An empirical study on user acceptance of ERP system by international students in Chinese HEIs: A TAM approach

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This study tries to make a theoretical framework for the use of Enterprise Resource Planning (ERP) system through an empirical study of the explanatory capacity of Technology Acceptance Model (TAM) concerning the intention of use by international students in Chinese HEIs. An online questionnaire yielding 363 valid responses was collected from the international students in Chinese HEIs and the quantitative analysis was performed using the Confirmatory Factor Analysis (CFA) and Structural Equation Model (SEM) framework verifying the research model and hypothesis. The statistical analysis evaluated and analyzed the behavioral intentions and patterns, and the consequent factor for the use of the ERP system. The study suggests resource optimization, the trust of the ERP system, perceived ease of use, perceived usefulness, and attitude towards using to have a significant impact on international students' behavioral intention to use the ERP system. Results from the analysis provide a crucial reference for Chinese HEIs while implementing ERP systems for the management of international students.

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1. Introduction

The present-day world is dominated by the culture of innovation and productivity. The global economy is now predominately moving away from traditional industrial structure towards service sector and emerging economies. In this scenario, the role of human capital or human resources has become very crucial. It is human talent that is the driving force behind the present milieu of innovation and efficient execution across the globe. The mobility of human talent across borders has emerged as an important field of study. Different nations and organizations are now attaching great importance to it. The increasing pace of globalization has accelerated the international flow of the factors of production. The flow of talent or human capital, as an important component of the factors of production, is emerging as the most crucial resource and has become prevalent around the globe. Wei (2013) emphasized that since international students of higher education level (service trade of higher education) is an important part of the international talent flow, any country should attach great importance to this phenomenon and capitalize on it to attract talents, so as to transform its economic growth pattern, optimize its trade structure and strengthen its economic status in the world. Previously, there was a one-way flow of talent from the emerging to advanced countries. However, lately the trend is changing and has gradually become a two-

way process. In recent years, the Chinese higher education system has shown a significant rise in the number of international students. According to UNESCO (2018), China received as many as 442,773 (in 2016) international students making it the second biggest destination for international students that year. There are a number of reasons for this attraction. China is burgeoning post its successful implementation of progressive policies which has ultimately changed the paradigm of Chinese society. Massive government planning projects together with its domestic market characteristics have shaped China as a formidable economic giant. Both of China's privately-owned and state-owned enterprises (SOEs), are heavily investing outside of China, consequently creating a lot of opportunities for talents with an international mindset. All in all, the growing profile of China's leading institutions, an expanding scholarship and the relative affordability of Chinese higher education have been identified as notable factors in China's growing share of the world's international students (ICEF Monitor, 2018).

As with the flow of the international student continues, Chinese HEIs will assess to implement sophisticated systems like ERP for the management of international students. This study analyses many approaches that highlight the factors that affect the international students' behavioral intention to use the tailored ERP system in Chinese HEIs and provide a theoretical framework for the use of ERP system from users' end. This study also aims at providing crucial information and references to Chinese HEIs planning to introduce ERP system for the management of international students. The significance of the study is that it proposes to construct a systematic framework for researchers to study university-oriented resource planning systems from users' perspective in terms of perceived usefulness, perceived ease of use, attitude towards using, behavioral intention, the trust of the system and ease of use.

The paper is organized as follows. Section 1 gives a gist of the paper under review. Section 2 focuses on the literature regarding the ERP systems, ERP in Chinese HEIs and introduces the application of TAM model. Section 3 covers the hypothesis and conceptual framework for the proposed study. Sections 4 is dedicated to research methodology, data analysis and results. Reliability and validity analysis were performed using SPSS software. Data were further analyzed using path analysis and confirms Resource Optimization, Trust of the APP, Perceived Ease of Use, Perceived Usefulness, and Attitude towards Using to have a significant impact on international students receiving new systems. Finally, Section 5 provides discussion and conclusions, and Section 6 talks about limitations and area for future research.

2. Literature Review

2.1 ERP System

The rising quality and performance requirements, competitive education environments, along with decreasing governmental support have pressured universities worldwide to adopt new strategies to improve their performance (Fisher, 2006). Nielsen (2005) observes that ERP systems are often the largest software application adopted by universities with huge investments in their implementation. However, little research has been conducted about the ERP systems in a university environment. Due to the significant investments of resources made by the organizations to adopt ERP system, the researchers have a strong desire to explain the causes and the factors that lead to good performance with ERP systems (Kositanurit, Ngwenyama & Osei-Bryson, 2006). According to King, Kvavik & Voloudakis (2002) the main advantages of ERP in HEIs are (1) improved information access for planning and managing the institution, (2) improved services for the faculty, students and staff, (3) lower business risks, and (4) increased income and decreased expenses due to improved efficiency. ERP benefits the universities in terms of business and technical point of views. Higher education has always been a sector that has had unique organizational models, core processes and objectives as compared to other businesses. The higher education system supports few academic activities in colleges such as scheduling, a learning process – advising, follow up, performance indicators and examination process. With the growing number of international students in China, a well-structured management process should be implemented to achieve

overall effectiveness and efficiency in handling and managing day-to-day tasks. Previous studies have identified many similarities between implementing ERP system software in educational institutes and in other organizations (Soliman & Karia, 2015). Basoglu, Daim & Kerimoglu (2007) point out that the information systems cannot by themselves affect productivity, with the main efficiency factor lying in the way people command these technologies. Thavapragasam (2003) observes that the various researchers in this area have investigated ERP in terms of cultural constraints to gain some knowledge about its importance regarding implementation success and failure issues.

