

Strategic Information Technology Compensation: A Cross-Cultural Perspective

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ABSTRACT

The 2008 financial crisis has made many high-tech firms vulnerable. Some non-American firms (e.g. in Taiwan) have even granted their IT professionals a “no-pay break” to reduce firms’ financial uncertainty. The crisis leads to a need to re-examine managerial compensation thinking from a cross-cultural perspective. Drawing on cross-cultural case studies in Taiwan, a collectivist culture, and in the United States, an individualist culture, this research explores managerial thinking on how to align strategic IT compensation with personnel’s immigrant status and IT sourcing strategies in different industrial and national/cultural contexts. It also explores how firms utilize nonmonetary compensation in different cultures. Compensation for IT professionals in Taiwan are reportedly to be more uniform because of the feature of collectivist culture. Compensation for IT professionals in the United States are reportedly more fluid thanks to a frontier culture and individualism. Therefore, negotiable competitive pay is emphasized. Both Taiwan and the US have suffered from wage stagnation for decades. In Taiwan, this stagnation may be related to a depreciation of higher degrees since the number of university graduates has been increased fivefold in two decades and IT related degrees have been amidst popular majors which lead to oversupply in IT workforce. In the US, this stagnation may be related to economic recession and reduced IT investment/full-time positions, dropping IT enrollment, IT skill/education-job mismatch, and increased reliance on IT contractors in an emerging IT gig economy. From a cultural perspective, “still under employment” in a Confucian society which emphasizes face-saving that has value in its own right and it explains why some firms in Taiwan granted IT professionals a “no-pay break” instead of immediate layoff to cope with the 2008 crisis. Meanwhile, to cope with the challenge of IT skill/education-job mismatch in the United States, using a domestic training program as nonmonetary compensation may be a viable alternative to IT firms whose IT compensation strategies emphasize lucrative pay or poach IT talents rather than nurturing IT talents. Theoretically, economic/organization theories derived from western experiences or ideologies in 1900s, where industrialization, private/hierarchical organizations, and higher education were booming, may not fit non-western countries’ experiences or today’s world where the trends of outsourcing, IT contracting, gig economy and depreciation of education are emerging.

KEYWORDS

Cross-Cultural Case Studies, IT Compensation, IT Immigration, Offshore Branching, Outsourcing

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INTRODUCTION

The 2008 financial tsunami has resulted in increased layoffs and pay freezes in many businesses. The economic recession especially makes high-tech industries vulnerable. It also brings attention to several important issues of IT (and non-IT)¹ compensation studies:

First, the need of cross-cultural perspectives: The 2008 financial crisis has invited criticism of the US perspective as lacking endogenous insights and unable to explain cross-cultural phenomena in compensation (Mintzberg, 2009; Sun, Zhao, & Yang, 2010). Economic theories commonly used to explain compensation has been criticized as assuming cultural homogeneity or been challenged as unable to explain endogenous compensation practices due to abstraction from contexts (Sun et al., 2010; Tjosvold & Leung, 2003).

Second, non-monetary compensation: The role of nonmonetary compensation is especially important during economic recession or in resource-scarce firms (Morrell, 2011). For example, some high-tech firms in Taiwan granted their IT professionals “no-pay breaks” to avoid immediate layoffs during the 2008 financial crisis. “No-pay break” is considered as a form of nonmonetary compensation to offset uncertainty resulted from shoestring budget, although in Taiwan it is often taunted as an unethical “innovative” management thinking worth of Nobel Prize (Wang & Kaarst-Brown, 2014a). Alternatively, other forms of nonmonetary compensation (e.g., flextime) can be translated into power and autonomy granted to IT professionals. Regrettably, while non-monetary compensation has been obliquely studied at best in empirical compensation research, its use in attaining, retaining IT professionals is still less explored. An exception is Wang and Kaarst-Brown’s (2014b) which explores the use of non-monetary rewards (i.e., IT contracting and flexible working hours) in a small U.S. based Chinese media firm to attract IT talents with relatively limited financial resources. They found internal status of IT division in media industry (relating to profit-making capability compared to other core professionals, i.e. IT professionals vs. news professionals and advertising professionals) has impact on their capability of resource competition, which in turn affects the level of IT compensation².

Third, non-high-tech industries: in spite of the recession in high-tech industries due to 2008 financial crisis, IT demand and IT jobs still increase in other non-high-tech industries including financial services, transportation and health services (Morgan, 2009, 2010, 2011; Thibodeau, 2012). After the 2008 downturn, a more recent report further shows that IT jobs in architecture and management outnumber jobseekers (Rugaber, 2015). For the other example, IT-related positions in healthcare industry are expected to grow 15% from 2014 to 2024 (Information Technology Newsweekly, 2016). Because IT professionals work in both high-tech and non-high-tech industries, there should be more research on IT compensation in non-high-tech industries or even more cross-industrial studies on IT compensation.

Forth, increase in IT outsourcing and related IT personnel immigration: To cut compensation costs, many firms opt to IT outsourcing to locations (or countries) that has relatively inexpensive IT labor costs. This practice is also related to a firm’s IT personnel immigration strategy. Although outsourcing and personnel immigration strategies are issues closely tied with (contractual) compensation decisions in practice, very few compensation studies, if not none, address the relationships between firms’ IT outsourcing strategy, IT personnel immigration, and compensation strategy. Perhaps this is out of the difficulty in acquiring data in this aspect. This difficulty is further related to the fifth point below.

Fifth, managerial thinking (i.e., theory-in-use or professionalization theory) of compensation decisions and its alignment with organization strategies: Most of the compensation studies (IT or non-IT) are quantitative using archival economic data (Ang, Slaughter, & Ng, 2002; Devers, Albert A. Cannella, Reilly, & Yoder, 2007; Dulebohn & Werling, 2007; Levina & Xin, 2007; S. Mithas & Krishnan, 2008) (an exception is Wang and Kaarst-Brown (2014b) which investigates into IT compensation strategies using qualitative case study). Although these quantitative studies are valuable, managerial explanations of compensation decisions in real world, especially when business strategies are taken into consideration, can hardly be revealed. So, there are repeated calls for qualitative,

contextual and interesting compensation studies at managerial decision level (Diaz & Gomez-Mejia., 1997; Dulebohn & Werling, 2007; Werner & Ward, 2004). Given that compensation decisions and organization strategies are both confidential and sensitive, acquiring information of this kind is more difficult than acquiring archival economic data. Very often, informants are only willing to reveal their past experiences that may not get back to haunt them. So, it is difficult to obtain timely and detailed information about strategic compensation decisions. With a revelatory nature, “natural language” from higher-level managers are especially valuable in this regard.

In sum, given that IT professionals work mainly for pay, we need more IT compensation studies drawing on managerial narratives, diverse methods and perspectives to investigate managerial compensation decisions (including both monetary and nonmonetary rewards) and their alignment with business strategies in different industrial, national/ cultural contexts. To fill these gaps, this research draws on embedded cross-cultural case studies to explore managerial explanations of IT compensation decisions from real world. With embedded case design, concepts at multiple levels can be investigated with manageable number of cases.

The case study addresses two research questions:

1. How do managers align IT compensation decisions with other strategic factors (clarified in the following section) in different cultures? And why?
2. How do managers utilize nonmonetary compensation in the total compensation plans for IT professionals in different cultures? And why?

In the following sections, this paper first discusses the concepts of interest and their hypothetical relationship with IT compensation decisions that are borrowed from Wang and Kaarst-Brown's (2014a) proposed IT compensation theory. It then discusses theory contribution of this paper from the angel of generating managerial explanations (i.e., theory-in-use or professionalization theory) for IT compensation decisions in different cultures, followed by discussion of research strategy, within-case and cross-case findings intertwined with cross-cultural inferences for IT compensation decisions. It concludes with discussion of research limitations and implications to practice and future research.

CONCEPTS AND CONCEPTUAL FRAMEWORK

IT compensation³ is a variable pay system remunerated to IT professionals or a contractual compensation agreement between organizations and IT service providers. IT compensation includes base pay, incentive pay and nonmonetary rewards. Although IT work can be seen as heterogeneous reflecting different job roles, almost all of the IT compensation research articles and the IT related HR-Management research articles adopt homogenous IT work concept regardless job roles (Ang et al., 2002; Messersmith, 2007). More on the discussion of heterogeneous vs. homogenous concepts of IT work is included in the “limitations of the research” section.

Drawing on both IT and non-IT compensation literature, Wang and Kaarst-Brown (2014a) theorized alignment between multi-level strategic factors and IT compensation decisions whose purpose is uncertainty-reduction⁴. Among the twelve strategic factors they proposed⁵, this paper focuses on the factors of immigrant status, IT sourcing strategy, and industrial/ national contexts (see Table 1 for definitions) and further explore how managers in the real world considers these strategic factors when they make IT compensation decisions in different cultures, and why. This paper also explores how firms utilized nonmonetary compensation to cope with uncertainties.

Drawing on the IT Compensation Theory that Wang and Kaarst-Brown (2014a) proposed, a recap of these selected factors of interest in this particular paper and their hypothesized relationship with compensation decision for the purpose of uncertainty reduction are provided below. For details please see Wang and Kaarst-Brown's paper (2014a).

