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Technology Acceptance in Public Sector Universities: A Case Study of University of the Punjab

Waseem Subhani	Assistant Professor, Institute of Business Administration, University of the Punjab, Lahore, Punjab, Pakistan.
Muqaddas Rehman	Professor, Institute of Business Administration, University of the Punjab, Lahore, Punjab, Pakistan.
Waqas Baig	Institute of Business Administration, University of the Punjab, Lahore, Punjab, Pakistan.

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Corresponding Author:

Waseem Subhani
Email: waseemsubhani@ibapu.edu.pk

Abstract: *Through the mediating role of behavioral intention and moderating role of experience, this study aims to determine that how well Enterprise Resource Planning (ERP) is accepted and used in public universities, such as evidence from the University of the Punjab by using the UTAUT model. Data is gathered from the 340 employees working in the different Enterprise Resource Planning (ERP) departments in the University of the Punjab. The boundary conditions and mechanisms between UTAUT model and employee behavior were estimated using SEM. SEM strongly agreed that behavioral intention partially mediated the impact of the UTAUT model on employees' behavior. We discovered that experience can increase the indirect effects of behavioral intention on employee behavior. The research limitation is a longitudinal study. The study results have implications for exploring how the UTAUT model affects employees' behavior within the organization. This is the first study to examine the mediating role of behavioral intention and the moderating effect of experience in determining the relationship between UTAUT model and employee behavior using multi-source data from the educational sector.*

Introduction

Enterprise resource planning, or ERP, is a data framework package that organizes data and database procedures both inside and outside of an organization (Singh & Randhawa, 2020). Enterprise resource planning (ERP) systems include a full set of tools for integrating and controlling all aspects of organizational operations, such as HRM, accounting and financial applications, SCM, and so on (Alsharari et al., 2020; Alsharari, 2022). ERP promotes an all-inclusive integrated information system that covers every practical area, such as production, distribution, payables, receivables, inventories, accounting, human resources, and acquisitions, among others. ERP automates essential organizational processes and improves client management. ERP gets rid of any barriers between coworkers, so they can work together all the time. ERP is a good way for executives to make their work better. Studies show that even though there are many benefits to using an ERP system, many of the needs of higher education institutions are still not met (Lyapina, et al., 2019.) There were many different kinds of requirements, like organizational, educational, functional, (Abugabah & Sanzogni, 2010). Agrawal and Mittal (2019) said that education is the most important area that can immediately

benefit from technological advances. If universities want to adapt changes in technology, they have a better chance of growing (Tarhini et al., 2019). Countries all over Europe, like the UK, Germany, and Italy, need to use new technologies to help with education (Soliman, & Noorliza, 2022). Compared to more developed countries, Pakistan's enterprise resource planning (ERP) is not as easy to use and implement. The Pakistan Higher Education Commission has signed a contract with people of oracle, a campus solutions supplier, to give the country's public universities high-tech IT solutions (Nizamani et al., 2014).

The ERP system has a lot of merits and demerits. In the Pakistani environment, universities are not aware of the ERP system. Compared to private sector universities in Pakistan, the number of people who get into and stay in public universities is low. So, there is a need that ERP acceptance and use are much further along and more effective in private-sector institutions than in public-sector institutions. This is because of things like bad management, lack of training, lack of money, lack of interest, and unknown fear (Bamufleh et al., 2021; Nizamani et al., 2014).

Evolution of ERP System

Enterprise resource planning systems have changed a lot since they were first used in the 1970s. Around 1960, firms started to use methods for keeping track of their inventory. In the 1970s, most organizations were focused on the 1980s. MRP II was made to make it easier to coordinate production and distribution management. MRP systems were expanded and moved to their second phase (Abdinnour-Helm et al., 2003). MRP II took a completely different approach than the first two MRPs (Khan et al., 2010).

