

The Role of Individual Absorptive Capacity, Subjective-Wellbeing and Cultural Fit in Predicting International Student's Academic Achievement and Novelty in China

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Abstract

This study investigated the role of cognitive-(absorptive capacity), psychological-(subjective-wellbeing) and cultural-fit-factors as predictors of academic achievement-novelty in a Chinese-C9-league-University. We addressed the question of what drive student's achievement of high graduations requirements and innovativeness in their Host-University; focusing mainly on whether interactionistic-nature-(fit-capabilities) are better mechanisms. The quantitative approach was adopted; collect 234 valid data via survey questionnaire (Note 1), and conduct analysis via structural equation modeling technique. We found that individual-absorptive-capacity has significant effect on supervisor-fit, but a non-significant effect on university-fit dimensions of cultural-fit. Subjective-wellbeing significantly affects both dimensions of cultural-fit. The findings further show how supervisor-fit and university-fit indirectly mediate the (absorptive-capacity, subjective-wellbeing)-achievement-novelty relationship. We highlight the importance of cultural-diversity-awareness; considering supervisor-institutional-fit-factors in research-mentorship-development to support international-students 'induction for research productivity in educational-settings.

Keywords: individual-absorptive-capacity, subjective-wellbeing, cultural-fit, academic-achievement-novelty, dynamic-learning-environment, international-students, higher-education

1. Introduction

In this period of globalization and information technology, multi-cultural-like education is seen as a door to every human activity. Higher education institutions are currently faced with historically unprecedented circumstance in the midst of more than 4.1 million international students enrolled worldwide (UNESCO, 2017). According to Ivor Crewe, president of Universities in UK, "reliance on international students has become "inevitable" and these students are no longer an "optional extra" for universities (Taylor, 2005). Asian countries like China dominate the suppliers of international students to long-established receivers mainly USA, UK, Australia, Canada and New Zealand. Given the prediction that universal transit of students will increase from 2.1 million in 2003 to roughly 5.8 million by 2020, (Asteris 2006) China as part of her "Soft power strategy" has laid significant emphasis on attracting international enrollments and enriching higher education in recent years. China has piercingly expressed its aspiration to compete with other traditional and new receiving countries in terms of international enrollment by setting a target to attract 500,000 students by 2020. However, improving international students' study experience is a strategic issue faced by most universities given the growing competition between each other (Böhmet *et al* 2004). The great importance of international students to receiving universities cannot be over-emphasized. Apart from financial contribution to host-institutions' progress, international students' distinctive demand from home students for various programmes for instance Sciences, Technology, Mathematics and Engineering probes receiving institutions to maintain a diverse array of disciplines. It is worth noting that the, responsibility for serving international students

educational needs is at the cross-road of balance while students are faced with the tandem need to prove excellence (Ploner, 2018), in their academic achievement. Hence, in every aspect of student's life and its surrounding social activities, there is need for cognitive capacity, psychological well-being and environmental-fit abilities to achieve success. This study aims to identify the key antecedents, especially those cognitive, psycho-emotional and environment-fit related ones, which influence students' academic achievement and novelty at the postgraduate level, considering the predominant proportion of diverse students engaged in academic research in China. The results of this study highlights the importance of increasing cultural diversity awareness in higher education settings to better support international students' learning experience and gain competitiveness in the international education market. Specifically, linking absorptive capacity, subjective well-being and cultural-fit effects to the study of postgraduate student's academic performance and novelty advances a promising understanding in the field of higher education and research productivity.

In the next sections, we present literature review, proposed conceptual framework and hypotheses. Following this, we present methodology and the empirical findings. We conclude with discussion and suggestions for future research.

2. Literature review

2.1 Connection among Predictor Factors of Student's Academic Achievement in the Present Study

Individual absorptive capacity, subjective-wellbeing and environment-fit capability are very crucial for individuals to attain academic success in today's highly challenging educational environment (Luigi, Maxim, &Concetto. 2017; Yong, Seong and Kun, 2014; Rafiza and Yee Chen See, 2010). March &Simion, (1958), have argued that innovation which happens in many organizations can be attributed to the organization's ability to acquire external resources than inventing it internally. Building on this notion, Cohen &Levinthal, (1990) found that the ability of institutions or individuals to access new knowledge or information and use it, plays an important role for the overall innovativeness and performance. The authors argue that the ability to apply the new knowledge will be as a result of prior related knowledge. Cohen &Levinthal then named these abilities "absorptive capacity". Absorptive capacity is the ability to recognize the value of external knowledge for personal development (Cohen and Levinthal, 1990; Francesca and Gary, 2014). In this process of innovation, imitation is important which can be a capacity that is acquired from external environment. Although, Cohen and Levinthal view of absorptive capacity is not directly in-line of academic settings but organizational settings, its value cannot be under-mined at the individual level in all spheres of life. Previous studies found that absorptive capacity is positively correlated to innovation both at the organizational and human levels (Huang et. al., 2015).

