Investigation of the Predictors of Civil Engineer Career Success

Tomas Ganiron Jr [1]
Cornersteel Systems Corporation
Mandaluyong City, Philippines
E-mail: tomasuganironjr@gmail.com

Doyce Tesoro- Martinez
Cornersteel Systems Corporation
Mandaluyong City, Philippines
E-mail: doycetesoro@gmail.com

Conference Key Areas: Employability of Engineers, Industry and engineering education, Gender in engineering education

Keywords: Career success, Career Planning, Career Management, Career Development

INTRODUCTION

Career success has long been a construct of considerable interest to career scholars and practitioners not to mention the multitude of individuals engaged in a career. Bosionoles defined career success as the extrinsic and intrinsic outcomes or achievements individuals have accumulated from their work experiences [1]. He defined the extrinsic success as directly observable, measurable and verifiable by an impartial third party, while the intrinsic success is only experienced directly by the person engaged in her or his career [1]. Thus, extrinsic success is defined by verifiable attainments, such as pay, promotions and occupational status, which have long been considered the hallmarks of career success across a wide range of societies. However, intrinsic success is defined by an individual's reactions to his or her unfolding career experiences.

The lack of research is highlighted by Kim who remarked that little literature has empirically explored the relationship between extrinsic and intrinsic success and career planning [2]. Therefore, in order to examine that relationship, the researchers come up with this study. First, identify the status of the civil engineers in terms of human capital and social capital. Secondly, it attempts to determine the level of career success of civil engineer in terms of extrinsic and intrinsic. Third, identify the factors predict the extrinsic and intrinsic success and Fourth, designed a career

[1] T. U. Ganiron Jr
tomasuganironjr@gmail.com

planning model, which serve as a guide for young civil engineers to be successful that will help them to manage their career in the near future. The aim of this research is to achieve these four objectives by an empirical analysis of a specific component of data.

1 LITERATURE REVIEW

1.1 University of the East

The University of the East (UE) is a private non-sectarian university located in University Belt Area, district of Sampaloc, Manila, Philippines. The university was founded in 1946 as a co-educational institution. Once labelled as the "Largest University in Asia" in terms of population [3].

UE became the first university in Asia to have an enrollment of over 60,000 students. In 1967, the late President Diosdado Macapagal, father of President Gloria Macapagal-Arroyo, decided to teach part-time in the College of Business Administration and branded UE as the “People's University” [3].

The University of the East gained prominence as an engineering school. During this period, the university consistently dominated the top 10 and even the top 20 slots in most licensure exams for civil engineering, year after year. It also consistently achieved the highest passing rates in the board exams among other competing schools in the various fields of engineering [3, 4].

Recently the University was labeled as "One of the Most Wired Universities in the Country" by the Computer World Magazine and Enterprise Magazine. Featured in the 2006 Computerworld Premier 100 of Computer World Magazine, the university ranked 15 among the top 100 corporations and companies in the use of Information Technology and is the only educational institution on the list [4].

Presently the Commission on Higher Education (CHED) has identified the University of the East as a Center of Development in Information Technology Education [4].

1.2 Career Success

Salary and promotions are the most widely used and readily accessible indicators of extrinsic career success. These extrinsic measures can have the substantial benefits of being readily available from existing records, standardized at least within firms, and efficient to collect [5].

They are free from self-serving and common-method variance, if collected by means other than self-support. They are valued by many engineers and executives. Extrinsic success has limited meaning in the many jobs where pay and promotions are institutionalized, such as in the civil service and Armed Forces of the Philippines [5]. In some professions, pay and promotions stem are not only extrinsic outcomes that people seek from their careers. The factors that affect the amount of career success of an individual experience are human capital and social capital [6]. Most people defined capital as a bank account, a hundred shares of IBM stock or assembly lines. These are all forms of capital in the sense that they are assets that yield income and other useful outputs over long periods of time [6].

In human capital theory, individuals make rational choices about the investments they made in their human capital. For instance, family context (i.e., civil status) has been argued to play an important role in career success, especially for women. Some argue that marital status has a positive influence on the careers of men and negative influence on the careers of women [7].

