



Received: 21 April 2015
Accepted: 02 June 2015
Published: 13 July 2015

*Corresponding author: Miao Zhang,
Faculty of Business and Law, Kingston
University, Kingston Hill, Surrey, London
KT2 7LB, UK
E-mail: Miao.Zhang@kingston.ac.uk

Reviewing editor:
Tahir Nisar, University of Southampton,
UK

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MANAGEMENT | RESEARCH ARTICLE

An integrative model for measuring graduates' employability skills—A study in China

Wenping Su¹ and Miao Zhang^{2*}

Abstract: Employability is a key issue in graduates' job-hunting, but little research has been done on that of the graduates in Chinese universities. These universities have been experiencing a decline in their graduate employment since the past decade. This paper attempts to tackle this issue. It reviews the relevant research on employability and develops a research-based theoretical framework to evaluate and analyze the graduates' employability in China. It adopts multiple approaches to establish the skills that will enhance university students' employability. Investigating around 100 employers and 200 undergraduates from the universities in Beijing, the paper explores the characteristics of and factors influencing the graduates' employability. Subsequently, it proposes a qualitative model to measure graduates' employability. Based on the findings, it discusses the theoretical and practical implications and provides advice for Chinese graduates to improve their employability.

Subjects: Chinese Studies; Higher Education; Human Resource Development

Keywords: graduates; employment; employability; measurement; China

1. Introduction

With a global shortage of skilled workers, governments around the world are concerned that higher education makes the greatest possible contribution to “human capital,” the quality of which is believed to be crucial to national well-being (Yorke & Knight, 2007). It has traditionally and shallowly been

ABOUT THE AUTHORS

Su's main research interests focus upon career development and HRM. She has been working in career education with university students in China since 2005 and has developed a model to develop the university graduates' employability in China. She has published a series of papers and two textbooks in the field.

Miao's main research interests are related to Human Resource Management and Developing Countries with a focus on China. She has published several papers in journals and books, such as *International Journal of Human Resource Management* and *International Labour Review*. She is also a reviewer for various journals, e.g. *Human Resource Management (USA)*, *Journal of World Business*, and *International Journal of Human Resource Management*.

PUBLIC INTEREST STATEMENT

Graduates' employability is one of the key factors which influences a graduate to obtain a satisfying job. This paper develops a research theoretical framework to evaluate and analyze the graduates' employability in China. It adopts multiple approaches to establish the skills which will enhance the graduates' employability in their job-hunting. The characteristics of the graduates' employability and factors influencing their employability are presented in this paper. A qualitative model to measure graduates' employability has also been proposed. The research will benefit who are doing business or intend to recruit graduates in China to understand Chinese labor market, in general, and graduate employability, in particular. It will be also helpful for those graduates either from China or overseas who want to gain a job in China to understand what skills and competencies would be needed in China.

regarded that a remarkably outstanding cumulative grade point average (CGPA) obtained by graduates through laboriousness in a university has been a passport to seek for qualification suited, if not highly rewarded employment (Wye, 2009). However, the more the people enter higher education, the more the graduates including those with high CGPA confront difficulties while finding a job. Therefore, it calls the researchers to look at the graduates' employability.

Since China is the biggest developing country in the world and the number of graduates in China is more than 25% of global graduates in recent years (Ren, Zhu, & Warner, 2011), the research will contribute to the world by helping to promote the graduates' employability in China. It has been well known that China began to implement "Open-Door" and Reform policies since the very beginning of 1980s. During the past three decades, China's labor market has become open gradually. As more and more international companies operated in China, the Western human resource management has influenced Chinese organizations and employees (Li & Zhang, 2010). Since "Open-Door" and Reform policies were implemented, higher education has developed rapidly. However, the quality and quantity of the graduates' employment have been declining continuously since 2003. While the universities have kept expanding year by year, both job satisfaction and the average salary of graduates have declined (Liang, 2009). The issue of graduate employability has started to draw attention in China since 2005, as more than one million graduates did not find a suitable job by the end of September. As China's Ministry of Education reported, the number of unemployed university students has increased to more than a million each year since 2005 (Bian, 2010). This phenomenon could be attributed to various factors. However, at the individual level, graduates' employment is related to their own employability skills. For example, Min, Ding, Wen, and Yues' report (2006) indicated that Chinese graduates who confronted job-searching problems were related to their own weakness on employability skills. Therefore, how to improve the graduates' employability becomes an important issue for higher education. This paper attempts to explore the employability skills of graduates in order to help the graduates find a suitable job. The result may help not only graduates to understand the employability skills they need but also universities to improve their educational system and the teaching approaches.