Since human beings are tied to their emotions (Yong, Seong and Kun, 2014), they are swayed by their subjective-wellbeing. Subjective-wellbeing is the self-internal happiness derived by individuals that motivated them to accomplish a specific task (Wang and Yang, 2017; Diener et al., 2005). Currently, subjective well-being is considered an important psychological factor as its imperative has been explored in social and behavioral studies by some researchers (Seligman &Csikszentmihalyi, 2000; Honkaniemi et al., 2015). Whereas Robertson & Cooper (2010) posit that subjective well-being can be linked to a person's engagement, recent research on the subject also indicate that, a sustainable sense of well-being plays a major role in the meaning of one's life, as it can increase organizational commitment, adjusting to new environments, accepting responsibility, creativity and ability to come out with new ideas and reduce labor turnover (Chung et al., 2016;Hashim and Tan (2015; Cohn et al., 2009). The understanding that students achieve academic performance based on either adaptive or maladaptive patterns which influence cognitive performance is critical. Dweck (1986) and Ames (1992) argued that student performance is determined by their ability to show positive attitude towards learning. The extant literature has paid adequate attention to absorptive capacity and subjective-well-being to academic accomplishment propensity. However, little is known about exploring the effect of cultural-fit on the novelty and academic performance of international students. This study put into consideration person-environment-fit phenomenon(Aichia Chuang et al 2016)representing cultural-fit. Culture has been described as a system where there are behavior norms among a common group of people (Patterson, 2014, small, Harding & Lamont, 2010, Dimaggio, 1997). Studies on how individuals fit into social groups has gain massive attention across major disciplines in social sciences of which education is one of the key focus (Sanaz, 2017). Cultural-fit is the likelihood that an individual will be able to conform and adapt to the core values and collective behavior that make up an organization. Studies have argued that, lack of cultural-fit may bring about dissatisfaction, poor productivity, excessive absence, and turnover. In the organizational field, studies have shown that employees, who are a good cultural-fit, work excellently within the environment of the company they belong.

2.2 Conceptual Framework and Hypothesis

Based on the aforementioned linkage above, the present study focus on predicting international graduate students' perception by empirically addressing the following questions;

1. Does absorptive capacity and subjective well-being serve as drivers for student's attainment of graduate requirements and novelty in Host University?
2. Do cultural fit (supervisor-fit and institution-fit) serve as better mechanism?

2.2.1 Individual-Absorptive-Capacity

Cohen and Levinthal, 1990 drawn from March & Simion, 1958, explained that the main idea of absorptive capacity was the need to assimilate and use new knowledge using prior related knowledge. Absorptive capacity can then be seen as the individuals' ability to ascertain new knowledge or information, understand how it works and use it for a gain (Cohen and Levinthal, 1990). Studies have found absorptive capacity brings about high productivity and innovation, making it one of the key drivers of innovation. (Lau and Lo, 2015; Huang et al., 2015; Szulanski, 1996). It is important to note that the cognitive and behavioral dimensions of people towards a group they belong, is vital and highly correlated to individuals achievement since it help them to fit into the culture of the group (Sanaz et al., 2017). Since absorptive capacity has the tendency to acknowledge and value new knowledge, individuals with higher absorptive capacity are better to applying knowledge for gain. (Deng et al., 2008; Cegarra Navarro et al., 2014), in-like manner, individuals with higher absorptive capacity will have a higher mental representation which can easily drive their beliefs and values to fit into a particular institutional culture (Sanaz et al. 2017). From these backgrounds, one can argue that, the ability of an individual to understand and fit into the culture of his/her institution could have a positive impact on his/her achievement in that institution.

2.2.2 Subjective-Wellbeing

According to Burns and Machin, (2009), subjective well-being is related to the awareness of pleasure, satisfaction, and happiness. As an important psychological factor, numerous studies have explored the role of subjective-wellbeing on individual's behavior and engagements. (Diener et al. 2005; Seligman and Csikszentmihalyi, 2000; Honkaniemi et al., 2015; Robertson and Cooper 2010; Chung et al., 2016; Spector, 1997; Hashim and Tan 2015). Other scholars postulates that one with positive subjective-wellbeing (positive emotions) can help the individual to remember information, increase academic and life related satisfaction and boost creative problem solving (Koveshnikov et al., 2014; Cohn et al., 2009; Ryan and Deci, 2001). Recently Henttonen et al. (2016) have concluded that, an individual with positive knowledge sharing ability would be positively linked with knowledge sharing behavior. Thus an individual with positive emotions, such as subjective well-being, will be likely sharing tacit and explicit knowledge with respect to student-institutional-fit and student's motivation to attained academic requirements.

2.2.3 Cultural-Fit

The bout between individuals and the environment has long been of interest to academicians and organizational psychologists (Kristof-Brown, Zimmerman, & Johnson, 2005; Grobler et. al 2018), as well employers, superiors, job seekers, student applicants and incumbent workers in all spheres of human engagements (Kristof-Brown, 2000). Recent advances in fit theory (Kristof-Brown & Guay, 2011) have served as the basis for some researchers to further consider the concept of person-environment-fit as an important goodwill in the interactionist theory of behavior; upon the supposition that certain environments match to each individual, mostly corresponding the characteristics of the individual's traits, and that this association, sequentially, results in higher performance, higher satisfaction and innovativeness across all cultures (Pervin 1968). According to Kristof-Brown & Guay, (2011) four dimensions of person-environment fit exist; person-job fit, person-organization fit, person-group fit and person-supervisor fit. These dimensions have been given attention by scholars in the literature on work attitudes, turnover, performance, innovation, job search, and managerial selection decisions, and student's success in unfamiliar environments (Kristof-Brown et al., 2005; Grobler et. al 2018). Studies on educational field, establish that there is positive correlation between school culture and students' achievement (Al Fara, Samia, 2012; Elbot & Fulton, 2008; Carter, 2011). In the present study we have paid attention to student-university-fit and student-supervisor-fit dimensions of person environment-fit and labeled as cultural-fit; an important predictor of international student's academic success and innovative behavior.

2.2.4 Environmental-Dynamism

The environment is anything outside an individual or institution that may affect their expected performance. Researchers have acknowledged that external environmental factors can moderate cognitive and market orientations, innovation strategy, and investments effect on performance both at the individual and organizational levels (Allred and Swan 2005; Freel 2005). Environmental dynamism has been explained to broadly include; continuous change in technology, market demand, competition, uncertainty, risk, challenges, unpredictable change. With regard to the present study focus, we describe specifically university dynamic learning atmosphere (*frequency of visiting professors from abroad, innovative climate, university competitiveness in and outside china*); and study abroad challenges within our sample.