Table 1. Definitions of IT Compensation and Strategic Factors (adapted from Wang and Kaarst-Brown, 2014a)

Concepts	Definition	Summary of Uncertainties
Immigrant Status (Individual Level – Strategic Decision)	The legal working status of foreign IT professionals.	<ul style="list-style-type: none"> - Retention uncertainty after incurred legal costs - Labor uncertainty due to H1B visa caps push up compensation costs
IT Sourcing Strategy (Organizational Level – Strategic Decision)	Outsourcing: employing non-resident IT workers of an external entity Insourcing: in-house full-time or part time contract workers; ad-hoc in nature to relieve temporary IT needs	<ul style="list-style-type: none"> - Resource uncertainty - Monitoring and Coordination uncertainty
Industrial Trait (Industrial Level)	Two categories of industrial traits: high-tech industry and labor-intensive industry (or non-high-tech industry). High-tech industry: annual R&D budget is 5% or greater of sales revenues. Measures: SIC codes	<ul style="list-style-type: none"> - Employment uncertainty - Labor competition uncertainty due to different opportunity levels - IT uncertainty
Geographic Location Cost of Living/Cultural Clusters (National Level – Strategic Decision)	Costs of living due to economic and cultural differences for regions the organization's IT group is based in (e.g., East or West Coasts of US, or Asia Europe)	<ul style="list-style-type: none"> - Cost of living variability
IT Compensation	A variable pay system remunerated to IT professionals including proportions of base pay (the fixed proportion compensating regular behavior/tasks), incentive pay (the variable proportion based on individual performance or profit sharing in organization), and nonmonetary rewards. It can be a contractual compensation agreement between organizations and IT service providers or IT professionals, including part-time or contract workers.	
Non-monetary Compensation	Informal and intangible incentives, together with monetary rewards (i.e., formal and tangible earnings) that are considered as components of total compensation plans.	

Individual Level Factors - Immigrant Status

Mithas and Lucas's (2010) study has shown that immigrant status has impact on IT compensation. Theoretically and logically, IT professionals who need to change their immigrant status to legal working status might be compensated at lower levels because firms have to cover the incurred legal service fees (*Wang & Kaarst-Brown, 2014a*). Immigrant status and the annual caps on work visa of foreign IT professionals (H1B) have been widely debated in various countries. But academic research on the relationship between immigrant status and IT compensation seldom include perspectives of non-American countries. This research focuses on hiring foreign IT professionals without legal working permits from a cross-cultural perspective because issue of H1B is not only applicable to the United States but other countries.

Strategic Level Factors - IT Sourcing Strategy

IT sourcing strategy is the other factor having influence on IT compensation decision. IT sourcing strategy is differentiated into IT outsourcing, IT insourcing and contractors; they are shorter-term principal-agent relationships compared to full-time employees (*Lacity & Hirschheim, 1993; Loh & Venkatraman, 1992; Pati & Desai, 2005*). IT compensation in this context can be extended from pay for individual IT professionals to contractual agreement for IT service providers. According to agency theory, when the intended length of principal-agent relationship is short, there is increased uncertainty regarding the agent's performance and greater requirement for closer monitoring, therefore there is an emphasis on incentive pay to motivate desired behavior (*Eisenhardt, 1988*). However, monitoring outsourced IT performance is more difficult than monitoring in-house IT performance; therefore,

Wang and Kaarst-Brown proposed that firms opting for IT outsourcing strategies would emphasize fixed-pay contract to reduce monitoring cost (2014a).

Literature tends to equate offshoring with offshore outsourcing whereby IT infrastructure and IT staff are delegated to third-party companies (e.g., Hahn, Doh, & Bunyaratavej, 2009; Sarker & Sarker, 2009). But our case findings show that managers frequently use “offshoring” to refer to “offshore branch” as well. IT infrastructure and IT personnel in offshore branches are still the firms’ formal employees and firms spend regular IT personnel expenditure to compensate these formal IT employees.⁶ Offshore branching⁷ along with IT outsourcing are IT strategies influencing on firms’ IT compensation decision to reduce risks of IT talent shortage. But there are few empirical compensation (both IT and non-IT) research linking compensation decision with sourcing strategies (e.g., Sethupathy, 2013), let alone offshore branching strategy.

Industry Level-Industrial Traits

Uncertainty related to industrial traits, namely the characteristics of the sectors in which the firm operates, also affects organizations’ compensation strategy (Balkin & Gomez-Mejia, 1987; Kleingartner & Anderson, 1987; Wang & Kaarst-Brown, 2014a). This research focuses on two industrial traits: high-tech industry and labor-intensive (non-high-tech) industry. Incentive pay as a proportion of total compensation is assumed higher in high-tech firms due to the volatile and constantly changing environment high-tech industries face. Emphasis on incentive pay in this regard not only motivates IT personnel to achieve firms’ future success but also compensate their endurance of high risk (Wang & Kaarst-Brown, 2014a). However, very few empirical research (e.g., Wang & Kaarst-Brown, 2014b) investigated how managers make IT compensation decisions in non-high-tech industries that face uncertainties of different kinds or how managers think of nonmonetary compensation in motivating/rewarding IT professionals.

National Level-Geographic Location/Cultural Cluster as a Strategic Decision

Geographic factors have influence on local IT compensation, but these factors are often controlled for in descriptive compensation studies. Wang and Kaarst-Brown’s (2014a) theory conceptualizes culture as a proxy for compensation differences.

There are relatively few cross-cultural⁸ compensation studies (e.g., Adithipyangkul, Alon, & Zhang, 2010; Greckhamer, 2011; Levina & Xin, 2007; Tosi & Greckhamer, 2004; Townsend, Scott, & Markham, 1990). Amidst them culture is not reduced to a measurable factor but is treated as a complex whole that can shape values and other macro-environmental phenomena (i.e., institutions) and therefore can explain the observed differences in compensation. Moreover, while Geert Hofstede’s cultural dimensions (power distance, individualism vs. collectivism, uncertainty avoidance, masculinity vs. femininity, long-term orientation) lay the foundation for contemporary cross-cultural studies (Tjosvold & Leung, 2003), Harry Triandis’ reviews of theory and research on individualism vs. collectivism show this dimension is deeply ingrained in the East and the West and therefore cover differences in economic development (i.e., developing vs. developed,) and social, political institutions (Berman, 1990; Tabellini, 2010; Triandis, 1990, 1995). Therefore, instead of pre-specifying measurable dimensions of culture beforehand, this paper treats culture as contextual backgrounds of the cases and uses sub-concepts of culture (i.e., collectivism vs. individualism) emerged in the study to explain compensations decisions in the hope of reaping richer cross-cultural notions in IT compensation.

RESEARCH STRATEGY OF CASE STUDY

Selecting Atypical Cases

Given that “...insightful theorizing may not come from studying averages across large samples, but rather from the study of atypical organization,” we select to report managerial explanations elicited

from four atypical cases with a nature of revelatory case. Atypical cases may be particularly useful to discover limits of theories because their outcomes “are not what traditional theories would anticipated” (George & Bennett, 2005, p. 75). Atypical cases can also be used in cross-cultural comparative studies to explain irregularities underlying general rules (Smelser, 2013). Therefore, they are worth of documentation for reference in practice or for future research.

This study selects two firms registered and operated in Taiwan (a collective culture), and two in the United States (an individualist culture). The four atypical cases are selected from four industries with various IT uncertainties: software, networking, civil construction consulting, banking and financial services.

The United States has been the world’s largest IT producer. Taiwan was the world’s second largest IT producer from 1995-1999 (Leonard, 2005). In 2008 and 2009, Taiwan was ranked second and the fifteenth respectively⁹ (Business Software Alliance, Business Software Alliance, 2008; Business Software Alliance, 2009). The Economist (The Economist, 2013) describes Taiwan as a “rare example of successful (IT) industrial policy”:

Taiwan, once a maker of soft toys and umbrellas, has long been a high-tech hive. It provides a rare example of successful industrial policy (though much more so in hardware than software). In 1973 the state created the Industrial Technology Research Institute (ITRI) to nurture the tech industry. ITRI started with semiconductors, securing the transfer of old technology from RCA, an American company, in 1976. In 1983 ITRI developed a clone of the IBM PC. Seven years later it formed an alliance of notebook-PC companies. Information and communications technology now makes up one-third of GDP. The island came to dominate the notebook business.”

As to the pay level nation-wide, giving the prevailing collectivism and depreciation of higher education in Taiwan¹⁰, reportedly base pay rates for different educational degrees¹¹ and individuals with different experiences are less varied in practice; average base pay rate in Taiwan has been frozen for over a decade (Chen, 2015; Editorial, 2014, 2015; Gerber, 2014; Liu, 2015; Wright & Poon, 2014). Therefore, pay negotiation has less leeway in IT compensation decisions in Taiwan compared to the US counterpart. However, this culture aspect of compensation has not been documented in current academic literature.

“IT industry” is not a unitary term and consists of heterogeneous sub-sectors. Non-hardware sectors of the IT industry are emphasized in this research in both national contexts. This is because from the perspective of production rate, the IT hardware sector is the number one, most mature IT sector in Taiwan and thus may not be ideal for contrasting differences in both nations. Conversely, IT sectors of software and networking services in Taiwan are relatively young and only account for 10% of the production value (Chien, 2003). The global software and networking service markets have higher language thresholds, more western-culture preference, more controversy regarding intellectual property rights, and have long been dominated by US firms. Consequently, Taiwan as a non-English-speaking and non-western nation is much more disadvantaged in the competitive global software and networking services market. So, this research focuses on non-hardware IT sectors in Taiwan and the United States to better contrast IT challenges in different cultural settings.

As to the non-IT industry, an (civil construction) engineering consulting firm in Taiwan and a banking firm in the United States are selected as the other two cases. The engineering consulting firm used to be run by the Taiwanese government. After privatization in the 1980s, this engineering consulting firm retains intricate ties with the government even though it now is nominally private-owned. That giant companies have strong ties with the government has been a prevalent phenomenon in the Asia-Pacific countries such as China, South Korea, and Singapore. But organizational theories or compensation research based on western experiences tend to overlook this uniqueness in the Asia-Pacific countries.

A financial consulting firm enrolled and operated in the United States is selected for the other case. Orlikowski and Baroudi (1989) deemed financial and legal specialists such as loan officers and financial law consultants as ideal “professionals” given their legitimacy, power and social relations with customers/clients but argued that IT personnel are not “professionals” from a social institutional perspective¹². The internal competition in the financial consulting firm between the ideal professionals (e.g., financial and accounting professionals), according to Orlikowski and Baroudi’s perspective, and IT professionals thus makes a purposeful supplement to the other cases.