Better, educated individuals have more options available to them because of their decisions to invest in human capital and these investments lead to higher ascendancy rates and salaries. Research from careers literatures indicates that returns from educational attainment in terms of pay and promotions are significant.

Research suggests that job tenure and total time in the one's occupation are positive related to career attainment. Along with amount of experience may be relevant in predicting career success [7, 8]. Specifically, it is becoming more important for structural engineers to have structural design experience, design management experience, construction experience and teaching experience in structural design suggesting that organizations are more likely to reward and promote engineers who have these work experiences [8].

Performance on new tasks requires general intelligence. General cognitive ability may also influence individuals' awareness of the need to acquire new knowledge and skills. Research has suggested that only individuals with high cognitive ability will be able to maintain the attention and effort necessary to master the task over period of time. This includes the Civil Engineering licensure examination rating as a measurement of general cognitive ability.

Social capital is a multi-dimensional concept that emphasizes both the quality and structure of social relationships. In social capital terms, Role models and mentors found to be the greatest positive social influence [6, 7]. Civil engineers defined role model as someone in greater authority in whom they saw things that were strong that they wanted to emulate and who played an important role in their careers. Role models demonstrated valued behavior [5, 7]. Douvan identified the lack of role models in non-traditional professional and senior level administrative positions as a significant barrier to career development, impeding from pursuing non-traditional careers [8]. Based on the study of Edwards, there are eleven (11) employability skills and aptitudes learned from a superior [9]. These are: flexibility, adaptability and the capacity to cope with and manage change, self- motivation and drive, analytical ability and decision making, communication and interpersonal skills, team working abilities and skills, organization, planning and prioritization abilities, ability to innovate, mental and physical resilience, leadership ability, managing long term projects, and time management [9]

2 CONCEPTUAL MODEL OF CAREER SUCCESS

Drawing conclusions from theory and research from psychology, human resource management, and labor economics, the researchers focuses on the concept of Bosionoles theory that career success is defined as extrinsic and intrinsic outcomes. The objectively observable are compensation and promotions, and a subjective reaction to career is career satisfaction.

This designed model aims to show the factors that predict the career success of structural engineers in terms of human capital and social capital. Human capital shows the profile of the respondents including cognitive skills, civil engineering board examination rating and work specialization. Social capital determines specific employability skills and aptitudes of civil engineers learned from a mentor. Extrinsic success such as compensation and promotion shows the visible outcomes of the success of structural engineer On the other hand, intrinsic success shows career values of the civil engineers.