Kvavik, Goldstein, & Voloudakis, (2005) investigated the impacts of ERP system on the business processes and performance in higher education. The key questions of the study addressed whether or not ERPs enhance performance processes and studied the causal relationship between the roles of factors such as leadership and culture and their effects on ERP and business performance. The study concluded that ERP potentially improves business performances in higher education by enhancing services offered to students, faculty, and staff. Vevaina (2007) investigated the factors affecting the success or failure of the implementation process of the Enterprise Systems. The study found that the factors such as change management, behavior management, emotions, communication, the implementation process approach, and system functionality had profound effects on the implementation success. The paper also discovered the impact the functionality offered by an Enterprise System had on the usage of the system by the users, leading to the belief that system aspects must be taken into account when investigating the ERP system. Kvavik et al. (2002) observe that some studies have been conducted for varied purposes within the context of the higher education sector, with most of the studies aimed at evaluating ERP implementation success and outcomes in terms of the invested outlay, or issues regarding the implementation failure. Most of the studies neither gave attention to the user perspectives nor assessed ERPs in higher education. It just merely raised awareness and made some important contributions to the understanding and implementation of the ERP system. It is therefore important to study the implications of using ERP systems in higher education in order to address the role of ERP(s) in changing educational organizations and the implications of its use in Chinese HEIs.

2.2 ERP in Higher Education Institutions

A university's most valued assets are faculty, students, and staff. Each of them has distinctive interests within the same organization. For faculty, a university is a place to teach, conduct research, and write. For students, it is a place to learn, live, and entertain. For staff, it may share many features with corporate work, including management structure, hours, and HR practices.

According to Chauhan & Jaiswal (2016) acquaintance with Enterprise Resource Planning (ERP) is claimed to enhance the employability of students. Another study suggests that an Educational ERP System is a solution developed to bring together the various modules and processes in an educational environment and also to improve the efficiency of such processes (Kulkarni, Hegde & Sharma, 2015). Soliman & Karia (2016) concludes ERP system is crucial for service operations competencies in HEIs, their study also contributes practical implication regarding the concept, dimension, and innovation of service operation in HEIs. The ERP systems are one of the largest software applications that are adopted by universities and involve significant investments in their implementation (Abugabah & Sanzogni, 2010).

Evidence suggests that HEIs expect ERP systems to deliver improved overall performance for international college within Chinese universities. ERP system is expected to:

- Reduce costs by improving efficiency through computerization and automation;
- Enhance decision-making by providing accurate and updated organization-wide information in real time; both of which should then lead to improved overall performance (Abugabah & Sanzogni, 2010).

However, little or no research has been conducted about international students' perspective on using ERP in China. ERP system is capable of producing real-time information for management to respond to, thus improving control and strategic decision-making. According to the data provided by the China Ministry of Education (2018), altogether 1,004 HEIs in China recruited 492,185 international students. Out of 431 Chinese HEIs' with an average of 300 or more international students, 129 HEIs (approximately 30%) had some sort of ERP system; while a whopping 302 HEIs (approximately 70%) had no experience of using or implementing an ERP system (Regmi, 2016). With added benefits, Chinese HEIs will gradually shift from the ongoing practices to a more advanced and efficient system in their process by implementing an ERP system gradually.

2.3 Application of Technology Acceptance Model (TAM)

TAM has been used by researchers worldwide to understand the acceptance of different types of information systems. The technology acceptance model (TAM) is a theoretical model proposed by Davis on the basis of the theory of reasoned action (TRA). Technology Acceptance Model is one of the most popular theories that is used widely to explain Information System usage (Masrom, 2007). Several studies have been conducted which has led to the changes in the originally proposed model.

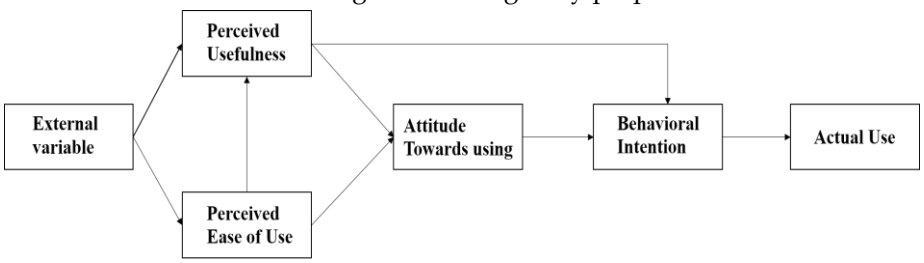

Fig. 1: Technology acceptance model

A study by Pavlou (2003) tries to evaluate the acceptance of eLearning systems by teachers through using TAM approach, whereby he developed a model to predict the acceptance of e-commerce by adding new variables of trust and perceived risk. According to the model developed by Pikkarainen, Pikkarainen, Karjaluoto, and Pahnila (2004) for understanding the acceptance of online banking in Finland, perceived usefulness and information in online banking play a very important role. Hsu & Chiu (2004) suggested a model which specifies the acceptance pattern and the important role of internet self-efficacy in e-service adoption. Ervasti & Helaakoski (2010) developed a model based on TAM and TPB to understand mobile service adoption which states that perceived usefulness is the pivotal factor in adoption.

