THE IMPACTS OF HUMAN CAPITAL ON THE VALUE CREATION BY Mergers and Acquisitions: An EVENT STUDY IN SOFTWARE INDUSTRY

Research-in-Progress

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Abstract

The source of value creation from Mergers and Acquisition (M&A) is an enduring research question. Prior studies have identified quite a few variables that may affect M&A performance. In addition to traditional measures of human capital, we are interested in how professional social networking variables could affect the M&A performance in the software industry. We also hypothesize that the similarity of human capital, turnover rate, and relatedness of business may have significant moderating effects on post-M&A performance. Specifically, this study employs event study to examine how M&A synergy correlate with the education background, work experience, and professional social network connection of employees in the software industry. Our study contributes to the literature by empirically examining the impacts of human capital on M&A using professional social website data.

Keywords: Mergers and acquisitions, human capital, event study, professional social network, social capital
Introduction

Corporate mergers and acquisitions (M&A) is an important economic activity across almost all industries in our modern economy. The total deal value of M&A in U.S. technology industries reached $107.1 billion in 2010. Behind which, software industry remained a driving force, accounting for 96 (25%) of the 390 deals closed in the year and $28.3 billion, or 26% of total deal value (PWC 2011). Since 2000, Microsoft has acquired 103 firms while Oracle has acquired 70 firms (from Wiki in April 2012). It is evident that M&A is one of the vital business activities in the software industry.

Managers often cite a variety of reasons for M&A. These reasons include creating synergy, accelerating growth, eliminating competition by merging with direct competitors, gaining access to unique capabilities and so on (Walter and Barney 1990). Among which, the most common motivation is synergy: creating additional value more than the sum of the two firms’ individual value (Coff 1999). Research has suggested that there are synergistic benefits for resource exchange or knowledge sharing among related units (Rumelt 1974). M&A allows the acquirer and the target1 to create synergy by sharing their resources which were originally separate in two firms. Since the “production” of software firms mostly rely only on its human capital, synergies between two software firms should heavily depend on the synergies among the employees of two software firms in most cases.

Carly Fiorina, CEO of Hewlett-Packard, once said “the most magical and tangible and ultimately the most important ingredient in the transformed landscape is people”. Human resources management is especially challenging in the software industry because the rapidly changing technology constantly shifts the required skill-sets, and renders existing skill-sets obsolete (Agarwal and Ferratt 2002). Besides, the high turnover of employees complicates the management issues in the software industry. Scholars and practitioners increasingly acknowledge that IT human capital is a strategic resource and that its effective management represents a significant organizational capability (Ferratt et al. 2005).

Therefore, the objective of this paper is to investigate the relationship between the human capital of employees and value creation by M&As in the software industries. Specifically, we plan to investigate how do the education background, work experience, and professional social networking connections of employees may correlate with the post-M&A performance. These human capital related variables are found to have significant impacts on firm performance in the literature. Yet, their impacts on the post-M&A firms’ synergy gains remain largely unexplored.

In this paper, we employ the event study methodology to assess M&A synergy gain. The event study approach is the most popular method to quantify the impacts of a specific event, such as an M&A, on the market capitalization of a firm. The procedure to conduct event study has been well-studied and is very standardized in the literature.

To investigate this context, we collected data from LinkedIn.com by web crawling. We collected all public profiles of employees who ever worked at software firms that engaged in M&As from 2000 to 2011. In the end, we collected 403,190 resumes from LinkedIn. Our sample size is much larger than most existing studies in M&A and human capital in the management literature because those papers typically employed surveys to collect HR variables. Due to the limitation of surveys, the sample size in the literature is typically less than 10,000. Therefore, our study could benefit from a larger dataset with unique variables. Specifically, we are able to examine the following attributes of human capital in the M&A context: education level, education quality (undergraduate's university quality), length and quality of work experiences, the number of connections, and the number of recommendations by supervisors on LinkedIn. The detailed career information collected from LinkedIn also allows us to estimate the employee’s turnover rate at software firms. We expect that the employee’s turnover rate and the relatedness of two software businesses are important moderators for the impacts of human capital on post-M&A performance of software firms.