2. Employability and graduate employability

Employability is a concept widely adopted by the Western researchers though its definition varies. This concept appeared in the middle of 1950s, while the empirical studies had not started until 1990s (O'Neil, Allred, & Baker, 1997). The initial employability emphasizes the intriguing individual's human capital and the ability of social capital around. It can be measured through potential, or obtained human capital, or one's social human network and quality. Since then, the research on employability has focused on individual level. Meanwhile, the possibility of that individual working and being promoted by seniority within one organization for the whole life has declined (Marilyn, 2008). The research on employability has extended to all types of employment rather than just unemployment. Governments, higher education departments, and industrial organizations all have the responsibility to promote employability skills (Tasker & Packham, 1994).

The research on employability in this period was focused on the several factors which affects employability, such as labor economics (Hasluck, 2001), public policies on employment (Ernst Kossek, Huber, & Lerner, 2003), social benefit system (Bowen, Desimone, & McKay, 1995), applicants' performance during their interview (Hazer & Jacobson, 2003), competency (Heijde & Van Der Heijden, 2006), and self-cognition (Rothwell & Arnold, 2007). The definitions on employability have been developed based on these studies, in which, it has been accepted widely that employability is "the ability to realize potential through sustainable employment" (Hillage & Pollard, 1998). The similar one is to define employability as "necessary skills or skills needed for employment" or "employability skills" (O'Neil et al., 1997). Hind and Moss (2011) explained this concept further and defined that Employability skills are a set of social behaviors and skills that people can learn to interact and work with other people in a variety of different situations and will help them with their career development. These social behaviors and skills are personal to the individual, although they do not necessarily come naturally. Once mastered, these skills can be applied in a variety of different situations and hence are transferable. Furthermore, Nabi (2003) points out that graduates' employability largely refers to graduates' possession of certain

skills and attitudes, as well as their ability to utilize them for job search and retention. Graduates whose skills and attitudes are highly valued by employers would definitely succeed in paving their way into the labor market. The scholars from the UK have done a great deal of studies on graduates' employability. They regard employability as a set of achievement skills, understandings, and personal attributes—that make graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workplace, the community, and the economy (Yorke, 2004). This definition has been accepted widely in the research.

One of main issues in the research on graduates' employability is how to measure employability. Hillage and Pollard (1998) argued that employability should be comprised of three parts: (1) development, including career management ability, obtaining knowledge ability, and strategic methods; (2) expression, showing employability assets to the labor market in an acceptable way; and (3) adaptation, individuals' ability to adapt to labor market environment and to practice their employable capacity. According to the research, from Enhancing Student Employability Co-ordination Team (ESECT), graduates' employability includes 37 attributes and skills belonging to personal quality, key skills, creativity, and handling skills which are required by employers (Knight & Yorke, 2004). Based on a survey with the employers in the UK, there are four elements of employability expected by employers: understanding, skills, efficacy beliefs, and meta-cognition (Yorke, 2004). The American Society for Training & Development divides employability into 5 types and 16 skills: basic competencies (reading, coordination, and calculation), communication skills (speaking and listening comprehension), adaptive ability (to solve problem and innovative thinking), organizational effect (interpersonal skills, teamwork, and coordination ability), and influential ability (understanding in-house style and share leadership) (Brown & Drew, 2005). Later on, the Secretary's Commission on Achieving Necessary Skills defines 36 abilities, including basic skills, thinking ability, and individual personality.

