

E-Utaut: An Extended Model in Addressing Student Course Registration

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Abstract— Student course registration is a fundamental process within most educational institutions enabling students to interactively ascertain courses to be registered for seasonally. The adoption of software based registration system has eliminated the fundamentals issues associated with previous based registration systems. The restrictiveness of UTAUT was a fundamental purpose for extending it in addressing course registration using two additional construct of UTUAT: ease of use and system availability. Eighteen (18) anonymous system users cutting across six universities with experience ranging between 1 – 12 years of system usage and aging ranging between 18 – 30 years were employed for this research. All system users were employed on a voluntary basis using the construct of UTAUT: performance expectancy, effort expectancy, and social influence, ease of use, system availability and facilitating condition. The performance of the Extended UTUAT (E-UTUAT) was portrayed using six graphs depicting UTAUT constructs with results ranging for 83%, 39%, 56%, 72%, 72% and 67% for Yes respectively.

Index Terms— E-UTAUT, UTAUT constructs

I. INTRODUCTION

A system is an interdependent group of items forming a unified structure (McLuhan, 2014). Every system is delineated by its boundaries, which comprises of its environmental surrounding. These boundaries define its structured functionalities. In [computer science](#) and [information science](#), systems are [software entities](#) which has interacting [components](#) as its structure and observable [inter-process defines its](#) behavior (Rafael, 2012).

Software systems have been designed, simulated and implemented in numerous establishments, with the banking; agricultural and mining sector benefiting tremendously from these software systems. Software system has facilitated prompt dissemination of financial records while enabling customers to obtain customer eccentric services and satisfactions which has indeed enhanced banking processes. Software system versatility is responsible for facilitating agro-allied processes such as purchases, inventory, storage and retrieval of prompt agro-allied products and services (Naveen, 2014; Rafael, 2012).

The rapid expansion of population; indeed has had tremendous impact on the population growth of students within the educational sector. Universities students both locally and globally have been affected by the way universities operations are handled and executed within these institutions. These operations determine the success of the education institutions. Student course registration is a

fundamental process within most educational institution (Shreedevi, 2015). This registration processes enables students to interactively ascertain and pin down the number of courses (electives, mandatory and core courses) needed to be registered for a semester and invariably a session. Student course registration in most universities has been handled using manual techniques, in which case a student is given a manual forms designed with the input from relevant parties (departmental and faculty advisors). This forms identified relevant courses for which the student is expected to fill and submit back to their respective course adviser (Norafizah, 2011; Shreedevi, 2015).

Overtime, the conventional approaches used in registering students have been marred with fundamental issues which may have prevented prompt and accurate student records. Student records have been inaccurately kept due to the cumbersome and bulky nature of obtaining and maintaining these records. It has also been noted that student records has been growing exponentially, outpacing the available number of advisers required to handle student advisory and maintain accurate records. The student exponential growth has not only resulted in increased hours of work but has enshrined nepotism, bias and favoritism giving the avenue for individual interaction and personalization. The aforementioned issues has forced universities management to sort out a more appropriate avenue in addressing the fundamental limitations of student courses registration, eliminating bulkiness, cumbersomeness and the overhead cost operations (Norafizah, 2011; Shreedevi, 2015).

The implementation of these systems has not been fully adopted and its usage not fully accepted by various system user (), leaving room for system re-evaluation using an appropriate user acceptance and technological model. Although the Unified Theory of Acceptance and Use of Technology (UTAUT) has been used overtime, portraying it usefulness and extensiveness, its application in addressing student registration, perhaps has been difficult due to Ease of Use (EU) and System Availability (SA) integral component lacking within the existing UTAUT model (Lin, 2005; Liu, 2006; Jayantha, 2011).

Therefore it is the intent of this research paper to extend UTAUT model through the inclusion of two integral components: Ease of Use (EU) and System Availability (SA) in assessing student registration.

II. UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY (UTAUT)

Unified Theory of Acceptance and use of technology was postulated by Venkatesh (Venkatesh, 2003) by consolidating the previous acceptance model with the main of achieving

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comprehensiveness in technological acceptance. This model is built on four key constructs which are: performance expectancy, effort expectancy, social influence and facilitating conditions while moderated using age, experience, gender and voluntariness of use. Figure 2.1 captures this model.

