Group H - Baldo, Sferragatta, Lecce

**Continue of the Systematic Review “Human Capital value in Hi-Tech Industry”**

FOR THE FINAL PROJECT

In the final version of this document will be added, for each chosen paper, the hypothesis done and a critical discussion about if they have been verified together with the results provided from the analysis.

ANALYZED PAPERS’ SUMMARIES:

**01 Human Resource Flow Within Software Industry: A Firm-Level Investigation**

Ge, Chunmian and Zou, Xiao, "Human Resource Flow within Software Industry: A Firm-Level Investigation" (2013). *PACIS 2013 Proceedings*.

This study takes a firm-level analysis and examines the effects of the human resource inflows and outflows on software firm performance. To be more specific, they investigate how human capital variables embedded in the human resource flows affect firm performance.

For this study, they use public data on LinkedIn.com, collecting the CV-like public profiles of IT professionals working in public software firms in US, limiting the target to software firm with less than 2,000 employees. Also, they construct a firm-level panel dataset, which consists of human resource flow of 170 firms from year 2000 to 2009.

Hypothesis

H1a. *The human resource inflow is positively associated with firm performance.*

H1b. *The human resource outflow is negatively associated with firm performance.*

H2a.*The average education level of the human resource inflow will be positively associated with*

*firm performance.*

H2b.*The average IT experience of the human resource inflow will be positively associated with*

*firm performance.*

H3a.*The average education level of the human resource outflow will be negatively associated with firm performance.*

H3b.*The average IT experience of the human resource outflow will be negatively associated with firm performance.*

Their analysis show that the number of incoming IT professionals does not matter, while the number of outgoing IT professionals is negatively associated with firm performance, but the incoming IT experience is important to firm performance improvement, while the outgoing IT experience does not significantly influence firm performance. So, the hypothesis supported are H1b, H2a and H2b, and the not supported H1a, H3a and H3b.

For the conclusion, they say that HR managers can take note of the different impacts of both the human resource inflow and outflow and employ different HR strategies correspondingly, and they should also pay attention to the specific human capital embedded in the flows in order to develop more effective HR strategy.

**03 Firm-Specificity and Organizational Learning-related Scale on Investment in Internal Human Capital for Open Source Software Adoption**

LI, Y., TAN, C.H. and TEO, H.H. (2008). Firm-Specificity and Organizational Learning-related Scale on Investment in Internal Human Capital for Open Source Software Adoption. In: *2008 SIGMIS Computer Personnel Doctoral Consortium and Research Conference Proceedings*. Association for Computing Machinery (ACM).

This study investigates two antecedents of organizational investment in the development of human capital in the context of Open Source Software (OSS). Survey data collected from 114 senior Information Technology (IT) managers and IT professionals indicates that an organization’s perception of firm-specificity of OSS human capital and the extent of learning-related scale are positively associated with the investment it makes in cultivating internal OSS human capital. Additionally, they observed that learning-related scale moderates the impact of firm-specificity of OSS on its investment in human capital for OSS platform products.

They made three different hypothesis to be proved on the data analysis.

H1: *Firm specificity of OSS human capital is positively associated with investment in internal development of OSS human capital.*

H2: *Learning-related scale is positively associated with investment in internal development of OSS human capital*.

H3: *Learning-related scale moderates the association between firm specificity of OSS human capital and investment in internal OSS human capital.*

From the analysis, the observed that when firm-specificity is low, organizations may still invest in internal human capital if learning-related scale is justifiably high.

Examining the full model reveals that two out of three hypotheses were supported in the context of OSS development tools: H1 and H2 at 99.9% confidence. All three hypotheses were supported in the case of OSS platforms: H1 at 99.5% confidence, H2 at 99.9% confidence and H3 at 95% confidence.

**08 The Changing Role Of Human Resource Management In An Era Of Digital Transformation**

THE CHANGING ROLE OF HUMAN RESOURCE MANAGEMENT IN AN ERA OF DIGITAL TRANSFORMATION. Fenech, Roberta; Baguant, Priya; Ivanov, Dan. *Journal of Management Information and Decision Sciences; Weaverville* Vol. 22, Fasc. 2, (2019): 1-10.

The purpose of this study is to explore the changing role of human resource management in an era of digital transformation. The research question is: what do HR (human resource) professionals perceive to be the changing role of Human Resource Management in times of digital transformation. The last one is the transformation of business processes, operations and structures in order to exploit the benefits of new technology. In the search for competitive advantage that may be brought about by digital transformation strategy researchers increasingly acknowledge human capital, intellectual capital and knowledge as critical components.

The research methodology is a qualitative methodology using semi-structured interviews with five HR (human resources) professionals in the United Arab Emirates (UAE). The semi-structured interviews address the areas of HR planning, reward management, performance management, training and development, health and safety and employee relations, and their change in an era of digital transformation. Results are analysed using thematic analysis of the main themes and sub-themes. The main findings are that whilst digitalization impacts day-to-day HR practices and procedures particularly with the use of human resources information systems there is less emphasis on the role of HR in contributing to the strategy of digitalization.