2.2.5 Academic-Achievement-Noveltly of International-Students

Salisbury, (2011) posit that, study abroad and cultural exchange programs are mainly designed to expose students to new experiences and to develop their cultural awareness, sensitivity, and communication skills. Decades now, academic performance of students in higher education has been the subject of intensive research (Head, 1990). A series of performance predictors have been developed and categorized into academic, psychosocial, cognitive and demographic categories (McKenzie & Schweitzer, 2001). Some researchers have also focus on course quality assurance, graduation rates, dissertation requirements, novelty, time to degree, retention, publications, and GPA in relation international students dynamic-learning-environments (Ingraham & Peterson, 2004; Metzger, 2006; Yorke, 1991).

With regard to academic factors, some studies have shown the dominant role learning skills and habits play in predicting students' academic performance (McKenzie & Schweitze, 2001; McKenzie, Gow & Schweitzer, 2004; Abbott- Chapman, Hughes & Wyld, 1992). In the case of psychosocial predictors; social adaptation into the university/ supervisor system, financial situation, motivation, social and emotional support and subjective-wellbeing been identified to influence students' success and novelty (Terenzini and Pascarella 1978; Lecomptee *et al* 1983; Pokay and Blumenfeld 1990; Gerdes and Mallinckrodt 1994).

The cognitive predictors have been explained by authors as self-efficacy, attribution tendency style, and absorptive capacity. (Pajares 1996; Lecomptee *et al* 1983; McKenzie & Schweitzer 2001; Yee *et al* 2004; Cohen & Levinthal, 1990). Self-efficacy means students' self beliefs about their capabilities to initiate and successfully perform specified tasks at designated levels. An individual's attribution refers to his/her general tendency to generate similar causal explanations across events. An individual absorptive capacity can be seen as the individuals' ability to ascertain new knowledge or information, understand how it works and use it for a gain.

Amongst the various predictors above, there is probability for some interactions between each other, and therefore the consequence of one factor on example; the psychosocial predictors might obliquely reflect and or be complimented through others to predict international student's academic success.

According to MacKeogh (2006), the strongest support that students receive comes from their supervisor/ university resources. Todd *et al.* (2004) in a study undertaken with final year social science undergraduates grouped four roles assigned to supervisors; to provide academic direction (selecting research methodologies, structuring the thesis), to motivate (setting responsibilities and deadlines), to have (and communicate) academic expertise in the area of the dissertation and to help them write the dissertation. University specific values, climate, competitiveness, cultural diversity and learning resources are crucial for international student's adaptations and success (Airini 2012; Bennett 2003; Mayeda, Keil, Dutton, & 'Ofamo'oni 2014). Especially in the case of China, in addition to language shock, there are many other culture-specific factors associated with academic behavior and achievement such as social culture shock, academic culture shock (Gilbert, 2000; Robertson *et al*, 2000; Hau & Salili, 1996; Smith & Smith, 1999; Webb & Read, 2000). Recent study by Li *et.al* (2010) examined perceived value of study, learning preference, leaning effort, familiarity of learning environment, social communication effects on international student's achievement in the Chinese higher education context. As the present study focus on the direct and indirect effects of some key factors, it is not necessary to include all of the above mentioned aspects into the hypothesized model and analysis.

2.3 Proposed Model

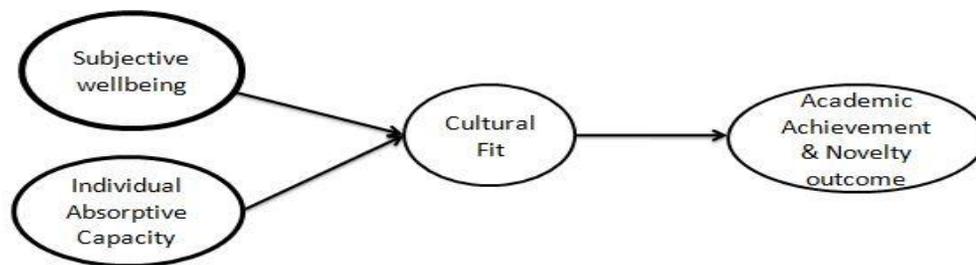


Fig 1 Antecedent model of academic achievement and novelty behavior

Source: Authors, 2018

2.4 Hypothesis

Fig1. illustrates the research model composing of four main constructs: The model predicts that graduate student's academic achievements and research novelty is influenced directly and indirectly by individual absorptive capacity and subjective well-being to study while cultural-fit is regarded as a mediator. The study also examined the descriptive situation of environmental dynamism and challenges related to study abroad. *See figure 2.*

H1 (a): Individual-absorptive-capacity has a significant positive effect on cultural-fit (student-supervisor-fit)

H1 (b): Individual-absorptive-capacity has a significant positive effect on cultural-fit (student-university-fit)

H2 (a): Subjective-wellbeing has a significant positive effect on cultural-fit (student-supervisor-fit)

H2 (b): Subjective-wellbeing has a significant positive effect on cultural-fit (student-university-fit)

H3 (a): Cultural-fit (supervisor-fit) has a significant positive effect on academic achievement and novelty behavior

H3 (b): Cultural-fit (university-fit) has a significant positive effect on academic achievement and novelty behavior

H4: Student-university-fit has a positive effect on student-supervisor-fit

H5 (a): Cultural-fit (supervisor/university fit) has a significant indirect mediating effect on the relationship between individual-absorptive-capacity academic achievement and novelty behavior

H5 (b): Cultural-fit (supervisor/university-fit) has a significant indirect mediating effect on the relationship between subjective-wellbeing academic achievement and novelty behavior

H6: Student-supervisor-fit) has a significant indirect mediating effect on the relationship between student-university-fit and academic achievement and novelty behavior