TAM model suggests that the acceptance and use of new technology by users are influenced by the behavioral intentions, and the behavioral intentions are in turn influenced by the attitude of the users and perceived usefulness. Furthermore, attitudes are influenced by perceived usefulness and perceived ease of use. Perceived ease of use has a positive effect on perceived usefulness. Perceived usefulness and perceived ease of use are also influenced by external variables. TAM has been widely used to explain and predict the acceptance of new things and the behavior, such as Remote Medical Technology, ERP System, Electronic Commerce, Online Shopping, Internet Banking, Online Messaging Service, Web Blog, Mobile E-Commerce and so on.

3. Research Methodology

3.1 Hypothesis

For the proposed study, hypothesis was formulated taking clear reference from the literature review.

a. Resource Optimization

Researchers have found that resources are a key factor in achieving learning and adoption of information systems, and many studies have explained that perceived resources, as an external variable,

has a certain impact on the user's motivation to use information systems (Amoako-Gyampah & Salam, 2004).

There are fewer resources on the current ERP system for international students, which limit the daily learning and life of international students. In order to solve this problem, we have put forward the idea of optimizing resources. To implement the new ERP system, we must solve the resource problem, so that the new ERP system can meet international students' development needs. Whether international students adopt a new ERP system as their own way of life and study will mainly consider whether there is any resource content suitable for their own needs, whether the form of resource presentation is suitable for life and learning environment and whether the use of resources is convenient and easy to learn. Therefore, resource optimization and perceived usefulness, perceived ease of use are closely related. When the user feels that the life and learning resources meet his/her needs, the form of the resource presented is suitable for the life and learning environment, and the process of using resources is easy to understand, which will increase their acceptance of the new ERP system.

Therefore, we propose the following hypothesis:

H1: Resource Optimization has a positive impact on Perceived Ease of Use

H2: Resource Optimization has a positive impact on Perceived Usefulness

b. Trust of the APP

The premise for international students to trust the new ERP system is that they or their classmates believe the system could benefit them. It is our view that the trust about the overall benefit of the system plays a role in shaping the usage intentions. It deals with the belief that relates to the benefit of the individual and how a particular system would enhance his or her benefit. Since they will benefit from the new system, they will have confidence in the new system, it is theorized that it will have a positive effect on the PU of the ERP system.

Additionally, the trust of the ERP system will have an impact on its perceived ease of use. This is primarily due to the complex nature of ERP technology. Compared to traditional technologies, ERP systems require that users understand it and find its interface to be easy to use. According to the theory of information social impact, when people face the fuzzy situations and find difficulties to make decisions, they are more likely to have a herd behavior, that is, around the views and behavior of others as their own choice. The relevant research by Amoako-Gyampah & Salam (2004) also confirmed this point. Thus, we are proposing that the perceived ease of using an ERP system might be influenced by the extent to which a user believes that there is a strong belief in others that the system will be beneficial.

Therefore, we propose the following hypothesis:

H3: The Trust of APP has a positive impact on Perceived Ease of Use

H4: The Trust of APP has a positive impact on Perceived Usefulness

c. Perceived Ease of Use

Perceived ease of use refers to the ease with which the user feels when using the new system, that is, international students do not need to spend too much effort to use the new system. There is also a significant correlation between PEU and the use of behavior. The more relaxed the individual feels about using the new system, the more positive the attitude towards the new system and the higher the will to use it. In other words, the greater the operability and ease of use of the system, the higher the use value is considered, the greater the likelihood of adoption. This directly affects the construction of perceived usefulness. Some of the past studies have also shown that perceived ease of use has a significant effect on attitudes to use.

Therefore, we propose the following hypothesis:

H5: Perceived Ease of Use has a positive impact on Perceived Usefulness

H6: Perceived Ease of Use has a positive impact on Attitude towards using

d. Perceived Usefulness

In this paper, we define perceived usefulness as the degree to which international students can improve their lives and learning outcomes using new systems, and it is positively related to attitude and behavior intention. In other words, the higher the benefits that individuals receive from the new system, the more positive their attitude towards the new system, and the higher the intention to use it. The positive impact of perceived usefulness on attitudes and intention to use has been confirmed by a number of previous empirical studies.

