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**Relationships among Human Capital, Employability and Innovative Work Behavior by Electrical Engineering and Computer Science (EECS) Field**

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**Abstract**

The influence of human capital on innovative work behavior is attracting increasing attention in the management of human resources. This is particularly the case given the emphasis on employability development of talents in today's society and the hope for employees to exercise innovative thinking at work for better operating efficiency of organizations. This study refers to employability as an intervening variable in order to explore the relationship between human capital and innovative work behavior of university graduates in science and technology. The questionnaires were sent to companies and forwarded by managers. A total of 530 questionnaires were released and the number of effective questionnaires was 146. The validation of the research hypotheses is as follows: (1) Human capital has significant and positive influence on employability; (2) human capital has significant and positive influence on innovative work behavior; (3) employability has significant and positive influence on innovative work behavior; (4) employability serves intervening effects between human capital and innovative work behavior.

**Keywords:** graduate, graduates in electric engineering and computer science, human capital, employability, innovative work behavior

**1. Introduction**

The economic and industrial structure of Taiwan has evolved from the agriculture and manufacturing development in 1912-1947, the labor-intensive period in 1948-1961, the second import substitution period in 1962-1980, the technology-oriented and economic liberalization period in 1980-1999, the economic globalization period in 2000-2007 to the cross-strait trade and economy period starting from 2008 to date. The development was driven by labor and capital in the early days. By the Taiwan Strait Crisis in 1970, the labor-intensive industries could no longer drive the economic cycles in Taiwan. The Taiwan government promoted the technology-intensive and capital-intensive industries. As a result, the high tech industries became an engine for economic growth and industrial development in Taiwan. The high tech industries include chemicals, electricity and electronics, machinery and transportation. Starting in the 1990s, the global industries evolved into a knowledge based economy (Tsai, 2008). Currently, Taiwan's

economy is oriented toward the high tech industry and its semiconductor industry is in a mature stage. The industry became the world's second largest in 2020, with a growth of 20.7% from 2019. Its annual production value exceeded NT\$3 trillion (TechNews, 2021).

According to the figures by the Directorate General of Budget, Accounting and Statistics, Executive Yuan (2020), the total number of the unemployed people in Taiwan was 460,269, including 102,564 people aged between 20 and 24 years old. This age group reported the highest percentage of unemployed people nationwide. Whilst the economy continues to develop, the youth unemployment rate remains high. This urges the Taiwan government to explore the policies and measures in the enhancement of youth employability. However, employment goes beyond the development of a student's domain professionalism. It is more of an emphasis on the cultivation of a student's ability to apply to different domains and achieve adaptive development (Wu, 2012).

The study by Chang and Liao (2019) finds discrepancy between the employability based on self-assessment of graduates in electrical engineering and computer science (EECS) and the employability of these graduates in the eye of companies. The difference lies in problem-solving ability, negotiation ability, frustration tolerance, and accountability for decisions. Some research indicates that the graduates in EECS need to improve foreign language capabilities and cost analysis ability (Chang & Hou, 2019). These days, companies like to see students who pursue development in diversity. Therefore, the development of all-rounded employability and employment rates has become a critical topic to technology universities and government agencies today.

In the knowledge economy and the era of globalization, companies need to adjust the direction of operations in an appropriate way in order to compensate the insufficiency of technology and to enhance the overall competitiveness. Meanwhile, it is necessary to utilize human capital for organizational innovations to obtain competitive advantages and achieve sustainable operation (Chang, Lee, & Chang, 2018). Chang and Chiu (2021) mention the positive and significant correlation between personal attitudes and creativity diffusion and implementation. The establishment of an atmosphere for sharing in the organization encourages the interaction and exchange between teachers and students in the classroom. In addition, personal learning is introduced to the organization for the creation of a learning atmosphere that is proactive and rationale. This will foster the output of innovative behavior.

In sum, countries around the world place an emphasis on human capital, employability and innovative work behavior. As the professional domain of EECS serves as the pillar of Taiwan's economic development, it is necessary for companies to keep human capital up to date in order to enhance innovative work behavior of employees. This study seeks to explore the relationship among human capital, employability and innovative work behavior of university graduates in EECS.