In-Depth Interview and Archival Data

This research used in-depth interviews to elicit first-hand experiences from the field and rich contextual information. Ghauri states that “[i]n-depth interviews are particularly suitable when researcher wants to understand behaviour of decision-makers in different cultures...” (2004, p. 113). Purposeful sampling strategy was utilized to select interviewees that have the power to make IT compensation decisions. Most of the people who have power to make IT compensation decisions are higher-level managers and usually no more than 3 to 5 people in a company. These people are ideal candidates to explain IT compensation decisions. But to have a large number of interviewees from higher level is practically difficult. A compromise this research makes is to interview other personnel who have knowledge on how managers decide IT compensation based on field experiences, but these personnel may not have full knowledge of compensation decisions and their alignment with business strategies. So, the accounts of these two types of interviewees were weighted differently. Due to page limit, this paper presents quotes from managers only.

Large number of interviewees (or transparency of the interviewees’ backgrounds) is practically unattainable under sensitive topics like strategic IT compensation decisions, which is identified as the challenges of corporate elite interviewing (Welch, Marschan-Piekkari, Penttinen, & Tahvanainen, 2002). The numbers of interviewees after compromise (total 20) and their roles in the companies are summarized in Table 2 (see “Imperfect Controlled Comparison and Small Number of Cases” and

Table 2. Summary of cases

Case Number	Location and Founded Year	Industry	Number of Employees	Sourcing Strategy	Informants (Total 20)	Specialties of the Case
Case 1	Taiwan 1998	Software/ Networking	80 (40 IT personnel; Investment Capital: \$4 million) *Small in terms of size, but large in terms of capital)	Multiple	1 VP; 5 Senior Engineers	Leading software firm in the disadvantageous sector of IT industry in Taiwan; offshore branching in China
Case 2	Taiwan 1969	Civil Engineering Consulting	1700 (# of IT personnel <10%; Investment capital not available because it is government owned)	Multiple	2 Case Managers; 6 Senior Engineers	Strong tie with government; having two IT departments; IT compensation is decided through public bidding process
Case 3	U.S. (CA) 2000	Software/ Networking	700 employees, 6 domestic IT support personnel in the main office, 5 IT personnel in oversea branches; 112.8 million cash and investments	Multiple	2 VPs; 1 Senior Engineer	Offshore branching in Bucharest, Romania, UK and India; different from firms relying primarily on immigrating foreign IT professionals or outsourcing IT functions.
Case 4	U.S. (CA) 1997	Banking and Financial Services	42 employees, 2 IT support personnel in the main office; assets \$37.3 billion)	Outsourcing	1VP; 2 Senior Engineers	Outsourcing core IT functions (cf. firms outsource non-core IT functions); IT downsizing; competition between core professionals and IT professionals

“Rich Description vs. Sensitivity and Small Number of Interviews”). To preserve confidentiality and reduce commercial risks, case IDs are assigned to disguise firms’ identities. Field interviews are conducted primarily in 2006-2007 and update in 2008-2009. Because pay freeze has been plagued both nations for decades and that managerial accounts on IT compensation decisions aligning with business strategies are with a revelatory nature that have not been documented in academic literature, the case findings still provide interesting insights from the real world to share with IS academia even today. This study also collects web reports from the firms, governments and news media, ranging from 2005 to 2017, as alternative information sources for triangulation purpose. Archival data is especially useful for understanding national/ societal/ cultural/ economic development, industrial traits, firms’ backgrounds and market directions.

Unit of Analysis and Data Analysis

The unit of analysis (main unit) in the case studies is set as the formal or informal compensation system(s) in the IT department, based on which IT compensation plans are designed. This research contains concepts at multiple levels as embedded units. It directs research attention to these embedded units along with the IT compensation systems (main unit). In an embedded case design, a case contains multiple factors at different levels. The embedded nature further supports Yin’s arguments that a large number of cases are not a prerequisite to draw theoretical conclusions because an embedded case can observe factors at different levels.

As to data analysis, the technique of explanation building, representing clarification of the “why” or “why not,” is used. The purpose of explaining a phenomenon is “to stipulate a presumed set of causal links about it” that is similar to identifying independent variables in statistical analysis (Yin, 2002:120); but these casual links often occur in narrative form and may be complex or difficult to measure in statistical or any precise manner. However, theoretical propositions (or inferences) may be generated further from narrative explanations:

In most existing case studies, explanation building has occurred in narrative form. Because such narratives cannot be precise, the better case studies are the ones in which the explanations have reflected some theoretically significant propositions. For example, the casual links may reflect critical insights into public policy process or social science theory. (Yin, 2002, p. 120)

Yin’s notion of narrative explanations is aligned with Dyer and Wilkins’ (1991) comment that better/richer stories, not concise statements of constructs, contribute to paradigm-challenging/creating theoretical advancements because rich stories unveil dynamics of phenomena (acting as new relationships/orientations) and help us spot similar dynamics in other contexts.

Theory Contribution

IT (and non-IT) compensation research rarely emphasize managerial explanations based on real-world experiences in different cultures. Therefore, we do not really know if managers think like economists or theorists in deciding IT (or non-IT) compensation or how managers make trade-offs facing all sorts of uncertainties in different cultures. Very often, we know how much IT professionals are paid, but we may not know managerial explanations for the ways they get paid in different cultures. Knowledge on managerial explanations actually fits into the categories of narrative theory and professionalization theory (Leeming, 2001; Reeves, Albert, Kuper, & Hodges, 2008) which views theories as what’s actually done to solve problems or values, standards in an occupation/profession. Theories of these types are of practical values and have implications to academics given that scholarly research is commonly considered irrelevant to business world and rarely read by managers (Nobel, 2016). (Please refer to section “Implication for organizational and compensation theories”).

The cross-cultural case studies, moving lower at the ladder of generality, attempts to generate plausible endogenous explanations for IT compensation decisions that are rich in contexts in order to complement existing theories that are at a more grand level but are relatively less precise or rich in their explanations. This contributes to the richness and plausibility of IT compensation theory at mid-range level and facilitates better link between theoretical sound and managerial relevance. Innovative and insightful theoretical propositions (or inferences) may be further generated from managerial narrative explanations in the future (see 'unit of analysis and data analysis' section for theoretical values of narrative explanations).

CASE FINDINGS OF IT COMPENSATION¹³

Due to the nature of embedded case study, cross-cultural comparisons are incorporated in the discussions of case backgrounds and influences of other factors at multiple levels.

Background of Case 1 Taiwan Software Firm, Including National Culture and Industrial Trait

This firm is in the software and networking sector with 80 employees including 40 IT personnel. The firm has strived hard to muscle their way into international markets (especially non-English-speaking regions) that favor closed, proprietary development systems¹⁴ such as those in Japan, South Asia, Western and Eastern Europe. Software firms in Taiwan in general are small compared to their giant hardware counterparts. But the importance of this IT firm should not be underestimated because this firm occupies 30% of the software market in Taiwan (top 10 in market share).

It is noted that giant hardware enterprises in Taiwan (e.g., Taiwan Semiconductor Manufacturing Company Ltd. and United Microelectronics Corp., the world's largest and the fifth largest semiconductor foundries) are sponsored by government, while small software enterprises are privately owned. Therefore, the former can afford more lucrative IT compensation than the other private software firms. The experience of Taiwan in this aspect is not captured by the dual perspective (i.e., public vs. private) of organization theories which assumes that private firms tend to provide more lucrative compensation plans than their public counterparts (Ang et al., 2002; Levina & Xin, 2007). But this dual perspective overlooks the influence of government subsidies in Asian countries.

A historical perspective in Taiwan's model of industrialization can explain this difference. Chiang Kai-shek (the former leader of KMT, the political party against Communist Party in China), when retreating to Taiwan after losing Mainland to Communist China, was forced to encourage the development of native industrial enterprises to secure his legitimacy (Mathews & Cho, 2000). But Chiang Kai-shek did not trust native Taiwanese entrepreneurs enough and was threatened by the idea of allowing them to grow into leaders of huge conglomerates¹⁵ (Mathews & Cho, 2000). Therefore, large companies used to be government-owned under a central-planned economic system in Taiwan.

After privatization in Taiwan, large enterprises with joint ventures with foreign partners (including the IT giants) still have a touch of governmental legacy while small and medium enterprises tend to be private-owned.

Taiwan is a country with army service system, which means every (healthy) male citizen has the obligation to serve in the army for 2 years. Those male citizens with technical backgrounds and honor roll standing at colleges can apply for serving in technical firms or electronics laboratory instead (also called Defensive Military Substitute Service). For the technical firms, this is an ideal means to recruit newly graduated IT talents. Nonetheless, the government allocates more quotas in the hardware industry than in the software industry. This places private software firms in a disadvantageous situation in terms of recruiting newly graduated IT talents. Consequently, outsourcing software projects to India and China has become an alternative strategy for small software firms to cope with the shortage of IT talents.