Therefore, we propose the following hypothesis:

H7: Perceived Usefulness has a positive impact on Attitude towards using

H8: Perceived Usefulness has a positive impact on Behavioral Intention

e. Attitude

Attitudes are regarded as subjective positive or negative feelings when using the new system. Attitudes are determined by two important factors: Perceived Usefulness and Perceived Ease of Use. The positive impact of attitudes on behavioral intentions is not only confirmed by numerous empirical studies based on TAM, but also supported by a large number of studies based on theory of reasoned action (TRA) and theory of planned behavior (TPB) (Park, 2009).

Therefore, we propose the following hypothesis:

H9: Attitude towards using has a positive impact on Behavioral Intention

3.2 Conceptual Model

Numerous studies have shown that TAM is very effective in interpreting and predicting the acceptance of new things. Therefore, we believe it would be appropriate to apply TAM to the interpretation and prediction of students' acceptance and use of our APP (ERP).

This research adds two external variables to the TAM model, that is, the trust and resource optimization of APP. At the same time, these two additional external variables can have a significant impact on the existing variables in the TAM model. As shown in figure 2, we expand TAM and get an extended technology acceptance model for international students using a new system.

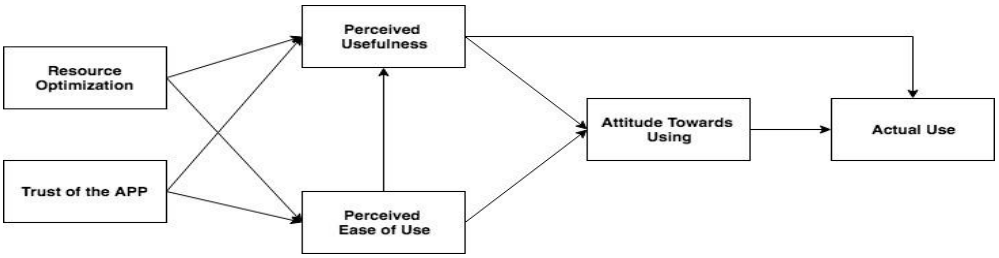

Fig.2 Conceptual Framework

4. Findings

4.1 Questionnaire Design

In this paper, we use a questionnaire survey method proposed by Davis (1989) to put a group of questions (variables) together to reduce the perplexity of the respondents when filling out the questionnaire. The questionnaire contained six variables, in which the scale of Perceived Usefulness and Perceived Ease of Use was derived from the Davis (1989) original scale. The scale of Trust of the APP was derived from the research of (Amoako-Gyampah & Salam, 2004). The scale of Attitude and Behavioral Intention was derived from the research of Nah (2004). The resource optimization scale was designed to refine the scale options according to the perceived resources defined by Mathieson, Peacock & Chin (2001). Before the formal investigation, the preliminary questionnaire was tested, and the questionnaire

was designed according to the problems reflected in the survey results. The whole questionnaire can be divided into two parts: the first part is personal information, including age, gender, geographical region, and current student status. The second part is the use of five-point Likert scale self-report questionnaire, a total of 30 questions where participants were asked to answer the question in the degree of consent, from (1 points) being the very likely (2 points) being somewhat likely (3 points) being Neutral (4 points) being Somewhat unlikely and (5 points) being very unlikely.

Influence factors	Survey questions	Reference
Resource Optimization	If the APP had the resources I wanted, I would like to use it for Pre-arrival information: a) Admission Notice b) Visa & Arrival Information c) Guidebook for arrival d) University Map and Address e) Emergency contact info	Mathieson, Peacock & Chin (2001)
	If the APP had the resources I wanted, I would like to use it for Settling down : a) Selection and booking dorm room b) Registration at the university c) Residence permit guidebook d) Setting up student account e) Online application forms for different issues.	
	If the APP had the resources I wanted, I would like to use it for Day to day administrative procedures: a) Class routine and academic calendar b) Events and notices from administration c) Online application for administrative purpose d) Communication with your coordinator e) Issuance of E-Transcripts	
	If the APP had the resources I wanted, I would like to use it for Access to lectures and class notes: a) Keeping track of your study b) Submitting assignments and function to capture lecture notes c) Attendance system d) Requesting information from lecturers e) Better communication between supervisors for graduate students	
	If the APP had the resources I wanted, I would like to use it for Finding internship/jobs: a) College/University approved Part-time jobs b) Enterprise to post full-time job position	
	If the APP had the resources I wanted, I would like to use it for Off Campus Engagement: a) Discount Coupons of different recreational places (pubs, restaurants, scenic spots) b) Finding a Job or Posting a job c) Regrouping with friends at different universities. d) hiring an student intern for different jobs e) Branding your items or your business at the platform	
	A clear process module of the APP can be good for me to arrange and keep track of my academic progress and social life	
	The rich content of the APP can make student life in China more convenient	
	The APP can help me get the information more efficiently	
Trust of the APP	I believe the APP will benefit me	Amoako-Gyampah & Salam (2004)
	My classmates believe in the benefits of the APP	
Perceived Usefulness	The APP can provide me with a wide range of services on and off campus	Davis (1989)
	The APP can help me get the information more efficiently	
	The APP will be useful for my study in China	
Perceived Ease of Use	I think it's easy to learn to use APP	Davis (1989)
	I think the operation of APP will not be complicated	
	It will be easy to get the APP to do what I want it to do	
	Overall, I hope the APP will easy to use	
Attitude Towards using	Using the APP would be a good idea	Nah (2004)
	Using the APP will be a wise choice	
	I think I would like to use the APP	
	Using the APP will be fun	
Behavioral Intention to Use	I am going to try using the APP	Lai & Chen (2011)
	I expect to use the information from the APP	
	I expect to use the APP immediately	