## **2. Literature Review and Hypothesis Development**

### *2.1 Relationship between human capital and employability*

Intangible assets are gradually attracting attention over recent years. The most important element of intangible assets is human capital. Hsu (2005) summarizes differing views of scholars about

human resource development. The study mentions that Jacob Mincer believes that human capital is the difference among individuals as a result of education, vocational training and work experience. Adam Smith (1976) develops the human capital theory and posits that an individual's ability is primarily an outcome of learning and development. Therefore, human capital is one of the important elements of national human development, the economic value, technology and development needs of the country can be connected with the industry and human needs through talent cultivation, and then create higher quality employment through human capital (Wang, 2018; Huang, 2019). Thodore W. Schults believes that human capital is the knowledge, skills and experience established with investment in people. Knowledge-rich human capital, skills and attitudes can also boost the economic value of companies. It is the most important resource for corporate and organizational operation (Huang, 2003). On the other hand, university education was previously for elites. However, higher education has become increasingly available to the public over the past few decades. This puts Taiwanese university graduates in a more intensive international competition. Industry and academia are highly concerned about the employability of university graduates (Wang, 2008). According to Tomlinson (2007), higher education should prioritize the development of students' cognition and attitude so that students understand the personal qualities and work attitudes required at the workplace.

Employment is different from employability; it is mainly about job seeking status of students after graduation. Employability encompasses an individual's development of professional capabilities when switching between different work domains. This is primarily concerned with long-term development and status of professional fields. The major objectives of universities are to cultivate vocational skills and to nurture the talents required by the society and the economy of Taiwan. As the industries around the world move towards a knowledge-based economy, it is essential to enhance the hard and soft skills and to develop the transferable capabilities of students (Lin, 2021; Ferns, Dawson, & Howitt, 2019; Chin & Chuang, 2010). The main goal of higher education is to cultivate capabilities in academic development or employment, in order to develop talents required by the Taiwan society. It is through learning that students are equipped with the ability to seek jobs and do well on jobs. This is for the development of employability of graduates, not about the alteration of thinking (Harvey, 2000). Cheng, Hung and Hou (2008) contend that employability is the ability with which graduates obtain employment opportunities. The curriculum should emphasize the skills valued by employers in order to reduce the gap between what is learned and what is in use. This allows students to immediately adapt to the work environment and mitigates the phenomenon of structural unemployment. In sum, employability is the ability to assist an individual in seeking employment, maintaining employment and applying existing capabilities to new jobs and opportunities.

In sum, the development of human capital and cultivation of employability are critical to the technology and international competitiveness in the future. Meanwhile, the theory in human capital development enhances productivity, employees' skills, training, economic development and technological innovation (Sofoluwe, Shokunbi, Raimi, & Ajewole, 2013). Sofoluwe, Shokunbi, Raimi & Ajewole (2013) suggested that there is a significant relationship between human capital and employability. The enhancement of human capital creates economic development, boosts labor competitiveness and drives technological advancement. Therefore,

this study develops the research hypothesis  $H_1$ : Human capital has significant influence on employability.

### *2.2 Relationship between human capital and innovative work behavior*

Human capital includes professional skills, experience, and is the basis for innovation (Derin & Gökçe, 2016; Subramaniam & Youndt, 2005). Liu and Hsieh (2006) divide human capital into two types: human resources in general and professional human resources equipped with special knowledge for specific industries. Relevant studies come up with differing definitions of human capital and views on the scope of human capital. Chang, Zhang, & Wu (2021) indicated that working knowledge is closely related to unique human capital and can be used to stimulate innovative work behaviors among employees by generation, promotion, and realization creative ideas in the workplace (Choudhary, Memon, & Mishra, 2020). Talents are an important asset to companies and highly relevant to production, marketing, R&D and information management. Proper utilization and timely renewal of human capital helps management to manage and allocate the allocation of knowledge and skills as an asset owned by organizational members. This also accelerates the performance and target achievement of companies (Chang, Lee, & Chang, 2018). In Taiwan, the economy is centered on the high tech industry and technology and the industry is in a mature stage (Hang & Chou, 2019). A robust development system for human resources has a positive influence on the core competitiveness of an industry. In other words, human capital is a key determinant of competitive advantage for the success of companies. During recent years, human capital has been widely discussed by experts and scholars (Chang, Lee, & Chang, 2018; Liao, 2016; Vidal-Salazar, Hurtado-Torres, & Matias-Reche, 2012). It is generally believed that the biggest difference between human capital and other tangible/intangible assets lies in the contribution to the development of a knowledge-based economy and value creation. An effective investment organization and human capital can boost the overall performance of organizations (Dzinkowski, 2000). Hence, retention and continuation of human capital is an essential issue for corporations in the tech industry and the environment where changes are drastic. The only way to maintain market competitiveness is the ownership of resources. In the meantime, organizations need to constantly change operational strategies and adjust the allocation of human capital and organizational structure, in order to maximize the use of capacities. Based on the abovementioned studies, this study defines human capital as the talents with knowledge, experience and capability.