For years, researchers have called for more research to uncover how acquirers create or destroy value in M&A from the perspective of human resource (e.g. Larsson and Finkelstein 1999; Stahl and Voigt 2008).

1 In an M&A case that involves two firms, we define “acquirer” as the firm that is the buyer whereas “target” as the firm that is acquired.
Our study contributes to the M&A literature by extending the knowledge of the impacts of human capital on M&A synergy gains in the software industry. Recent studies have used big data of resumes to quantify IT human capital to examine various issues, such as IT offshoring (Tambe and Hitt 2012a) and the productivity of IT investments (Tambe and Hitt 2012b). Similarly, our study adopts real world big data from professional social networking site to empirically assess the impacts of various aspects of human capital in the software industry. This paper is different from previous studies by utilizing public data with social networking features to empirically study the M&A performance in software industry. This study could produce new practical implications for software firms which are considering acquiring other software firms and for stock analysts following the software industry. M&A decision makers may draw on human resource variables such as education background, work experience of the employees in the target firm to predict their potential M&A synergy gains, along with those well-known variables such as financial performance (e.g. accounting ratios) and product innovation.

Literature

Researchers drawing on the resource-based view of the firm have argued that M&As can provide firms with a competitive advantage by giving them access to unique and potentially valuable resources or capabilities that are originally embedded in a different cultural or institutional environment (Larsson and Finkelstein 1999; Morosini et al. 1998; Stahl and Voigt 2008) and therefore help firms create cross-business synergy through organization integration and resource sharing (Zollo and Singh 2004).

Synergy gains of firms after M&As are also confirmed by many previous studies. For example, Houston et al. (2001) relied on management’s forecasts to assess synergy gains in 41 large bank mergers. They documented average gains of about 13% and reported that gains arose from cost savings rather than revenue increases. Devos et al. (2009) estimated the average synergy gains in a broad sample of 264 large mergers to be 10.03% of the combined equity value of the merging firms. Wang and Xie (2009) argued that the M&A activities in the 1990s and the first half of 2000s were capable of generating efficiency gains through corporate governance transfers from acquirers to targets.

There exist vast number of studies on the variables that could affect the firm performance or synergy gains after M&As. King et al. (2004) conducted a meta-analysis of 93 published studies to assess the impact of the most commonly researched antecedent variables on post-M&A performance. According to their analysis, there are four variables which are commonly examined in the literature: degree of diversification of the acquirer, degree of relatedness, method of payment (i.e. cash or equity), and acquisition experience. However, they found that none of these four variables were significant in predicting post-M&A firm performance. Thus they concluded that the existing research had not clearly identified variables that impact the acquirer’s performance, and what impacts the value creation of firms engaging in M&A activity remains largely unexplained.

Although theoretical frameworks for explaining the success and failure of M&A have traditionally focused on financial and strategic variables, research into the organizational and human resources implications of M&A has increased in prominence in recent years (Stahl and Voigt 2008), and provides another perspective to look into this M&A issue. According to Larsson and Finkelstein (1999), previous research on M&As in the human resource management (HRM) had focused on psychological issues, the importance of effective communication, and how M&As affect careers. An emergent stream of research examines the impacts of cultural difference on the post-M&A integration process and the financial performance of firms engaging in M&A activity (Cartwright and Schoenberg 2006; Stahl and Voigt 2008). Studies in this stream include the variables of cultural distance (Morosini et al. 1998), management style similarity (Datta 1991), and so on.

