The Exploration of Human Resource from the Supply-Demand Core Competence to its Suitability: A Resource-Based Theory Perspective

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ABSTRACT

This main study explores resource-based theory as a perspective to exam whether the professional and basic capabilities of college education can provide and then fit the need the human resource core competence of firms. Using 200 managers of Taiwanese firms by Multi-Hierarchical Regression as statistical tools, this study significantly shows by: while the college education can provide students with these two capabilities, these capabilities can fit the firms' needs of the core competence, under the consideration of firms and college cooperation as industry-school exchange to raise the development of these capabilities of these students. This suggests that when the colleges give its academic training for the students to these two capabilities, these capabilities match the firms' demand for their need of human resources. The rationale reason could be: when we consider the component of core competence as creative force, learning ability, and practical experience, the processes of the academic particular programs and the college-firm collaboration can help enhance the student from a labor force to human resource, increasing an employment rate based on a better contribution to firms.

Keywords: *human resource core competence, resource-based theory, industry-school exchanges, the employment rate*

INTRODUCTION

Research Background, Motivation and Purpose

This beginning of the 21st century shows a great employment change in the supply- demand job market. After the September 2008 by following the U.S. subprime mortgage crisis, it evolved into a global financial storm. The same year the U.S. government took over Fannie Mae and Freddie Mac. Affected by Lehman Brothers' bankruptcy, Merrill Lynch was taken over by the Bank of America. American International Group (AIG) had difficulty in seeking funding. The financial deterioration of major U.S. mortgage lenders, investment banks and insurance groups spread rapidly. The financial turmoil swept the globe, affecting Iceland, Dubai and Greece. The financial crisis manifested into a global storm. Former U.S. Federal Reserve Board (FED) Chairman Alan Greenspan also said "the type of crisis that happens, in my judgment, once in a hundred years." In addition to Obama's administration saving the auto and financial industries, at the same time, the economic turmoil is also reflected in supply-demand job market, Taiwan. For example: the unemployment rate was 3.87%, 4.42%, 5.73%, and 5.85% under the 1st and 2nd half of 2008 and 2009, respectively.

Since the labor supply condition is the same, the unemployment rate increased sharply, indicating that the industry demand for the labor market was gradually changing. This shows that the industry demand for human resources began to lock in on a specific preference (for example, language and information technology skills for firms to raise their competitiveness). Based on the phenomenon of job market being unstable, this paper intends to connect the study into the resource-based theory. The strategic management under this theory uncovers the internal supply-demand manpower, a competitive resource by valuable, rare, costly to imitate, and non-substitutable criteria to fulfill the industry demand of strategic human resource. Under industry-school cooperation with the theoretical premise, when the students cultivated by the academic teachers, the students should meet the industry's (firms') demand for competitive resource criteria as value, rare and inimitable, and non-substitute. According to these discussions already done, these help raise the empirical research question by: whether the college education's provision of the professional

and basic capabilities to the students can fit the need the human resource core competence of firms, an conversation with Diamond, Mortensen, and Pissarides's (2010) Frictions Theory as the consideration to *why so many people unemployed under a large number of job openings*.

We first formulate some hypotheses and a study framework which are then applied in a case study of industry-school cooperation, Taiwan. This study gives new significant findings by: while the college education can provide students with these two capabilities, these capabilities can fit the firms' needs of the core competence, under the consideration of firms and college cooperation as industry-school exchange to raise the development of these capabilities of these students. The results should lead to a better understanding of the process when the colleges give its academic training for the students to these two (basic and professional) capabilities, these capabilities can match the firms' demand for their need of human resources. Finally, we utilize a Multi-Hierarchical Regression approach to structural equation modeling to assess the major issues already addressed.

THEORETICAL BACKGROUND AND DEVELOPMENT

In this turbulent environment of globalization, the students nurtured in the academic environment can improve the employment rate. The application methods used in the academic community in the past are the Sandwich Plan, Topping Teaching and the Last Mile. Under the premise to meet the industry's demand for human resources, training students in the academic environment can improve the employment rate since the students can meet the specific preferences that the industry's demand for manpower. This explains that the teaching efforts made in the past: Sandwich Plan, Topping Teaching, and the Last Mile are geared to the expectation that cultivates students to meet the industry's demand, to produce student employability and competitiveness, and to reflect this quality in the students' employment rate. However, the past Sandwich Plan, Topping Teaching, and the Last Mile teaching methods explore the employment rate *only* from the academic-level perspective. Therefore, the main purpose of this study intends to explore the industry-level needs for human resources, which investigate the industry's specific needs for these students' capabilities under industry-school cooperation.

Specifically, the purpose of this study is based on the industry's resource-based theory to explore whether the industry's demand for students as human resources fits the core competence under the industry-school exchange. While Barney (1991) and Barney, Wright, and Ketchen (2001) proposes the industry's manpower requirement prefer the resources to be valuable, rare, inimitable, and non-substitutable, Figure 1-1 shows the framework of this study, which indicates the industry's demand for the professional and basic capabilities of student resources should fit the core competence under the industry-school exchange. Thus, whether the professional and basic capabilities of academic student resources can increase the employment rate, and fit the demands of the industry's preference for human resources is the key for academic human resources training.