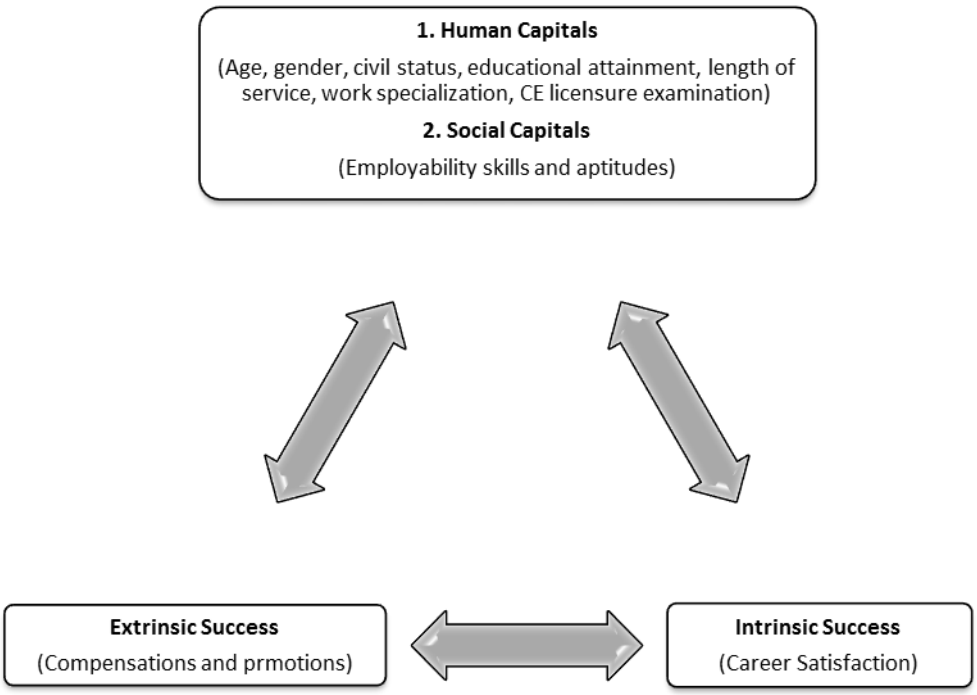

Fig. 2. Conceptual model of career success

3 RESEARCH METHODOLOGY

The researchers utilized the descriptive method of research. The subjects of this study were the companies located in the Philippines where vertical and horizontal structures projects are in progress. Purposive sampling was utilized in order to determine the participation of the knowledgeable employees only by considering those who meet the criteria. The respondents were purposively selected and have included 500 civil engineers who are alumni of the University of the East. The Statistical Package for Social Science (SPSS) software was used to generate statistical data to arrive these findings and conclusions. Statistical tests of Regression Analysis, percentage and weighted mean values were used to enable researchers give appropriate responses to the statement of the problem. Human capitals was measured through eight distinct variables age, gender, highest educational attainment , length of service in the company , work specialization and CE licensure examination ratings. Social capital was measured through two (2) distinct variables such as employability skills and aptitudes learned from a superior. Extrinsic career success was measured through four (4) distinct variables such as compensation, and promotion. Extrinsic career success was measured through (1) distinct variable such as career satisfaction. This was measured with the five-item scale developed by Greenhaus, Parasuraman, and Wormley [10. 11], which appears to be the best measure available in the literature [11, 12].

4 FACTORS OF CAREER SUCCESS

Most of civil engineers fell within 36 to 45 years old, single and dominated by male since majority of their work needs climbing the building by using ladder and lifting heavy equipment for testing forensic in structural buildings which is appropriate work for men. The civil engineers appear to be highly educated holding a degree

MS/MEng and Doctorate degree beyond a Bachelor degree. Many civil engineers, 67.3 % were between 5 to15 years in the company and considered seniors in their current job. They have work experiences in structural design, managing construction projects and teaching design subjects ranged not less than 5 to 20 years. They have a high marked rating in the CE licensure examination, 51.8 % were between 91 and above 95%. Respondents perception on their level of confidence to demonstrate employability skills and aptitude learned from a mentor have an over-all mean of 3.71 which is very high. Each employability skills and aptitudes learned from a mentor have a mean between 3.65 and 3.77. Most mentors who have high employability skills and aptitudes are role models of civil engineers.

5 LEVEL OF CAREER SUCCESS

More than half of the respondents, 59.1% earned an average monthly compensation between 40,000php to 60,000php. Generally, civil engineers received high average monthly compensation. Civil engineers are promoted because of their personality traits such as creativity, loyalty, etc. (33.6%) and, experience and background (32.7%). On the other hand, most of the civil engineers, 71% are in the administrative level. The positions of the respondents in the administrative level are: Construction Manager (28.2%), Project Manager (27.3%) and Vice President (15.5%). Therefore, majority of administrative level in construction industries are occupied by civil engineers and most of them are promoted because of their very high positive personality traits, experience and backgrounds. Civil engineers possess a high degree level of skills in innovation and creativity. The level of their opportunities, responsibility and excitement are very high since all of their structural projects presented are more than fifteen storeys'. The level of engineering services fees received by civil engineers for every project is highly competitive with regards to the number of building storey and project construction cost. Respondents perception that civil engineers “strongly agree” that they are satisfied with their career with a mean composite response of 3.79 .In general, the level of career success for civil engineers in terms of career satisfaction was very satisfied.