The MRP-II grew to include business in back 1990s, human resource management, finance, engineering, and management of project. Since then, it has added other major business sectors. This MRP-II extension is now called the ERP. In the present day, a new generation of enterprise resource planning (ERP) technologies is coming out. Extended enterprise resource planning systems is the name for this new change. These systems are smarter and better at handling orders, purchasing and sales, HRM, finance, accounts, sales, business planning, manufacturing, client interactions, and inventory management.

Significance of Study

The HEC of Pakistan has been working for a long time to improve how well the educational institutions work. HEC and Oracle People Soft Campus Solution have made a deal for HEC to provide Pakistan's public institutions with high-tech IT solutions. In Pakistan, a campus management system was first used as a pilot project at six (6) institutions, according to the Higher Education Commission's annual report for 2008. With the agreement, these are the names of the universities that are taking part in this pilot project:

- University of the Punjab (PU) in Lahore; Islamia University (IU) in Bahawalpur (IUB)
- Karachi's Dow University of Health Sciences (DUHS)
- Islamabad, Quaid-e-Azam University (QAU)
- Engineering and Technology University of Peshawar (UET)
- Quetta, Baluchistan University of Information Technology and Management Sciences (BUITEMS)

The project began in 2009, in the middle of 2007. IBA Sukkur is considered the seventh Institute. This project is backed in Pakistan by Curiologix, an Oracle Partner Company (Oracle PeopleSoft CMS, 2009). More institutions have put money and budgets into building ERP systems:

- Lahore University of Management Sciences, in Lahore (LUMS)
- Jamshoro, Liaqat University of Medical and Health Sciences (LUMHS)
- Karachi's Aga Khan University (AKU)

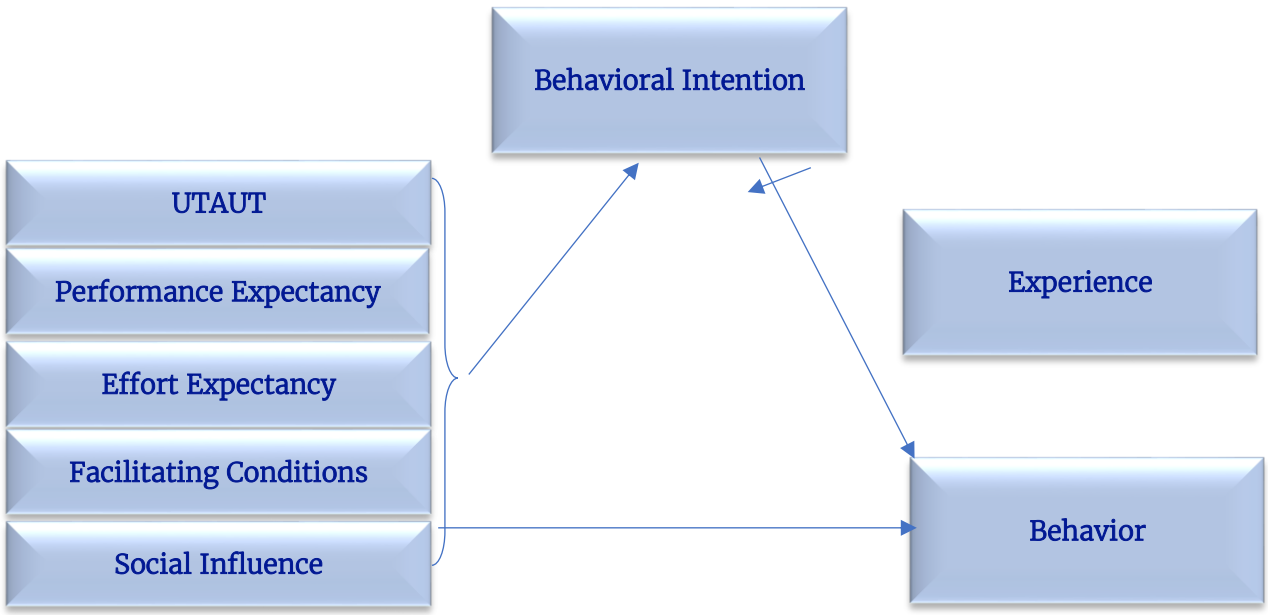
It is a big change for Pakistani institutions, which went from old systems to campus-intensive integrated systems. Oracle is a multinational company that makes many different kinds of products. PeopleSoft solutions have been adopted by 48% of public and private colleges in the US (Oracle PeopleSoft CMS, 2009). Several modules make up the system, which is part of the PeopleSoft Enterprise Campus Solutions (Nizamani et al., 2014).