In this study the focus of participants tends to be on how technology has made HR practices and procedures more efficient and effective. In conjunction, companies seem to be using technology more to ease, speed up and improve their current human resource practices and procedures and less to analyse data and plan around such analysis.

**09 Editorial: human resource management in high-tech companies (maybe to be removed)**

Jolly, D.R. (2005) ‘Editorial: human resource management in high-tech companies’, *Int. J. Technology Management*, Vol. 31, Nos. 3/4, pp.197–203.

Three topics are covered: the distinctiveness of human resource management in high-tech companies, the dynamics of human capital building in these contexts and the implementation of human resource management practices suited to the company’s stage of development and line of business.

In high-tech companies, a majority of the human capital is highly skilled and educated.

**18 A Human Capital Perspective of Organizational Intention to Adopt Open Source Software**

Li, Yan; Tan, Chuan-Hoo; Teo, Hock-Hai; and Siow, Alex, "A Human Capital Perspective of Organizational Intention to Adopt Open Source Software" (2005). *ICIS 2005 Proceedings*. 12.

This study adopts the human capital perspective as a theoretical lens to understand the factors that influence organizational intention to adopt open source software (OSS). They posit that availability of internal human capital and accessibility to external human capital significantly affect an organization’s intention to adopt OSS either directly or indirectly through switching cost. They analyze survey responses from 81 chief information officers or information systems managers and the results indicate that organizational availability of internal human capital has an indirect effect on an organization’s intention to adopt OSS through switching cost whereas accessibility to external human capital has a direct effect on an organization’s intention to adopt OSS. This study has both theoretical and practical implications. Theoretically, the unique approach from the human capital perspective adds to the extant literature on organizational adoption of innovation and calls for more attention to be directed at understanding the influence of human capital in an increasingly technologically complex environment. Practically, their findings suggest that potential OSS adopters and proponents should develop the human capital necessary for effective exploitation of OSS.

Hypothesis

H1*. Availability of internal OSS human capital is positively associated with an organization’s intention to adopt OSS*.

H2*. Accessibility to external OSS human capital is positively associated with an organization’s intention to adopt OSS.*

H3. *Availability of internal OSS human capital is negatively associated with an organization’s switching cost in adopting OSS.*

H4. *Accessibility to external OSS human capital is negatively associated with an organization’s switching cost in adopting OSS.*

H5. *Switching cost in adopting OSS is negatively associated with an organization’s intention to adopt OSS.*

Their results suggest that the theoretical model is substantive enough to explain a large portion of the variance in organizational intention toward OSS adoption. Examining the theoretical model and the full model reveals that three out of five hypotheses were supported, H2, H3 and H5.

**23** **Five Degrees of Separation: A Human Capital Model of Employment-Related Decisionmaking in the Information Technology Workforce**

R. A. Josefek and R. J. Kauffman, "Five degrees of separation: a human capital model of employment-related decisionmaking in the information technology workforce", *Proceedings of the 32nd Annual Hawaii International Conference on Systems Sciences.* 1999. HICSS-32. Abstracts and CD-ROM of Full Papers, 1999, pp. 13 pp.-, doi: 10.1109/HICSS.1999.772695.

Successfully implementing information technology (IT)-enabled strategy rests on the performance of IT professionals. Consequently, developing and retaining “IT human capital” is critical for many organizations. They introduce human capital theory from economics to the information systems (IS) literature for the study of turnover, present a new model of separation, and provide empirical results based on observed separation from a large diversified firm. They derive five categories of explanatory variables from multiple theoretical bases including IS, organizational studies, industrial psychology, and strategic management. Results indicate ways in which IT human capital differs from that in less knowledge-intensive and less dynamic occupations.

They construct five propositions based on their review of the literature, interviews with managers at multiple levels in the organization, and other related observation made during their field work.

Propositions

Prop. 1. *Lifecycle considerations are not an important factor in IT professionals’ separation decisions.*

Prop. 2. *Firm-specific human capital is not an important factor in IT professionals’ separation decisions.*

Prop. 3*. As the level of human capital attributable to specific technology increases, the likelihood of separation increases.*

Prop. 4. *As benefits to the firm and individual decrease, the likelihood of separation increases.*

Prop. 5. *Organization characteristics are an important factor in IT professionals’ separation decisions.*

They found support for all five prepositions on their results: Age, Annual Salary and Tenure offer no significant explanatory power over the variables contained in the estimation model, and this is consistent with Prop 1 and Prop 2. Significant and positive coefficients on the Skill Set variables, Applications, Architecture, and Multiple, support Prop 3. The positive coefficient (0,7526) on Underpaid = 1 support Prop 4. The significant coefficient on Division 4 (-1,5855) supports Prop 5.