Table 1. Questionnaire on acceptance of international students

4.2 Data Collection

Sampling method was used for data collection. International students (hereon subjects) of graduate and undergraduate level from Nanjing University of Aeronautics & Astronautics were chosen through random sampling method. The survey questionnaires were distributed electronically. Subjects were asked to complete and submit an online questionnaire independently. The responses were then collected and retained. A total of 367 responses were collected of which, four invalid questionnaires were removed after initial examination. A statistical analysis was performed on the remaining 363 responses to evaluate and analyze their approval of the new system. The effective rate of the questionnaire was 98.91% and it met the requirements of this study.

Please evaluate the new APP objectively for resource optimization		**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Q2-1	If the APP had the resources I wanted, I would like to use it for Pre-arrival information Settling down Day to day administrative procedures Access to lectures and student progress Bridge for students and enterprises	1	2	3	4	5
Q2-2	A clear process module of the APP is good for me to arrange and keep track of my academic progress and social life	1	2	3	4	5
Q2-3	The rich content of the APP will make my student life in China more convenient	1	2	3	4	5
Please evaluate objectively for your Trust of the APP						
Q3-1	I believe the APP will benefit me	1	2	3	4	5
Q3-2	My classmates believe in the benefits of the APP	1	2	3	4	5
Please evaluate objectively for the Fit of APP						
Q4-1	The APP fits well with the needs of my study	1	2	3	4	5
Q4-2	The APP fits well with the needs of my campus life	1	2	3	4	5
Q4-3	The APP fits well with the needs of my requirement for part time job and also for full time job.	1	2	3	4	5
Please evaluate objectively for the Usefulness of APP						
Q5-1	The APP can provide me with a wide range of services on and off campus	1	2	3	4	5
Q5-2	The APP can help me get the information more efficiently	1	2	3	4	5
Q5-3	The APP will be useful for my study in China	1	2	3	4	5
Please evaluate objectively for the Ease of APP						
Q6-1	I think it's easy to learn to use APP	1	2	3	4	5
Q6-2	I think the operation of APP is not complicated	1	2	3	4	5
Q6-3	It will be easy to get the APP to do what I want it to do	1	2	3	4	5
Q6-4	Overall, I find the APP easy to use	1	2	3	4	5
Please evaluate objectively for your Attitude Towards APP						
Q7-1	Using the APP would be a good idea	1	2	3	4	5
Q7-2	Using the APP will be a wise choice	1	2	3	4	5
Q7-3	I like to use the APP	1	2	3	4	5
Q7-4	Using the APP will make me feel happy	1	2	3	4	5
Please evaluate objectively for your Behavioral Intention to Use the APP						
Q8-1	I am going to try using the APP	1	2	3	4	5
Q8-2	I expect to use the information from the APP	1	2	3	4	5
Q8-3	I expect to use the APP immediately	1	2	3	4	5

Table 2. Basic question structure for students

Variables	Properties	Number	Proportion
Age	Under 20 years old	61	16.62%
	20-25 years old	216	58.86%
	26-30 years old	68	18.53%
	Over 30 years old	22	5.99%
Gender	Female	65	17.71%
	Male	302	82.29%
Geographical Region	North America	4	1.09%
	Africa	93	25.34%
	Asia	237	64.58%
	Europe	20	5.45%
	Oceania	8	2.18%
	South America	5	1.36%
Current Student Status	Language Student	14	3.81%
	Undergraduate Student	224	61.04%
	Masters Students	76	20.71%
	PhD	41	11.17%
	Exchange Student	12	3.27%

Table 2.1 Basic structure of the samples

4.3 Analytical Methods

a. Reliability analysis

The reliability analysis uses a Cronbach's Alpha (α) value that reflects the inherent consistency. Using SPSS16.0, we calculated the Cronbach's alpha values for the whole scale and the subscales of each variable. According to the principle of statistical correlation, α coefficient is greater than or equal to 0.7, indicating that the measurement project has a good reliability. As can be seen from Table 3, the Cronbach's Alpha values for each variable, such as Resource Optimization, Trust of the APP, Perceived Usefulness, Perceived Ease of Use, Attitude Towards using, and Behavioral Intention to Use, were all greater than 0.7.