3. Methodology

3.1 Data

In order to empirically test the hypotheses, from December 2017 to February 2018 during winter vacation, students from different cultures and region of origin (Asia, Africa, Europe, America etc) were invited to participate in this study. An online questionnaire was administered via Email and social media applications (WeChat, WhatsApp). Two versions of the online questionnaire powered by www.docs.google.com/forms and www.wjx.cn were developed for this study. The survey was confidential and anonymous. The purposeful random sampling technique was used to select respondents for the purpose of increasing credibility and not only to foster representativeness of the total population. In total, 245 finished and submitted questionnaires were retrieved from the online data sources, which approximated the intended sample size of 300 students for the study. After screening out the incomplete ones, a total of 234 valid questionnaires were used for analysis, resulting in an effective response rate of 81percent. Among those respondents, 170 (72.6percent) were male, 64 (27.4percent) were female. Regarding their age range, 31 (13.2percent) were at 18-25, 174 (74.4 percent) were at the 26-35 years range, and 29 (12.4 percent) were at the 36-50 years range.

In terms of their student status, 108 (46.2percent) were master degree candidates and 126 (53.8percent) were PhD candidates. Respondents marital status also depicted 124(53percent) as single, 94 (40.2percent) to be married, 5 (2.1 percent) as divorced and 11 (4.1 percent) as others. Regarding language of study and main mode of communication with faculty in the university, 193 (82.5 percent) students dialogue in English, 4 (1.9 percent) dialogues in Chinese and 36 (15.6 percent) dialogue in both English and Chinese with Faculty. Given that participants represented different home countries and cultures, respondent were grouped by region of origin. The largest representation was 128 (54.7 percent) from Asia, followed by 95 (40.6percent) from Africa, 3 (1.3 percent) from other regions and 3 (1.3 percent) from Europe, 5 (2.1percent) from America. *Table 1 gives selected descriptive statistics.*

Table 1. Demographics of respondents

Demographics	Frequency	Percentage
Gender		
Male	170	72.6
Female	64	27.4
Age		
18-25	31	13.2
26-35	174	74.4
36-50	29	12.4
Marital Status		
Single	124	53
Married	94	40.2
Divorced	5	2.1
other	11	4.7
Region of Origin		
Asia	128	54.7
Africa	95	40.6
Europe	3	1.3
America	5	2.1
Other	3	1.3
Student Status		
Master Students	108	46.2
PhD Students	126	53.8

3.2 Method

To achieve the aim of this study, a cross-sectional design was used, supported by quantitative statistical analysis, a typical empirical paradigm. International students from University of Science and Technology of China (a C9 league university; one of *Chinese government main target schools under construction up to world class standard and strategic plan to develop a number of disciplines among science, technology and education in the twenty first century*) noted for its fierce competitive and innovative atmosphere were surveyed. All students were full scholarship awardees from the CAS-TWAS, Chinese Government Scholarship, CAS Belt and Road Master Fellowship and University Scholarship. Students are required to publish at least 1 article for master and 2 articles for PhD in renowned academic journals with indexes in SCI, SSCI and other few selected journals before graduation from the 3year master and 4year doctoral research programs. To measure the predictor and outcome variables, an instrument was developed for both the latent and observed variables namely individual-absorptive-capacity, subjective-wellbeing, cultural-fit and academic achievement; all of which were combined into a proposed academic achievement and novelty behavior model. This served as the motivation to select structural equation modeling (SEM) as the appropriate method of analysis. Accordingly a sample size for complex SEM should be more than 100. (Kline 2005).

3.3 Measures

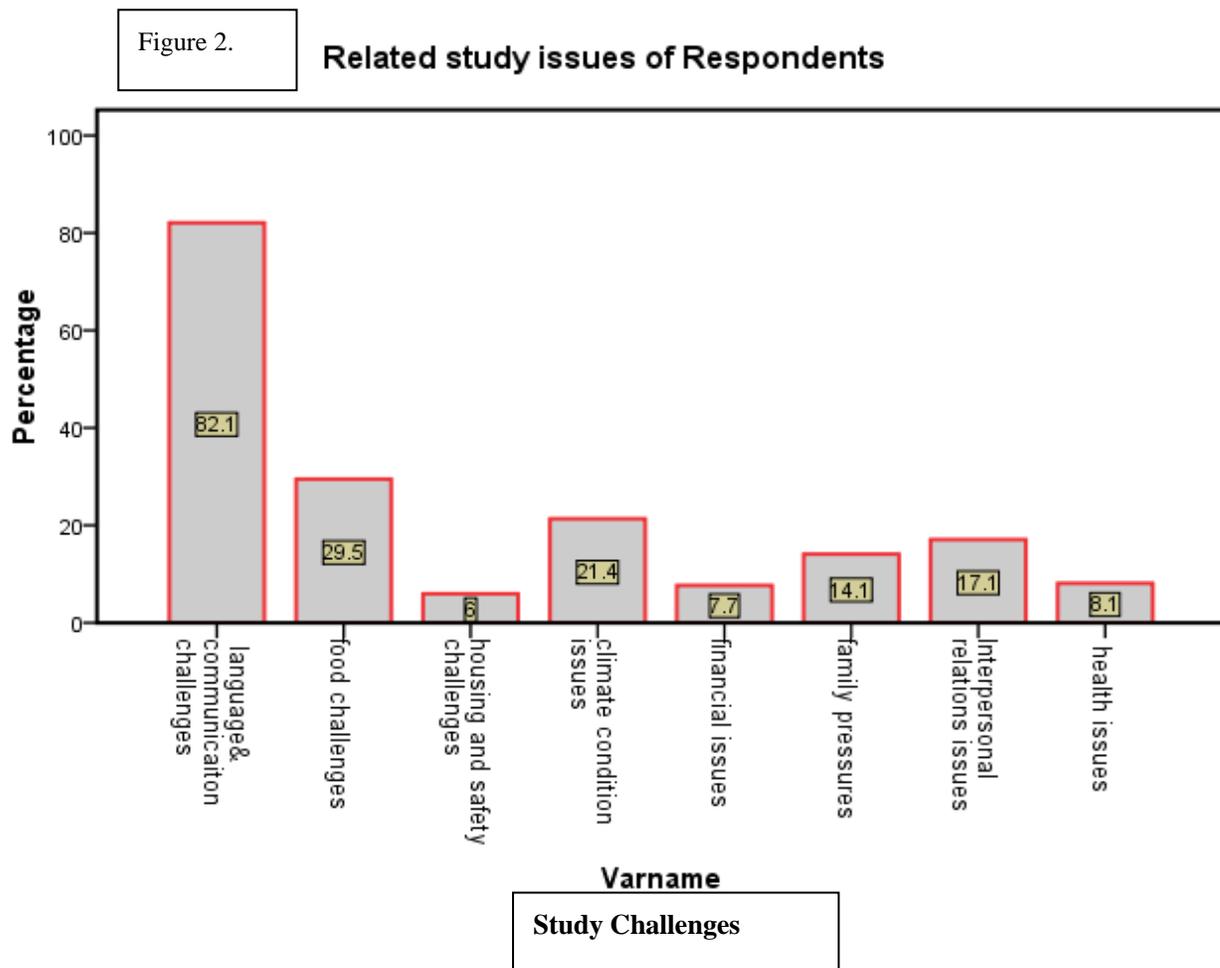
Individual-Absorptive-Capacity: A fourteen-item scale developed by Lowik et al.'s (2016), Cohen and Levinthal (1990), was modified to measure individual-absorptive-capacity. It was intended to be operationalized as a second-order construct consisting of individual activities of recognition, assimilation & transformation and exploitation. Measures were rated on a five-point Likert-type scale, and response options ranged from 1, "strongly disagree," to 5, "strongly agree." A sample item is: "I am always actively looking for new knowledge for my research work"