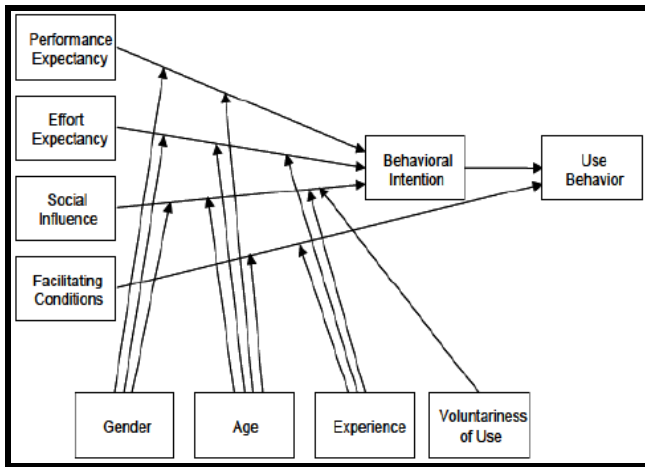


Figure 2.1: Graphical description of UTAUT Model (Venkatesh, 2003)

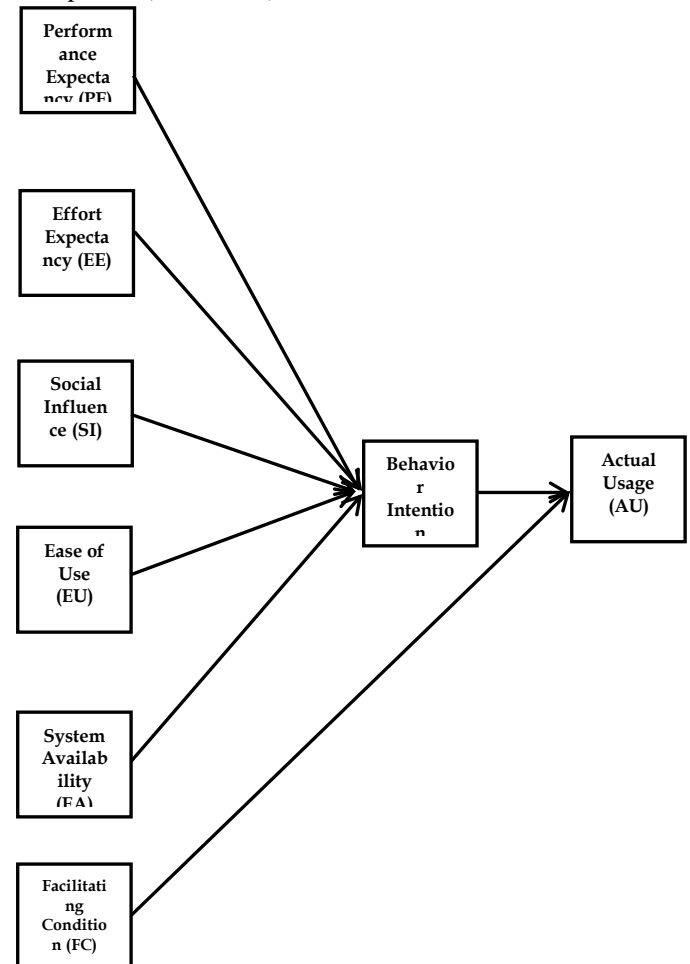
Venkatesh in developing the unified model integrated and tested all the constructs that were previously used in previous models. Out of the seven fundamental components used previously, four was adopted as the most appropriate determinant for technology usage as shown in Figure 2.1. These four includes: performance expectancy, effort expectancy, social influence and facilitating conditions. The rest three construct were identified as less importance in ascertaining technology usage such as self-expectancy, attitude and anxiety. Therefore these three components were removed from UTAUT model. UTUAT was identified as most appropriate due to its ability in explaining 70% of variances opposed to 30% of previous model (Venkatesh, 2003). Tables 2.1 portray recent studies on UTAUT model.