However, the research on measuring the graduates' employability so far considers different stakeholders' influences separately. These include the perspectives of employers (Heijde & Van Der Heijden, 2006), universities (Camps & Torres, 2011), and graduates (Rahmat, Ahmad, Idris, & Zainal, 2012; Yusof, Mustapha, Mohamad, & Bunian, 2012) or employees (Reamdonck, Tillema, de Grip, Valcke, & Segers, 2011). It has been noted that a few studies attempted to combine the opinions from both employees and their supervisors (e.g. Heijden & Bakker, 2011), but there is limited research to have addressed this issue by considering all different stakeholders' expectations, e.g. employers, universities, and graduates/employees. In fact, all these parties contribute to the construction of graduates' employability.

This paper adopts the definition that employability skills refer to such cognitive abilities as learning to learn, analytical and problem solving, innovative, and communication skills (Bikson, 1994; Bikson & Law, 1995) since it has been found that these are the employability skills required by employers, and universities need to train students on having these skills (Su & Wu, 2006). These skills make learning new applications possible when these applications are becoming increasingly needed, and this validates the fact that "Graduate Attributes" are more important than the degree subject studies (Harvey, 2000). Therefore, to integrate employability into the curriculum of every discipline would mean to equip students with critical skills by the time they graduate (Fallows & Steven, 2000). It is widely agreed that graduates' employability means the degree to which students have a robust sense of self-efficacy and the degree to which students provide experiences that are associated with making strong claims to being employable in graduate jobs (Yorke & Knight, 2007). This is different from Occupational Skills which are related to many other factors such as economic conditions, discrimination in the labor market, and so on.

As to the content of employability, some researchers propose to divide graduates' employability into two aspects: intelligence and non-intelligence (Zheng, 2005). Others argue that employability is the ability for occupying certain jobs and it should include both basic abilities and special abilities (Hu & Zhang, 2006). Some scholars indicate that graduates' employability is the ability obtained from their study and practice in the university and the key elements of employability should include

responsibility, skills of hunting and obtaining a job, ability to deduce and solve problems, health and safety usage, personalities, and so on (e.g. Zhong, 2005). Overall, the researchers emphasize that employability is the comprehensive, career-related ability and it is a group of competencies including abilities, skills, attitude, personality, and psychological endurance (Hu & Zhang, 2006).

Based on the arguments discussed above, our study defines employability skills as comprehensive abilities determining graduates to be employed. The aim of this study is to develop the indicators by which graduates' employability can be measured. The samples we selected were that graduates who studied Economics and Management or Art and Literature in two Chinese universities since the students from these majors are more typical of using comprehensive skills compared to those who studied other majors such as engineering and medical science, etc. In order to understand fully what should be included in the employability skills they need, we not only investigated the views of employers, but also those of universities and graduates in order to compare their similarities and differences in the definition of employability skills.

3. Research methods

We started with taking the employers' recruitment criteria as the benchmark of the graduates' employability skills, and then referred to the perspectives of the universities and the graduates. As there were no clear indicators on the graduates' employability from their employers in China, the objective of the study is to set up the indicators, by which universities can educate and train the students in their studies. To make the indicators easy to use, we have developed a competency model according to the employers' criteria on graduate recruitment, referring to ESECT's achievements (Knight & Yorke, 2004). Due to the diversity of employees, the model could be rather complicated. Therefore, our study decided to focus on graduates who studied Economics and Management and Art and Literature, which we argued that would need more comprehensive and general skills than others.

3.1. Design, pretest, and revision of scale and questionnaire

Before the primary data collection, we developed a list of abilities from the literature review to frame the competency model first. We then focused on developing the indicators from the collected information through questionnaires. Delphi was used to build up employability indicators after sorting data. Employability indicators are the base of measuring the employability.