Originality of study

There isn't a lot of empirical research on how ERP is accepted and used in public and private universities in Pakistan. Second, it is important to evaluate the success of ERP deployments because they require a lot of money and people (Nizamani et al., 2014). The lack of mandatory modules is the main reason why the ERP system isn't being used well (Batada et al.,2005). As a result, this study gave a model for how public sector institutions should use ERP systems. This research tries to find out how ERP systems are Punjab.

used at the University of the Punjab. This is called "technology acceptance." Since the technology and information system were put in place, it has been clear that end users have accepted the technology. Researchers and consultants have been confirming that end users accept technology and information systems since the beginning of the field (Bhatiasevi, 2016). The unified theory of acceptance and use of technology (UTAUT) model is made up of eight unified theories and models. It brings together different theoretical concepts and frameworks, such as the reasoned action theory (TRA; Fishbein & Ajzen, 1977), the Model of Motivational (MM) (Deci et al 1991; Pavlou & Fygenson, 2006); the PC Model; Use (MPCU; Triandis, 1979; Thompson, Higgins, & Howell, 1991), Social Cognitive Theory (SCT; Bandura, 1989), and the Diffusion of Innovation Theory (DOI; Rogers, 2003). Due to its high explanatory power of 70%, this study uses the UTAUT model to look into how ERP is accepted and used at the University of the

Theoretical Framework



Proposed Objectives, Research Questions, Research Hypotheses:

Objective of the Study

The primary goal of this study is to investigate the factors influencing ERP system acceptability and use in public sector universities in the context of the University of Punjab. As a result, the following specific objectives to focus in this study:

1. To determine the direct relationship of UTAUT with the behavior.
2. To determine the mediating role of behavioral intention between the UTAUT and the behavior.
3. To determine the moderating role of experience between the behavioral intention and the behavior.

Research Questions

The key research question that address "the lack of ERP acceptance and use among public sector universities, how can public sector universities apply ERP as a scalable platform that enhance the relationships among technological, contextual, and organizational processes that impacts business success"? The specific research questions that investigated in this study are:

1. Does the direct relationship of exist between the UTAUT with the behavior?
2. Does the mediating role of behavioral intention exist between the UTAUT and the behavior?
3. Does moderating role of experience exist between the behavioral intention and the behavior

Research Hypotheses

Hypotheses	Hypothesized Relationships
H1	There is a significant relationship between PE and use behavior (acceptance & use) of ERP within the context of university of the Punjab.
H2	There is a significant relationship between EE and use behavior (acceptance & use) of ERP within the context of university of the Punjab.
H3	There is a significant relationship between SI and use B (acceptance & use) of ERP within the context of university of the Punjab.
H4	There is a significant relationship between FC and use B (acceptance & use) of ERP within the context of university of the Punjab.
H5	There is a significant relationship between BI and use B (acceptance & use) of ERP within the context of university of the Punjab.
H6	BI mediates the relationship between the UTAUT model and behavior.
H7	E moderate the relationship between BI and use behavior (acceptance & use) of ERP within the context of university of the Punjab?

Method

This quantitative research examined the factors that affect the acceptance & use of ERP systems in SMEs using Venkatesh et al. (2003) UTAUT model.

Population and Sample

The population in the present study were the employees using ERP systems in the University of Punjab. A representative sample of the population it is necessary for the sampling frame to be complete in all elements. Whereas the probability sampling technique is used for the sampling.