Resource-Based Theory

Through the evolution of time, the resource-based theory has become a widely acceptable research viewpoint, constructing the relationship between resources and performance (Powell and Dent-Micallef, 1997). The restructuring and integration of the resource generate the resources uniqueness (Barney, 1991) that can better respond to the requirements of the changing surrounding environment (Song, Droge, Hanvanich, and Calantone, 2005) and thus increase the chance for better performances (Ravichandran and Lertwongsatien, 2005). The theory dates back to 1957 when Selznick mentioned the term organization's distinctive competence. In 1959, Penrose, deducting her economic theory, puts forward the "Theory of the Dynamic Growth of the Firm" and defined Distinctive Competence as an organization, through the distribution and the use of resources, obtaining economic rents. This concept later became the basis of resource-based theory. In 1984, Wernerfelt, leading the mainstream strategic management, proposes a resource-based idea that the "internal" organizational resources and the "external" commodity markets together form a complementary strategy. For the industry, if an organization has the internal distinctive resource of value, rarity, inimitability, non-substitutability (Barney, 1991), then it can introduce externally advantageous goods and services, and create competitive advantage or sustained competitive advantage. Resource-based theory literature suggests that the

construct of human resources is indicated as intrinsic characteristics of an organization, or as causal ambiguity (Lippman and Rumelt, 1982; Barney, 1991), otherwise known as isolating mechanism (Mahoney and Pandian, 1992; Knott, 2003). However, it requires further clarification and exploration (Acedo, Barroso and Galan, 2006) as to why the resource heterogeneity and distinctiveness can improve enterprise performance, competitive advantage, or organizational effectiveness.

According to the above, when the basic and the professional capabilities of the academic trained student resources satisfy the industry's demand for the student resources, the suitability of the supply and demand of human resources between industry and school will be reflected in the student employment rate. To induce its reasons, through the two-way three-party, the academic teachers, students, and industry managers, contribution, the suitable supply and demand in human resources can be achieved. This is why the basic and the professional capabilities of the academically trained student resources should have the quality of value, rarity, inimitability, and non-substitutability. The basic and the professional competitiveness of the academic trained student resources is in line with the industry manager's demand for this student, because the human resources preference requirements are in line with the resource quality of value, rarity, inimitability, non-substitutability. According to the above, this study, applying the resource-based theory, under the premise of the core competence of human resources that constructed under the industry-school exchange, examines whether the student resources established by academic teachers can meet the industry's demand for student resources.

Core Competence

The concept of core competence can be traced back to Selznick (1957) "Distinctive Competence", meaning: "the institutionalization of an enterprise must have special characteristics, and the distinctive competence is an important quality for an organization to implement a specific task. Leonard-Barton (1992) defines core competence as unique, distinctive, difficult to imitate, and making better use of resources and skills than competitors. Foil (1991) defines core competence as a specific organizational culture, and in relation to the competitors, there is a competitive advantage. Tampoe (1994) defines core competence as where an organization can integrate various technologies, processes, develop a sustainable and unique competitive advantage, and create a value-added technology or manage subsystems. Hamel and Prahalad (1990) define the core competence as a "unique combination of the company's technology, skills, operating procedures." It is the result of a long period of evolution, a combination to meet customer needs.

Long and Koch (1994) regard strategy as an indicator for identifying and developing core competence, and a unique value the company can offer its customers and stakeholders, and that competence is a skill, knowledge and technological trade secret, providing special advantage to a specific point of the value chain, combining with strategy to form core competence. Chandler (1990) mention that core competence includes functional capacity (such as production, marketing, personnel, finance and R & D) and strategic capacity (such as vertical integration, diversification and internationalization.) Hamel and Prahalad (1990) believe core competence is the accumulated knowledge from the previous learning of an organization, particularly, the integration capability in different industrial skills and technologies. Collis and Montgomery (1995) believe that core competence does not mean for an enterprise to do the best of its own ability, but to do better than the competitors and to meet the market demand. Sabourin and Pinsonneault (1997) treat core competence as the technology or subsystem management of an enterprise in order to create a unique competitive advantage, and if it is in sync with the organizational goals, it can form a competitive advantage. The definition of core competence into: the result of cumulative learning; integration of multiple technologies within the organization; the key ability to perform a specific task; personal unique advantages, and the organization's sources of competitive advantage.

Based on the above analysis, some common characteristics can be summarized: the core competence is not just a single skill or technology, nor can be owned by a single member of the enterprise; core competence of the business development is the strategy focus that senior leadership must take an active interest in; core competence is the source of competitive advantage, and it usually demonstrates its competitiveness and personality; core competence evolves over time in an organization process that utilizes resources and capabilities; core competence is the element that enable companies to create its uniqueness, is the sustained capability of an enterprise to create value for customers, and is also the capacity for business operations; if resources and the strength of competence possess the attributes of value, rarity,

inimitability, non-substitutability, they can become the sources of competitive advantage, and if lacking these attributes, they cannot become the core competence. Therefore, based on the above discussion, this research defines core competence as the innovation ability, the learning ability and practical experience capability.