Although there were various enterprises' competency models applied by HR in graduate recruitment, there was not a common model by which different organizations could evaluate a graduate competency, even within a subject. Therefore, the first task of our study was to set up the indicators which can measure the common graduate competency. The primary indicators were obtained from the interviews with both career experts and HR managers. This was because they dealt with various employers and companies and had more close experience on the general skills which are needed by different companies. Together, we interviewed 12 people including 3 career experts who have been teaching and doing research on career education for more than 5 years, 3 career tutors who have worked in Career Office in a university and been familiar with both the graduates and employers, and 6 experienced HR/recruitment managers with over 8-year experience for graduates' employers. After three rounds of in-depth interviews and data analyses, the indicators were emerged and defined as 5 first-class indices and 20 second-class indices (see Table 1 for the details).

To test the validity of the model, we developed a questionnaire based on these indicators and distributed the questionnaires to 100 employers who recruited graduates from School of Economics & Management of Beihang University. The results of the pretest were analyzed by principal components. We finally obtained 5 first-class indicators as the factors by referring to the Scree Plot and factors cumulative explain rate. The norms of keeping an item are:

- (1) The factor of the item's loading value is greater than or equal to 0.50.

Table 1. Indicator list of E&M graduates' employability

Indicators	Items				
	First-level indicators	Personal attribute	Professional ability	Communication and interpersonal ability	Practice experiences and ability of solving problems
Second-level indicators	Psychological competency	Professional knowledge	Oral communication	Practice experience	Initiative
	Attractive appearance	Solve professional problems	Interpersonal skills	Internship experience	Sense of responsibility
	Morals quality	Related professional certification	Understand others	Ability to find solutions	Faith
	—	—	Teamwork	—	—

(2) The item is not cross-loaded. There is not an item whose loading value is greater than 0.40 on two factors.

Eventually, we collected five kinds of factors through several attempts. The factors cumulative variance explanatory contribution rate is 69.864%. Each item has a high loading value on corresponding factor, ranging from 0.479 to 0.903.

According to the results of factor analysis, 16 factors, including sense of responsibility and initiative, explain 69.864% of population variance. Four second-class indicators, including value of gender, works well under pressure, hobbies, and university reputation, are not high enough to be distinguished, so the four indicators were discarded.

3.2. Measurement and analysis of graduates' employability

3.2.1. Sample selection and distribution

We selected about 300 employers who have recruited the graduates in E&M in the past three years from job fairs on campus from Beihang University (whose graduates in E&M have science or engineering background) and Beijing Normal University (whose graduates in E&M have art/literature background) in 2009. The specific distribution of employer's business nature and industry data are demonstrated in the following charts (Figure 1).

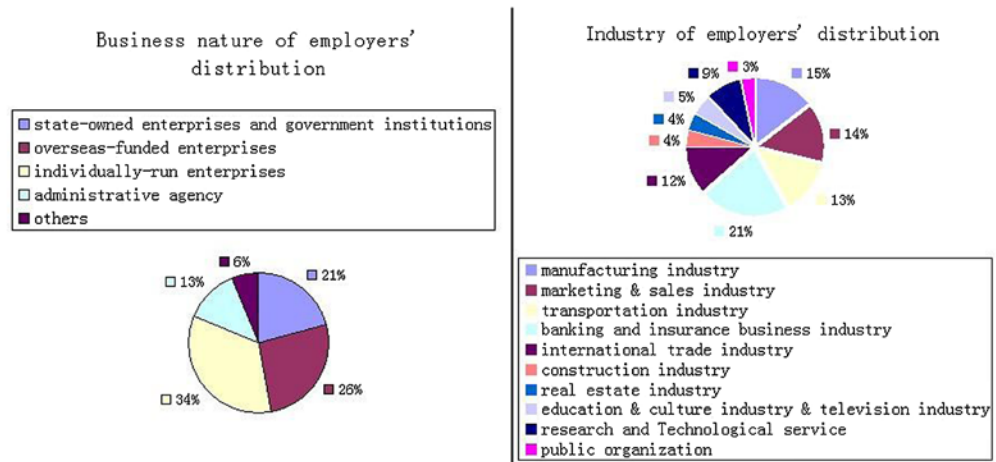
3.2.2. Questionnaire of reliability and validity