Case 1 Taiwan Software Company-Immigrant Status and IT Sourcing Strategies

Immigrant Status (Insourcing From Abroad)

In this firm, the relationship between immigrant status of foreign IT personnel and IT compensation decisions is of managerial concern because of the additional costs incurred. If workers are actively recruited, there may also be housing costs not normally paid for local workers. It is explained that lower base pay offset extra legal costs for the firm. But the overall base pay plus subsidies paid to the foreign IT personnel may still surpass the total compensation plans for domestic IT personnel. Therefore, this firm no longer immigrate Indian IT talents because the costs is far beyond that for training in-house IT staff domestically. Relatedly, immigrating IT labors from China is politically controversial which made this firm reluctant to do it¹⁶. This company now prefers to train IT personnel from local areas and set up offshore branches in China:

Insourcing from India cost more. We have to pay the fee to the Institute of Information Industry to acquire Indian IT labor, as well as pay the legal fees, and file a long report. It is actually more expensive than hiring local IT people with a master's degree. Now we have an IT training program to train people we want. (Quote 1-IVP)

Outsourcing

Unlike the larger firms in hardware industry, outsourcing IT projects to India was found to be unfavorable to a small company like this firm because they could not benefit from scales of economy as larger companies do. Outsourcing specialized IT projects to India cost them more than they had expected. This is very different from the cost-reduction lessons learned from typical US firms that outsource more general IT functions overseas:

It [IT in India] is very specialized. Our company is not big enough, not enough for scale of economy. Outsourcing IT projects to India costs us more money. (Quote 1-I VP)

Offshore Branching

The other IT strategy, offshoring through establishing branches in China, also faced challenges from different value systems of the two sides of the Taiwan Straits. Due to lower living standard, the basic compensation level is lower in China, compared to those in Taiwan; but difficulties in discipline resulted in more expenditure in administrative management and monitoring costs. Taiwan's small IT firms have been used to providing IT training with reduced pay. This IT training strategy, serving as IT investment, is related to the collective culture in Taiwan wherein individuals are more loyal to groups (e.g., firms) and are more hesitant to switch firms frequently. But younger generations in China, growing up under one-child policy and in a newly developing economy growing with a breakneck pace, may look for individual prosperity over loyalty to groups or concerns for groups' long-term development. It is getting common for younger generations in China to switch firms frequently for better pay or even start their own companies once they learn the core skills from the firms they work for. All of these together with intensified competition from China's and South Korea's IT firms become new challenges to IT investment of this Taiwan's firm:

We tried to set up branches in China before but it was not very successful. The attitudes and value systems of mainlanders are different from Taiwanese, which makes discipline difficult to maintain... We saw a mushroom of IT firms...from South Korea and China. The competition is intensified. (Quote 1-IVP)

Nonmonetary Compensation in Case 1-Taiwanse Software Firm

This firm has a couple of HR practices serving as nonmonetary rewards. First, this firm lets IT personnel select their own titles. Titles are especially important in Taiwan (a culture with high power distance) because titles are held in high esteem and have value in themselves. This form of non-monetary benefit attracts those interested in the perception of a shorter career progression to more senior levels. It also attracts those interested in landing marketing positions in the future, given that good marketing people may earn highest pay in IT firms and marketing people's career paths (or lives) are seemingly less-pressured than IT people. The second non-monetary tactic the firm use is to provide training programs for three months and then a potential pay raise after a three-month period. Meanwhile, due to language threshold embedded in the global software marketing, software companies in Taiwan emphasize languages skills (e.g., English or other major languages) of the IT professionals. This software company provides language learning courses (e.g., English and Japanese) for the IT professionals as the other form of nonmonetary rewards.

Unlike some of the insecure high-tech counterpart in Taiwan, this IT firm does not consider “no-pay break” as a means to cope with financial uncertainty during economic recession or to avoid future recruiting/training uncertainty¹⁷ because it is not the best interest for their fellow IT professionals:

They [senior IT professionals] have been with us ever since our firm was started. No-pay break is not the best interest for our brothers. (Quote 1-1 VP)

Background of Case 2 Taiwan Civil Engineering Firm, Including National Culture and Industrial Trait

Established in 1969, the Taiwan civil engineering firm provides engineering consulting services to organizations on civil, transmitting, architectural, structural, measuring, electronic and mechanical engineering projects. Their client bases located not only in Taiwan but also in other countries such as Indonesia, Saudi Arabia, Jordan, Singapore and Vietnam. With the pervasion of information technology in today's information age, their service scopes have been expanded to geographic information systems (GIS), global positioning systems, intelligent transportation systems, electronic commerce and biotechnology.

The firm has 1700 employees, among which the number of the IT personnel is less than 10%. Their IT professionals belong to two departments under different groups: Business and Administrative IT Group, and the Electrical and Mechanical Engineering IT Group (the numbers are around equal in both departments). The one under Business and Administrative Group is responsible for IT support (e.g., managing the information system and electronic documents) to internal divisions within the firm. The other one under Electrical and Mechanical Engineering Group is responsible for simulating traffic conditions and presenting demonstrations to external client companies. Having *two* IT Departments in charge of IT support functions and IT marketing functions respectively qualifies this firm as an atypical case. The other unique characteristic of this giant firm is its close connection with the government (i.e., semi-government-owned). This has been a common characteristic of large conglomerates in Taiwan, China, and South Korea.

Case 2 Taiwan Civil Engineering Consulting-Immigrant Status

This firm used to be government owned and did not employ foreign IT staff. So, immigrant status is not considered by managers when IT compensation decisions are made. An implication is that the culture (or historical contexts) of the firms at more macro level may render the consideration of the immigrant status of IT staff (or other factor at more micro level) differently.

Case 2 Taiwan Civil Engineering Consulting- IT Sourcing Strategies

Insourcing IT Contractors

There are two reasons for this firm to rely on IT contractors. The first is related to global economy. The construction market worldwide had undergone recession since 2000 (and again in 2008), as is similar in other industries. Construction cases overseas have decreased during the recession. Furthermore, Taiwan government has tightened budgets during the recession. This has led to shrinking revenue in the construction industry and many firms increasing reliance on IT contractors rather than having large in-house IT departments of their own. This is no difference to this civil engineering consulting firm.

The other reason is the trend of specialization in the industry. By hiring IT contractors, the firm can focus on the development of the core functions (i.e., construction related systems) and save more money on regular personnel expenditures:

We only focus on developing construction, or transportation related software such as the traffic lights system. For the other types of IT systems or software, we delegate them to third parties. (Quote 2-1 Manager)

IT compensation for IT contractors is decided based on market value through the public bidding process. Furthermore, due to the rigidity of the bureaucratic system, this firm's estimated costs for IT contractors focuses primarily on their *base pay* pre-estimated, rather than incentive pay based on performance. This is different than the perspective of agency theory which focused on reducing monitoring costs in shorter-term principal-agent relationship by emphasizing incentive portion to motivate desired performance (Eisenhardt, 1988):

The government announces the public projects they have, announces their needs. A public project consists of several sub projects. The sub projects are open for bid to a wide variety of firms. It is up to the third parties, the IT providers to report their plans and their prices. (Quote 2-1 Manager)

IT Outsourcing

In this firm, when considers outsourcing relationships where the IT personnel are directly responsible for a third-party company, once again base pay pre-estimated by service providers through public bidding process, rather than incentive pay based on performance, is the emphasis in compensation. A major focus in IT outsourcing literature is the issue of monitoring from the principal-agent perspective (i.e., agency theory) (Gopal & Sivaramakrishnan, 2008; Osei-Bryson & Ngwenyama, 2006; Wang & Kaarst-Brown, 2014a). But in this firm, it is (a bit off) the market value, rather than the difficulty in monitoring, plays an important role in deciding IT compensation for outsourced IT professionals. Therefore, this case provides a different angle to interpret managerial concerns underlying IT compensation decisions.

Nonmonetary Compensation in Case 2 Taiwan Civil Engineering Consulting

Due to the rigid bureaucratic system, HR system in this firm is very inflexible and therefore leaves little leeway for pay negotiation¹⁸. Strategic compensation and nonmonetary compensation is not utilized in this firm. But during economic recession, many people in Taiwan prefer to stay at government-own companies or companies having strong ties with the government to avoid job insecurity commonly seen in hard-pressed private firms. In this sense, job security related to strong ties with the government can be translated into nonmonetary reward symbolically.

Background of Case 3 US Software and Networking Firm, Including National Culture and Industrial Trait

A start-up that went public in 1999, the company has 112.8 million dollars in annual revenues, and about 700 employees¹⁹. There are six people in the IT Department in the main office at their US headquarters, including the Director of IT, and five people in application and desktop support. There are six other IT people in offshore offices: two in Bucharest, Romania, one in UK and two in India. Unlike case 1 (the software company in Taiwan), this software firm in the United States takes language skills as granted. Mastering other major languages (e.g., Japanese, Chinese) in the regions favoring proprietary systems receives less attention in this US based company.

The challenges of IT hiring and retention in software and networking industry in the US include the imbalance of supply and demand for specialized IT skill sets (i.e., skill/education-job gap) (Congressional Documents and Publications, 2016; Hanc, 2017; Information Technology Newsweekly, 2016; Lorek, 2007; PR Newswire, 2016). Partly because the trend of dropping enrollment in IT related majors in the United States, there are severe IT hiring challenges and IT pay stagnation out of the shortage of qualified candidates and skills mismatches (Chozick, 2015; Gibson, 2015; Leonhardt, 2015; Newman, 2014; Rugaber, 2015; Schwab, 2015)²⁰. As such, US firms employ more and more foreign IT labors or poach IT talents with lucrative pay to cope with IT shortage. All of the above contributes to more leeway for pay negotiation in the US firms.

Nonetheless, whether to increase H1-B quota in order to release the tension of IT shortage has been a hard-core debate in the United States (Iwata, 2006; Khan, 2012). These challenges not only increase the firms' IT compensation costs but encourage them to outsource projects elsewhere where IT compensation expenses are lower.

Case 3 US Networking Company-Immigrant Status

The informants in this firm indicated that people holding H1B visas were paid less compared to those having citizenships. Similar to the findings in Case1 (the small Taiwan software firm), the reason presented is that hiring foreigners by immigrating them is expensive and the immigrant regulations incur tedious paperwork. According to the former HR VP, large companies consider more of immigrant status than smaller firms because small firms may not be able to (or not willing to) afford the costs of immigrating foreign workers. And outsourcing has been an economic alternative to immigrating with H1B visas for the company. Outsourcing helps the firm to acquire qualified foreign IT workers and bypass tedious legal process required for hiring with H1B, although this VP was concerned of its negative impact on local society in the United States:

Small companies don't do it [immigrating IT people] as much as big companies unless they are desperate to get people. It is expensive to immigrate somebody. You have to go through a lot of work to hire somebody coming from another country. That's why a lot of companies are doing outsourcing now, which is a very bad thing for this country. (Quote 3-2 Former VP)

The other VP expressed that they consider H1B visa and compensation primarily at the recruiting stage. If the IT personnel are eligible to work [without the need to change their status], they are treated the same as other employees. It is engrossing that this firm outsources less and less IT projects because they establish offshore branches to cope with IT shortage.