Subjective-wellbeing: A six-item scale developed by Hills and Argyle (2002) was used to measure subjective-wellbeing. Measures were rated on a five-point Likert-type scale, and response options ranged from 1, "strongly disagree," to 5, "strongly agree." A sample item is: "I am very happy."

Cultural-fit: A twelve-item scale adopted and modified from Aichia Chuang et al (2016) was used to measure cultural-fit. Two dimensions of Perceived-Person-Environment-Fit Scale (PPEFS) person-organization-fit and person-supervisor-fit was used because it suited the present study's context. Cultural-fit was therefore operationalized as first order two dimensional constructs consisting of the Variables University-fit and Supervisor-fit. Measures were rated on a five-point Likert-type scale, and response options ranged from 1, "extremely unlikely," to 5, "extremely likely." A sample item is: "How would you describe the match between your research passions and your supervisor's research area and expertise?"

Academic-Achievement-Novelty: A measure of six-item scale adapted from Zhou and George (2001) and general graduation requirements were used to measure the outcome variable; perceived-academic-achievement and novelty. Measures were rated on a five-point Likert-type scale, and response options ranged from 1, "strongly disagree," to 5, "strongly agree." A sample item is: "I come up with new and practical ideas to improve academic performance".

Demographics: for this study, age, gender, marital status, mode of study, region of origin, student's status, type of scholarship, field of research, religious beliefs, dynamic atmosphere and research challenges were selected as demographics. Gender was dummy coded (1="male" and 0="female"), while age was measured using a 3-point scale (1="18-25", (2= 26-35) and (3= 36-50). Dynamism was measured using five point Likert type scale. Research challenges measured with multiple response items. *Table 1 and Fig 2* presents further detailed demographics of respondents.



4. Analysis and Results

4.1 Step 1

In the present study, first exploratory factor analysis was used to deal with dimension reduction of items. In doing so, we aimed to obtain a reduced number of factors, enabling the identification of structural relations between predictor and outcome variables. The method used for extracting the factors was the principal component method, through the Promax with Kaiser Normalization approach. In accordance with the Scree Plot and the retained variance percentage, 7 factors were retained registering an eigen-value greater than 1, explaining 66.584% of total variance extracted, **significant at 0.00 level with KMO and Bartlett's Test of 0.908 and Chi square 5.648E3, df=666** respectively (Hair et al. 2005). Items were suppressed at 4.0 threshold which resulted in one item “*capacity10*” being dropped. The remaining items were used for further factor validation purposes. **Table 2** presents the results of Exploratory Factor Analysis.

Table 2. Exploratory Factor Analysis in SPSS

Items	Component						
	1	2	3	4	5	6	7
loading							
Cfit4	.808						
Cfit2	.808						
Cfit3	.805						
Cfit7	.791						
Cfit1	.778						
Cfit6	.761						
Cfit5	.743						
Wellbing4		.874					
Wellbing2		.816					
Wellbeing6		.727					
Wellbeing1		.697					
Wellbeing5		.687					
Wellbeing3		.656					
Novelty3			.861				
Novelty5			.794				
Novelty2			.703				
Novelty6			.681			.411	
Novelty4			.673				
Novelty1			.587				
capacity5				.758			
capacity8				.732			
capacity7				.714			
capacity6				.663			
capacity9				.659			
capacity12					.840		
capacity11					.813		
capacity14					.676		
capacity13					.672		
Cfit9						.783	
Cfit10						.727	
Cfit12						.655	
Cfit8						.639	
Cfit11						.525	
capacity1							.785
capacity3							.774
capacity2							.724
capacity4							.482

Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalization.
 a. Rotation converged in 8 iterations.