Internal consistency, reliability, and split-half reliability were used to test the study's reliability. The results of confirmatory factor analysis (CFA) divided the factors. Internal consistency reliability applies Cronbach α coefficients. Internal consistency reliability (0.744) and split-half reliability (0.586) of the questionnaire are quite high. Only minority items do not come up to 0.60—such as professional ability. Fewer indicators in the dimension are the possible explanation for low value. Therefore, each dimension's reliability can satisfy 0.50 on the background of complex situation, which means the reliability of the questionnaire meets the requirements.

Before we sent the questionnaire out, we invited the recruiters from enterprises to comment on the content and rationality of items. Then, we modified the questionnaire based on their suggestions to ensure content validity. Correlation of all indicators and dimensions is significant at 0.01. All of these ensure and show the reliable content validity. KMO sample adequacy measure and Bartlett ball test in SPSS16.0 show good construct validity. Bartlett ball test of factor analysis is 949.968, sig P is 0.000, and KMO is 0.789.

Besides, we tested the correlation between factors and indicators through correlation coefficient matrix and CFA. As a result, the correlation between items and dimension is significant on 0.01, except

Figure 1. Chart 1 and 2 employers' business nature and industry distribution.



factor 5 and indicator of attractive appearance is significant on 0.05. Consequently, all of this ensures and shows the reliable content validity.

3.2.3. Factor evaluation

Through principal components analysis (PCA) and Vari MAX rotation, we found five factors with eigenvalue greater than 1. The factor accumulation explained 63.394% as the total variance. From Table 2, factor loading values were rearranged after factor rotation. Meanwhile, common factor explained most of the variation because only 1 item's commonality is below 0.5.

The study arranged the evaluation of the employers to graduates' ability and competency according to factors' explanation ability. The order is from the strong to the weak: career motivation, communication and interpersonal abilities, professional abilities, practice experiences and ability of solving problems, and personal attributes. The combination of professional abilities and general abilities is the most important dimension of graduates' employability. However, the graduates in E&M cannot employ their human capital to complete task if they did not have an opportunity to be employed. If the graduates only have general abilities (lack of professional skills), the abilities will be meaningless.

3.3. Comparison of evaluation consistency from employers and graduates

To compare the evaluation to graduates' employability from employers with that from graduates, we compiled self-evaluation questionnaire of graduates' employability, based on the scale. We selected 150 graduates from SEM, Beihang University (BUAA) and 50 from Management School, Beijing Normal University (BNU) as subjects. Finally, 192 questionnaires were collected and 187 were valid.

From Table 3, the major differences between the employers and the graduates lie in understanding others' intention and professional knowledge, which means the graduates underestimated the importance of the professional knowledge on some extent. In another indicator, understanding others' intention may be not considered by the graduates as essential as what employers thought. The reason may be that employers are satisfied with the graduates' understanding to their tasks.

The items for most unimportant factors in employability are same, just in a different order. The three factors are interpersonal skills, finding solution ability, and psychological competency.

