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Research Paper

Factors impacting student choice of satellite campus: A comparison between engineering and non-engineering at postgraduate level

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Abstract. The existing literature about satellite campus in China, especially on postgraduate level, generated insufficient findings on the impacting factors on student choice prior to program enrollment. This study conducted a cross-sectional study on the postgraduate students (N=506) newly enrolled in the satellite campus to a prestigious research university in P.R. China with engineering (N=400) and non-engineering (N=106) background respectively. Statistical analysis of independent T-test was employed in this study. Quantitative results showed that there was no significant difference about the overall satisfaction and the choice difficulty between both groups. Within the framework of social capital theory, non-engineering students showed significantly more interest in the college peer-or-family discussion and marketing promotion while engineering counterparts generated more interest on the academic performance of individual supervisors in terms of individual-level resources. The engineering students emphasized the academic achievement and financial aid system of the satellite campus while the students from non-engineering background directed attention to the institutional resources and the enrollment bars. This study also demonstrated that the administration policy making of the satellite campus had great impact in the decision-making process of the students, in their level of expectation of the institute and at personal level as well.

Keywords: Satellite campus, student choice, social capital, micro-level, meso-level.

INTRODUCTION

Satellite campus refers to the newly-established campus physically located in a distance from the main campus of the existing college and university. Part of the initiatives stemmed from the response to the regional economic development or answering the call for internationalization of higher education (Brooks and Waters, 2018; Burke, 2017; Fraser and Stott, 2015; Li and Lin, 2005). So was the same case in the People's Republic of China (P.R. China) with the government regulations released in 1999 by Ministry of Education about "Strengthening and Deepening Educational Reform to Promote Quality Education in a holistic way" (Ministry of Education, P.R. China, 1999). The official regulations proposed that by satellite campus, the off-site branch campus warranted further autonomy in student enrollment and academic programs.

The existing literature exploring the satellite campus in P.R. China directed their efforts in five areas: historical development, quality of teaching, program management, student career development counselling and student psychological state counselling (Sang *et al*., 2014; Yang *et al*., 2008; Yang and Lin, 2005; Zhang *et al*., 2008). Yet insufficient findings were generated about the factors motivating the students in choosing the satellite campus, since the satellite campus was challenged due to lack of senior academicians, short of reputation compared with the

Table 1. Building blocks of social capital.

Contributors	Build blocks of social capital
Bourdieu (1986)	Resources, Social network, Providing and Acquiring Capital
Coleman (1988, 1994)	Resources, Trust, Information Channel, Social Norm
Putnam (1995)	Resources, Trust, Social Network, Norm
Son and Lin (2008)	Resources Investment and Return, Resources Acquisition

main campus, or struggling of governance autonomy (Wirihana *et al*., 2017). In addition, the students enrolled in satellite campus passed the entrance level of National Graduate Entrance Examination. Yet meeting the minimum requirement did not guarantee the enrollment in the main campus due to competition. Further, the graduate programs offered in the satellite campus covered the research areas of engineering and non-engineering background. The majority of the programs were supported by or syndicated in the main campus. Thus the current study aims to classify the participants into groups of engineering and non-engineering students, and compare the factors impacting both groups s in choosing the graduate program in the satellite campus.

LITERATURE REVIEW

Building blocks of social capital theory

French sociologist Bourdieu has for the first time proposed the term of social capital. He believed that social capital referred to a collection of existing resources and potential resources (Bourdieu, 1986). Closely related to these resources was the mastery of a long-lasting and solid network of connections. The network was based on mutual understanding or recognition. It also provided the collective shared capital support to members of the network. The definition refined the term of social capital as fluid and dynamic. When the actors were utilized via the social network, social resources surfaced and became active social network agents, which otherwise became dormant.

Later Coleman advanced the term of social capital and related it to the educational field. He believed that social capital was a set of resources within the family relationship and social community organization, which generated benefits to the cognitive and social development of young children or adolescents (Coleman, 1994). Social capital in the field of education manifested itself in three categories: trust, information channels and social norms.

Also, social capital was further elaborated in the macro-level and individual-level respectively. Putnam (1995) believed that the collaboration and efficiency imposed on macro-level social organization were featured by network, norms and trust. On the other hand, Son and Lin (2008) advocated the resources embedded in individual social network were acquired or implemented through network connections.

As shown in Table 1 below, the basic building block of social capital included resources, social relationship, information channels, individual agent's role in resources, social norms and trust. Resources included the tangible and intangible types of fame and reputation. Social relations cover the bonds among individuals or between individuals and groups. Individual actors access resources through different information channels.