Human capital is also considered as an important explanatory variable of the M&A issue, since it is a critical resource in the firm. Chatterjee et al. (1992) found a strong link between equity and human capital. Coff (2002) argued that similar expertise is particularly important when acquiring human capital-intensive targets. Fulghieri and Sevilir (2011) studied the effect of mergers on employee incentives and showed that in industries with high human capital intensity, mergers between competing firms can be inefficient, since they weaken employee’s incentives to innovate. Their research also provides an explanation for why many M&A fail to create value even though they reduce the level of competition in the product market.
Recently, Tanriverdi and Uysal (2011) developed the idea of cross-business information technology integration (CBITI) capability and found that the CBITI capability of an acquirer created significant value for shareholders of the acquirer in M&As. They also pointed out that IT has been the least studied of all corporate functions in M&A. It is not consistent to the increasing importance of IT and IT employees in our modern business, since firms increasingly rely on the managerial and technical skills of IT professionals to design and execute IT-enabled business processes (Mithas and Krishnan 2008). That’s why researchers have argued that IT professionals differ significantly from other professionals. The possession of IT human capital distinguishes IT professionals from other professionals (Josefek and Kauffman 2003).

Besides, the impact of human capital on the firm’s value is much greater in the human capital-intensive industry since human capital is the primary value-creating asset (Coff 2002). Software industry is, undoubtedly, human capital-intensive. The production of this industry depends heavily on the firms’ employees. Therefore, it could be expected that the human capital of employees in the software industry should have significant impacts on the post-M&A performance. And that is exactly what we aim to address in this study.

**Hypotheses Development**

**Human Capital & M&A**

Human capital has long been argued as a critical resource in most firms (Jeffrey 1994). It refers to worker attributes such as education and experience (Mincer 1970). These attributes reflect the level of an individual’s investments in formal education in school or on-the-job work experience (Ang et al. 2002).

In the IT profession, both education and IT work experience are important attributes of human capital. IT jobs are complex, requiring knowledge of difficult technical concepts such as data modeling, process engineering, and design theory. These general knowledge is often acquired through advanced educational degrees while specific IT knowledge about organizational systems, roles, and procedures are typically acquired through work experience (Ang et al. 2002). Besides, there is usually some variance in the education quality. For example, students who receive their education from the best universities are assumed to have more and better knowledge (Hitt et al. 2001). Firms create value through their selection, development, and use of human capital (Lepak and Snell 1999).

Information systems (IS) researchers have studied various aspects of the role of human capital in the IT workforce such as returns to human capital, human capital and innovation in IT industries (Ang et al. 2011). There exist a number of studies (Ang et al. 2002; Levina and Xin 2007; Mithas and Krishnan 2008; Tambe and Hitt 2010) on IT human capital and employee compensation in the IS research. For example, Ang et al. (2002) found that IT employee compensation was directly determined by human capital endowments of education and experience. Note that the only rational reason that a firm is willing to offer higher compensation is because it expects that the employees could create more business value for the firm itself.

In fact, firms do perform better when they possess better human capital. Hitt et al. (2001) showed that the leveraging of human capital exhibited a positive effect on professional service firm performance. Banker et al. (2008) found that average education level was associated with a positive firm performance in IT industries. Especially, IT firms which invest in highly skilled employees were in a better position to take advantage of R&D investments. Moretti (2004) found that more educated workers would make other workers more productive, which indicated potential synergy gain resulting from better human capital. Besides, Srivastava and Gnyawali (2011) found a positive synergy between portfolio resources for technologically weaker firms, and eventually for stronger firms when they overcome some of their competency traps. Thus, we expect that post-M&A performance of the portfolio of two software firms will be affected by resource sharing of IT human capital which is previously separate in two firms.

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2 A firm generates portfolio effects through the acquisition of portfolio resources, co-development with partners, and creation of inter-partner synergy among the portfolio elements (Srivastava and Gnyawali, 2011).
To conclude, literature suggests that better human capital offers software firms better opportunity to create synergy. In general, better human capital either results from education or work experience. Therefore, we come out with the following hypotheses:

**H1a.** The average education background of employees in the acquirer and the target is positively associated with M&A synergy gain.