Therefore, the four attributes of resources can help define the core competence that appears in an enterprise's innovation ability, learning ability and practical experience capability. Value refers to ability to help companies to resolve threats and explore opportunities. By making effective use of these attributes in developing and in seizing opportunities, an enterprise can create value for customers. Value is the difference between benefits and sacrifices, that is, customer perceived benefits minus the perceived sacrifice equal value. Rarity is the ability that the existing and potential competitors possess a little of or none at all. Value is universal (non-scarce) resources and capabilities that only gain balance of power in competition; companies that develop in different ways, contrasting to their competitors and utilize resource capabilities will gain competitive advantage. Inimitability refers to the capabilities that cannot be easily imitated by other companies. To imitate others, a company has to pay a considerable price. There are three reasons. First, companies develop specific skills sometimes because they have unique historical backgrounds. Second, the price of Imitation is that the relationship between core competence and competitive advantage is ambiguous that a competitor cannot verify in what capacity the foundation is for the development of the organization's competitive advantage, thus, cannot determine what value creating strategy of the opponent to copy. Social complexity is the third reason for costly imitation.

Social complexity refers to the capabilities of an enterprise, in part, the products of complex social phenomena, such as: relationships, trust and friendship among managers, and a company's credibility to the suppliers and customers. Non-substitutability refers to the capability that has no strategic equivalence to replace. The last condition to turn the enterprise's capabilities into the source of competitive advantage is that "…there must be no strategically equivalent valuable resources that are themselves either not rare or imitable. Two valuable firm resources (or two bundles of firm resources) are strategically equivalent when they each can be exploited separately to implement the same strategies. Generally, when the capability is more difficult to replace, the value is higher. When enterprises own more non-substitutable intangible capabilities, it is more difficult for the competitors to imitate value creation strategies, because these capabilities are difficult for the competitors to replace. In summary, core competence is based on these four attributes to generate a competitive advantage (Barney, 1991).

Human Resources

Student employment competitiveness includes communication, problem solving and teamwork skills, because the three vocational skills examine whether the academic education is compatible with the industry job market, when student resources entering the industry employment market, so that the career development of student resources can have a good start. Student employment competitiveness training can be divided into: basic competitive ability training, referring to general education courses and basic subjects, teaching student resources with the capacity of basic college knowledge; professional competitive ability training, referring to professional practice skills and the practical employment application of advanced academic education, teaching student resources to have professional competitive capability when entering the industry employment market in the future. The basic and professional competitive capabilities of the academic trained student resources are in line with the capabilities listed in the National Youth Commission's *2006 College Graduates Employment Survey*: work attitude and collaboration of the human resource employment competitiveness, active learning in the career planning and management, and professional knowledge and practical skills.

This employment competitiveness proposed by the National Youth Commission focuses on a wide range of basic and professional competitive capabilities: good work attitude, stability and stress resistibility, expression and communication skills, professional knowledge and skills, willingness to learn and malleability, teamwork skills, basic computer application skills, problem identification and solving skills. According to a 2002 Australian White Paper, "Employment Skills Required In the Future", which was quoted in a speech made by Minister Cheng-sheng Tu at a Southern Division Conference of the 2006 Youth Resource Development Conference, held by the Ministry of Education, that college program planning should integrate eight core employment skills: communication skill,

teamwork skill, problem solving skill, originality and improvement skill, planning and organization skill, self-management skill, learning skill, and technological skills. As previously described, the employment competitive capabilities explored in this study can be clearly divided into, the basic competitive capabilities: "Humanity Care", "Problem Solving", "Service Leadership", " Language Expression " and "Information Application"; and the professional competitive capabilities indicators: "Professional Knowledge", "Practical Skills", "Innovation Integration", "Interpersonal Communication" and "Teamwork".

The industry required basic and professional capabilities of student resources come from the basic and professional capabilities of the academically-trained student resources. The employment competitive capabilities of the academic student resources should fit the industry-required capabilities of student resources. The required capabilities can be divided into the basic capabilities and the professional capabilities. The required basic capabilities include: problem solving, service leadership, language expression, information application, professional knowledge and practical skills. The required professional capabilities include: humanity care, innovation integration, interpersonal communication and teamwork. In terms of the basic capabilities that the industry's demand of the student resources, because the industry's human resources require that the student resources have the employment competitive capabilities, the basic capability requirements of the student resources have been met.

When student resources have the quality to care for others, respect and cherish their own values, experience teamwork cooperation, which are in line with the core competence of humanity care, they can solve problems using innovative integrated logic thinking, have a flexible keen insight and a collaboration ability, have an issue interpretation ability through professional trained interpersonal communication skill, have interpersonal communication and conflict management skills through learning from the ground up, can establish good interaction with partners, work together with the team for a common goal, and can follow the organization system and disciplines. In terms of the professional capabilities that the industry's demand of the student resources, when the industry's demand shows preferences for student resources, the professional competitive capabilities of the student will be the important basis for reference. When student resources learn to utilize existing knowledge, experience and skills, they can solve problems through a variety of thinking and action, have the ability to learn active service leadership with humility, have the self-leadership ability to work independently, have multiple opportunities to show foreign language application, have full understanding of international affairs, can express clearly using language skills, can effectively and properly use IT tools, and can use professional skills and work ability to keep abreast (digesting and mastering) of professional knowledge and practical skills.