Conceptual framework

In the framework of social capital theory, this paper subdivided social capital into meso- and micro- layers, as evidenced in previous empirical works (Akdere, 2005; Faist, 2010; Knorringa and Van Staveren, 2007). The meso-level referred to the social capital carried by the institution and local organizations. The school institution provided resources as a collective actor, which was represented by tangible assets and intangible assets socially constructed. The micro-level began with the individual perspective, and utilized the information resource network and the social network as channels to establish personal social network and information network resources. Micro-level social capital mainly examined how individual actors acquired resources and advanced communication for mutual trust with other individuals. The research questions in this paper were proposed as follows:

1. Is there any difference in the overall satisfaction and difficulty in choosing satellite campus between engineering and non-engineering graduate students?
2. Is there any difference in the meso-level factors in choose satellite campus between engineering and non-engineering graduate students?
3. Is there any difference in the micro-level factors in choose satellite campus between engineering and non-engineering graduate students?

METHODOLOGY

Context

The satellite campus in this study was jointly founded in

2001 by the prestigious research university and the local municipal government in the southern part of China. It offers a wide range of academic programs within 7 academic divisions including life science, environmental engineering, information science, logistics and transportation, advanced manufacturing, ocean studies, social studies and management. By the end of 2018, the total amount of 12706 full-time graduate students had been enrolled in the satellite campus. This satellite campus represented the partnership between the main campus and the local government, struggling for autonomy governance and striving for academic quality, as most satellite campuses were enduring (Scott *et al*., 2016).

Participants

A total amount of 506 participants took the survey. They were newly-enrolled first-year graduate students, among whom there were 400 engineering students from disciplines of Mechanical engineering, Electrical engineering, Material science, and 106 non-engineering graduate students from Art Design, Finance and Hospital Management. The average age of engineering students was 22.4 and the proportion of male and female was 63.2 to 37.8%. The average age of non-engineering was 22.4 and the ratio of male to female was 44.0 and 56.0%.

Instrument

Background information questionnaire

The 4-item background information intended to collect the participants' demographic information about name, gender, discipline and age.

Overall attitude and difficulty level

The survey was self-designed and placed on a 5-point Likert scale about the overall attitude from Scale 1 (the least satisfied) to Scale 5 (1=strongly dissatisfied, 2=fairly dissatisfied, 3=neutral, 4=fairly satisfied, 5=strongly satisfied). The survey also covered the difficulty level ranging from Scale 1 to Scale 5 (1=strongly easy, 2=fairly easy, 3=neutral, 4=fairly difficulty, 5=strongly difficult) of student choice and the resources at institutional-level and at individual-level only.

Resources at institution-level

This self-designed survey covered nine variables including the enrollment size of the satellite campus, social recognition of the academic degree, the same job hunting benefits as in main campus, resources provided by supervisors, difficulty level of applying for the programs, academic quality, laboratory facilities, campus culture, and financial aid system. Scaled from 1 to 5 (1=strongly disagree, 2=fairly disagree, 3=neutral, 4=fairly agree, 5=strongly agree), the reliability test showed that Cronbach scale were 0.74 and 0.75 for engineering and non-engineering students respectively, indicating that the responses of the two groups are consistent with fairly high reliability.

Resources at individual-level

The survey was also self-developed and it mainly covered three areas of the access to information, the interaction between teachers and students, and the individual social network. The survey was placed on the Likert scaled from 1 to 5 (1=strongly disagree, 2=fairly disagree, 3=neutral, 4=fairly agree, 5=strongly agree). The Cronbach coefficients were 0.85 and 0.86 respectively, indicating that two of the scales had rather high reliability.

Data collection and processing

Quantitative data was generated from the cross-sectional study of the newly enrolled graduate students in the satellite campus. A total amount of 763 surveys were distributed to the students. 506 questionnaires were generated with the response rate of 66.32%. The survey data were analyzed via SPSS19.0. Independent T-test was conducted to compare the means generated from the survey data between the engineering and non-engineering students.

RESULTS AND DISCUSSION

In response to the first question, the study examined the overall attitude and choice difficulty between two groups of engineering and non-engineering students.

As shown in Table 2, In terms of the overall attitude, both engineering and non-engineering students showed their satisfaction in choosing the satellite campus by generating the mean of 4.08 (0.80) and 4.15 (0.75). There was no statistically significant difference between these two groups. The data also showed both groups experienced a low difficulty level between the engineering and non-engineering students with the mean value of 3.58 (1.05) and 3.71 (0.88) respectively.