In today's society, innovation and creativity are gradually becoming key factors at workplace and in teams and organizations. Although both creativity and innovation involve novelty, their definitions are somewhat different. Creativity is anchored on ideas whilst innovation emphasizes both the generation of ideas and the realization of ideas with actions. West and Farr (1989) believe that innovative behavior is for an individual to introduce and apply novel thinking in an organization or a group. Given the rapid development of technology nowadays, both companies and teams must constantly innovate services, products and work procedures. Innovative work behavior entails new ideas, technologies and workflows. It benefits work and organization and enhances work efficiency of teams or individuals (Kleysen & Street, 2001; Janssen, 2000; Tushman & Nadler, 1986).

According to Oluwatobi and Ogunriola (2011), the higher the human capital of a country, the greater the productivity and national welfare. Baker (2006) posits that organizations require quality human capital to realize and realign organizational goals. Therefore, innovation is a prerequisite for companies, as well as the cornerstone of corporate competitiveness. It is undeniable that human capital has significant influence on flow management, product development, training & education and organizational operation. It helps to boost corporate performance and development and enhances industry competitiveness. Hence, this study develops the research hypothesis H<sub>2</sub>: Human capital has significant influence on innovative work behavior.

### *2.3 Relationship between employability and innovative work behavior*

Anderson, Potočnik and Zhou (2014) contend that the elements of innovative work behavior are motivation, knowledge and skills. The lack of any element may disable an individual from innovative activities. Innovative work behavior is for employees to seek innovation, generate innovative ideas and utilize innovative thinking so that employees contribute to better performance of companies and teams (Chang & Weng, 2017). Therefore, innovative work behavior of employees is paramount to organizations. Scholars believe that this behavior is more than an internal resource for companies. Externally, it also maintains customers' loyalty to companies and organizations. In brief, innovative work behavior functions both inside and outside organizations (Hiong, Ferdinand & Listiana, 2020).

Stoffers, Van der Heijden, & Jacobs (2020) showed that some dimensions of employability affect innovative work behavior and can predict innovative work behavior. Human capital affects employees' work involvement. Companies value employees, treat employees as an important asset and are willing to invest efforts in the development of organizational members and the enhancement of employability of employees. This will have further influence on employees' innovative work behavior. Chang and Chiu (2021) indicate that the behavior and attitude as constructs of employability have the highest correlation with the diffusion and implementation of creativity. In other words, positive behavior and attitude fosters information sharing and discussion of innovative thinking with organizational members. This diffuses creativity to organizational members and encourages the realization of creativity within organizations (Liu, 2021). Therefore, employability and innovative behavior are correlated (Acar & Tuncdogan, 2019). The cultivation of capabilities enhances employability. The spirit of continuous learning boosts the value added of organizations. Companies encourage employees to share creative ideas and create an environment for innovation sharing in order to foster innovative work behavior of employees. This helps to enhance overall competitiveness of companies (Wright & McMahan, 1992). Therefore, this study develops the research hypothesis H<sub>3</sub>: Employability has significant influence on innovative work behavior.

#### *2.3.1 Sample Size, Power, and Precision*

Along with the description of subjects, give the mended size of the sample and number of individuals meant to be in each condition if separate conditions were used. State whether the achieved sample differed in known ways from the target population. Conclusions and interpretations should not go beyond what the sample would warrant.