Basic Capabilities

Basic capabilities are value. The basic capabilities provided by academics allow students to learn: the value of respecting others and caring for themselves, from humanity care; solving problems by using existing knowledge, experience and skills; to create self-worth, through various ways of thinking and action; to experience the joy of servicing that leads to self-leadership potential, and to learn the value of the capability of working independently; to learn multiple language expressions and to show the value of international perspectives; and to select the correct and effective information resource method, through the assistance of IT tools, utilizing and completing the simplifying procedures, effectively using the value of IT. Therefore, from the industry's perspective, academic teachers cultivating the basic capabilities of student resources is in line with Barney's (1991) proposed view that human resources are important sources to maintaining the industry's development of competitive advantage. From this logic, we induce that, when the basic capabilities of student resources encompass the attributes of this theoretical perspective, the industry will need the basic capabilities of student resources to perform a specific strategy in order to enhance the effectiveness and efficiency of its operations. In other words, the basic capabilities of the student resources bring or maintain competitive advantage to the industry.

Basic capabilities are rare. When the industry requires the student resources, academic teachers train student resources in the basic capabilities, such as: humanity care, problem solving, service leadership, language expression, and information application, that are very important to the industry's need of the student resources, and thus are reflected in the student employment competitiveness. This is because the student resources have the humanity care

attribute of respecting others and caring for their own values, which reflect directly on the student resource employment, and because the industry's customer relations really need the student resources to provide for and fulfill the job requirements. Furthermore, for the student resources that have problem-solving ability, one of the basic capabilities of student resources, will be able to utilize the academically-trained working knowledge and experience, solving problems through a variety of thinking and action to achieve the desired situation. In terms of the service leadership attribute, students understand the importance of studying service leadership in a team. Therefore, when student resources have the rarity attribute, they can bring more competitive advantage for the industry. In the language expression, student resources, applying a wide range of language skills, can fully demonstrate their understanding of international affairs and multicultural learning.

When the need to expand international trade arises, this language expression ability of the student resources will come in handy. In the IT application capability, the student resources utilize information technology platform and software operations to streamline process procedures, improving performance, so that when the need of such manpower arises, the students with this basic capability have the attribute of rarity. This is because the basic capabilities of the student resources reflect directly in the work demand, and so do customer relations, problem solving at work, teamwork, expansion of global perspectives, and information applications. Based on the above discussion of the basic capabilities, this study arrives at the deduction that the basic capabilities have the attribute of rarity that the industry demands for human resources.

Basic capabilities are inimitable. Under the global economic turmoil, the unemployment rate rises because of the industry's specific preference for labor produces a specific demand. Should the academically trained student resources meet the specific requirement; the student resources have the inimitable attribute. For example: for students having a noble cultured quality, they can resolve various matters by approaching problems with rational judgment, demonstrating a high degree of problem solving skills; they are modest and polite, and have the spirit of active learning and service; they have fluent foreign language communication skills; they have the ability to operate computer information platforms and software applications smoothly, demonstrating information technological skill fully, dealing with work issues in an efficient and effortless way. Students must devote a lot of emotion and effort in learning basic student resource capabilities. When students have the above-mentioned basic capabilities, the industry's human resource needs can have a higher competitive advantage, thereby raising the employment rate, which is in line with industry's demand for human resources. Therefore, this study deduces that the student resources have the inimitable attribute.

Basic capabilities are non-substitutable. Industry's demand for human resources on the labor market is generating a particular preference. When student resources have all three attributes of value, rarity and inimitability, and reflect on the student employment competitiveness, as far as the industry's needs for manpower is concerned, the student's basic capabilities are non-substitutable. When students are capable of: establishing humanistic care values, applying it fully in learning knowledge and experience; having the ability to solve problems; presenting naturally a service leadership style in the workplace; showing multiple international affair perspectives; selecting and using computer information platforms and software; establishing individual core competencies and the abilities that competitors have, the capabilities are non-substitutable. The basic student resource capabilities match what Barney (1991) proposed how the industry can maintain sustainable competitive advantage lies in the human resource competitive advantage strategy where the existing or potential competitors cannot obtain, or cannot obtain benefits from duplicating. This is what Lippman and Rumelt (1982) proposed that the competitive advantage the industry required from student resources innovates as competitors imitate. Therefore, when the industry's requirement for human resources has the non-substitutable attribute, then the industry can have a sustainable competitive advantage.

The basic capabilities that the industry demands of student resources fit the core competence of the human resources under industry-school exchange. We can find assistance from the employment rate increase and job seekers' competitive advantage on how to increase job seekers' employment competitiveness. Resource-based theory is the foundation of industry's competitive advantage. Resources are the source of the industry's competence. Combining a number of resources can form a side of the industry's competitive advantage. The basic capabilities, provided by the academic field: humanity care, problem solving, service leadership, language expression, and information applications, are in response to the industry's demand for human resources. Students, with employment competiveness, can establish

humanistic care values respecting others and care for themselves; utilize existing knowledge, experience and skills; solve problems through a variety of thinking and action tools; learn active service and have leadership ability, have opportunities to apply multiple foreign languages, have full understanding of international affairs and learn about a variety of different cultures, and can effectively and properly use IT tools. The student resources encompass these basic capabilities. Those who have these capabilities are able to exhibit attributes of value, rarity, inimitability, and non-substitutability that are in line with the industry's core competence under the industry-school exchange. Based on the above discussion, this study infers the following research hypothesis:

H1a: Based on the resource-based theory, the basic capabilities that the industry demands of student resources fit the core competence of the human resources under industry-school exchange.