In response to the second research question, the data yielded the comparison results between the engineering and non-engineering students.

As shown in Table 3, the item of laboratory facilities was most significant as it generated the highest level of effect size (d=0.77). The result indicated that the engineering group held much higher of the significance of

Table 2. Independent T-test of overall satisfaction and difficulty in student choice.

Item		Engineering N=400	Non-Engineering N=106
Overall satisfaction	Mean (SD)	4.08 (0.80)	4.15 (0.75)
	P	0.466	
Choice difficulty	Mean (SD)	3.58 (1.05)	3.71 (0.88)
	P	0.215	

Table 3. Independent T-test of mean value at institutional level.

Item	Eng. N=400	Non-Eng. N=106	Independent T-test	
	Mean (SD)	Mean (SD)	P	Result
1. Enrollment size	3.06 (1.14)	3.14 (1.06)	0.76	P>0.05
2. Social recognition of the academic degree	4. 61 (0.70)	4.55 (0.84)	0.47	
3. Same job hunting benefits as in main campus	4.12 (1.14)	4.06 (1.22)	0.60	
4. Resources provided by supervisors	4.44 (0.77)	4.34 (0.97)	0.32	
5. Threshold of program application	3.54 (1.01)	3.79 (0.96)	0.02 (d=0.22)	P<0.05
6. Academic quality	4.45 (0.76)	4.10 (1.05)	0.002 (d=0.35)	
7. Laboratory facilities	4.43 (0.74)	3.51 (1.28)	0.00 (d=0.77)	
8. Campus culture	4.27 (0.86)	4.01 (1.07)	0.009 (d=0.29)	
9. Financial aid system	4.12 (0.98)	3.89 (1.07)	0.034 (d=0.23)	

Notes: Eng. = Engineering

the social capital related to laboratory experiments. Also, the effect sizes of academic quality (d=0.33), the campus culture (d=0.29) and the financial aid system (d=0.23) proved that engineering cohorts valued more the social impact of academic quality and reputation in the field, as well as the cultural and material resources related to the satellite campus.

Table 3 also generated the significantly different results in terms of the level of threshold in program application, academic quality, laboratory facilities, campus culture and financial aid system. The engineering group generated the lower level of threshold (MD=3.54 (1.01) than non-engineering group (MD=3.79 (0.96)), indicating that this factor was not as important to the engineering group as the non-engineering group. In addition, the mean value of the other four items was higher than that of the non-engineering group (Engineering= 4.45 (0.76), 4.43(0.74), 4.27(0.86), 4.12(0.98); Non-engineering = 4.10 (1.05), 3.51(1.28), 4.01(1.07); 3.89(1.07)).

In addition, Table 3 showed that there was no significant difference between both groups in terms of the enrollment size, social recognition of academic degrees, the same job hunting benefits as in main campus, resources provided by supervisors. Yet both groups rated highly of the item of social recognition of the academic degrees (M=4.61 (0.70); M=4.55 (0.84)). The result indicated that all the participants valued the academic degree certificate of the satellite campus. They believed that the academic degree certificate in consistency with the degree accredited in the main campus guaranteed the same academic qualifications of the satellite campus. Social recognition of the academic qualifications ensured the potential for the career path in the future.

Both groups rated the second the resources provided by supervisor with (M=4.44 (0.77); M=4.34 (0.97)). At postgraduate level, the participants exposed more to the individual supervisors and the resources the supervisors provided. We argued that the resources by the supervisor were still regarded as the resources at meso level of institution. They were dwelling in the resource ecosystem of the institution level. As part of the ecosystem, the supervisor resources were interrelated with other indexes the school level provided including the school reputation and campus facilities (Craft, 2018).

In response to the third question, the study produced the comparison analysis regarding the individual-level resources as shown in Table 4.

Table 4 showed that the item of supporting from supervisors (4.47 (0.74); 3.83 (1.20)) was most important since it generated the largest effect size (d=0.57). The result implied that there was a significantly big difference between the engineering and non-engineering students in terms of expectations from the supervisors. The trust and support from the supervisor in individual personal network made the best cornerstone of the teacher-student interactions. This claim was also supported by

Table 4. Independent T-test of mean value at individual level.