Instrumentation

This study uses the adapted scale of Venkatesh et al. (2003). The original UTAUT survey was changed in the manner that the questions are worded to better fit how ERP is accepted and used at the University of the Punjab. In the survey, the

UTAUT model was used to find out how performance expectancy (PE), effort expectancy (EF), social influence (SI), facilitating conditions (FC), and use behavior (UB) are related.

Data Collection

The online survey tool has been used to find out how people at the University of the Punjab accept and use ERP technology. Google Survey Form was used to set up and run the survey. The survey also inquired information about gender, age, years of experience, previous technology training, current skill level, and organization major.

Results

In the table below, you can find information about the study's participants' gender, age, marital status, number of employees, and level of education.

Table 1

Study Demographics

Study Demographics			
Age	25-30	32	10.0
	31-35	53	16.6
	36-40	33	10.3
	41-45	99	30.9
	46-50	43	13.4
	50 Above	60	18.8
	Total	320	100
Gender	Female	118	36.9
	Male	202	63.1
	Total	320	100
University Department	Chemistry	50	15.6
	IBA	50	15.6
	Sociology	40	12.5
	Physics	40	12.5
	Islamic Studies	40	12.5
	English	50	15.6
	Mass Com	50	15.6
	Total	320	100
Education	Intermediate	11	3.4
	Graduate	65	20.3
	Masters	123	38.4
	Ph.D	75	23.4
	Others	46	14.4
	Total	320	100

In this study, information is gathered from the different university departments, and SPSS is used to figure out the number of people in each age group, gender, university department, and level of education. In this study, 320 people, 118 of whom are women and 202 of whom are men, gave information. Most of the people who answered are in their 20s or 30s. Most people have a lot of experience, and the group has been around for too long.

Table 2

Normality Analysis

Item	Mean	St. Dev.	Kurtosis	Skewness
Performance Expectancy	3.25	.675	.223	-.765
Effort Expectancy	3.65	.678	.398	-.899
Social Influence	3.85	.688	.567	-.756
Experience	3.55	.765	.687	-.885
Behavior	3.45	.776	.654	-.789
Behavior Integrity	3.95	.798	.409	-.665
Facilitating Condition	3.88	.775	.709	-.678

The above table shows how the data are normally spread out. Bulmer came up with the rule of thumb method for figuring out skewness in 1979. He said that its value must be between +1 and -1. Mac Gillivary and Balandan (1995), who came up with the scale for kurtosis, said that its value was between +3 and -3. All of the skewness values in the table above are between +1 and -1, and all of the kurtosis values are between +3 and -3. So, based on the above table, we can say that the data has a normal distribution and can be used for more analysis.

Table 3

Items	Items	Cronbach Alpha
Performance Expectancy	07	0.789
Effort Expectancy	05	0.877
Social Influence	04	0.890
Experience	05	0.790
Behavior	05	0.799
Behavior Integrity	04	0.776
Facilitating Condition	04	0.865
Over All	34	0.899

Reliability analysis is very important for making sure that both the instrument and the questions in the questionnaire are reliable. It is important to test before using the different tests, because it is easy to rule out things that cause trouble. As a general rule, if Cronbach's alpha is 0.7 or higher, the instrument is good, 0.8 or higher is better, and 0.9 or higher is the best. The Cronbach's value for each item is shown in the table above. All of the variables have values above 0.7, which is a good rule of thumb. Overall, the instrument's reliability is above 0.7, which is the best.

Table 4

Items	1	2	3	4	5	6	7
PE	1						
EE	.649**	1					
SI	.455**	.520**	1				
E	.457**	.555**	.333**	1			
B	.565**	.589**	.434**	.345**	1		
BI	.513**	.655**	.343**	.543**	.432**	1	
FC	.669**	.478**	.545**	.345**	.412**	.423**	1

The value of the correlation matrix should be between 0 and 1and significance = p<.001, p<.005. The value 1 shows that the relationship between the two variables is extremely strong. And a value of 0 means there is no link between the two variables. At the 1% level of significance, the above table shows that all of the variables have a very strong relationship with each other.