SN	Authors	Goals
1.	Lin (2005)	Investigate, portability among mobile phone user
2.	Choa (2005)	Investigate WLAN usage among network user
3.	Liu (2006)	Conceptualize three models: TAM, C-TAM-TPB and UTAUT
4.	Said et al. (2007)	Understanding the acceptance of desktop application using UTAUT
5.	II et al. (2008)	Extend UTAUT model for investigating technological acceptance
6.	Jayantha (2011)	Extension of UTAUT through new construct addition
7.	Paul (2013)	Investigate English as a factor in attaining knowledge
8.	Ali (2015)	Extending UTAUT, model in perceiving customer usage of bank services

III. E-UTAUT: AN EXTENDED MODEL IN ADDRESSING STUDENT COURSE REGISTRATION

Unified Theory of Acceptance and Use of Technology (UTUAT) model comprises of four main construct specifically: performance expectancy, effort expectancy, social influence and facilitating conditions while accommodating four moderators: age, gender, voluntariness and experience. This construct usually are not universal and their application are largely dependent on the assessor be considered.

A constructive interview with relevant system user (students) has showed that two factors are integral to student course registration: ease of use and system availability. This constructs are not subtly considered within UTUAT model. Therefore, in other to have a comprehensive assessment of student acceptances these construct are included, extending the UTAUT model and addressing comprehensive student course registration. The accommodation of this construct within UTUAT model, assessing student course registration will be comprehensive in term of student acceptance, availability and usage. It is also principle to know that, ease of use and system availability will encourage instead of hamper system users. The Extended UTUAT (E-UTUAT); will address system performance, effort performance, social influence, and ease of use, system availability and facilitating factors. These factors are tested with the aim of achieving the set objectives of student registration: Figure 3.1 identify and portray Extended Unified Theory of Use and Technological Acceptance (E-UTAUT) model.



IV. E-UTAUT: MODEL IMPLEMENTATION

The Extended Unified Theory of Acceptance and Use of Technology (E-UTUAT) model for student registration was implemented using data collected from several students across several universities. A structured interview was used as the data gathering techniques. Due to the nature of the research a minima number of user: three (3) were selected across six (6) universities. The interview was post examined after each individual had sufficiently utilized the system. The interview questions were not gender bias, neither did it focus on age limitation but was posed toward experience in system and software usage. In moderating the construct, equal number of gender was selected: nine (09) male and nine (09). The Age of experts was selected with the range of eighteen (18) to thirty (30). The experienced of users were sort after based on years ranging from eighteen (18) to thirty (30). The voluntariness was based on Yes or No.

The questions basically focused on the pinnacles of E-UTUAT, specifically the construct: performance expectancy, effort expectancy, and social influence, ease of use, system availability and facilitating conditions. The following were the questions (a-f) used with response elicited in the form of Yes or No. Table 3.1, shows the components of E-UTAUT utilized within this research paper.

- a. Performance Expectancy: Can this system motivate users for student registration?
- b. Effort Expectancy: Can the system be used by anyone?
- c. Social Influence: Can the system push user to encourage other to use it?
- d. Ease of Use: Can you use the system without prior or succeeding help?
- e. System Availability: Is the system always available for use
- f. Facilitating Conditions: Will this system integral into it environment?