Case 3 US Networking Company-IT Sourcing Strategies

Offshore Branching

Headquartered in the United States, the IT firm has offshore branches in Europe and Asia (e.g., Bucharest, Romania, UK and India). The favorable attitudes toward foreign-owned businesses in these countries help reduce uncertainty in IT personnel investment:

We don't outsource [rely less and less on outsourcing]. They are all our employees. They are just offshore. They are paid local market competitive salary for their skill sets. Our overall compensation philosophy is to pay at or above the market established by independent compensation surveys in that particular geographic location. (Quote 3-IVP)

Insourcing IT Contractors

This IT firm also employs around 20 IT contractors to fulfill short-term IT projects for the sake of maintaining flexibility. The other occasion for the company to employ IT contractors is when the company does not have a legal entity in any particular region.

The IT firm emphasizes base pay for short-term contractors, rather than incentives such as bonuses to transfer monitoring costs to the contractors as agency theory would expect²¹. The VP stated that it is very common that these short-term contractors receive higher base pay than regular employees do because there may be a lapse before their next contracts. This humanity concern is apparently different from agency theory which emphasizes risk-transferring through incentive pay in contract design. IT contractors in this software firm receive even higher pay and more jobs after the 2008 financial crisis because IT contractors are sought after for new roles in new IT projects²². This is consistent with the trend of declined number of permanent jobs, and therefore pay increase for IT contractors worldwide due to more job opportunities for short-term/freelance IT positions (Bateman, 2014; CEB, 2014; Mahroum & Bascavusoglu-Noreau, 2015).²³ This trend is called IT gig economy (Heltzel, 2015; Hoover, 2016; White, 2016).

Nonmonetary Compensation in Case 3 US Networking Company

Due to the emphasis on competitive negotiable pay at or above the market level and the competition between HR Department and IT Department, this firm does not fully utilize nonmonetary rewards. The IT Department in this firm has to fight with other units (e.g., HR unit) regarding authority in IT governance. The IT manager reported that he was sometimes very frustrated by difficulties convincing HR people why they should provide beyond-average pay to some very good IT people. Similarly, HR people commented on frustrations and difficulties communicating with IT guys about the average market values of IT jobs and their ideal personnel expenditures.

Background of Case 4 US Banking Firm, Including National Culture and Industrial Trait

Established in 1997, the firm is a California State chartered bank, and is insured by the Federal Deposit Insurance (FDI) Corporation. The firm is invested by a premier commercial bank in Taiwan that has total assets of \$37.3 billion and subsidiaries worldwide (over 180 branches). In spite of the multicultural nature of this bank, the researcher considers it as an American firm because it is registered and operated in California. There are 42 people in this bank. All of them are full-time employees.

The development of technology has made competition in the banking and financial industry much more intense. Meanwhile the adversities of fraud and threats from terrorists and hackers exacerbate IT challenges in the banking and financial industry. Actually, many established banking and financial companies now expect financial professionals to have programming and IT skills as well but find serious skills gaps in this regard in the workforce (Information Technology Newsweekly, 2016). This

hiring trend in practice makes Orlikowski and Baroudi's differentiation between financial professionals and IT personnel appear somewhat outdated (see footnote 12 under "Selecting Atypical Cases").

Despite the desire for IT security and stability, this firm cannot afford the excess expenditures on the specialized IT skills, let alone recruiting super financial professionals possessing required IT skills as their more established counterparts desire. Additionally, good and qualified IT specialists will not stay in small firms in non-IT industries for too long. Therefore, this firm outsources specialized banking and financial IT functions (i.e. the core-competitive functions) to an outside computer company. This resulted in a small-sized IT department in this bank.

There are two internal IT personnel responsible for system maintenance in the firm²⁴. The IT design function, requiring incorporation of knowledge of banking, is delegated (i.e., outsourced) to a third-party computer company, which is the World's number 4 computer manufacturer. Unlike other firms outsourcing non-core IT functions, this small bank outsources its core IT functions to a prestigious computer company. This third-party computer company creates, designs software and systems, and conducts compliance or security-related projects to match special business needs of banking industry (e.g., banking solutions, payment solutions, and insurance and loan solutions).

Case 4 US Financial and Banking Consulting-Immigrant Status

Immigrant status of IT professionals is of managerial concern in IT hiring in this firm. To avoid tedious paperwork, this firm is reluctant to hire foreign IT personnel by immigrating them with H1B visas. A valid working status is a prerequisite now:

We don't immigrate IT personnel now. All of our IT personnel are [US] citizens. There is too much paperwork... if we hire a foreigner. (Quote 4-1 Manager)

Case 4 US Financial and Banking Consulting-IT Sourcing Strategies

IT Outsourcing

To improve customer's experience and efficiency, the application of service-oriented architecture (SOA) has been used for this bank. Nonetheless, this bank cannot afford specialized IT personnel internally. Outsourcing specialized IT functions to an outside computer company saved money for developing new systems for the bank.

This firm has five other branches in California. Nonetheless, these branches do not have internal IT divisions within them but rely on the IT services provided by the third-party computer company mentioned above. These branches are like users of IT infrastructure provided by the third-party computer company:

A4-1: The other five branches were established later. It is more consistent to use the same set of infrastructures provided by XXXX [the outsourcer]. It is more efficient than having independent IT department in each branch. We can communicate better." (Quote 4-1 Manager)

SOA may help enhance customer experience. It is customer-centric design. We let XXXX [the outsourcer] takes care of the IT development. We don't have the resources to develop ourselves. We then focus on expanding our customer base. (Quote 4-1 Manager)

The outside computer company is now in charge of all the developing functions and security solutions for the bank and the other four branches. Being a world leader in information technology, this outside computer company is believed to have sufficient capability and credibility:

We pay the price they [the outside computer company (i.e., the outsourcer)] asked for. We consider their [the outsourcer] background, credibility, and capability. Everyone knows XXXX [the name of

the outsourcer]. You know it right? We evaluate their background, credibility, and capability. We don't trust other small computer companies no matter how economical their products are. They may run out of businesses anytime. Then we have to find another outsourcer to develop the systems. Collaborating with XXXX can reduce the risk. (Quote 4-1 Manager)

This trust in capability and credibility actually accounts for why this bank provides only fixed pay contract, which bases on a negotiated outcome with the outsourcer, but not incentive based contract which aims to motivate performance (i.e., Agency Theory)²⁵.

Nonmonetary Compensation in Case 4 Financial and Banking

Because IT is not the core-competitive function, this firm does not fully utilize strategic IT compensation and nonmonetary compensation to manage their IT personnel.

CROSS-CASE FINDINGS OF IT COMPENSATION²⁶

This case studies find more similar compensation practices toward immigrant status and IT sourcing strategies with different managerial explanations at local levels. But industry-wide and nationwide, there are various shaping forces on IT compensation decisions.

The following section reports findings across the four cases and their inferences to IT compensation decisions.

Cross Case Analysis and Inferences-Immigrant Status

Immigrant status of the IT professionals is of managerial concern across four cases when managers make IT compensation decisions²⁷. But immigrant status is considered especially in IT recruiting stage rather than in IT retention stage. Societal debates over H1B quota and related regulations become uncertainty that has influence on firms' IT immigrating strategy, as shown in case 1 (Taiwan software firm) and case 3 (US software firm). This reflects a cross-cultural similarity. Based on the case findings, those who need to change their immigrant status to legitimate working status are compensated at lower pay levels because there are limited quotas, and the firm has to pay for the legal service and application fees. A risk to the firm is that should the IT personnel switch to another company, this investment in immigrant applications becomes a waste of the firms' time and resources. This was not explored in all the interviews, but some suggested it is the reason their firms (especially those with IT as non-core units) are reluctant to hire foreign IT employees.

This finding of lower pay levels for immigrant IT personnel is consistent with the report in trade literature and academic findings which shows that H1B visa holders are paid less by 20-25% compared to similarly qualified workers with American citizenship (Financial Times Information, Anonymous, 2006; Lowell & Avato, 2014; Wakabayashi & Schwartz, 2017).

Cross-Case Analysis and Inferences-IT Sourcing Strategies (Similar Compensation Practices but Different Explanations at Local Levels)

Case 1 (small IT firm in Taiwan) and case 3 (large IT firm in the US) are compared for observing IT sourcing strategies and their impacts on IT compensation. To case 1, immigrating IT labors from China is a controversial political issue that managers would like to avoid. Likewise, a firm like case 3 in the US face relentless debates on H1B quota for fear of impacting local employment. So, managers may be reluctant to hire people without work permit. Consequently, IT outsourcing (i.e., buy it abroad) or offshore IT branching (i.e., grow it abroad) become the alternatives to hiring foreign IT professionals and managing IT personnel expenditure. In these cases, different societal concerns eventually lead to similar managerial practices across different cultures.

IT Outsourcing

IT personnel in the short-term principal-agent relationship in IT outsourcing are usually from a third-party agent having credibility in certain IT areas but works for the firm temporarily. According to the case findings, incentive pay receives managerial attention only when the IT personnel is directly responsible to the firm. But when the IT personnel is directly responsible to a third-party agent, the organizations push off risks through fixed pay arrangements resulted from a negotiated outcome with the third party agent.

IT sourcing strategies were more a short-term contractual issue at every firm except the US bank in case 4 where the majority of their IT functions had been turned over to a third-party firm. In case 1 (the small Taiwan software firm), due to the firm's smaller scale, it did not benefit from scale of economy in outsourcing. It now does not rely on outsourcing but opt for offshore branching to cope with IT demand. In case 2 (the Taiwan construction firm), case 3 (the US software firm) and case 4 (the US bank), IT compensation risks were largely abdicated to outsiders. It is also because the third-party service provider often has credibility in certain areas, monitoring IT workers' behavior is less a managerial concern for firms using their services. So, firms simply pay the projects the service providers conduct with fixed pay.