To test the validity of data, reliability test was run. At the same time, we used a powerful instrument that could analyze the confirmatory factor analysis, regression and structural model simultaneously to estimate measurement model (Anderson & Gerbing, 1988). Furthermore, standardized factor loadings, squared multiple correlations (SMC) and model fit indices were considered to be the key statistical criteria for an acceptable measurement model (Koufteros, 1999). Threshold level for Cronbach's alpha, composite reliability, average variance extracted (AVE), standardized factor loadings and squared multiple correlations-SMC(R^2) is 0.7, 0.7, 0.5, 0.7 and 0.5 respectively, as per the standard criteria in existing literature (Flynn, Sakakibara, Schroeder, Bates, & Flynn, 1990; Fornell & Larcker, 1981; Hair et al., 1998; Nunally & Bernstein, 1978; Bollen, 1989; Lu et al., 2007; Garver and Mentzer, 1999). With respect to standardized factors loadings and SMC, lower values have been considered acceptable depending on sample size and for interpretive purposes (Hair et al 1998; Stevens 1992; Tabachnick and Fidell 2007).

As presented in **Table 3**, composite reliability and Cronbach's alpha values are greater than 0.7 and AVE values for all constructs are greater than 0.5 confirming good convergent validity. In terms of discriminate validity Fornell and Larcker (1981), suggests an assessment of the relationship between correlation among the constructs and the square root of AVE of all constructs. In the instance where square root of AVE is higher than the correlation among constructs, then good discriminate validity is confirmed (*see Table 4*).

Table 3. Result of Confirmatory Factor Analysis, Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE)

Constructs	Factor loadings	SMC (R-square)	Cronbach's Alpha	(CR)	(AVE)
Novelty Achievement			0.863	0.866	0.521
Novelty1	0.675	0.456			
Novelty2	0.658	0.433			
Novelty3	0.756	0.571			
Novelty4	0.771	0.594			
Novelty5	0.774	0.599			
Novelty6	0.686	0.471			
Cultural Fit			0.940		
Sffit			0.895	0.895	0.631
Cfit8	0.738	0.545			
Cfit9	0.807	0.651			
Cfit10	0.909	0.549			
Cfit11	0.741	0.586			
Cfit12	0.765	0.636			
Ucfit			0.929	0.921	0.627
Cfit1	0.763	0.582			
Cfit2	0.799	0.638			
Cfit3	0.816	0.666			
Cfit4	0.771	0.595			
Cfit5	0.868	0.754			
Cfit6	0.720	0.518			
Cfit7	0.797	0.636			
Subjective well-being(SWB)			0.884	0.888	0.575
Wellbeing1	0.827	0.683			
Wellbeing2	0.797	0.636			
Wellbeing3	0.761	0.579			
Wellbeing4	0.788	0.621			
Wellbeing5	0.515	0.265			
Wellbeing6	0.815	0.665			
Overall Capacity(IAC)			0.870	0.843	0.645
Cap Recognition	0.678	0.46	0.709		
Capacity1	0.557	0.310			
Capacity2	0.639	0.408			
Capacity3	0.563	0.317			
Capacity4	0.684	0.469			
CapAssimTrans	0.867	0.752	0.811		
Capacity5	0.736	0.542			
Capacity6	0.785	0.616			

Capacity7	0.668	0.446	
Capacity8	0.702	0.492	
Cap Exploitation	0.85	0.723	0.841
Capacity11	0.787	0.620	
Capacity12	0.777	0.604	
Capacity13	0.831	0.690	
Capacity14	0.641	0.410	

Table 4. Descriptive Statistics, Correlation Matrix, Convergent and Discriminant Validity

Constructs	Mean	Std. Deviation	1	2	3	4	5
Dynamism	4.17	0.72					
Cap Recognition	3.96	0.53					
CapAssimTrans	3.87	0.56					
Cap Exploitation	4.13	0.55					
Novelty Achievement	4.49	0.51	0.722				
Scfit	3.82	0.78	0.600	0.795			
Ucfit	4.08	0.71	0.631	0.77	0.792		
SWB	4.03	0.62	0.679	0.728	0.641	0.758	
Overall Capacity (IAC)	3.98	0.44	0.536	0.538	0.369	0.454	0.803

Boldface in diagonal line shows square root of AVE of each construct.

Correlation is significant at .01 levels.

4.2 Step 2

Structural equation model as a cross-discipline research tool has received much attention recently and become one of the important techniques applied by scholars to validate their research results (Hooper, Coughlan, & Mullen, 2008). To evaluate the model fitness, researchers suggest the examination of fitness indices such 1. Absolute-fits; affected by sample size (e.g.chi-square, goodness of fit index (GFI), adjusted goodness of fit index (AGFI), root mean square error of approximation (RMSEA) etc) McDonald and Ho, 2002 and 2. Incremental-fit; i.e. group of indices that do not use the chi-square in its raw form but compare the chi-square value to a baseline model (tucker-lewis index (TLI), comparative fit index (CFI), Normed-fit index (NFI) etc.(Miles and Shevlin, 2007; Järeskog and Sörbom, 1993). The present study follows acceptable threshold fit indices recommended by previous researchers to determine model goodness; Chi-square <3.0, GFI >0.90, AGFI >0.80, RMSEA<0.07, PCLOSE >0.05 (Hu and Bentler 1999; Miles and Shevlin 2007; Arbuckle 2003), Other researchers recommended that for TLI, IFI, CFI, and NFI, indices the values can be greater than 0.85 (Arbuckle, 2003; Hu &Bentler, 1999).

As per the aforementioned recommendations, indices calculated for this study shown the appropriate goodness-of-fit for the measurement and the structural model where all values of chi-square, GFI, AGFI, CFI, TLI, NFI, IFI, and RMSEA are within acceptable threshold range as shown in *Tables 5 and 6*.

Table 5. Goodness of Fit Indices for Measurement Model.

Model	X2	df	p-value	X2/df	GFI	AGFI	RMSEA	UPCLOSE	CFI	IFI	NFI
Base	927.601	563	0.000	1.648	0.834	0.804	0.053	0.227	0.930	0.931	0.841

Table 6. Goodness of Fit Indices for Structural Model.