3.4. Evaluation of the graduates' employability

Communication and interpersonal ability, practice experiences and ability of solving problems, and personal attributes are above average of all employability dimensions, through analyzing the data and comparing the mean of employability in every indicator. The explain capacity of the five factors are 2.62, 1.35,

Table 2. Rotation factor loading matrix

Items	Factor loading					Similarity
	1	2	3	4	5	
Initiative	0.83					0.75
Sense of responsibility	0.69					0.71
Faith	0.57					0.54
Oral communications		0.75				0.65
Understand others		0.62				0.57
Interpersonal skills		0.54				0.40
Teamwork		0.47				0.56
Professional knowledge			0.87			0.73
Related professional certification			0.79			0.64
Solve professional problems			0.72			0.84
Practice experience				0.76		0.62
Ability to find solutions				0.72		0.64
Internship experience				0.63		0.52
Attractive appearance					0.82	0.77
Psychological competency					0.74	0.65
Morals quality					0.68	0.55
Eigen value	2.72	2.16	2.07	1.67	1.53	
Cumulative variance contribution rate (%)	16.98	30.49	43.43	53.87	63.40	

2.36, 3.70, and 1.65, corresponding to communication, attitude, practice, personal attribute, and major. The average of total capacity is 2.33.

The gap reflects in personal attributes significantly. Psychological competency and appearance discrimination may be one of the explanations. The graduates' moral quality is another reason why there is a gap between employers and students. However, we still found that the career attitude and professional ability in BUAA are better than average, which reflect the reality of how the students have been educated in Chinese universities.

4. Discussion and conclusions

In this study, we proposed a competency model for measuring employability of graduates. This model includes five key competencies based on the indicators of graduates' employability, which were found through the data analysis. Each core competency has its own specific behavior elements and indicators and we discuss each of them in turn.

4.1. Practical experience and ability to solve problems

The behaviors are related to perform a task and show the ability that people take actions to achieve a goal and complete a task. The traits include result orientation, new knowledge application, good communication, information literacy, full concerns, comprehension by analogy, and crisis response. These are the key elements of the behaviors. Since the universities in China were focused on theoretical disciplines rather than applying theories into practice, most graduates were weak in dealing the practical issues (Su, 2005; Su, Zhang, Zhou, & Qu, 2011).

4.2. Professional competency

This is related to the ability to perform a professional job. The key behavior essences are the ability to understand the goal, to make an analysis and a judgment, as well as strategic planning. Most graduates have also been found relatively weak in this aspect because they were not trained enough in universities (Su, 2009; Su et al., 2011).

Table 3. Evaluation table for employability from employers and graduates

Order	Employability indicators selected by employers	Score	Employability indicators selected by graduates	Score
1	Sense of responsibility	1.42	Teamwork	1.50
2	Teamwork	1.46	Initiative	1.55
3	Professional knowledge	1.50	Sense of responsibility	1.60
4	Morals quality	1.51	Solve professional problems	1.61
5	Initiative	1.52	Understand others rightly	1.65
6	Solve professional problems	1.60	Morals quality	1.66
7	Oral communications	1.62	Practice experience	1.68
8	Attractive appearance	1.70	Professional knowledge	1.72
9	Internship experience	1.73	Faith	1.77
10	Understanding others' intention	2.00	Attractive appearance	1.84
11	Practice experience	2.14	Oral communications	1.86
12	Related professional certification	2.19	Internship experience	1.86
13	Faith	2.19	Related professional certification	1.91
14	Interpersonal skills	2.73	Find solution ability	2.14
15	Ability to find solutions	2.74	Interpersonal skills	2.86
16	Psychological competency	3.07	Psychological competency	3.17

4.3. Communication and personal relationship

This means the ability of team work. It emphasizes to understand or handle emotional issues and work relationships. The key behavior essences are to work independently, being flexible, and taking leadership in team work. As most graduates are the only child in their family, due to “One-Child” policy in China, it has been found that the most of them have difficulties in collaboration and communication. This was also found related to a large size class teaching in Chinese universities these years. The students rarely have an opportunity to develop these skills (Su et al., 2011).

4.4. Personality in the working process

Several important personal qualities were found in our study. The key behavior essences are self-confidence, sense of responsibility, ability of bearing pressure, and ability of resisting frustration. The study conducted by Hou (2012) shows that most of the university students born in 1980s (the only child in their families) are weak in sense of responsibility, the ability of bearing pressure, and resisting frustration, which could explain the lower evaluation of the graduates by their employers in our study.