Table 3.1: UTAUT Fundamental Components

SN	UTAUT Construct						UTAUT Moderator			
	Performance Expectancy	Effort Expectancy	Social Influence	Ease of Use	System Availability	Facilitating Condition	Gender	Age	Experience	Voluntariness
Case 1	No	No	Yes	Yes	Yes	No	Male	20	2	Yes
Case 2	Yes	Yes	Yes	Yes	No	Yes	Female	22	4	Yes
Case 3	Yes	No	No	Yes	Yes	No	Male	28	10	Yes
Case 4	Yes	Yes	No	Yes	No	No	Female	18	1	Yes
Case 5	Yes	No	No	Yes	Yes	No	Male	26	8	Yes
Case 6	Yes	No	Yes	Yes	No	No	Female	27	9	Yes
Case 7	Yes	Yes	Yes	No	Yes	Yes	Male	26	8	Yes
Case 8	Yes	No	Yes	No	No	Yes	Female	19	2	Yes
Case 9	Yes	Yes	No	No	Yes	Yes	Male	25	7	Yes
Case 10	Yes	Yes	Yes	No	No	No	Female	28	10	Yes
Case 11	Yes	Yes	Yes	Yes	No	Yes	Male	20	2	Yes
Case 12	Yes	Yes	No	Yes	No	Yes	Female	21	3	Yes
Case 13	Yes	No	No	Yes	No	Yes	Male	22	4	Yes
Case 14	Yes	No	No	No	No	Yes	Female	26	8	Yes
Case 15	Yes	No	No	Yes	No	Yes	Male	30	12	Yes
Case 16	Yes	No	Yes	Yes	Yes	Yes	Female	26	8	Yes
Case 17	No	No	Yes	Yes	Yes	Yes	Male	27	9	Yes
Case 18	No	No	Yes	Yes	Yes	Yes	Female	28	10	Yes
Total	Yes= 15 No= 3	Yes= 7 No= 11	Yes= 10 No= 8	Yes= 13 No= 5	Yes= 13 No= 5	Yes= 12 No= 6	Nil	NIL	NIL	NIL

V. RESULT AND DISCUSSION

The result and discussion are based on the fundamentals obtained from various system users (students) through a structured interview approach. Table 3.1, shows the result of performance expectancy, effort expectancy, and social influence, ease of use, system availability and facilitating condition. Figure 4.1 – 4.6 exemplify the finding of Table 4.1

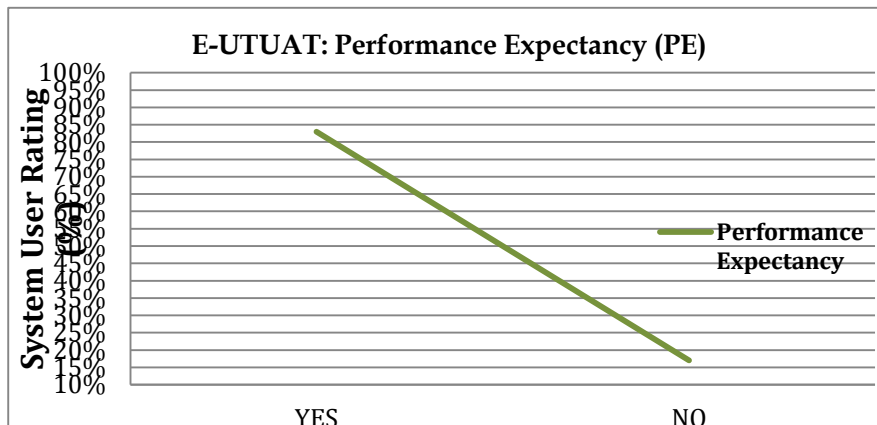


Figure 4.1: E-UTUAT: Performance Expectancy (PE)

Figure 4.1: portray the graph for E-UTUAT: Performance Expectancy (PE). The graph clearly shows that fifteen (15 equating to 83%) respondents agree that the enhances student performance with three (3 equating to 17%) disagree with the system as an enhancer to system performance.

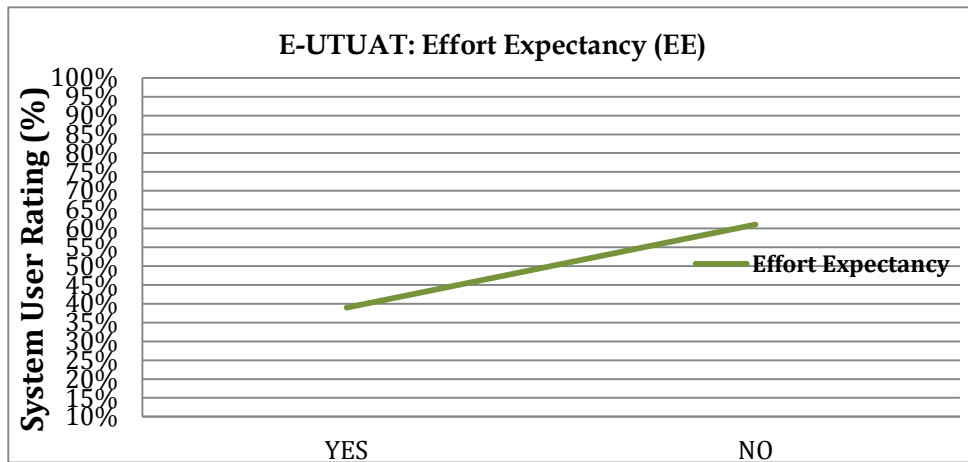


Figure 4.2: UTUAT: Effort Expectancy (EE)