**H1b.** The average work experience of employees in the acquirer and the target is positively associated with M&A synergy gain.

Besides, in a review of 40 years of research (Williams and O’Reilly 1998), the authors argue that there is a substantial evidence that demographic similarity can positively influence group performance. Ancona and Caldwell (1992) found that managers’ ratings of innovativeness would be lower when teams were functionally diverse than when they were similar. Barsade et al. (2000) argue that affective homogeneity (i.e. similarity) in demographics should lead to greater cooperation and less conflict, therefore should reduce friction and increase efficiency in task performance. These findings all indicate that the similarity between human capital in the acquirer and the target could result in better group performance, which could have positive impacts on the creation of synergy gain, and therefore leads to better post-M&A performance. Based on these concerns, we hypothesize that:

**H2a.** The similarity between education background of employees in the acquirer and the target is positively associated with M&A synergy gain.

**H2b.** The similarity between work experience of employees in the acquirer and the target is positively associated with M&A synergy gain.

**Social Capital & M&A**

We can also examine the post-M&A performance from a social capital perspective. In the most general forms, the concept of social capital is about the value of connections and is characterized as ties to resource-filled others (Borgatti and Foster 2003). M&A allows the acquirer and the target to share their resources and capabilities. And social capital refers to the productive possibilities embedded in relationships that may be used to leverage these resources and capabilities (Somaya et al. 2008). Research in management has been largely interested in social capital as an firm-level phenomenon (Leana and Pil 2006). We will use the firm-level analysis, wherein a firm’s social capital of its employees incorporates the aggregate form and its employees’ social relationships (Leana and Pil 2006).

Prior research has identified two types of organizational social capital: external and internal. External social capital facilitates external knowledge acquisition in key customer (Yi-Renko et al. 2001) and important external stakeholder (Somaya et al. 2008) relationships. Firms can more successfully leverage IT investments if they effectively capture external information through networks of customers, new employees and so on (Tambe et al. 2012). Comparing to external social capital, internal social capital is more related to synergy. Tsai (2000) found that the interaction between internal social capital and strategic relatedness significantly affects the formation of inter-unit linkages, which are especially important in leveraging the resources to realize the potential synergy.

One’s number of connections (recommendations) on professional social networks (as LinkedIn in this study) is an indicator of his (her) social capital. Therefore, we hypothesize that:

**H3a.** The average number of professional social networking connections of employees in the acquirer and the target is positively associated with M&A synergy gain.

**H3b.** The average number of (LinkedIn) recommendations of employees in the acquirer and the target is positively associated with M&A synergy gain.

**Moderating Effect: Relatedness of Business**

The degree of relatedness (please see p.7 for the details) is an important variable for explaining post-M&A performance in the M&A literature. In this study, the degree of relatedness mainly refers to sector relatedness (Li et al. 2010) between the acquirer and the target in the software industry. As we have mentioned above, there is still no consensus on the effect of the degree of relatedness. However, this
variable is usually considered as a moderator in the literature. Researchers seem to agree that related M&As generally lead to more extensive interaction among the employees of the two firms (Datta 1991; Larsson and Finkelstein 1999; Schweiger 2002).

The work experience of an employee in the software industry is highly relevant to his (her) job in the firm. Firm-specific IT experience may comprise knowledge of a specific firm’s unique inventory control process, or a unique software development methodology and so on (Mithas and Krishnan 2008). Related work experience of employees will be extremely helpful for the IT synergy after M&A. Coff (1999) found that acquirers with related industry expertise outperform those that lack shared expertise. Acquirers with similar expertise may be more adept at evaluating a knowledge-intensive target. When the experience of employees is lowly related, it is very likely that the acquirer is not familiar with this IT experience. An unrelated acquirer may lack the expertise to make substantive changes in the target (Pitts 1976). The acquirer probably won’t be able to leverage the IT experience of employees in the target, such as recognizing their skills and quickly getting them involved in the IT collaboration process. However, general knowledge is not affected by the degree of relatedness. Therefore, we hypothesize that:

H4a. The relationship between the M&A synergy gain and the work experience is \textit{moderated} by the degree of relatedness between the acquirer and the target.