Variable	Number of questions	Cronbach's α
Resource Optimization	9	0.927
Trust of the APP	2	0.847
Perceived Usefulness	3	0.924
Perceived Ease of Use	4	0.918
Attitude Towards using	4	0.913
Behavioral Intention to Use	3	0.918

Table 3.1, Reliability analysis of the model

b. Validity analysis

Confirmatory factor analysis was used to test the validity of the measurement model that is the correlation between measurement items and potential variables. Confirmatory factor analysis is based on two important types of construct validity; the convergent validity and discriminant validity.

Convergent validity refers to the measurement of the same potential variable measurement project will fall on the same factor level, and the measurement items are highly correlated between the measurement values. The convergence validity can be evaluated using the load factor, combination reliability and mean variance extracted by confirmatory factor analysis to extract three values, and the three indicators are tested below.

Factor load is the correlation between the measurement item and the potential variable in the factor structure. For the same latent variable, the load factor of the corresponding measurement item usually requires more than 0.5. Any value greater than 0.7, the more ideal it is. The factor load of each

measurement item is shown in Table 3.2. The factor load of all measurement items is more than 0.7, which shows that the factor load of the model is ideal.

Combination reliability refers to the intrinsic consistency of the measurement items. The higher the value of the combination reliability, the higher the internal consistency of the measurement items that represent the same latent variable. Generally, the combination reliability value is above 0.7, which means that the combination reliability of measurement items is better. The combination reliability is shown in table 3.2. The combination reliability of latent variables represented by each measurement project is greater than 0.7, indicating that the internal consistency of the measurement model is higher.

The average variance extraction refers to the amount of variation in the amount of variation explained by the potential variable from the measurement item. The higher the average variance extraction value, the higher is the degree of the potential variable that the measurement item can interpret. In general, if the average variance extracted from latent variables is greater than 0.5, then the quality of the measurement model is better. In this study, the average variance extracted from each latent variable of the measurement model is between 0.60~0.9, suggesting that the measurement model is ideal.

Variable	Measure items	Factor load	Combined Reliability	Average Variance Extraction
Resource Optimization	RO1	0.730	0.9398	0.6346
	RO2	0.808		
	RO3	0.816		
	RO4	0.831		
	RO5	0.760		
	RO6	0.760		
	RO7	0.838		
	RO8	0.811		
	RO9	0.809		
Trust of the APP	TR1	0.931	0.9286	0.8668
	TR2	0.931		
Perceived Usefulness	PU1	0.925	0.9518	0.8681
	PU2	0.947		
	PU3	0.923		
Perceived Ease of Use	PEU1	0.894	0.9421	0.8026
	PEU2	0.921		
	PEU3	0.892		
	PEU4	0.876		
Attitude Towards using	AT1	0.912	0.9411	0.8001
	AT2	0.927		
	AT3	0.913		
	AT4	0.822		
Behavioral Intention	BI1	0.933	0.9491	0.8613
	BI2	0.940		
	BI3	0.911		

Table 3.2, The Convergence Validity of the model

The discriminant validity means that the square root of the average variance of the potential variable itself in the measurement model is greater than the common variance (or the correlation coefficient squared value) of the potential variable and any other potential variable, indicating that the measurement model has a good discriminant validity, that is to say the value of the diagonal than the peer, with the value of the same column. That means the value on the diagonal is greater than that of the peer and column. As shown in Table 3.3, the numerical value on the diagonal is greater than that of the same column in the same column, indicating that the model has good discriminant validity.

	RO	TR	PU	PEU	AT	BI
RO	0.797					
TR	0.561	0.931				
PU	0.627	0.727	0.932			
PEU	0.506	0.624	0.669	0.896		
AT	0.555	0.613	0.664	0.692	0.894	
BI	0.566	0.575	0.696	0.641	0.776	0.928

Table 3.3, The Discriminant Validity of the model

c. Structural model analysis

Amos 21.0 is used to analyze the structure of the research model to determine the fitting degree of the research model. The hypothesis test of the model uses the maximum likelihood. The higher the fit of the model, the higher the usability of the research. The suitability of the model is evaluated as shown in table 3.4.

The goodness-of-fit indices are to evaluate whether the Path analysis model diagram of the hypothesis matches the data collected. It mainly includes the absolute fitting index, the added value fitting index and the simplified fitting index. Except that GIF and AGFI are slightly less than ideal values, other indexes all reach ideal values, which show that the research model has good fitting degree and availability.

Evaluation Item		Evaluation Standard	Actual value
Absolute fitness index	CMIN/DF	<3	2.982
	Degree of fit(GIF)	>0.9	0.885
	Root mean square residual(RSR)	<0.05	0.029
	Root Mean Square Error of Approximation(RMSEA)	<0.08	0.074
Value - added fitness index	Comparative Fit Index(CFI)	>0.9	0.960
	Normed fit index(NFI)	>0.9	0.941
	Incremental fit index(IFI)	>0.9	0.960
	Adjust Goodness of Fit Index(AGFI)	>0.9	0.848
Simple fit index	Parsimony Goodness of fit Index(PGFI)	>0.5	0.674
	Parsimony-adjusted NFI(PNFI)	>0.5	0.792

Table 3.4, Goodness-of-fit evaluation of the model

4.4 Results

In order to reduce the measurement error as much as possible, in this study, two exogenous variables and four endogenous variables are reduced according to the variables described which represent the values of each variable when model reduction is performed. On the path, resource optimization, trust two exogenous variables, through cognitive usefulness and cognitive ease of these two intermediate variables to form potential variables, thus affecting attitudes, and ultimately affect behavioral intentions.