#### *2.4 Relationship among human capital, employability and innovative work behavior*

As far as employers are concerned, human capital is the element for organizational strengthening, profitability and competitiveness enhancement (Campbell, Coff, & Kryscynski, 2012). This includes cultural, psychological, social, academic and skill capital for the creation of greater benefits. Baruch, Bell and Gray (2005) prove that the strengthening of inner value and capital creates self-confidence. This is beneficial to a positive and proactive mindset. Donald, Baruch & Ashleigh (2019) point out the significant correlation between human capital and employability. Companies can use human capital to encourage career decisions by employees and to achieve alignment in organizational goals by helping employees in the pursuit of positive career development. Given the emphasis on personal experience and capability development in the job market, the cultivation of personal capabilities and the betterment of professional knowledge solidify the connection between human capital and market value (Luthans, Youssef & Avolio, 2015). Hence, human capital is the core of an individual's employability and a nation's competitiveness. Individuals can develop knowledge and skills through higher education and training. The nurturing of high-caliber talents creates employability and employment opportunities.

Lecat, Beusaert and Raemdonck (2018) examine the employability of teachers in terms of learning and innovative work behavior. The research mentions that employability serves regulating effects on learning activities and innovative work behavior. In the meantime, Stoffers, Van der Heijden, and Jacobs (2020) believe that employability is the antecedent of innovative work behavior. If enterprises and companies invest in the development of employees' employability, it will also enhance innovative work behavior. When it comes to university students, employability is not only about the development of technicality but also learning motivation and ability to reflect. Employability is primarily concerned with the development of students' ability in adapting to the workplace, innovation and leadership after graduation (Liao, 2017). Moreover, human capital, talent investment and development are pertinent to innovative output. The training and education of talents enhances a company's human capital and economic productivity and influences the economic output of a country (Lee & Lee, 2016). To ensure survival and sustainability in the industry and the competition, innovative work behavior is considered highly relevant to human capital and productivity. It contributes to the organizations and refreshes the organizational climate. Therefore, it is necessary to thoroughly analyzes organizational resources in order to clarify the integration of overall resources and continued creation of competitive advantages (Leitão, Nunes, Pereira & Ramadani, 2020). Yen (2013) studies the banking industry and examines the influence of human capital on innovation capability and organizational performance. The results indicated that human capital has positive influence on innovation capability. Meanwhile, innovation capability exhibits intervening effects between human capital and organizational performance. Human capital consists of knowledge, skills and ability. Therefore, this study seeks to explore whether there are other influencing factors between human capital and innovative work behavior. This leads to the development of the research hypothesis H<sub>4</sub>: Employability has intervening effects on the relationship between human capital and innovative work behavior.

### **3. Research Design and Implementation**

#### *3.1 Subjects*

This study aims to explore the relationship among human capital, employability and innovative work behavior of university graduates in science and technology in the corporate environment. This study was used purposive sampling to survey the senior-, middle- and entry-level managers and whose background with electrical engineering and computer science as the main research subjects. The population is the top 1,000 companies listed by Common Wealth (2017) according to operation performance in Taiwan. A total of 530 companies in electrical engineering and computer science were selected with a reference to the industry classifications published by the Directorate General of Budget, Accounting and Statistics, Executive Yuan (2016) via the National Statistics, the Republic of China (Taiwan) website. The survey was conducted with a Google sheet. The questionnaires were released to companies and forwarded by the human resource department to managers. 530 questionnaires were issued and 146 effective questionnaires were recovered, at an effective recovery rate of 27.55%.

#### *3.2 Questionnaire*

This study uses the 5-point Likert scale, from “strongly agree” to “strongly disagree”. A score of 5 to 1 is assigned, with 5 indicating “strongly agree” and 1 indicating “strongly disagree”. The questionnaire design is in reference to measurements and questions developed by scholars overseas. The measurement’s appropriateness is reviewed and assessed by industry experts and scholars in electrical engineering and computer science.

##### *3.2.1 Employability*

This study refers to the employment measurement development by Brennan et al. (2001). The measurement consists of three constructs. The contents are discussed and modified according to reviews by experts’ meetings. The questionnaire covers the specific skills and knowledge-related capabilities; general competences; and behavior and attitude. For example, “Broad general electrical knowledge”, “Problem solving skills”, and “Adaptability.”

##### *3.2.2 Human Capital*

This study measures human capital with the “human capital” measurement developed by Subramaniam and Youndt (2005). For example, “The employees in your company are highly proficient in work skills.”

##### *3.2.3 Innovative Work Behavior*

This study adopts the “innovative work behavior” measurement produced by Scott and Bruce (1994). The original measurement is divided into three constructs. The appropriateness of contents is reviewed, discussed, and modified by the experts’ meetings. For example, “I will come up with new ideas to solve the problem” ,and “I can find many new ways, techniques or tools to solve problems.”