Offshore Branching

The case findings show that insourcing IT personnel from abroad actually increases firms' expenses due to fees for legal process and subsidies for relocation. So insourcing from abroad is less favorable to smaller firms. Two IT firms in needs of specialized IT software talents (Case 1 Taiwan software firm and Case 3 software and telecommunication firm) rely on offshore branching strategy to cope with uncertainties of IT shortage and the volatile social, political debates of hiring from abroad. It shows that instead of "buy it," the two IT firms in Taiwan and in the US are willing to "grow their own" core-competitive IT functions in countries favoring foreign-invested businesses. In this strategy of offshore branching, IT professionals abroad are still the firms' internal regular employees and the firms have to spend regular IT personnel expenditure to compensate these IT professionals. IT professionals in offshore branches are paid according to the same pay structure in-house but different pay standard to adjust to costs of living in different geographical location. In general, firms would align their IT compensation strategies with their IT immigrant strategies, IT sourcing strategies and IT offshore branching strategies. When immigrating foreign IT personnel is too expensive and too controversial, firms would adjust their IT hiring strategy and opt to IT outsourcing or offshore branching strategies (especially when the IT unit is their core-competitive unit). This is similar in Taiwan and in the United States as shown in case 1 and case 3.

Cross-Case Analysis and Inferences- Industrial Trait and National Culture (More Cross-Cultural Differences)

Due to the collectivist culture, base pay rates in Taiwan are reportedly less varied. In Taiwan especially when IT pool is sufficient (or even over supply) and higher education is depreciated, more uniform pay level for IT professionals is expected across different educational degrees and for individuals with different expertise/experiences. There is less room for pay negotiation. Training IT talents, but with reduced pay level, is more common in smaller IT firms in Taiwan. This is related to the social feature of conformity to groups (e.g., firms) in a collective culture where IT talents are more loyal to firms and are hesitant to switch firms frequently²⁸. Contrarily in the United States where individualism, a frontier culture and commitment to capitalism is prevailing, competitive negotiable compensation package is emphasized. Reportedly, base pay rates are more fluid with different educational degrees and individual experience/expertise, and more open for negotiation especially when IT pool is insufficient, and IT skill/education-job mismatch is high. Poaching IT talents with higher pay is more common in US IT firms. This perspective of cultural influence on IT compensation has not been discussed in existing literature.

From the industrial level and geographic/national level, firms in hardware sector in Taiwan receives constant governmental subsidies. So private hardware firms with close tie with the government can afford more lucrative pay, especially the incentive proportion, than the other private software firms to attract IT professionals. This aspect is not captured by the public-private dichotomous perspective in organization theories.

Cross-Case Analysis on Nonmonetary Compensation (More Cross-Cultural Differences)

Theoretically, the importance of nonmonetary compensation increases in small start-ups or during economic recession or in organizations with limited financial resources (Morrell, 2011). Nonetheless, three companies interviewed have various reasons for not emphasizing non-monetary rewards even though their managers do recognize the strategic role of non-monetary rewards. The two large firms of case 2 (large Taiwan construction firm) and case 3 (large US software firm) did not emphasize non-monetary rewards for their in-house IT personnel due to their more rigid compensation systems or emphasis on market-level pay. The small US bank in case 4 downsized its entire IT functions which makes IT personnel non-core knowledge workers. So, this firm did not emphasize non-monetary rewards for IT personnel either. Therefore, firms with flexible structure may utilize nonmonetary rewards better than firms with strict bureaucratic structure. In a society with high power distance like Taiwan, nonmonetary rewards (e.g., selecting job titles) that can be translated into power or high social esteem is as valuable as monetary rewards to IT professionals. Certainly, to some IT professionals, it is not all about money.

It is also interesting to compare the findings of the two small firms (small Taiwan software firm in case 1 and small US bank in case 4). The training program and title selection practices in case 1 (the small Taiwan software firm) are the nonmonetary rewards to offset IT personnel spending. But IT personnel in the small bank in Case 4 are not the core-competitive knowledge workers. So, this small bank would likely not focus on strategic use of IT compensation to attract the best IT people. This infers that strategic IT compensation and non-monetary IT rewards may be more relevant for IT firms whose culture places IT personnel as the core-competitive knowledge workers. Otherwise, base pay can be the major focus of the total IT compensation in firms where IT units are not the core-competitive units.

Indeed, job security related to the firm's semi-government-owned culture in case 2 (the large Taiwan constructing firm) can be translated into nonmonetary rewards symbolically during economic recession. Actually, this particular firm received more and more IT job applications after the 2008 financial crisis. This is consistent with the trend in Taiwan in the aftermath of 2008 financial crisis that government-own companies attract more and more IT personnel from the other insecure firms because employees in the government-owned firms will not encounter layoff involuntarily, nor is the likelihood of encountering "no-pay break". This aspect can also be explained by the high risk-avoidance tendency in local society in Taiwan especially during economic recession.

Table 3 summarized findings of cross-cultural difference in IT compensation decisions between Taiwan and the United States that are not captured in the existing literature.

SERENDIPITOUS CASE FINDINGS

Humanity Concerns vs. Economic Concerns

This study finds managers are not exclusively motivated by economic concerns as economic theories predict. Instead, managers are found to have humanity concerns to some extent. For examples, the VP in Case 1 (the small software firm in Taiwan) did not consider transferring risk to the firm's IT peers by no-pay break during 2008 financial crisis and viewed no-pay break as disgraceful. The VPs in Case 2 (the large US software firm) expressed their concerns over the impacts of IT outsourcing on local employments. The offer of higher base pay for IT contractors to help them cover lapses between

Table 3. Cross-cultural differences on IT compensation explanations between Taiwan and US (* marks shrouded differences in IT compensation practices)

US (Individualism)	Taiwan (Collectivism)
Business Environment	
<ul style="list-style-type: none"> -Private IT firms compete in a level playing field -Software firms dominate market of open, standard systems worldwide -Pay stagnation over decades 	<ul style="list-style-type: none"> -Private IT firms compete with government-sponsored giant IT firms -Software firms focus on niche market of closed, proprietary, non-English systems worldwide -Government-sponsored firms are ideal workplaces in risk-avoidance society -Government-sponsored firms are big draw for IT talents during recession -Pay stagnation over decades
IT Pool	
<ul style="list-style-type: none"> -Dropping IT enrollment; IT skill/education-job mismatch -Economic stagnation and reduced IT investment²⁹; IT contracting positions outnumber full-time IT positions after 2008 (All of above causes IT pay stagnation, same result as Taiwan) -Insufficient supply of IT talents leave more room for pay differentials based on individual expertise, experiences or educational degrees -Negotiable competitive compensation leaves more room for pay negotiation -Poaching IT talents with lucrative pay is common -IT talents switch firms for higher pay -IT HR strategy in recession: keep central people, let go others; rely on short-term/freelance IT workers 	<ul style="list-style-type: none"> -IT related majors are hot; Confucianism emphasizes study =>soaring number of college graduates=> depreciation of (IT) higher degrees -Intensified competition from China, South Korea and decreased profitability (All of above causes IT pay stagnation, same result as U.S.) -Sufficient supply of IT talents leave less room for pay differentials based on individual expertise, experiences or educational degrees -Uniform IT pay level leaves less room for pay negotiation -Training IT talents with reduced pay is common, especially in small IT firms -IT talents are more loyal to their firms and are hesitant to switch firms -IT HR strategy in recession: “no-pay break” is common
IT immigration	
<ul style="list-style-type: none"> -IT immigration is socially controversial for fear of impacting local employees -IT outsourcing and offshore IT branching are alternatives (IT outsourcing is cost-efficient) to lucrative IT pay 	<ul style="list-style-type: none"> -IT immigration from China is politically controversial because confrontation between Taiwan and China -IT outsourcing and offshore IT branching are alternatives to lucrative IT pay (but IT outsourcing is costly for small software firms, therefore is not always ideal)
Nonmonetary Rewards	
<ul style="list-style-type: none"> -Nonmonetary rewards is overlooked due to an emphasis on market-level pay -Domestic training program as nonmonetary rewards may be an alternative strategy to close skill/education-job gaps 	<ul style="list-style-type: none"> -Job security is important during economic recession; government-sponsored firms as a symbol of job security are especially attractive -Title selection can be translated into power/social esteem in society with high power distance

contracts is also considered as humane. All of the above indicates a need to incorporate different perspectives other than economic theories to explain IT compensation decisions.

Human Capital Theory Doesn't Work

News reports in Taiwan after 2008 serendipitously showed that education degrees and experiences do not translate into higher (IT) pay given the depreciation of higher education and economic downturn (see footnote 10-11 under “Selecting Atypical Cases). In 2015, that “no-pay professor” position in a top national university advertised in Taiwan but astonishingly still requiring a PhD degree and at least six-year industry experience (see footnote 11 under “Selecting Atypical Cases) further contradicts

with Human Capital Theory, which assumes compensation would positively related to level of human capital endowment (e.g., education, experience) (Ang et al., 2002). Widened skill/education-job gap reported in the United States also causes skepticism toward Human Capital Theory. Therefore, Human Capital Theory needs further revision in an era where higher (IT) education degree is depreciated, in a culture with (IT) education-degree fetish that leads to oversupply in IT workforce, in a society with serious skill/education-job mismatch or during economic downturn that is hard to grapple with. Facing the emerging IT gig economy where long-term IT employment opportunities has been decreased, Human Capital Theory's explanation power is further compromised.

Ideal IT Compensation Thinking vs. Actual IT Compensation Decisions

All of the firms interviewed relied on market-based IT compensation surveys, but did not fully explore or utilize strategic IT compensation or nonmonetary compensation to cope with uncertainties. But this does not mean the firms deny the utility of strategic IT compensation in coping with uncertainties. Instead, managers contacted by the researcher expressed interest in issues regarding IT pay-business alignment and the role of non-monetary rewards. They also believe these are two important issues in need of more attention in IT compensation planning. In this sense, issues on aligning IT compensation with organization strategies still provide managerial relevance. It also implies the gap between how the firms actually pay their employees and what the managers think as important (or ideal).