Model	X2	df	p-value	X2/df	GFI	AGFI	RMSEA	UPCLOSE	CFI	IFI	NFI
Base	650.173	409	0.000	1.590	0.858	0.828	0.050	0.464	0.948	0.948	0.872

4.3 Discussion

The primary aim of this study was to examine the impact of student’s absorptive capacity and subjective-wellbeing in predicting their academic achievement and novelty behavior; by specifically positing cultural-fit dimensions as important mediators. Students are under much pressure with dissertation and publishing of scholarly articles forming a significant part of the final degree award in recent times (Hand and Clewes, 2000). Success factors in the retention and completion of postgraduate students have been studied by some researchers in different context (Grant & McKinley, 2011; Trudgett 2014; Trudgett et al., 2016; McKinley, Grant, Middleton, Irwin, & Williams, 2011).Therefore, boosting up their cognitive, psychological and social capabilities is the key to structural reform which can motivate them at a deeper level to achieve novelty and sustainable research productivity. University administrators, policymakers, and educators should focus on reforming educational programs and should provide students with practical education and training as well as conducive atmosphere(Xiao-jiong 2010)in order to enhance their capabilities and skills to fulfill new models of postgraduate awarding requirements at their candidature level.In today’s increasingly competitive academic workforce, a healthy list of scholarly publications is necessary for job applications, funding applications and internal promotions (Dinham& Scott, 2001; Brien, 2008). Publishing standards set by various C9 Chinese university and other higher institutions around the globe for their studentsis taught to aim at preparing them for the skills andknowledge that will better facilitate an active and sustainable career in academia (Smith, 2015; PoyatosMatas, 2012). This may account many benefits to students and their hostinstitutions. Previous studies have shown that students who publish early in their careers, during their postgraduatestudies, are more likely to have greater research productivitythroughout their careers (Fischer, Ritchie, &Hanspach, 2012; Horta& Santos, 2015). Research outputs are a key measure of the success of institutions (Australian Research Council, 2016) and specifically the quantum of fundinguniversities receive from government is dependent on how many publications, patentsand innovationstheir academics produce (Norton, 2016).

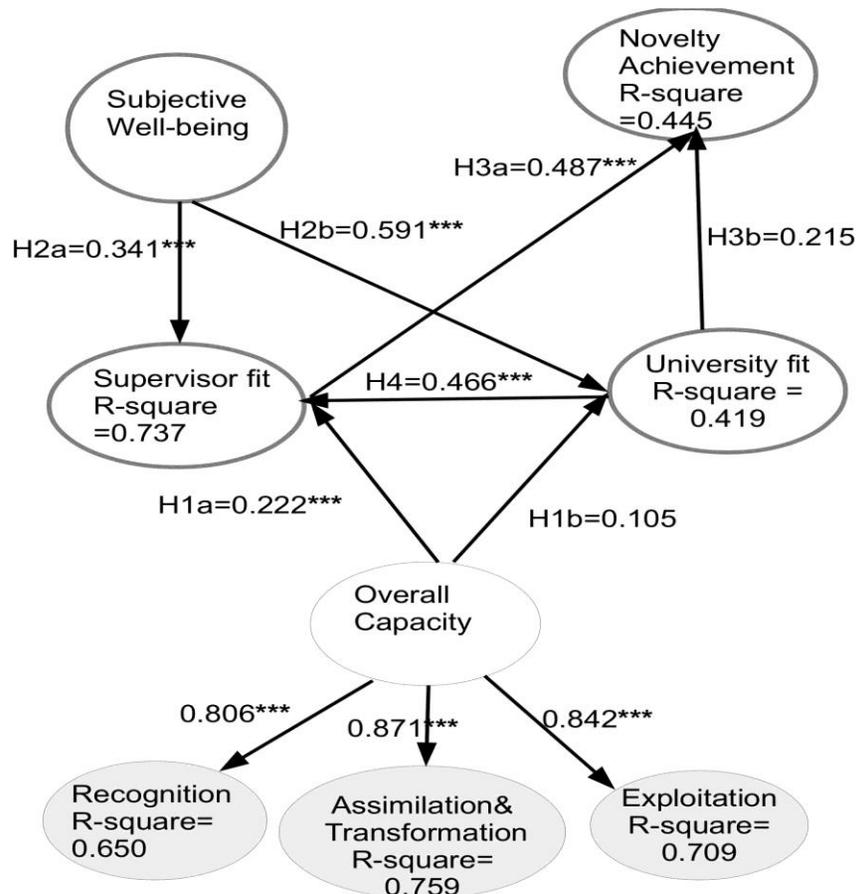


Fig 3. Results of structural model. *P<0.05, **P<0.01, ***P<0.001, Overall capacity represented as higher order construct and university/supervisor fit as formative of Cultural fit.

The present study findings show that individual-absorptive-capacity has a positive significant impact on supervisor-fit but non-significant impact university-fit dimensions of cultural-fit. Subjective-wellbeing also showed a positive significant impact on both supervisor-fit and university-fit. The supervisor-fit is found to be positively associated academic achievement and novelty behavior. Similarly, supervisor-fit is positively influenced by university-fit. University-fit is also found to be positively associated with academic achievement and novelty but it has non-significant value. The findings further show how supervisor-fit and university-fit indirectly mediate the relationships between both (individual-absorptive-capacity and subjective-wellbeing) and academic achievement and novelty behavior by way of bootstrapping. In hypothetical terms our study finds support for H1(a), H2(a), H2 (b), H2 (b), H3 (a), H4, H5 (a), H5 (b) and H6 but no support for H1(b) and H3(b). This is the first empirical study testing a causal model that predicts student's academic achievements and research novelty considering the direct and indirect influence of absorptive capacity, subjective well-being and cultural fit dimensions in China.