Professional Capabilities

Professional capabilities are valuable. In the industry-school exchanges, when the industry's human resources require relevant professional knowledge and ability to work in the professional field, effective integration of theory and practice, the establishment of multiple expertise, the use of sensitive and flexible insight and organization capabilities, learning interpersonal communication and conflict management skills, building good partnerships and maintaining good interaction, fully demonstrating the value of professional competence, students having the above-mentioned attributes become the industry's competitive advantage. From this logic, we induce that, when the professional capabilities of student resources possess the attributes of this theoretical perspective, the industry will need the professional capabilities of student resources to perform a specific strategy in order to enhance the effectiveness and efficiency of its operations. In other words, the professional capabilities of the student resources bring or maintain competitive advantage to the industry.

Professional capabilities are rare. The industry's demand for professional capabilities of human resources reflects in the students' employment competitive advantages. The professional capabilities of the student resources, such as: professional knowledge, industry skills, innovation and integration, communication and teamwork, are very important to the industry-required attributes of human resources, and can directly reflect in the student employment competitiveness. This is because when the student resources have the attribute of professional knowledge, gaining recognition from the industry's manpower demand, integrating professional theory and practical skills, then imagine what professional capabilities its human resources should have when the industry demand for human resources emerges and further nurtures student resources to have the all-round expertise, integrating existing knowledge to make a systematic innovation, thus help enhance efficiency and effectiveness of the future service in the industry, thereby improving the quality and performance of the work of the industry human resources. Therefore, when student resources have the above-mentioned professional capabilities, this study infers that they have the resource attribute of rarity. To explore the cause, when having the above-discussed professional capabilities, students exhibit distinct competitive advantage in employment competitiveness, resulting in differentiation in human resources.

Professional capabilities are inimitable. In the professional capabilities, student resources can create irreplaceable personal professional qualities, master professional knowledge and practical experience, analyze and solve problems in a systematic way, have good inter-personal communication skills, and have good work disciplines and follow work procedures. This is what Barney (1991) proposed that human resources are important sources in maintaining the industry's development of competitive advantage. This research infers that the professional capabilities of the student resources provided by teachers in the academic field have the resource attribute of inimitability.

Professional capabilities are non-substitutable. The industry's requirement to the student resources is non-substitutable to the core competence under the industry-school exchange. Students, having the quality of value, rarity and inimitability, can have professional skills and job performance, establishing good practical skills, integrating problems between industry human resource requirement and student resources, establishing systematic professional learning method, having good interactive communication channels with peers, building mutual understanding and working for the common goal, fully demonstrating personal professional capabilities. This is the factor proposed by Dierickx and Cool (1989) that human resources can maintain the development of industry's competitive advantages. When the professional capabilities of the student resources have the attribute of non-substitutability, it can bring sustainable competitive advantage for the industry.

Under the industry-school exchange, industry and academia have a good supply and demand relationship: schools provide professionalization that satisfies industry's professional requirements, while industry provides practical experience for the academic reference and learning, enhancing academic capacity. The professional capabilities of the student resources: innovation integration, inter-communication, teamwork, humanity care, nurtured by the academic teachers, resulting in the nurtured capabilities to be valuable, rare, inimitable, and non-substitutable. To fulfill industry-academia mutual benefits, schools provide professionalization that satisfies industry's professional requirements, while industry provides practical experience for academia, enhancing academic capacity. Based on the above discussion, this study infers the following research hypothesis:

H1b: Based on the resource-based theory, the professional capabilities that the industry demands of student resources fit the core competence of the human resources under industry-school exchange.

RESEARCH METHODS

Research Subjects and Questionnaire Survey

The sample subjects of this study are academic students and teachers, and industry managers, participating in the two-way value benefiting industry-school exchange. The definition of core competence in the industry-school cooperation includes: innovation ability, learning ability and practical experience capability. According to the definition, this study evaluates the core competence that the sample structure should include academic students and teachers, and industry managers since the innovation ability mainly come from students, the learning ability largely provided by teachers, and the practical experience and capability greatly supported by the industry managers. To evaluate this core competence, the sample structure should include academic students and teachers, and industry managers in order to reflect the research definition of this core competence. This study utilizes the managers from two hundred industry enterprises in Southern Taiwan. The managers were given a pre-test of a total of 250 questionnaires, of which 232 were returned. After a deletion and revision of troublesome questions, then a post-test was given. The total number of questionnaires distributed was 505, deducting incomplete answers, the valid returned questionnaires were 402, a valid return rate of 79.6%.