The table 3.6 is a non-normalized regression coefficient and its significance test summary table, the first column is the impact path of the two variables, the second column is the estimated value with non-standardized coefficient, the second column is the standard error of the estimated parameters, the third column is the test statistic (critical ratio), the critical ratio is the t-test t value, which is greater than 1.96 indicates the significance level of 0.05, the fourth column is significant. For example, the six items that describe the resource optimization content are averaged as characteristic variables of the resource.

Code	Hypothesis	Test Result
H1	Resource Optimization has a positive impact on Perceived Usefulness.	Supported
H2	Resource Optimization has a positive impact on Perceived Ease of Use.	Not Supported
H3	Trust of the ERP System has a positive impact on Perceived Usefulness.	Supported
H4	Trust of the ERP System has a positive impact on Perceived Ease of Use.	Supported
H5	Perceived Ease of Use has a positive impact on Perceived Usefulness.	Not Supported
H6	Perceived Ease of Use has a positive impact on Attitude towards Using.	Supported
H7	Perceived Usefulness has a positive impact on Attitude towards Using.	Supported
H8	Perceived Usefulness has a positive impact on Behavioral Intention to Use.	Supported
H9	Attitudes has a positive impact on Behavioral Intention to Use.	Supported

Table 3.5, Test of Relation between dimensions

Path	Estimate	S.E.	C.R.	P
RO→PEU	-0.080	0.220	-0.362	0.717
TR→PEU	0.969	0.187	5.180	★★★
RO→PU	0.322	0.150	2.145	★
TR→PU	0.604	0.185	3.261	★★
PEU→PU	0.153	0.090	1.699	0.089
PU→AT	0.373	0.069	5.387	★★★
PEU→AT	0.545	0.072	7.529	★★★
AT→BI	0.666	0.069	9.644	★★★
PU→BI	0.337	0.064	5.264	★★★

Table 3.6 the Results of Model Path Analysis

★★★Means P<0.001, ★★means P<0.01, ★means P<0.05

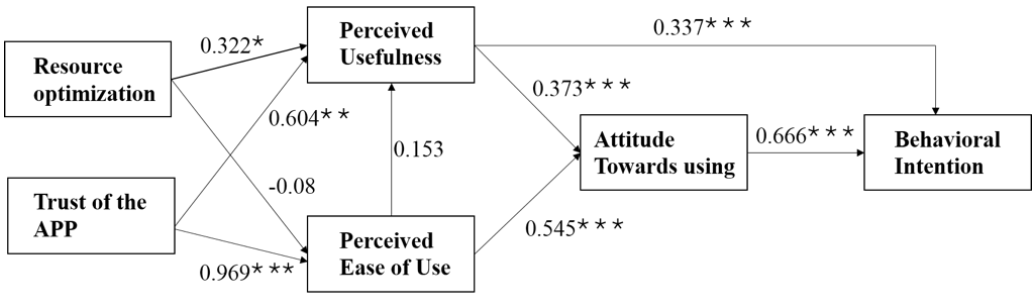

Figure 3, Results of Model Path Analysis

As can be seen from table and figure 3.6, Resource Optimization is positively related to Perceived Usefulness. Resource Optimization has a positive impact on Perceived Usefulness (P<0.05), thus confirming Hypothesis 1. However, the effect of resource optimization on Perceived Ease of Use is not significant and the coefficients are negative (P=0.717). Unfortunately, Hypothesis 2 is not confirmed. A guesstimate for this non-confirmation could be that the students might think that because there are a greater number of resources, operation will be more complex which would make the system difficult to use. It also shows that Resource Optimization Affects Perceived Usefulness rather than Perceived Ease of Use. Resource Optimization value effectively enhances the user's understanding of the usefulness of the

new system. When users value the optimization of resources better, they will feel that the new system is more useful and will be more willing to use it. This strongly supports the optimization of resources plays an important role for the use. The Trust of APP has a significant positive impact on Perceived Ease of Use (P<0.001) and Perceived Usefulness (P<0.01). Hypothesis 3 and hypothesis 4 are both confirmed. This means that users have a higher degree of trust in the new system, and they will feel that the new system is more useful suggesting more inclination to use it. Perceived Ease of Use has no significant impact on Perceived Usefulness. Hypothesis 5 is not confirmed. Perceived Ease of Use has a significant positive effect on Attitudes (P<0.001), and hypothesis 6 is confirmed. Perceived Usefulness has a significant positive impact on Attitudes (P<0.001) and Behavioral Intentions (P<0.001). Hypothesis 7 and 8 are both confirmed. Attitudes have a significant impact on behavioral intentions. Hypothesis 9 is confirmed.