Item	Eng.	Non-Eng.	Independent T-test	
	Mean (SD)	Mean (SD)	P	Result
1. Nation-wide websites for graduate study enrollment	2.63 (1.29)	2.52 (1.26)	0.423	P>0.05
2. Official website of the satellite campus	3.02 (1.22)	2.93 (1.15)	0.526	
3. Discussion with friends from childhood	2.24 (1.18)	2.32 (1.19)	0.620	
4. Promotional meetings	2.43 (1.17)	2.77 (1.18)	0.008 (d=0.29)	P<0.05
5. Public account in the social media WeChat	2.56 (1.21)	2.92 (1.25)	0.009 (d=0.29)	
6. Discussion with parents	3.36 (1.22)	3.69 (1.11)	0.013 (d=0.27)	
7. Discussion with friends in college	3.07 (1.25)	3.41 (1.01)	0.004 (d=0.32)	
8. Job commitment of supervisors	4.45 (0.76)	4.10 (1.05)	0.000 (d=0.37)	
9. Supporting from supervisors	4.47 (0.74)	3.83 (1.20)	0.000 (d=0.57)	

Goplerud (1980) that the guidance and feedback from faculty supervisors were expected from and valued by the graduate students.

The comparison results also showed that there was a statistically significant difference between engineering and non-engineering graduate students in promotional meetings, public account in the social media of WeChat, discussion with parents, discussion with friends in college, job commitment of the supervisors and supporting from supervisors. Engineering students showed significantly lower scores than non-engineering counterparts in the acquisition of personal information channel of promotional meetings (2.43 (1.17); 2.77 (1.18); d=0.29; official account in the social media (2.56 (1.21); 2.92 (1.25); d=0.29); discussion with parents (3.36 (1.22); 3.69(1.11); d=0.27); discussion with friends in college (3.07(1.25); 3.41(1.01); d=0.32). The results implied that personal channel of information acquisition was valued less important to the engineering group than to the non-engineering group. Engineering students held that the referral to the official website or official account of social media was used as a supplementary reference only. They also took the discussion with parents and university students as a less important means than did the non-engineering students. The effect size indicated the difference in medium level from two groups. The item of job commitment of the supervisors also generated the higher results by the engineering group in terms of the job commitment of the supervisors (4.45 (0.76); 4.10 (1.05); d=0.37).

On the other hand, the results in Table 4 yielded no statistically significant difference between engineering and non-engineering students related to the nation-wide websites for graduate study enrollment (2.63 (1.29); 2.52 (1.26)), official website of the satellite campus (3.02 (1.22); 2.93 (1.15)) and discussion with friends from childhood (2.24 (1.18); 2.32 (1.19)). All the participants were aware of the authoritative nature of the information published in nation-wide and official websites of the local campus. But both groups did not value much of the discussion with friends from childhood. We argued that as the students advanced in the learning path, they were more likely to share and consult with the peers within the vicinity of physical institutions or the cognitive endeavor. The interactions generated and progressed the opinions based on the same mental representations of social resources, which hardly existed among the youth or childhood contacts.

Generally speaking, the results showed that engineering graduate students valued academic degree certificate, resources provided by supervisors, academic quality and laboratory facilities at the meso-level. This implied the theoretical significance for policy makers. The social capital was divided into the subcategories of meso- and micro-level (Faist, 2010; Knorringa and Van Staveren, 2007). It facilitated the finer grains of the analysis unit and optimize the implementation policy at the hierarchical level. Institution-level resources promoted the students to invest in social capital, activate social resources and finally obtain returns, thereby forming a positive cycle of social resources.

The practical implications also lied in the micro-level of social capital including the access to information sources, the interaction with supervisors and emotional and personal needs. Generally speaking, engineering students valued the favorable interaction with the supervisor and gained trust and support from the supervisors. The emotional drive of engineering graduate students accounted as well for rapport and satisfaction. That’s why administrative support counted as they involved in the progressing communication between the agents in the smaller-scale community (Penner, 2018). For example, the administrative divisions engaged in summer camps or scientific research innovation projects, in helping students feel the support and mutual trust of their teachers and respond to the individual needs of potential engineering graduate candidates in the course of their activities.

CONCLUSION

Satellite campus arose from the development of higher education and echoed the needs from several dance partners of main campus, satellite campus, the local government and as well as the teachers and students. This study explored the impacting factors on the part of the students about their choice decision, especially the comparison result between engineering students and non-engineering students. The study had several limits. Engineering program opened in the satellite campus outnumbered the non-engineering program, which lead to the unequal numbers between two groups. Second, the participants were all the postgraduate level, which needed careful generalization across the other higher educational settings of undergraduate level.

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