Reliability, Validity, and Research Tools

The basic capabilities of student resources nurtured by academic teachers acceptable to the industry refer to a good work attitude, personality traits and a high resistance to stress and so on. The industry required professional capabilities of student resources refer to the field of expertise, a high degree of professional knowledge accomplishment, systematic practical skills, a high degree of problem-solving ability, etc., so that one can effectively perform the tasks entrusted by the industry. According to the above, to comply with the industry required professional capabilities of student resources, there should be a set of methodical professional learning models, and a clearly defined focus on professional training and educational content. If the student resources have the four attributes of employment core competence, then when the industry requirement of student resources shows a specific preference, the student resources can bring sustainable competitive advantages to the industry. These are the basis for the questionnaire suggested by scholars. Using Likert five-point scale, test subjects, as the employees, check one of the five answers: "strongly agree", "agree", "no comments", "disagree", "strongly disagree", scoring 5 ~1 point respectively. The KMO (Kaiser-Meyer-Olkin Measure of Sampling Adequacy) value of this study was .668, and Bartlett's Test of Sphericity $\chi 2$ value was 343.347. This study met content validity based on the overall Eigenvalue was greater than 1, and Cronbach's α reliability coefficient was 0.779. Therefore, this research questionnaire suggested and met a reliability factor.

Using a factor analysis to test the two factors of professional and basic capabilities, the cumulative explanatory variance was 51.469%. This study utilizes Haman's One-factor test to see if two or more dimensions have single source. By using Common Method Variance (CMV) for the basic and professional capabilities of industry and academic human resources of the core competence under industry-school exchange under the Eigenvalue over 1.00 and the value of cumulative explanatory variance at 51.469% (Podsakoff and Organ, 1986), the first factor to the explanatory variance is 34.321% (less than 50%). Therefore, this research suggests that the single source bias does not affect the conclusion of regression analysis.

RESULTS

Multi-Hierarchical Regression Analysis

Table 1 showed all the correlations. Table 2 Model 1 showed industry's basic capability of human resource requirement has positive effect on dependant variables (β =. 547, P <.01). The explanatory variable of this model was 34.321% and F value was 32.457 (R^2 =. 299, F = 32457, P <.01). In model 2, the industry required basic capabilities of human resource core competence positively influences on dependent variables (β =. 454, P <.01). The industry required professional capabilities of human resource employment competitiveness positively influences on dependent variables (β =. 467, P <.01), in the meantime, the explanatory variable of this model was 51.469% and F value was 23.521 (R^2 =. 467, F = 23.521, P <.01), and this model has no collinearity concerns (VIF <10). Based on these analyses, therefore, both hypotheses, H1a and H1b, are established.

Table 1: Correlations

	M.	S.D.	1	2	3	4	5	6	7	8	9	10
1.	3.363	.410	1									
2.	3.424	.447	.574**	1								
3.	3.417	.482	.440**	.341**	1							
4.	3.368	.453	.231*	.277**	.525**	1						
5.	3.654	.515	.140	.368**	.392**	.341**	1					
6.	3.922	.484	.251*	.218*	.453**	.396**	.566**	1				
7.	3.615	.353	.033	.170	.159	.379**	.501**	.217*	1			
8.	3.552	.409	.183	.292**	.075	.411**	.056	.052	.323**	1		
9.	3.664	.430	.017	.348**	.095	.306**	.100	.054	.225*	.591**	1	
10.	3.181	.529	.310**	.331**	.121	.243*	.139	.039	.242**	.357**	.189	1

** p<0.01 (two-tailed); * p<0.05 (two-tailed); 1. Problem Solving; 2. Service Leadership; 3. Language Expression 4. Information Application; 5. Professional Knowledge; 6. Practical Skills; 7. Innovation Integration; 8. Inter-communication; 9. Teamwork; 10. Humanity Care

CONCLUSIONS AND RECOMMENDATIONS

Under industry-school cooperation, academic teachers cultivate student resources, producing basic and professional competitiveness, and reflecting on innovation ability. Academic teachers when providing student resource competitiveness, allow students the learning capability to contribute in the industry's organization learning. Industry teachers give special topic lectures or lessons, providing academic field the practical experience capability, fulfilling industry-school cooperation mutual benefit. Academia provides professionalization to meet the industry's professional requirement, while industry provides practical experience to the academia in order to enhance academic research capacity. As resulted, the students can have employment as its reflection into the suitability of the supply-demand human resources since the core competence of human resources should include the innovation ability, learning ability, and practical experience capability with the overall views of industry-school coordination and three-party cooperation as academic teachers, students, and industry managers.

Table 2: Multi-Hierarchical Regression Analysis

	Model 1	Model 2	VIF
Model 1：Human resource requirement			
Basic capability requirement (H1a)	.547**	.350**	1.000
Model 2： Human resource requirement			
Professional capability requirement (H1b)		.454**	1.231
R^2	.299**	.467**	
F	32.457	23.521	

*** p< .01 (two-tailed), * p< .05 (two-tailed)*

New Findings

Our new significant finding shows that the industry's demand for both professional capability and basic capability of student resources fits human resource core competence under the industry-school cooperation. In other words, the student resources nurtured by the teachers in the academic field can properly supply the basic and professional capabilities that industry required of student resources. The core competence under the industry-school cooperation can enhance the basic and professional competitiveness of student resources nurtured by academic teachers, and then these two capabilities can meet the capability competitiveness that industry required of student resources.