6 CONCLUSION

It is concluded that the profile of civil engineers especially in terms of human capital and social capital to a large extent contribute in the success of civil engineer. The level of career success of civil engineers is dependent on the profile of structural engineers that determine its extrinsic and intrinsic success. The length of service in the company and CE licensure examination, were found to highly contribute to extrinsic success of structural engineers. Highest educational attainment, length of service and superior were found to highly contribute to intrinsic success of structural engineers. On the other hand, CE licensure examination rating can best predict extrinsic success in terms of promotion.

7 CAREER PLANNING MODEL

7.1 Longevity with company

As shown in figure 2, construction companies should offer a work environment for civil engineers. These enable them to stay longer and not to resign in a short period of time. Organize spacious environment and adequate equipment. To make civil engineers happy, their basic needs have to meet. There must be a reward for their successful projects. Inspirational rewards given frequently can help to ensure that engineer stay motivated. Make civil engineers feel that their involvement is significant to the companies’ triumphs. This can be achieve by saying kind words, send thank

you notes and remember their holiday. Provide recognition to civil engineer. Find new ways to acknowledge those civil engineers who go to extra mile. Create monthly or recognition days. Provide valuable and competitive health coverage. Civil engineers understand that if their well-being and their family's well-being are important to the organization. Put into operation an open book management program. Ensure trust and empowerment by allowing engineers to view the organization financial records. This opportunity can build confidence between the engineers and the company.

Fig. 2. Longevity with company

7.2 Civil Engineering licensure examination

In planning for licensure examination as presented in figure 3, graduate engineer should determine what is necessary for admission including the coverage of the exam and passing percentage of the licensure exam. Take a CE preparation course. This will help to review the subject matter covered on the CE exam. Treat preparation for the CE licensure exam like a job because preparation requires full-time attention. Develop a schedule of study for CE examination, usually six hours per day and keep a positive attitude.

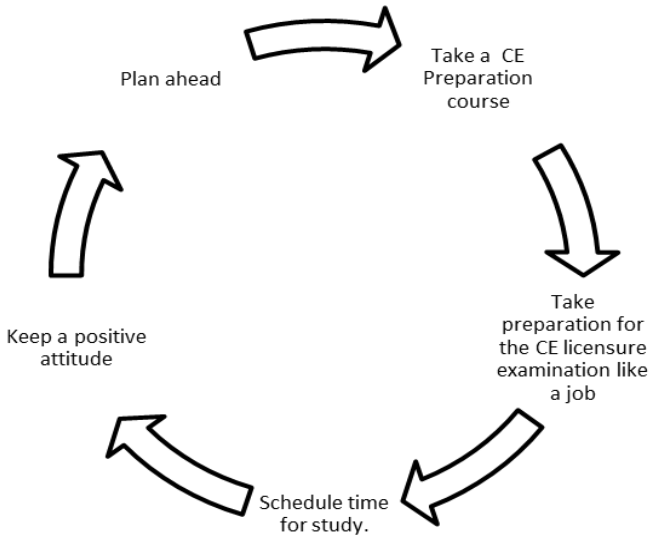

Fig. 3. Civil Engineering licensure examination

7.3 Student Graduate Professional Development

In planning for studying advance program as presented in figure 4, gather written descriptions of various programs and talk with students, faculty and graduates of the ones that appeal to civil engineer applicants. In choosing an adviser, discuss important issues clearly. Be frank about plans, strengths and weak points. When thinking about topic, imagine how to describe it with the perspective required of a thesis or dissertation. Career breadth is attained through such as on job trainings or internship and on-campus research centres that work in collaboration with industry. They can also help to mature and develop confidence in ability to succeed in their career.