**30** **Returns to Human Capital for Information Technology Professionals**

*Sandra Slaughter and Soon Ang. 2003. Returns to human capital for information technology professionals. In Proceedings of the 2003 SIGMIS conference on Computer personnel research: Freedom in Philadelphia--leveraging differences and diversity in the IT workforce (SIGMIS CPR '03). Association for Computing Machinery, New York, NY, USA, 143–146.*

This study examines compensation-tenure profiles using detailed salary data collected on IT professionals. Consistent with human capital theory, findings show that compensation increases with organizational tenure for all IT jobs. However, for a given level of organizational tenure, individuals in IT jobs requiring more firm-specific human capital are paid more on average than those in IT jobs requiring less-firm specific human capital. Their results suggest the importance of job type in examining compensation-tenure profiles in IT where the value of technical human capital can diminish while the value of firm-specific human capital can appreciate with organizational tenure.

**47 Complementarities of human capital and information technology: Small businesses, emerging economy context and the strategic role of firm resources**

Ana Cristina O. Siqueira & Maria Tereza L. Fleury (2011) Complementarities of human capital and information technology: small businesses, emerging economy context and the strategic role of firm resources, Technology Analysis & Strategic Management, 23:6, 639-653, DOI: 10.1080/09537325.2011.585032

How information technology (IT) may complement other key firm resources such as human capital is a question that has drawn increasing attention from scholars and practitioners. Answers to this question are crucial for small businesses in today’s environment. These businesses face a growing demand for IT usage at the same time that they typically can count only on limited resources. This has become a common situation that is particularly critical for small businesses operating in developing countries with emerging economies. They develop propositions and test them with a dataset of service small businesses in an emerging economy. They find that the use of IT services is positively related to firm productivity and that this relationship is positively moderated by entrepreneurs’ management education. Their findings indicate that firm productivity is associated with a combination of human and technology resources.

Hypothesis

H1: *Firm productivity will be positively associated with the use of IT services.*

H2: *Firms’ use of IT services and entrepreneurs’ management education are complementary in affecting firm productivity, such that firms using both types of resources will be associated with greater productivity.*

They test H1 with Models 1 and 2 by specifying firm productivity as a function of control variables and the use of IT services. They test H2 with Model 3 by including an interaction term between the use of IT services and entrepreneurs’ management education. For their analysis, they used WOLS regression with robust standard errors.

On their results, H1 and H2 are both supported.

**70 Human Capital Investments and Employee Performance: An Analysis of IT Services Industry**

Ravi Bapna, Nishtha Langer, Amit Mehra, Ram Gopal, Alok Gupta, Human Capital Investments and Employee Performance: An Analysis of IT Services Industry. Management Science 59 (3) 641-658 https://doi.org/10.1287/mnsc.1120.1586

The rapid pace of technological innovation necessitates that information technology (IT) services firms continually invest in replenishing the skills of their key asset base, the human capital. We examine whether human capital investments directed toward employee training are effective in improving employee performance. Our rich employee level panel data set affords us the opportunity to link formal training with performance at the individual employee level. Using a dynamic panel model, we identify a significant positive impact of training on employee performance. A unit increase in training is linked to a 2.14% increase in an employee's performance. Interestingly, we find that in the IT sector, skills atrophy and consequently high-experience employees reap higher returns from training, which highlights the uniquely dynamic nature of IT knowledge and skills. We also find that general training that an employee can utilize outside the focal firm improves employee performance. However, specific training pertinent to the focal firm is not positively linked to performance. On the other hand, although domain and technical training both enhance employee performance individually, the interaction between the two suggests a substitutive relationship. Thus, our findings suggest that the value of training is conditional on a focused curricular approach that emphasizes a structured competency development program. Our findings have both theoretical and practical significance. Most important, they justify increased human capital investments to fuel future growth in this important component of the global economy.

Hypothesis

H1: Employer provided training is positively related to improvement in overall employee performance.

H2: The marginal impact of training is higher for high experience employees compared to low experience employees.

H3: Both general and specific training contribute positively to employee performance.

H4a: Both domain and technical training contribute positively to employee performance.

H4b: The contribution of domain training is higher in magnitude than that of technical training.

To empirically validate their hypothesis, they conducted an in-depth study at a leading IT outsourcing vendor head-quartered in India. The study involved gaining access to the company and its resources and interviewing key managers to learn more about the organization as well as its training environment. They held extensive discussions with these managers to become familiar with the company’s training structure, human resource systems, and performance evaluation processes.

To support H1, their unbiased and efficient estimate from the AB-BB dynamic panel model suggssts that an additional training course, on an average, helps employees improve their performance rating by 2.14%.

To support H2, experienced employees may have higher absorptive capacity, and hence are better able to assimilate the new courses than novices. Given these findings, they expect firms to provide a renewed emphasis to employer provided training for high experience employees. Such a practice better replenishes the human capital and contributes significantly towards employee performance.

H3 is only partially supported, because they found that specific training does not have a significant impact on employee performance.

H4a is supported and H4b is not. On their results, the analysis indicates that training replenishes knowledge due to changes in both technology and domain. While both domain and technical training yield performance benefits, there is no clear indication on the relative merits of the two in the data.