The basic and professional capabilities that industry required of student resources fit the core competence under industry-school cooperation (β= .350, .454; R2= .467; VIF=1.231; $p < .01$; respectively). Industry's human resource demand of the labor market is gradually changeable, beginning to show a specific preference. Academic teachers, while nurturing the basic and professional capabilities that industry required of student resources, are expecting the cultivated student can fit the industry's human resource requirement, producing student employment competitiveness that reflects on the student employment rate. This shows that when the industry is seeking student resources, the student resources nurtured by academic teachers can provide timely supply to the industry's requirement of the basic and professional capabilities. The statistical returns indicate that the β value of the professional capabilities of student resource required by the industry is higher than the required basic capabilities, which means the required professional capabilities is more important to the core competence under the industry-school exchange.

Academic Contributions

Earlier literatures regarding resource-based theory only cover the impact of resource-enterprise interaction. This research intends to explore the employment and its core competence on subjects of the academic field (teachers and students) as well as the industry (firms) managers. Based on the current teaching plans under industry-school cooperation are Sandwich Plan, Topping Plan and the Last Mile, while both teachers practice trade in the industry as well as industry managers give lectures on special empirical topics to academic students, through such processes, academic student can obtain the basic and professional competitiveness in order to fulfill the industry requirement of human resources. When an industry's labor preferences begin to change, these two capabilities can help enhance students' employment competitiveness.

The core competence under the industry-school cooperation can include: innovation ability, learning ability and practical experience capability. When cultivating student resources, academic teachers can consider the these two capabilities that industry required of the student resources; at the same time, when there is a demand for student resources, the industry seeks the basic and professional competitiveness of student resources nurtured by teachers in the academic field. When the academic teachers practice trade in the industry, the industry professionals can provide special topic lectures and teachings to the academics to cultivate student resource competitiveness, so that academic teachers and industry professionals can nurture student resources on the industry-school cooperation platform and share benefits from the supply and demand of student resources.

CONCLUSIONS

The 21st century has been hailed as a time of tremendous change in the world of work. Given the accelerated rate and complexity of changes in the workplace, it is not surprising that there are a large empirical practices and growing literatures on the causes, consequences, and strategies of organizational change. For example, a global financial crisis was following by the "sub-prime mortgage" of the United States in September 2008. While at the time, Lehman Brothers was declared bankrupt, and thus the United States Government took over Fannie Mae and Freddie Mac. The major mortgage firms, investment banks, and insurance group in the United States have deteriorated seriously. The financial crisis finally spread out the whole world quickly from the United States to Iceland, Dubai and Greece. Along with this, the phenomena of economic unrest truly reacted on the employment market of Taiwan. The unemployment rate in the 1st and 2nd half of 2008 and 2009 were 3.87%, 4.42%, 5.73%, and 5.85%, respectively. While the supply conditions of the employees were fixed in the Taiwanese employment market, the raising unemployment rate presented

the change need of human resource utilization toward firms' productivity. Based on the evens already cited, this research conducts resource-based theory (RBT) as a viewpoint with multiple hierarchical regression (MHR) to expand the new findings by: when a student's competence trained by the both particular programs of academic professional and basic programs, we suggest that the student enables in raising the employment rate. The rationale reason could be: when we consider the component of core competence as creative force, learning ability, and practical experience, the processes of the academic particular programs and the college-firm collaboration can help enhance the student from a labor force to human resource, increasing an employment rate based on a better contribution to firms.

Research Limitation and Future Research Recommendations

This research theory is based on the research premises that include: 1) the sampling subjects (academic teachers and students and industry managers) have performed the industry-school cooperation; 2) the core competence is defined as being under industry-school cooperation, including innovation ability, learning ability, and practical experience capability, and, by a concrete measurement, should include academic teachers and students and industry managers, the three-party sample structure; and 3) all test subjects understand every items listed on the questionnaire and the answering method. This research, based on the resource-based theory, explores the suitability of academic student resource supply and industry student resource demand with the human resource core competence under the industry-school cooperation. Therefore, the theory (among the relationship of the dependent and independent variables) of core competence under the industry-school cooperation is established on the consistent statistic significance.

Although the number of the research subjects cannot be increased or expanded, and the duration of the sampling cannot be lengthened in order to enhance the sampling timelessness, and environmental change factors, the above situation impacts the validity of this theory establishment. However, according to the above-mentioned hypothesis, this research is still quite acceptable. Therefore, even though this research has limitations as previously described, the research theory is still acceptable. As described, the future research may include social economic condition into the research of the core competence under industry-school cooperation, so that the relationship between the supply of the academic student resources and the demand of the industry student resources can be clarified.

REFERENCES

Acedo, F.J., Barroso, C., and Galan, J.L. (2006). "The Resource-based Theory: Dissemination and Main trends", *Strategic Management Journal*, 27(7): 621-636.

Barney, J. (1991). "Firm resources and sustained competitive advantage", *Journal of Management,* 17(1), 99-120.

Barney, J.B., Wright, M., and Ketchen, D. J. (2001). "The resource - based view of the firm ten years after 1991", *Journal of Management*, 27(6): 625-641.

Chandler, A.D. (1990). *Scale and Scope: The Dynamics of Industrial Capitalism*. Cambridge: Harvard University Press.

Collis, D. and Montgomery, C.A. (1995), "Competing on resources: strategy in the 1990s," *Harvard Business Review*, 73(5): 118-128.