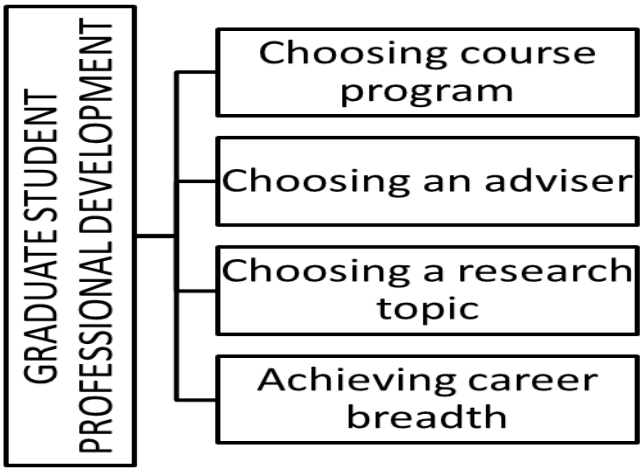

Fig. 4. Student Graduate Professional Development

7.4 Choosing a superior

Figure 5 shows career planning model in terms of superior. Develop friendship with someone probably superior civil engineer and more experiences than possess employability skills. These skills can be learned by civil engineer. A good superior may also be able to help civil engineer with networking and making connections with others in their filed that might help them. Keep an open mind in matching civil engineer needs to a prospective mentor. Former boss or engineering officials represent a good starting point in the search for mentors. Learning about the people want to ask first can help prepare civil engineer to ask guidance and assistance. They can either make request via telephone or email.

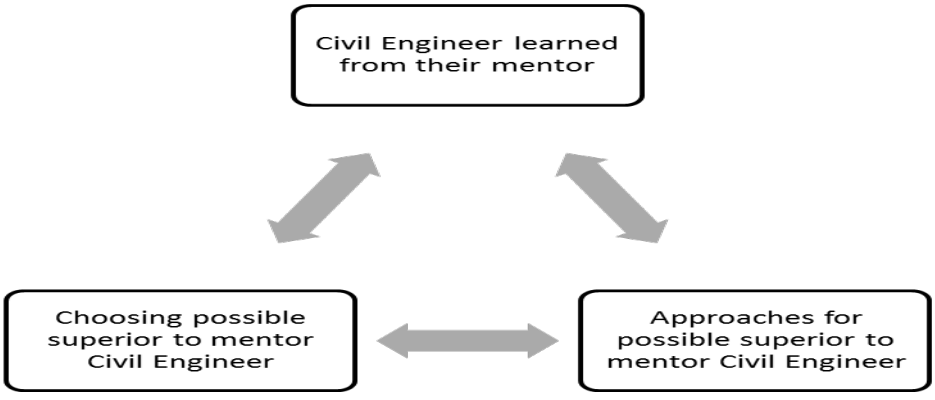

Fig. 5. Choosing a superior

REFERENCES

[1] Bosionoles, E. R. (2004). Managing Careers: Theory and Practice. Essex: Pearson Education.

[2] Ganiron, T.U. Jr. (2012). Structural Engineer Career Success, International Journal of Innovation, Management and Technology, 3(4), 321-326

[3] "University of the East Nearly 60 years of quality education for the masses". Manila Bulletin, 2006

[4] "UE Today: UE red warriors, fighting, striving and winning". UE Bulletin, 2009.

[5] Ganiron T.U. Jr & Ganiron T.M. (2013). Managing Career Success of Geodetic Engineers, International Journal of Education and Learning, 2(1), 13-24

[6] Ganiron, T. U. Jr & Ganiron T.M. (2012). Social Capital on Civil Engineer Career Success, International Journal of Innovation, Management and Technology, 3(6), 725-730.

[7] De Molina, T.G. (2004). Predicting Career Success of Graduate Business School Alumni. Academy of Management Journal, 16, 129-137

[8] Douvan, K. (2006). Reliability in Content Analysis: Some Common Misconconceptions and Recommendations. Human Resource Research, 30(3), 411-413.

[9] Edward, T. W. (2011). The Personality of High Earning MBA's in Big Business. Personnel Psychology Review, 22, 447-463.

[10] Greenhaus, G. F. & Ash, R. A. (1990). A Comparative Study of Mentoring Among Men and Women in Managerial, Professional and Technical Positions. Journal of Applied Psychology, 75, 539-545.

[11] Kim, A.A. & Bray, D. (2005). Managerial Lives in Transition: Advancing Age and Changing Times. New York: Guilford Press.

[12] Oberfied, G. H. (2004). Career Choice. San Francisco, CA: Jossey-Bass.