### 3.3 Research framework and hypotheses

Figure 1 is an illustration of the research framework. This study aims to explore the relationship among human capital, employability and innovative work behavior by using employability as the intervening variable for the relationship between human capital and innovative work behavior.

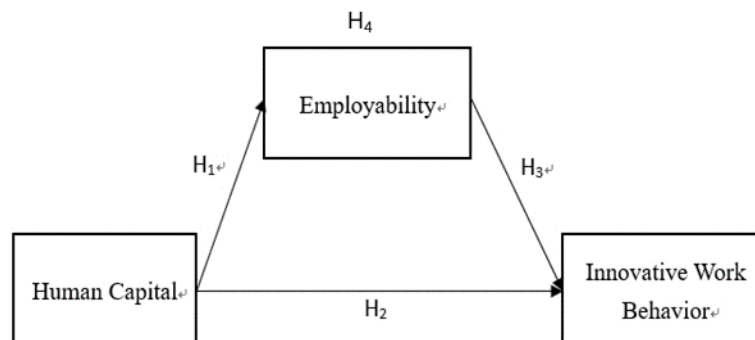


Figure 1 Research Framework

H<sub>1</sub>: Human capital has significant and positive influence on employability.

H<sub>2</sub>: Human capital has significant and positive influence on innovative work behavior.

H<sub>3</sub>: Employability has significant and positive influence on innovative work behavior.

H<sub>4</sub>: Employability has intervening effects on the relationship between human capital and innovative work behavior.

## 4. Data Analysis and Discussion

### 4.1 Descriptive statistics and analysis

This study collected a total of 146 effective questionnaires, 126 from male respondents and 20 from female respondents. Among the respondents, 6 are senior managers, 9 middle managers, 13 entry-level managers and 118 employees. As far as educational background is concerned, 67 are graduates from public universities, 79 from private universities. 75 respondents graduated less than three years ago, 71 no less than three years ago. Table 1 summarizes the frequency distribution and the percentage breakdown of background variables. Through t-test showed that there was no significant difference between the male and female samples in the mean scores of employability ( $t=-1.159, p>.05$ ), human capital ( $t=-1.431, p>.05$ ), and innovative work behavior ( $t=-0.952, p>.05$ ), indicating that these two types of data don't have differences depending on gender. Therefore, the data can be combined to directly explore the relationship between the variables.



Table 1 Analysis of background variables (N=146)

Background variable	Percentage (%)	
Gender	Male	86.3
	Female	13.7
University type	Public	45.9
	Private	54.1
Years of graduation	Less than 3 years	51.4
	3 years or more	48.6

As shown in Table 2 and Table 3, the mean values of individual constructs are all higher than 3.0. The mean is 3.69 for human capital, between 3.377 and 3.831 for employability, between 3.773 and 3.815 for innovative work behavior. The standard deviations are all below 1.0. Cronbach's  $\alpha$  as an indicator for reliability is 0.886 for the measurement of human capital, between 0.948 and 0.961 for the measurement of employability, between 0.856 and 0.939 for the measurement of innovative work behavior. Cronbach's  $\alpha$  values for all constructs are higher than 0.7 This indicates good reliability for the constructs and measurements (Tsung-Hsien Kuo, 2020; Kuijpers et al., 2013).

Table 2 Means and standard deviations of individual constructs

Variable and construct	Mean	Standard deviation
<b>Human capital</b>	3.694	0.864
<b>Employability</b>	3.638	0.728
Professional competences	3.377	0.802
General competencies	3.706	0.750
Behavior and attitude	3.831	0.762
<b>Innovative work behavior</b>	3.794	0.583
Origination of creativity	3.81	0.933
Diffusion of creativity	3.815	0.835
Implementation of creativity	3.773	0.912

#### 4.2 Correlation matrix

According to Huang (2018), a correlation coefficient between 0.3 and 0.7 indicates medium correlation. As shown in Table 3, the Pearson correlation coefficients are between 0.475 and 0.63. The correlation between the employability and innovative work behavior of university graduates in electrical engineering and computer science is positive and significant ( $r = 0.607, p < .001$ ). The correlation with human capital is also positive and significant ( $r = 0.63, p < .001$ ). The correlation is positive between human capital and innovative work behavior ( $r = 0.475, p < .001$ ). This analysis shows the significant relationship among human capital, employability and innovative work behavior.