H4b. The relationship between the M&A synergy gain and the education background is \textit{NOT moderated} by the degree of relatedness between the acquirer and the target.

**Moderating Effect: Employee Turnover Rate**

Employee turnover rate is defined as the percentage of employees leaves a firm within a specific period of time. The turnover of employees in the software industry generates a lot of issues that desire insightful research. In fact, The turnover of IT employees is one of the most persistent challenges facing organizations (Joseph et al. 2007). Software firms typically have very high employee turnover rate. Researchers have studied the turnover issue from various perspectives. For a systematic review about turnover in the IT industry, please refer to the work of Joseph et al. (2007). They conducted a review of 33 studies which include 43 antecedents to turnover intentions.

M&As often have a severe impact on employees of the target and the acquirer, to the extent they may experience significant stress, career disruptions, and culture clashes in the months and perhaps years following the M&A (Larsson and Finkelstein 1999). In an M&A, some jobs may be threatened and some employees are forced to leave the firm. One extreme M&A example is that, the acquirer just bought the target and shut it down to alleviate competitions. This is not rare in the real world. Another common case is that the acquirer is only interested in the patents or products of the target and therefore most employees of the target may face layoff after an M&A. In these scenarios, the impacts of human capital become less impactful. Alternatively, we need to consider the human capital of only employees who stay in the firm after M&As.

Employee turnover rate may also have signaling effects. If the long-term prospect of a merged firm is cloudy, it is intuitive that significant number of employees (especially the high-quality employees) may switch to other firms. Based these arguments, we hypothesize that:

H5. The relationships between the M&A synergy gain and education background, work experience, and professional social network connections are \textit{moderated} by the employee turnover rate in both the acquirer and the target.

**Data and Methods**

The M&A related data is from Securities Data Corporation’s (SDC) Platinum database. SDC dataset is the de facto standard dataset used in all M&A studies. Our sample consists of 4,153 M&A cases of U.S. firms in the software industry from 2000 to 2011. The software industry is defined as firms with SIC code 7372. We only include those M&A cases in which both acquirer and target are publicly listed software firms because we need to utilize stock prices to estimate M&A synergy gain. We use CRSP and Compustat to obtain daily stock trading data and annual accounting data of these firms.
Our human capital data is collected from LinkedIn.com, which is the dominant professional social network site around the world. LinkedIn focuses on professional information, encouraging users to construct an abbreviated CV and to establish “connections” with professional friends. Profiles are strictly professional, with little or no information about hobbies, political or religious affiliations, favorite music, books or movies included (Skeels and Grudin 2009). A person’s LinkedIn page can be considered as a resume.

We use a computer program to collect these LinkedIn pages. This program will send sophisticated queries containing the company names to Google search engine. The search engine will then only return results containing only related LinkedIn pages. From our experiment, Google seems to be able to capture all active pages on LinkedIn. The program will download these returned results, and extend these results by crawling the pages recommended on the right-hand side of each page, and then continue extending the sample using these newly crawled ones and so on. Finally, the program will refine the sample by going through the field of work experience. In total, we collected 403,190 resumes of employees who worked at the sample software firms from LinkedIn. We further classify these employees into IT and non-IT workers using a computer program which adopts a simple key-word based classification algorithm. This computer program is based on a large number of keywords of IT job titles. Therefore, we are able to identify most of the IT workers.