Figure 1

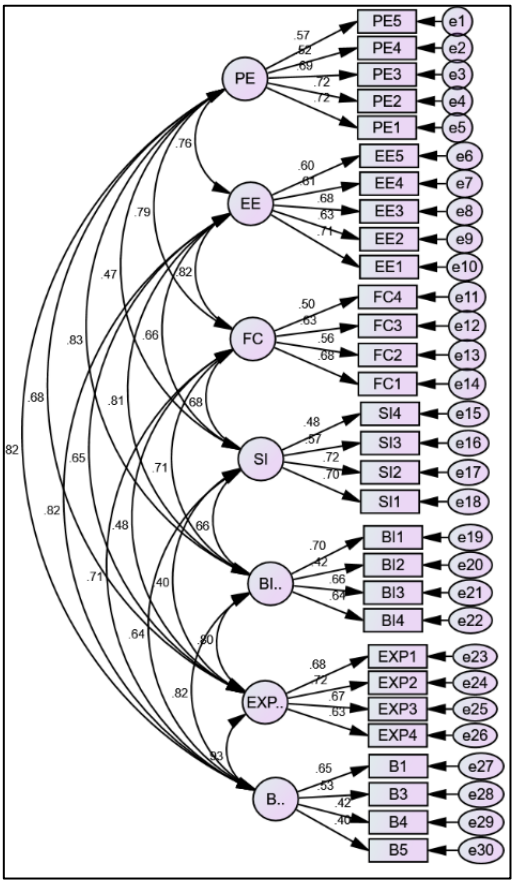


Table 5

Model	Thresholds	Hypothesized
GFI	0.9>	0.910
AGFI	0.9>	0.905
CMIN/DF	0.3<	3.00
RMSEA	0.08<	0.065
RMR	Closer to 0	0.072

The SEM is used for the evaluation of the model and the covariance-based SEM is used for the analysis of the SEM overall model fit and its indices is used. Most of the work is done through this SEM.

Hypothesis Testing

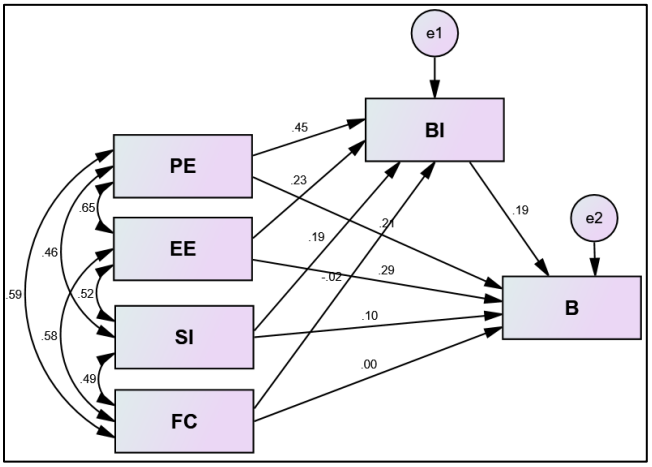
The direct relationship between the variables is shown in the table below. All the important things about the relationship are good and important.

Table 6

Estimate			S.E	C.R.	P	Hypothesis
B	<----	SI	0.077	1.801	***	Accepted
B	<----	EE	0.075	2.234	***	Accepted
B	<----	BI	0.067	2.533	***	Accepted
B	<----	PE	0.089	1.113	***	Accepted
B	<----	FC	0.096	4.112	***	Accepted

Mediation Analysis

Figure 2



Part of the model is the definition of the mediator. Using the bootstrapping method of Bollean and Stein's 95 confidence interval and the indirect path, mediation is calculated in a model. The results of the mediation are shown in the table below. On the first path as PE(IV) and B(DV), BI (Med.). The value of the direct path is significant (0.46***), and so is the value of the indirect path (0.11***). The values show that the path has some kind of mediation. In the second path, EE (IV) and B (DV) both lead to BI (Med.). The value of the direct path isn't important (0.29***), and the value of the indirect path is also important (=.12***). The values show that the path offers full mediation. On the first path as SI (IV) and BI (DV), B (Med.). The value of the direct path is significant (=.26***), and the value of the indirect path is significant, too (0.14***). The values show that the path offers full mediation. On the fourth path as FC (IV) and BI (DV), B (Med.). The value of the direct path is significant (0.35***), and the value of the indirect path is significant (0.17***).