Table 3 Correlation matrix and reliability (Cronbach's  $\alpha$ )

Variable	1	2
1. Employability	(0.886)	
2. Innovative work behavior	0.607***(0.980)	
3. Human capital	0.630***	0.475***(0.961)

Note: \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

#### 4.3 Regression analysis on human capital, employability and innovative work behavior

The VIF test results show that all the VIF values are smaller than 10 and hence there is no collinearity between constructs. This study refers to human capital as the independent variable, innovative work behavior as the dependent variable, employability as the intervening variable. An analysis is conducted on the basis of the regression model. First, Model 1 is on the effects of human capital (independent variable) on employability (dependent variable). As shown in Table 4 the regression result of Model 1,  $R^2=39.3\%$  for the influence of human capital on employability and  $\beta$  coefficient is 0.63, statistically significant ( $p < .001$ ). In other words, human capital has positive and significant influence on employability. Therefore, the regression model supports the research hypothesis  $H_1$ : Human capital has significant and positive influence on employability.

Model 2 is on the effects of human capital (independent variable) on innovative work behavior (dependent variable). The results indicate  $R^2= 22\%$  for the influence of human capital on innovative work behavior and  $\beta$  coefficient is 0.475, statistically significant ( $p < .001$ ). In other words, human capital has positive and significant influence on innovative work behavior. Therefore, the regression model supports the research hypothesis  $H_2$ : Human capital has significant and positive influence on innovative work behavior.

Next, Model 3 is on the effects of employability (independent variable) on innovative work behavior (dependent variable). The results indicate  $R^2=36.4\%$  for the influence of employability on innovative work behavior and  $\beta$  coefficient is 0.607, statistically significant ( $p < .001$ ). In other words, employability has positive and significant influence on innovative work behavior. Therefore, the regression model supports the research hypothesis  $H_3$ : Employability has significant and positive influence on innovative work behavior.

Finally, Model 4 is the regression analysis on the influence of human capital and employability (as two independent variables) on innovative work behavior. The results indicate  $R^2=37.4\%$  for the influence of human capital on innovative work behavior but  $\beta$  coefficient of 0.153 is not statistically significant. That said, the reduction of the regression coefficient from 0.63 to 0.153 shows that employability has complete intervening effects on the relationship between human capital and innovative work behavior. Hence, the regression model supports the research hypothesis  $H_4$ : Employability has intervening effects on the relationship between human capital and innovative work behavior.

Table 4 Regression analysis

	Dependent variable							
	Employability		Innovative work behavior					
	Model 1		Model 2		Model 3		Model 4	
	$\beta$	t	$\beta$	t	$\beta$	t	$\beta$	t
Human capital (independent variable)	0.63	9.741**	0.475	6.473**			0.153	1.806
Employability					0.607	9.168**	0.511	6.035**
F	94.886		41.9		84.052		44.317	
R <sup>2</sup>	0.397		0.225		0.369		0.383	
$\Delta R^2$	0.393		0.220		0.364		0.374	

Note: \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

## 5. Discussion and Recommendations

### 5.1 Discussion

5.1.1 Employability serves the complete intervening effects on the relationship between human capital and innovative work behavior

This study attempts to explore the relationship between human capital and innovative work behavior. To take a step further, employability is incorporated to examine whether it has an intervening effect on the relationship between human capital and innovative work behavior. The research analysis and findings suggest a positive and significant correlation between human capital and innovative work behavior. Human capital, employability and innovative work behavior are positively and significantly correlated. The research hypotheses H<sub>1</sub>, H<sub>2</sub> and H<sub>3</sub> are accepted. The research also indicates the intervening role of employability between these two and hence the research hypothesis H<sub>4</sub> is accepted. In sum, H<sub>1</sub>, H<sub>2</sub>, H<sub>3</sub> and H<sub>4</sub> developed by this study are all supported.