We also realized that the collection process of our data could be possibly biased by the Google search process. To correct for potential sampling bias, we intent to employ the method adopted by Tambe and Hitt (2012b), which adjusted the number of IT workers by scaling the number of sampled IT workers employed by the firm by the firm-specific sampling rate. And we will follow that study to develop instrumental variables to test how errors-in-variables impacts the estimates produced by data.

To operationalize education quality, we need a measure of the quality of universities. We have also crawled related information from The Princeton Review, a nonprofit corporation which provides a wide range of key statistics and referenced ratings of most U.S. universities. We use the admissions selectivity rating as a proxy for the quality of US universities. This rating is from 0 to 100 and it generally reflects the difficulty to enter a university. For example, Harvard University has an admissions selectivity rating of 99. A higher rating implies the quality of that university is better because it means it is more competitive for a student to obtain the admission offer from that university.

**Dependent Variable**

Event study method has been widely used in M&A literature, as well as in IS literature (e.g. Dewan and Ren 2007; Dos Santos et al. 1993). This method assumes that capital markets are efficient. In reacting to the announcement of a new M&A, the capital markets incorporate all publicly available information into the stock price of the acquiring firm (the firm that is still listed on the stock exchange after the M&A). We will use this method to compute our dependent variable.

**M&A Synergy Gain.** The dependent variable, M&A synergy gain, is measured in percentage return using the methodology developed by Bradley et al.(1988). First, we can estimate a theoretical daily normal return (denoted by $R^n_{it}$) by Market Model, CAPM, or Fama-French three-factor model (Bodie 2007). The subscript $i$ denotes one M&A event sample. The daily abnormal return ($AR$) is defined as the difference of actual return ($R_{it}$) and $R^n_{it}$.

$$AR_{it} = R_{it} - R^n_{it} \quad (1)$$

We estimate the parameters of Market Model or other models over the period from (event day -210) to (event day -11), where event day 0 is the M&A announcement day (Wang and Xie 2009). Following Bradley et al. (1988), we use 11-day cumulative abnormal return (CAR) over the M&A announcement period (-5, +5).

$$CAR_{i} = \sum_{t=-5}^{5} (AR_{it}) \quad (2)$$

For each M&A, we form a value-weighted portfolio of the acquirer and the target, with the weights ($w$) based on their respective market capitalizations at the sixth trading day prior to the M&A announcement.
data. The M&A synergy gain is therefore defined as the portfolio’s cumulative abnormal return (PCAR) during the event window (Wang and Xie 2009).

\[
PCAR = w_1 CAR_{1} + w_2 CAR_{2}
\]

### Independent Variables

**Education Level.** Some researchers (Mincer 1974) used years of schooling to measure education level. IS researchers (Ang et al. 2002; Mithas and Krishnan 2008) typically used education degree as a proxy. Mithas and Krishnan (2008) used dummy variables of one’s highest degree at an individual level. Following Mithas and Krishnan (2008), we create four firm-level variables: \(edubach\), \(edumaster\), \(eduphd\), and \(edusomecoll\) to measure the percentage of employees in a firm whose highest educational degree is bachelor’s degree, master’s degree, doctoral degree or college/associate degree.

**Education Quality.** As we have discussed earlier, we use Princeton Review’s admissions selectivity rating as the proxy of university quality. We obtain the firm-level education quality by averaging over the education quality of employees without missing value.

**Work Experience.** This variable is usually measured in years (Mithas and Krishnan 2008). So the firm-level work experience is calculated by the average of work experience of all employees in the firm. The work experience of individual employee is calculated as the difference between the date of the graduation and the date of his/her first job. We also plan to include work experience quality in the future works.

**Similarity.** We intend to follow the work of Barsade et al. (2000) for the calculation of similarity.

**Social Capital.** We operationalize the social capital of an individual by two variables: the number of connections and the number of recommendation on LinkedIn. Again, the firm-level variable is defined as the average number of professional social network connections or recommendations.