From the above analysis, we can see that the Trust, Resource Optimization, Perceived Ease of Use, Perceived Usefulness and Attitude will directly or indirectly influence the behavior intentions of international students towards the new system. It also shows that the new system could be very useful for the international students.

5. Discussion and Conclusions

Although there were prior studies in the context of ERP acceptance at HEI's, however as with the rise of international students in China, acceptance of ERP system with TAM approach still remained elusive due to lack of prior studies or empirical evidence. This study uses structural equation model (SEM) analysis to make a theoretical framework for the use of ERP in relation to the intention of use of the ERP by the international students in Chinese HEIs. Through an empirical study of the explanatory capacity of the Technology Acceptance Model (TAM) we conclude that the Resource Optimization, Trust of the APP, Perceived Ease of Use, Perceived Usefulness and Attitude Towards Using will have a significant impact on international students receiving new systems.

This study extends the findings from Ervasti & Helaakoski (2010) that Perceived usefulness is an important factor for adoption of the new system. As many studies have explained that perceived resources, as an external variable, has a certain impact on the user's motivation to use information systems, this paper included Resource Optimization and Trust of the App as the external variable as mentioned on the study by Amoako-Gyampah & Salam (2004). By doing so we improvised on the theory by Pavlou (2003) and added those external variables.

While on the managerial aspect, prior studies from Kulkarni, Hegde & Sharma (2015) this study adds evidence on how ERP system at Chinese HEI's would benefit the international students, administration and faculties. In line with studies from Soliman & Karia (2016) the acceptance of ERP system is crucial for service operations competencies in HEIs, this study also contributes practical implication regarding the concept, dimension, and innovation of service operation in HEIs

a. Resource Optimization has a positive impact on the Behavior Intentions of international students receiving new systems.

Resource Optimization has a positive impact on Perceived usefulness and influences the Behavior Intention of international students on the new system through Perceived Usefulness. Resources are the necessary material basis for international students to study and live. The resources in the new system are an important component of the new system and the necessary material basis. It is also a way for international students to obtain information. For international students, if the resources in the new system are abundant and the quality is good enough, and it is easy for them to acquire the needed and useful resources in their study and life, they could learn and live more easily and efficiently. If it is difficult to find the required resources in the process of using the new system, it can't meet the needs of learning and life, and can't achieve the goal; users will give up participating in the new system. Therefore, in order to

promote the development and application of new systems, we must design and develop new and rich resources to meet the needs of international students at any time and place to obtain information.

b. Trust of the APP has a positive impact on the Behavior Intentions of international students receiving new systems

Trust of the APP has a positive impact on Perceived Ease of Use and influences the Behavior Intention of international students on the new system through Perceived Ease of Use. Trust of the APP has a positive impact on Perceived usefulness and influences the Behavior Intention of international students on the new system through Perceived Usefulness. Trust is a prerequisite for users to use the new system, and the user would trust the new system if they believe that the new system can benefit them. Therefore, it is necessary to investigate and publicize the new system before the implementation of the new system, so that students can understand the new system, and can see the benefits of the new system.

c. Perceived Ease of Use has a positive impact on the Behavior Intentions of international students receiving new systems

The easier it is for international students to use the new system, the simpler the operation of the various activities by means of mobile devices or computer equipment, the more likely they are to accept the new system. On the contrary, if it is difficult to grasp the operation of the new system, it will affect the enthusiasm of international students to participate in the new system.

d. Perceived Usefulness has a positive impact on the Behavior Intentions of international students receiving new systems

It will be more likely for international students to accept the new system if they realize that the new system can meet the needs of picking up information anytime and anywhere and meet their needs for informal learning and lifelong learning and improve their learning performance and work performance.

The analysis of the empirical results from this study can provide the theoretical basis and practical support for the implementation of the corresponding development strategy. It can also provide the direction for the development of new ERP system to a certain extent only. The finding reveals that in the process of the development and implementation of the ERP systems, it is imperative that such system should be able to provide rich resources to help international students to improve the quality of work, life and study in China; Before the overall application of the new system, it should be applied in a small scope with expanded publicity, so that students have a certain understanding of the new system. It will also assist to improve system resource availability design to ensure that new system resources are useful and easy to use for faculties and administrators as well.

6. Limitation and Direction for Future Research

In this paper, two factors are selected to express the influence on the acceptability of technology by college students according to the existing literature and theoretical analysis. In the current research, there is still some controversy about the selection of influencing factors, as there may be some factors that were not taken into account in establishing the model to lead to erroneous evidence. Therefore, based on this article, we can add some variables to do a further in-depth study.

The survey questionnaires were drawn and were distributed to the respondents. We assume that respondents truthfully responded to the survey questionnaires. However, due to time and financial constraints, the collection of data on the acceptance of students in this study is mainly based on the form of online questionnaires and only investigated with universities in Nanjing. As the sample data is not detailed enough, the sample size may not be large enough to lead the empirical analysis. In future research, we can expand the sample, and take a variety of data analysis methods to carry out research in order to enhance the accuracy of the research and reliability.

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