Dierickx, I. and Cool, K. (1889). "Asset stock accumulation and sustainability of competitive advantage", Management Sciences, 35(12): 1504-1511.

Diamond P.A., Mortensen, D. T., and Pissarides, C.A. (2010). *The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2010 "for their Analysis of Markets with Search Frictions."* (The Official Website of the Nobel Prize of Nobelprize.org at http://nobelprize.org/)

Fiol, C (1991). "Managing culture as a competitive resource: an identity-based view of sustainable competitive advantage", *Strategic Management Journal* 17(1): 191-211.

Hamel, G. and Prahalad, C.K. (1996). *Competing for the Future*, (Translated by Shuxin Gu), Taipei: Triumph Publishing Co.

Hitt, M.A., Ireland, R.D. and Hoskisson, R.E. (2007). *Strategic Management: Competitiveness and Globalization (7th Edition)*, Cincinnati: South-Western / Thomson Learning.

Knott, A.M. (2003). "The organizational routines factor market paradox", *Strategic Management*, 23(11): 1033-1050.

Leonard-Barton, D. (1992). "Core capabilities and core rigidities: a paradox in managing new product development", *Strategic Management Journal*, 13(S1): 111-125.

Lippman, S. and Rumelt, R. (1982). "Uncertain imitability: an analysis of interfirm differences in efficiency under competition", *Bell Journal of Economics*, 13(2): 418-438.

Long C., and Koch, M.(1994). "Using core capabilities to create competitive Advantage", *Organizational Dynamics*, 3(1): 7-22.

Mahoney, J.T. and Pandian, J.R. (1992). "The resource-based view within the conversation of strategic management", *Strategic Management Journal*, 13(5): 363-380.

Podsakoff, P. M. and Organ, D. W. (1986), "Self-reports in Organizational Research:Problems and Prospects.", Journal of Management, 12(4): 531-544.

Powell, T.C., and Dent-Micallef, A. (1997). "Information technology as competitive advantage: the role of human business and technology resources", *Strategic Management Journal*, 18(5): 375-405.

Ravichandran, T. and Lertwongsatien, C. (2005). 'Effect of information system resources and capabilities on firm performance: a resource-based perspective', *Journal of Management Information Systems*, 21(4): 237.

Sabourin, V. and Pinsonneault, I, (1997). "Strategic formation of competitive high technology clusters", *International Journal of Technology Management*, 13(2):165-178.

Selznick, P. (1957). *Leadership in administration: a brief overview of themes and contributions. Harper and Row.* London: Oxford University Press.

Song, M., Droge, C., Hanvanich, S., and Calantone, R. (2005). "Marketing and technology resource complementarity: an analysis of their interaction effect in two environmental contexts", *Strategic Management Journal*, 26(3): 259–276.

Tampoe, M. (1994), "Exploiting the core competence of your organization", *Long Range Planning*, 27(4), 66-77.

Appendix 1. Factor Analysis Table of Basic and Professional Capabilities of Student Resources Required by the Industry

Basic capabilities of student resources required by the industry (Scale: 1 = strongly disagree, 5 = strongly agree; factor loadings: .489 - .807; industry executives rating)

1. When an employee is able to respect, care for others and cherish their own values, and to understand teamwork and co-operation, then the employee has the humanity care attribute of the four attributes of core competence.
2. When an employee is able to solve problems with systematic thinking logic, and has sensitive and flexible insights and organization capabilities, then the employee has the innovation integration attribute of the four attributes of core competence.
3. When an employee is able to analyze problems through professional learning, and to learn inter-personal communication from the ground up and has conflict management ability, then the employee has the inter-personal communication attribute of the four attributes of core competence.
4. When an employee is able to establish a good relationship with partners, working for the common goals, following the organization system and disciplines, then the employee has teamwork attribute of the four attributes of core competence.

Professional capabilities of student resources required by the industry (Scale: 1 = strongly disagree, 5 = strongly agree; factor loadings: .434 - .854; industry executives rating)

1. When an employee is able to utilize existing knowledge, experience and skills, and can solve problems through a variety of thinking and action, then the employee has problem-solving attribute of the four attributes of core competence.
2. When an employee is able to learn active service leadership with humility, have the self-leadership ability to work independently, then the employee has service leadership attribute of the four attributes of core competence.
3. When an employee is able to use multiple foreign languages, and to exhibit the understanding of foreign affairs and learn multiple cultures, then the employee has language expression attribute of the four attributes of core competence.
4. When an employee is able to use IT tool to assist and complete work requirement of the job responsibility, simplifying operation procedure, then the employee has information application attribute of the four attributes of core competence.
5. When an employee is able to use professional skills and work ability to obtain advantages in the professional expertise, then the employee has the professional knowledge attribute of the four attributes of core competence.
6. When an employee is capable of integrating and understanding theory and practice, then the employee has the practical skill attribute of the four attributes of core competence.

Overall $\alpha = .779$; Cumulative Explanatory Variance (%) = 51.469; KMO =. 668; Bartlett $\chi 2 = 343.347$, $p < .01$ (2-tailed); Overall Eigenvalue > 1; The Four Attributes of Core Competence are: Value, Rarity, Inimitability, and Non-Substitutability.