Table 7. Results of Hypothesis Testing (direct & indirect mediation effects)

Hypothesis	Regression paths	Std. Estimates	Remarks
H1(a) direct effect	Overall capacity → supervisor fit	0.222***	accepted
H1(b) direct effect	Overall capacity → university fit	0.105	rejected
H2(a) direct effect	Subjective well-being → supervisor fit	0.341***	accepted
H2 (b) direct effect	Subjective well-being → university fit	0.591***	accepted
H3 (a) direct effect	supervisor fit → novelty achievement	0.487 ***	accepted
H3(b) direct effect	University fit → novelty achievement	0.215	rejected
H4 direct effect	University fit → supervisor fit	0.466***	accepted
H5 (a) indirect effect	Overall capacity → novelty achievement	0.155***	accepted
H5 (b) indirect effect	Subjective well-being → novelty achievement	0.428***	accepted
H6 indirect effect	University fit → novelty achievement	0.227***	accepted

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; Bootstrap samples 500; BC confidence level 95%

Our study makes important implications by focusing on the postgraduate foreigner's academic achievement, research productivity, innovation, adaptation issues, and fulfillment of new graduation models in higher education settings at the individual level. First, the individuals reflect very basic, but important research units that can be readily observed. Furthermore, to our knowledge, little is known about international student's academic achievement and novelty, especially what factors influence these activities, which can enrich our understanding of their success in the Host universities. Secondly, absorptive capacity and subjective-wellbeing factors considered in this study have its basis in individual actions, behaviors and predispositions as valuable capital (Brehm and Rahn, 1997). It is not clear about the influence mechanism of different predictors on academic achievement, and we try to fill this gap. Thirdly, we advance the person-environment-fit research at the individual level by firstly exploring the mediating role of cultural-fit. We recognize that student's achievement and novelty are driven by the aggregation of numerous fit factors (supervisor and university fit). In other words, we provide a further understanding of antecedents and consequences of individual-cultural-fit.

Even though, students are encouraged and required to publish scholarly articles in addition to their course work and thesis to be eligible for degree awards, they are however also warned of pitfalls and challenges, including risks to the coherence and integrity of the thesis, publication delay and cold reviewers especially in the SSCI/ SCI index journals as well as most renowned indexes. Also orbit times for the peer-review process are infamously long and getting longer (Powell, 2016). This can affect a student's ability to complete their thesis in a timely manner. It is worth noting that Universities have different policies regarding the status of papers permitted to be considered for graduation. While some require papers to be published in high index journals or in-press, others allow papers to be under review or papers which have been prepared for submission.

Finding from this study indicate that Absorptive capacity is an important determinant of students achievement and novelty which approves the fact that cognitive capabilities as a necessity for postgraduate education. The results also show that student's have high sense of subjective wellbeing which greatly influence their achievement and novelty behavior. Moreover, the results of the study indicate that cultural fit (supervisor and university fit) can play an important role in developing favorable research and valuable intellectual assets among students toward their

achievements in host universities. Surprisingly the results revealed that, students cannot fit better in their host university whiles striving to achieve success without them fitting with their supervisor/mentors. In other words, supervisor fit guarantees more success than university fit for international student's academic success.

Overall, the findings shows that students possess high absorptive capacity and are well positively psyched in their wellbeing as they thrive for achievement, but there are cultural-fit pressures that create a better enhancement to their achievement and productivity.

4.4 Limitations and Future Direction

There are some limitations to this study. It is worth noting that absorptive capacity, subjective-wellbeing and cultural fit are not the only cognitive, physiological and person-environment-fit factors that might influence students academic achievement and novelty; therefore, other factors might merit consideration as predictors of students academic achievement and novelty especially in today's digital and diverse higher education context. Although absorptive capacity was treated as a second higher order construct, there was a little deviation from established theory which reflects four independent factors; recognition, assimilation, transformation and exploitation based on Lowik et al.'s (2016), and Cohen and Levinthal (1990); our data revealed three factors therefore the corresponding findings should be interpreted accordingly. Finally, participants in this cross-sectional study were all 2016/2017 batch of international postgraduate students immersed in a critical transition period from adaptations to their new study country, to balancing lifestyle changes and fulfilling the challenging requirements for graduation in Host University, which implies a combination cognitive, psychological, socio-cultural and academic adjustments (Fryer 2017, Mar  et al 2006). However, changes across the lifetime of their degree pursuit in the variables defining the proposed hypothesized model were not addressed.

Despite these potential limitations, further studies are needed to advance this research line by (i) exploring other important and reliable predictor variables probably to academic achievement (e.g., academic self-efficacy, self-worth and transformation, motivation, *social communication, leaning effort, social capital* developed through campus associations (Rhew et al, 2018; Glass et al 2018; Li et al 2010; Kelly et al 2018) (ii) examining in depth absorptive capacity as a first order construct using different scales (Seo, et al 2015; Jansen et al. 2005) (iii) performing longitudinal studies (Pampaka et al 2016) with multiple waves to address these relationships over time, tandem with qualitative and or from a person-oriented perspective as well as expanding the scope of study to include samples (both local and international students) from all C9 universities in China and other countries.

5. Conclusion

In sum, this research advances the current understanding of the density of international students' learning experience in higher education settings, research productivity, and the international higher education market by providing empirical evidence for a causal model linking absorptive capacity, subjective-wellbeing, cultural fit and achievement & novelty. These findings hold substantive implications for researchers seeking an integrative view of postgraduate students' learning experience and novelty especially in overseas study and are relevant to superiors and university management wanting to foster an optimal dynamic-learning environment in which students can well be inducted about their learning and teaching needs (Nallaya, S. S. 2018) while fulfilling required standards for degrees and produce novelty.

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Note

Note 1. For any information about the questionnaire, please write to the corresponding author.