5.1.2 The correlation coefficient is the highest for the relationship between human capital and employability, followed by the relationship between employability and innovative work behavior

Overall, the correlation coefficient is the highest when it comes to human capital and employability. This is followed by employability and innovative work behavior. Yen (2013) conducts research on the personnel in the banking industry and indicates that human capital and innovation capability are positively correlated. When the company understands the capability of organizational members, comprehensive training and education can make team cooperation more attuned. Through innovation in products, manufacturing and services, team advantages and organizational goals are developed (Hang & Chou, 2019). Moreover, Santoso and Heng (2019) mention that an individual's willingness to assume responsibility and come up with innovative

ideas when confronting frustration will enhance the implementation of creativity. This positive attitude has a sweeping effect on subsequent diffusion and implementation of innovative thinking. Chang and Chiu (2021) indicate that among the constructs of employability, behavior and attitude are the most correlated with creativity diffusion and implementation. An individual's proactive learning attitude enhances self-learning motivation. This individual's influence can create a positive atmosphere in the organization and boost organizational innovations.

#### 5.1.3 Human capital can adapt to the environment change and stay current with training and education

Human capital can be accumulated with training and education and boost the performance of companies and organizations. Therefore, it is necessary for companies to constantly develop human capital and provide employees with relevant training and education. This will further increase the soft capabilities, general capabilities and professional capabilities of employees, so that employees are up to date in knowledge, skills and attitude. This enhances the employees' self-development and innovative work behavior, creates more value added for the organization and strengthens the overall organizational competitiveness. Generally speaking, the training and development of a specific element of employability does not directly contribute to effective output unless the employee concerned is lacking in the specific skill (Brixiová, Kangoye, & Said, 2020). In addition, the learning process and efficiency policies help the sharing among organizational members, improve the substantial capabilities of employees and increase organizational innovations (Hsiao, Chang, & Chen, 2014).

#### 5.1.4 Employability's predictability of innovative work behavior is better than human capital's predictability of innovative work behavior

Most previous academic studies compare the single constructs of human capital and employability (Donald, Baruch & Ashleigh, 2019), employability and innovative work behavior (Lecat, Beusaert & Raemdonck, 2018; Stoffers, Van der Heijden & Jacobs, 2020). However, the research findings of this study suggests that human capital and innovative work behavior are positively correlated. After employability is incorporated, the results show that employability exhibits greater influence on innovative work behavior than human capital's influence on innovative work behavior. As far as employability is concerned, general competences have the greatest influence. Therefore, this study believes that innovative work behavior can be enhanced through the cultivation of general competences, professional competences, and behavior and attitude and the training of general competences. Based on the above research findings and conclusions, this study makes the following two academic contributions:

1. Employability can effectively predict innovative work behavior.
2. The enhancement of general competences as an element of employability can strengthen the expression of innovative work behavior. Employability can be developed with training and cultivation and this indirectly boost employees' innovative work behavior.

### *5.2 Recommendations and Limitations*

This study makes the following recommendations to subsequent academic research. First, innovative work behavior has become a factor that most companies care about. Companies hope that employees can exercise innovative thinking at work in order to improve work performance and organizational operation efficiency. There are many variables that influence innovative work behavior, from individual to organization levels. This includes personal motivation, attitude, leadership style, organizational atmosphere and team climate (Yu & Tsai, 2014; Scott and Bruce, 1994). This study only uses employability as the intervening variable and the results show that employability has intervening effects on the relationship between human capital and innovative work behavior. Hence, this study recommendates the inclusion of other variables in the exploration of intervening effects on the relationship with innovative work behavior. Second, the openness and diversity of university curricula these days also helps students to break away from the framework of knowledge-based human capital theories (Tseng, Hu & Chen, 2011). Based on the finding regarding the correlation between human capital and innovative work behavior, this study believes that human capital of workers influences innovative work behavior. However, this study only examines the corporate managers in the field of electrical engineering and computer science and cannot make inference for companies in other domains. It is recommended that follow-up studies may explore the relationship among human capital, employability, and innovative work behavior in companies of different fields and whether employability has intervening effects on the relationship between human capital and innovative work behavior.

There are two limitations of this study: 1. Since the online questionnaire was distributed through the human resource department of the company, the respondents may be under pressure to fill out the questionnaire or the questionnaire was filled out by non-original research subjects, therefore, the conclusion of this study allows for the existence of errors; 2. This study only focuses on 10,000 large companies in the manufacturing industry in Taiwan, and it is not possible to infer that all companies have such results; therefore, this study is limited by inference.

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