### Moderating Variables

**Turnover Rate of Employees.** We can identify one’s career path from his (her) LinkedIn profiles. Therefore we can also learn when and who leaves which firm. We define the turnover rate of employees as the number of employees who left the software firm divided by the total number of employees in that firm at that time.

**Degree of Relatedness.** We defined the degree of relatedness in this study as the sector relatedness in the software industry. Following Li et al. (2010), we divide the software industry into seven sectors. If the acquirer and the target are in the same sector, the degree of relatedness is high. Otherwise it is low.

### Control Variables

Prior research identifies a number of acquirer, target and transaction characteristics that may affect the M&A performance.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Firm size</td>
<td>Natural logarithm of book value of total assets.</td>
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<tr>
<td>Tobin’s Q</td>
<td>Market value of assets over book value of assets.</td>
</tr>
<tr>
<td>Leverage</td>
<td>Book value of debts over book value of total assets.</td>
</tr>
<tr>
<td>ROA</td>
<td>Operating income before depreciation over book value of total assets.</td>
</tr>
<tr>
<td>Payment method</td>
<td>Dummy variable: 1 for purely cash-finance deals, 0 otherwise.</td>
</tr>
<tr>
<td>Relative M&amp;A transaction size</td>
<td>Natural logarithm of the ratio of the transaction value of the target to the market capitalization of the acquirer three days prior to the M&amp;A announcement.</td>
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</table>
We build on the work of Bradley et al. (1988) to control for these characteristics to rule out potential alternative explanations other than HR factors. More specifically, the list of control variables includes firm size, Tobin’s Q, leverage, return on assets (ROA), the method of M&A payment, and relative size of M&A transaction. The definitions of this list of variables from the work of Wang and Xie (2009) are provided in Table 1.

**Plan for the Empirical Analysis**

Our baseline model will be estimated by Ordinary least squares (OLS). Moderating variables will be included as the interaction terms with each independent variable. The other approach to include the proposed moderating variables is to employ OLS separately for high/low turnover rate and high/low relatedness.

We also plan to estimate our model on all employees, only IT professionals, and only marketing professionals in the acquirer and the target. Our findings could shed more light on the contribution of different types of human capital on the post-M&A performance.

**Conclusion**

How firms create value in M&A is an enduring research question (Andrade et al. 2001; King et al. 2004). Prior studies have examined quite a few variables that affect the M&A synergy gain. However, researchers claimed that what impacts value creation of firms engaging in M&A activity remains largely unexplained, and also called for more research to uncover how firms create or destroy value in M&A from the perspective of human resource. We realized that human and social capital could significantly contribute to firm performance according to literature, as well as that turnover rate and degree of relatedness may have significant moderating effects on post-M&A performance.

In this study, we plan to examine the impacts of human and social capital of employees in the software industry. Not only the impacts of the static human capital such as education and work experience, but also the impacts resulted from the flow of human capital (turnover). By collecting data from web data sources using computer programs, we are able to measure education quality and other variables for hundreds of thousands of real world software firm employees. Our study benefits from real world big data. Therefore, we probably could achieve more convincible results.

There are also some limitations in our study. For example, there could be sampling bias in the data collection of LinkedIn public resumes of software firm employees. In order to address this issue, we can later try to build a much larger data set following software firm employees’ social connections in the social network. Another limitation of our study is that we don’t have education quality data out of the USA because Princeton Review only evaluated USA universities. We are investigating other credible sources that can provide a quality measure of major universities all over the world.

Future research could examine the impacts of more specific human capital such as major, as well as impacts that different career paths of employees could have on M&A. Results could be valuable to assess the success of software M&A. One interesting direction is to develop measures and variables beyond those used in the existing literature. For instance, in our data, we know not only an employee’s years of work experience, but also the company and the industry that he/she had worked in. We might be able to create a measure about the fitness or complementarity of human capital in two organizations. This could be another research direction to contribute to the M&A literature.

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Economics and Value of IS

References


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