Table 7

Hypothesis	Dβ W/O Med.	Dβ W/O Med.	Iβ	Results
PE-BI-B	β= 0.46***	β= 0.36***	β= 0.11***	Partial Mediation
	p=0.01	p=0.00	p=0.01	
EE-BI-B	β= 0.29***	β= 0.30***	β= 0.12***	Partial Mediation
	p=0.01	p=0.00	p=0.01	
SI-BI-B	β= 0.26***	β= 0.20***	β= 0.14***	Partial Mediation
	p=0.01	p=0.00	p=0.01	
FC-BI-B	β= 0.35***	β= 0.26***	β= 0.17***	Partial Mediation
	p=0.01	p=0.00	p=0.01	

Moderation

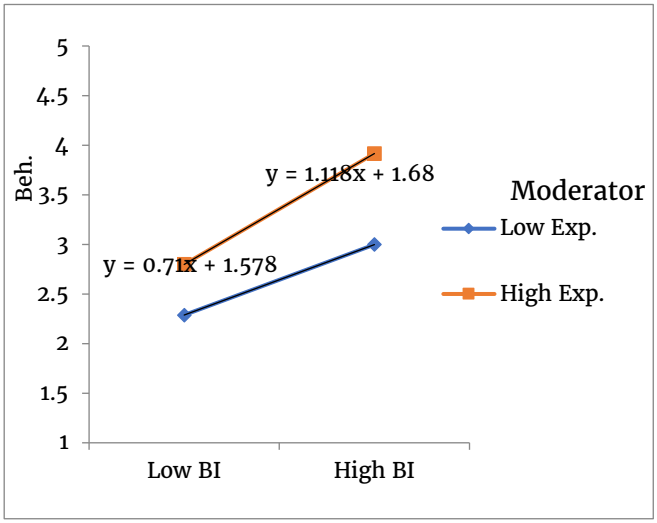
The simple effect analysis looks at how the relationships work together in two ways. Gaskin (2016) recommended the "Stats Tools Package" as a way for people to talk back and forth. For two-way interaction, you need the unstandardized regression coefficients for the IV, the moderator, and the interactional variable in order to plot the graph. The simple slope of the graph shows how important moderation is from a statistical point of view. The intercept/constant box needed the number 3, and it was very important to put it in the right box. Through

linear regression analysis in SPSS, you can find out the value of regression coefficients that are not standardized.

H: *Moderation of Experience between Behavioral Integrity and Behavior*

The graph is used to do the moderation analysis. The graph shows how BI (IV) and B (DV) affect each other. Through linear regression in SPSS, you can get the unstandardized regression coefficients (B) for all variables. The unstandardized regression coefficient for the first variable, IV (PE), is B1 = 0.457 (p = 0.002). The second variable is the moderator (HPD), which has a value of B2 = 0.357 (p = 0.000) for its unstandardized regression coefficient. The third variable is the interaction of BI (IV), B (DV), and E as a moderator. Its unstandardized regression coefficients value is B3 = 0.102 (p =.000). The results show that E makes the link between BI (IV) and B stronger (DV).

Figure



Conclusion

This study was done to see how the UTAUT model worked with the University of the Punjab's academic staff. In this way, it is a very important study in Pakistan's higher education system. The study comes to the conclusion that there is a strong link between UTAUT factors like performance expectations, effort expectations, conditions that help, and social influence and behavior. Also, the relationship between the behavior and the UTAUT factors is mediated by behavioral integrity. The study also shows that the relationship between behavior integrity and behavior is moderated by job experience. This is an important study about UTAUT factors and behavior in the context of higher education in Pakistan. It has implications for the management of higher education institutions and those who make policy in higher education.

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