4.5. Working attitude

A series of traits are related to take initiative, mobilize the initiative, cultivate awareness on every aspect, and find solution by oneself. It is a comprehensive ability of surpassing instinct and developing gradually. Many of the graduates in China have been also found to be reluctant to take an initiative to find a job. Most of them are not very anxious if they could not find a job when they had graduated as most of their parents are willing to support them until they have found a job.

5. Recommendations to improve graduates' employability in Chinese universities

Based on the detailed data we collected, we have developed a competency model for employability of graduates. According to the questionnaires as well as the interviews with graduates' employers, they inspect the applicants by five aspects—personal attribute, professional ability, communication and interpersonal ability, practice experiences and ability of solving problems, and career attitude.

These are quite similar to the research from ESECT (attributes and skills belonging to personal quality, key skills, creativity, and handling skills). The second-level indicators in this research are similar to the 37 attributes and skills from ESECT. This is not surprising. With globalization, more and more employers in China have adopted the management experience from their counterparts in western countries. On campus, the advertisements such as “How to Get Offers from 500 Top Globally?” are quite popular during graduation season. According to our interviews with the HR managers from private enterprises and even the state-Owned enterprises, they prefer to refer the recruitment evaluation criteria of Top 500 since they present high quality for modern management. As a result, the requirements of the employers from the graduates in China are similar to those in western countries. However, there are still some differences. This is perhaps explained by the remaining difference of the social context and the characteristics of the selected samples. For example, creativity is highly stressed in the UK, while most employers in China may not think of it to be as important as other traits such as integrity, responsibility, and common skills.

We hope that the research would arouse the universities in China to revise their education concept and modify the teaching methods according to our employability model, and eventually, the universities can impart more employability-based education to help graduates match the requirements from their employers better. As a result, the employers can recruit qualified graduates from universities. The graduates’ difficulties in employment can be solved accordingly. We also think that the research methods we used and the model we developed could be referred by the researchers in other countries.

We have recognized that there are some limitations in this study. For example, the samples were selected from only two universities, and the selected universities were only from the top universities and most of their students were quite distinguished when compared to those from ordinary universities. On the one hand, the samples could show the trends of employability because even the students from the top universities cannot match the employers’ requirement, which means the universities have to deal with this issue and improve their education to provide qualified employees. However, on the other hand, both the sample universities are top universities which emphasize on academic research ability rather than on practical ability. The students of these universities are not supposed to be trained as an employee working for an applicable job in enterprises though ridiculously, almost all of the employers, including enterprises, prefer to recruit graduates from a top university as our samples in China. Moreover, this study was only focused on enterprise employers since more than 60% graduates started to work for the enterprises once they had graduated (Min et al., 2006). However, employers from different sectors, e.g. public sector, may need different competencies. Further studies could consider to widen employer samples from different sectors and select graduates from different types of universities.

In short, the graduates’ employability is increasingly important for all the universities in the global talent competition. It is the key factor for the graduates obtaining a satisfying job and for the employers to retain the competitive advantage in their operation. To achieve enough employability, the government, universities, employers, and students all need to understand what competencies are needed for the employability and work together to develop these competencies as part of higher education. We hope that the competency model we developed and the methods we used in our study could help to promote the research in this area.

Funding

This work was supported by Kingston University.

Author details

Wenping Su¹

E-mail: Swps27@buaa.edu.cn

Miao Zhang²

E-mail: Miao.Zhang@kingston.ac.uk

¹ School of Economics and Management, Beihang University (BUAA), Beijing, P.R. China.

² Faculty of Business and Law, Kingston University, Kingston Hill, Surrey, London KT2 7LB, UK.

Citation information

Cite this article as: An integrative model for measuring graduates' employability skills—A study in China, Wenping Su & Miao Zhang, *Cogent Business & Management* (2015), 2: 1060729.

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