Despite managerial interests, there are different sorts of rigidity and inflexibility in these firms that inhibits strategic IT compensation decisions. These reasons are summarized in Table 4. This empirical research finds that compensation decisions in real-world organizations may not always be out of a consideration of effectiveness or strategic alignment with business strategies, but out of compromise among different departments (or stake holders) or a bureaucratic legacy out of historical backgrounds. Therefore, real-world compensation decisions may be considered by their managers as ineffective, inflexible and sometimes problematic.

LIMITATIONS OF THE RESEARCH

In this section, we discuss limitations of this study; meanwhile we incorporate commentaries in these aspects to highlight acknowledged difficulties in using case study to build, elaborate or revise theory.

Imperfect Controlled Comparison and Small Number of Cases

At first glance, this case study design may have imperfect controlled comparison. For perfect controlled comparison, two or more cases are expected to resemble each other in every aspect but one, as the logic of experiment required. But it has been recognized that controlled comparison in case studies is very difficult to achieve and has no acceptable alternative methods because it is extremely difficult

Table 4. Inhibitors of aligning IT Compensation with business strategies in practice

Case 1 Small Taiwan Firm	Relatively rigid pay system inhibits flexibility in adapting IT compensation to IT uncertainties (Note: this firm has the most flexible IT compensation among the four companies)
Case 2 Large Taiwan Construction Firm	Rigidity resulted from intricate tie with the government inhibits flexibility in adapting IT compensation to IT uncertainties
Case 3 Large US Software Firm	Rigidity resulted from formality of compensation rules and tension from competition between Human Resource Department and IT Department on resource allocation inhibits flexibility in adapting IT compensation to IT uncertainties
Case 4 Small US Bank	IT downsizing strategy deprives of the significance of coping with IT uncertainties with IT compensation in the firm

to find two cases resembling each other except to one respect; and the logic of controlled comparison often brings about the problem of insufficient number of cases (George & Bennett, 2005):

Unfortunately, practically all efforts [in case studies] to make use of the controlled comparison method fail to achieve its strict requirements. This implication is often recognized by investigators employing the method, but they proceed nonetheless to do the best they can with an admittedly imperfect controlled comparison. They do so because they believe that there is no acceptable alternative and no way of compensating for the limitations of controlled comparison. (p. 153)

Additionally, “to control” is not an agreed-on purpose of science. According to Reynolds (2007), the purpose of science is to provide typology (or classification scheme), “explanations of past events,” “predictions of future events,” and “a sense of understanding about what causes events.” However, to control events is optional and disputable. Reynolds explicated that “if the ability to control events is taken literally as a desirable characteristic of scientific knowledge, then much of the current subject matter of science would be excluded” (p. 7). He took astronomy and geology as examples and explicated that these two are fields of sciences yielding typologies and statements that can explain, predict and provide a sense of understanding. However, it is unreasonable to expect astronomers to control events in the solar system (e.g., eclipse) or for a geologist to control events on the earth (e.g., earthquake). Similarly, some social phenomena (e.g., economic systems) are as hard to control as eclipses or earthquakes (Reynolds, 2007). Thus, a critical issue to emphasize is distinguishing between “understanding how certain variables affect one another” and “being able to change the variables” (Reynolds, 2007). Following this line of reasoning, case study, although not good at “control”, is still a valuable scientific method to build theory because it contributes to classifying, explaining, predicting and understanding social phenomenon that is hard to control or manipulate. Moreover, to answer “why” and “how” questions is one of the merits of case study research (Yin, 1981, 2002). “Why” or “how” questions are better understood by a gestalt of rich numbers of factors existing simultaneously than by a control observation (or investigation) attempting to remove any of these factors for the purpose of parsimony originated from the perspective of reductionist positivism.

Relatedly, a large number of cases are not a prerequisite to draw theoretical conclusions because an individual case is not equal to a statistical sampling unit; case study research does not intend to reflect prevalence in the entire large-number statistical sample but are used to “examine a contemporary phenomenon in its real-life context” whose complexity is difficult to control (Yin, 2002).

Case studies researchers in other discipline also make the efforts to differentiate these inherent limitations (and recurrent trade-offs) of case studies from other poor implementation of case study method and suggest future researchers to discuss the challenges they encounter and explain their coping strategies in the field (George & Bennett, 2005). These suggestions are applicable to case studies in the IS field. Therefore, this paper explains the reasons for selecting cases that may not be perfect for comparable cases, and the seeming small number of interviewees and cases studied to reflect the challenges of conducting qualitative research and collecting primary data on the sensitive topic area of strategic IT compensation decisions.

Search for Plausibility vs. Testing for Generalizability

While focusing on managerial explanations of IT compensation decisions, this research contributes to exploring the plausibility of contextual explanations in narrative form at the expense of testing for generalizability. While multiple case studies preserve richness of the phenomenon and related contextual explanations, it sacrifices parsimony at the same time. Parsimony focused on the role of theory in integrating and simplifying experiences. So multiple case studies may render the resultant explanations cumbersome. This may also raise the concerns on the trade-off between explanatory richness and generalizability. But George and Bennett (2005) contrast theoretical parsimony, explanatory richness and manageable case number as below:

Case study methods involve a trade-off among the goals of attaining theoretical parsimony, establishing explanatory richness, and keeping the number of the cases to be studied manageable. Parsimonious theories rarely offer rich explanations of particular cases, and such theories must be stated in highly general terms to be applicable across different types of cases. Greater explanatory richness within a type of case usually leads to less explanatory power across other types of cases. (p. 31)

Likewise, Ghauri (2004) also emphasizes that the merit of case study is to “optimise understanding of a particular situation or problem rather than generalisation” (p.109). Moreover, unlike hard science, social interpretations and social explanations have been recognized as conditional, and temporal (Glynos & Howarth, 2007; Strauss & Corbin, 1994). Therefore, although not testing for generalizability or identifying the rightfulness of the plausible explanations, the exploration of rich managerial explanations under various contexts in this cross-cultural study still complements knowledge rooted in economic theories.

Rich Description vs. Sensitivity and Small Number of Interviews

It is noted in several research and trade reports on compensation that researchers frequently encounter problems obtaining details and timely information on compensation data or practices. It is viewed as sensitive issues and corporate elite interviewing challenges (Thompson & Kaarst-Brown, 2005; Welch et al., 2002). Large number of informed interviewees are therefore not always feasible, especially when the topic raises concerns on confidentiality or sensitivity, and when only a handful of people (e.g., top managers) possess the required insight and knowledge. In this sense, the notion of “rich description” as suggested by Yin or large number of interviewees may be problematic as screening criterion for case studies involving sensitive topics, with a risk of devaluing potential contributions. Research on sensitive or competitive topics may be more challenging, and may well explain the challenge of having large number of interviewees or cases. So, it is important to differentiate trade-offs, inherent limitations, and poor implementation of case studies (George & Bennett, 2005).

Homogeneous IT Work vs. Heterogeneous IT Work

This study adopts a homogeneous approach to various IT work, though some argues heterogeneous approach may be better. Theoretically, while post-institutional economics and HR management emphasizes job roles as a fundamental unit of compensation, neoclassical economics and most labor-market analysis virtually ignore different job roles but emphasize the supply-side factors such as strategies and organizational structures as the main sources of compensation differentials (Gerhart & Rynes, 2003). Practically, instead of paying different job titles, compensation management is getting paying “broadbanding,” where “many positions traditionally covered by numerous separate pay ranges are swept into a relatively few, very wide job classifications (i.e., bands)” (Wolf, 1999, p. 45). Gerhart and Gynes (2003) also documented that IBM moves its pay strategy from internal job roles to emphasize external competitiveness (p. 90). Because practitioners today have more of an external focus in compensation design rather than job roles to reflect competitive environment and volatile market, Dulebohn and Werling (2007) in a comprehensive compensation review suggests compensation researchers to expand their scope from internal (or job) focus to external focus to keep pace with the changing economy and marketplace. In this regard, this limitation is also the strength of this IT compensation research.

IT Compensation vs. General Compensation vs. Other Compensation

At first glance, the case findings may not be distinct from compensation for other professionals. Some may even harshly question its difference from “general compensation”. But from a review of some well-cited comprehensive compensation reviews (e.g., Devers et al., 2007; Dulebohn & Werling, 2007; Gomez-Mejia & Wiseman, 1997; Sun et al., 2010; Werner & Ward, 2004),

considerable compensation research focus on executive (or CEO) compensation, a specific but not “general compensation” (e.g., Devers et al., 2007; Gomez-Mejia & Wiseman, 1997; Sun et al., 2010). Most of these executive (or CEO) compensation research did not explain, justify their distinctions from compensation for other professionals or “general compensation” but is still valuable in its own right. “General compensation” is actually elusive if it is not non-existent in current literature. Executive compensation research aside, relatively few compensation research address non-executive positions, or other occupations/professions, including IT occupation/profession.

Giving that IT profession is the core of IS (or HR-IS) discipline and IT professionals work mainly for pay, IT compensation is of due value in its own right regardless its similarities or differences from other types of compensation.

Cross-Culture vs. Cross-Country

Although cross-culture or cross-country are literally different, a significant amount of cross-cultural studies use country as a proxy for culture or use cross-culture and cross-country interchangeably (Jong, 2009; Malhotra, Agarwal, & Peterson, 1996; Zhou & Martocchio, 2001). This study does not specify cultural dimensions upfront deductively but loosely integrate Hofstede’s, Trriandis’ and other culture conceptions emerging from case findings together. While culture concept is still evolving, future research can push the boundary of cultural dimensions to include performance orientation, assertiveness orientation, future orientation, humane orientation, institutional collectivism, family collectivism, and gender egalitarianism identified by other cross-cultural studies (Tjosvold & Leung, 2003). This study does not distinguish cultures at different levels (e.g., individuals, organizations and nations), but future comparative studies can integrate multi-level culture conceptions if data from different levels are available.

IMPLICATIONS FOR PRACTICE, THEORY AND RESEARCH

Implications for the Practitioners

While practices of IT compensation are found focusing largely on the market-based monetary rewards, the alignment between IT compensation and business strategies as well as the utility of non-monetary rewards are still rarely explored or employed by practitioners. The market-based compensation perspective may make small firms that have relatively limited resources and IT budgets more disadvantaged in attaining skilled IT labor than their resource-abundant counterparts. A recommendation to compensation managers in firms with tight budgets, or during economic recession, or in societies with risk-avoidance tendency or high skill/education-job gaps, is to focus on non-monetary rewards such as the recognition program, job security and training program. Awarding social recognition may be an alternative if combined with other favorable working conditions. To some people, titles that can be translated into nonmonetary rewards may be as valuable as real pay. This is especially true in Confucian societies that emphasize honor and face-saving. During economic recession, “still under employment” to many Taiwanese people has value in itself regardless the real pay-offs it actually produces. This is why some firms in Taiwan granted their IT professionals “no-pay break” instead of immediate layoff during the economic recession in 2008 from a culture perspective. But certainly no-pay break is not the best interest for IT personnel in countries with more robust welfare and legal systems to subsidize unemployment and protect labors. Meanwhile, to cope with the challenge of IT skill/education-job mismatch in the United States, using training program as nonmonetary compensation may be a viable alternative to IT firms whose current IT compensation strategies emphasize lucrative pay or poach IT talents rather than nurturing IT talents.

Implications for Organizational and Compensation Theories/Research

Insensitivity to Non-Western Experiences and Modern Experiences

Most of the economic/organizational theories are derived from western experiences or ideologies in 1900's where industrialization, private/hierarchical organizations and higher education were booming. As such, these theories, emphasizing bureaucratic control and monitoring, may not be sensitive to capturing and explaining non-western experiences or modern-world phenomena including offshore outsourcing/branching, IT contracting, gig economy, depreciation of education and skill/education-job mismatch. Nonetheless, historical/social/cultural contexts in non-western countries (e.g., giant firms' intricate ties with governments in East Asia) or social/economic trends in today's world (e.g., decreasing full-time jobs) and their symbolic meanings are important because it provides alternative explanations at macro level for the shaping force of IT compensation.

In addition to how individual IT professional actually gets paid, IT compensation can be interpreted as how IT human capital is valued from the stances of organizations, industries, societies, cultures and nations. Perspectives from these diverse angles would enrich the landscape of IT compensation research and be beneficial to multinational corporations and policy making at the societal, national levels.

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ENDNOTES

- ¹ References on *IT compensation* are italicized to differ from non-IT compensation literature.
- ² Due to page limit, this paper doesn't report findings on impact of internal status of IT division on IT compensation in an independent section. But case analysis of case 3 contains account of internal competition between HR and IT department regarding IT compensation strategies and case 4 has account of the influence of non-core-competitive status of IT department in banking industry.
- ³ Please refer to subsection "IT compensation vs. general compensation vs. other compensation" for the discussion of the difference between IT compensation and general/other compensation.
- ⁴ Wang and Kaarst-Brown's IT Compensation Theory integrated Agency Theory, Contingency Theory, Human Capital Theory and traditional compensation/non-momentary reward literature. They made the first attempt in academia to develop IT compensation theory.
- ⁵ These strategic factors include education, experience, gender, immigrant status at individual level, task programmability, proposed length of principal-agent relationship at job level, organizational size, stage in organizational life cycle, IT sourcing strategy, profit-orientation at organizational level, industrial trait at industrial level and geographic location/cultural cluster at national level.
- ⁶ Offshore branching is further discussed in case findings.
- ⁷ We use the term "branching" to highlight the growing strategy of the firms.
- ⁸ Please refer to subsection "cross-culture vs. cross-country" for discussion on cross-cultural and cross-country studies.
- ⁹ The Economist Intelligence Unit (EIU) changes the weight of index in 2009 study. This change reportedly accounts for the change of ranking of several Asian countries. For example, Taiwan was dropping from the second to the fifteenth while South Korea was dropping from the eighth to the sixteenth.
- ¹⁰ The annual number of college graduates has increased 5-fold in two decades in Taiwan. The top four majors in 2012 were Electric Engineering, Business Administration, Information Management and Computer Engineering (see: <http://www.i-talent.com.tw/files/16-1005-2485.php>). Numbers of people having a PhD degree have increased 3-fold in previous decade, among which around 70% hold technology-related degrees (see: <http://k-review.com.tw/2011/05/01/1000>). The pool of IT talents is therefore sufficient (or even oversupply) in Taiwan. This is different than the US where enrollment in IT programs is dropping and therefore IT labor market is shrinking. However, the newer trends of shrinking youth population given the low birth rate and increasing brain drain to foreign countries (including China) are predicted to impact Taiwan's (IT) university enrollment and workforce inversely in the long run.
- ¹¹ According to a news report in Taiwan, "postgraduate degrees help not much in terms of employment and wages. 68% of the businesses interviewed [by "Yes 123 HR Company"] reported that having postgraduate degrees or not does not matter to wage difference." (Chen, 2015) (in Chinese). Allegedly, some IT firms would lay off senior IT people in order to hire junior IT people for reduced pay. The trend of waning influences of individual experiences and educational degrees on IT compensation coincides with the trend of rising unemployment rate worldwide after 2008 and soaring college and postgraduate enrollment in Taiwan (see footnote 10). In the end of 2015, a job ad for a professor position in a top national university with no regular pay but requiring a PhD degree and at least 6-year industry experience stirred up public outrage. Many "stray Ph.D. holders" who cannot find full-time academic positions still desperately applied to this job in order to enrich their resumes. This "no-pay professor" incident reflects the phenomenon that organizations tend to take advantage in the workforce where supply-demand imbalance exists. Educational-degree fetish in Confucianist societies like Taiwan actually facilitates this supply-demand imbalance in local workforce.
- ¹² Actually Orlowski and Baroudi's differentiation between financial professionals and IT personnel is outdated in practice. Financial industry now looks for financial professionals having IT skills at the same time. Reportedly among the 129000 new jobs added in financial services in 2016, mostly also require programing and IT skills (Information Technology Newsweekly, 2016).
- ¹³ Due to page limits, findings on the influences of industrial and national contexts are reported in the sections of "selecting atypical explanatory case" and backgrounds of the cases but not presented as independent sections.
- ¹⁴ The United States has long dominated software markets favoring open, standard systems. Nonetheless, for some clients, they favor closed system out of culture, preferences or economic concerns.
- ¹⁵ The native entrepreneur Yung-Ching Wang is an exception who founded Formosa Plastics that has become the leader of Taiwan's largest private industrial conglomerate. See (Mathews & Cho, 2000).
- ¹⁶ Immigration from Mainland China has been a political issue under strict scrutiny from the Taiwan government and local society. There is very limited quota and various red tape for immigration from China. The negotiation of Cross-Straits Service Trade Agreement among China and Taiwan further complicated this issue. In March and April in 2014, many college students occupied Legislation Yuan to protest against then-Taiwan Government's (under the rule of former president Ma Ying-Jeou) stance of favoring labor immigration from China. This protest is called "Sunflower Movement".

17 In this sense, “no-pay break” also signals risk-avoidance tendency in local society in Taiwan during
economic recession.

18 There were fixed start pay ranges for bachelor degrees and master degrees.

19 Information elicited from corporate website.

20 According to AP news, “The number of unemployed people peaked at 15.4 million in October 2009,
just after the recession ended. Still, that it takes companies so long to fill vacancies, even with 9 million
people unemployed, suggests that more discouraging factors might be at play. Some companies that are
seeking high-skilled workers in fields like information technology and advanced manufacturing complain
about a shortage of qualified candidates. Some recruiters and job Web sites describe ‘skills mismatches.’
Paul D’Arcy, senior vice president at the job listings Web site Indeed.com, said that lower-skilled jobs
generally received a flood of resumes, while higher-skilled positions attract far fewer. Jobs in management,
computers and math and architecture and engineering far outnumber jobseekers in those fields, according
to Indeed’s data” (Rugaber, 2015)

21 As aforementioned, according to agency theory, when the intended length of principal-agent relationship is
short, there is increased uncertainty regarding the agent’s performance and greater requirement for closer
monitoring; therefore there is an emphasis on incentive pay to motivate desired behavior (Eisenhardt, 1988).
22 This is consistent with the trend in the U.S. nation-wide. As the AP (Associate Press) reported: “There
are 6.8 million part-time workers who would prefer full-time jobs- 50 percent more than in 2007, before
the recession began. The recession also left some companies reluctant to make permanent hires. They
have turned instead to temporary and contract workers.” (Rugaber 2015)

23 This is no difference in Europe. Reportedly, “The Dutch labor market has the highest concentration of
part-time and freelance workers in Europe, with nearly 50 percent of all Dutch workers, and 62 percent of
young workers, engaged in part-time employment- a luxury afforded to them by the country’s relatively
high hourly wage” (Mahroum and Bascavusoglu-Noreau, 2015).

24 All of the IT personnel in this firms have Master degrees.

25 As aforementioned, according to agency theory, when the intended length of principal-agent relationship is
short, there is increased uncertainty regarding the agent’s performance and greater requirement for closer
monitoring; therefore there is an emphasis on incentive pay to motivate desired behavior (Eisenhardt, 1988)
26 Narrative explanations from cross-case findings serve as the theoretical basis for future theorizing
endeavors.

27 Although in practice the firm of case 2, the Taiwan construction firm, does not immigrate foreign workers,
the managers interviewed agreed with this compensation logic.

28 But this practice is challenged in their branches in China. Growing up under one-child policy and a newly
developing economy, younger generations in China may look for immediate personal prosperity over firms’
long-term development or loyalty to firms. Switching to other firms for better pay or start new companies
after they learn the core skills of the firms they work for is getting common for younger generations in China.

29 IT investment is expected to have the largest increase in 2015 ever since 2008 (CEB, 2014).

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