Figure 4.2: portray the graph for E- UTUAT: Effort Expectancy (EE). The graph shows clearly that seven system users (7 equating to 39%) agreed that the system can be used by anyone while eleven system users (11 equating to 61%) disagreed that the system cannot be used by anyone.

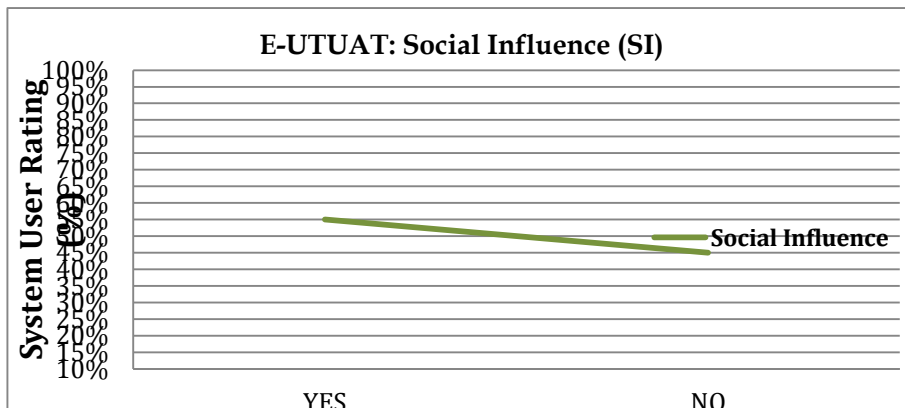


Figure 4.3: E-UTUAT: Social Influence (SI)

Figure 4.3: portray the graph for E-UTUAT: Social Influence (SI). The graph shows clearly that ten system users (10 equating to 56%) agreed that the system can be used to influence other system users while eight system users (8 equating to 44%) disagreed that the system cannot be used to influence other system users.

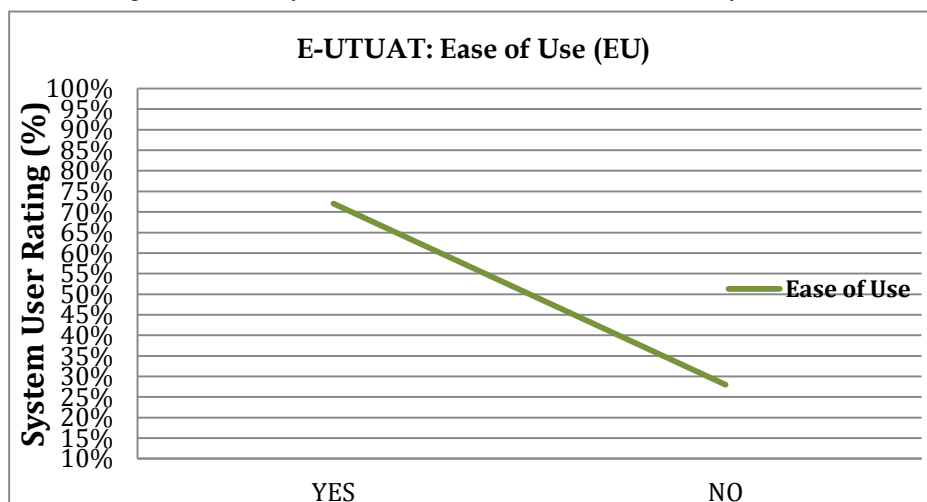


Figure 4.4: E-UTUAT: Ease of Use (EU)

Figure 4.4: portray the graph for E-UTUAT: Ease of Use (EU). The graph shows clearly that all thirteen system users (13 equating to 72%) agreed that the system can be used by any system users easily while five system users (5 equating to 28%) disagreed that the system cannot be used to any system user easily.

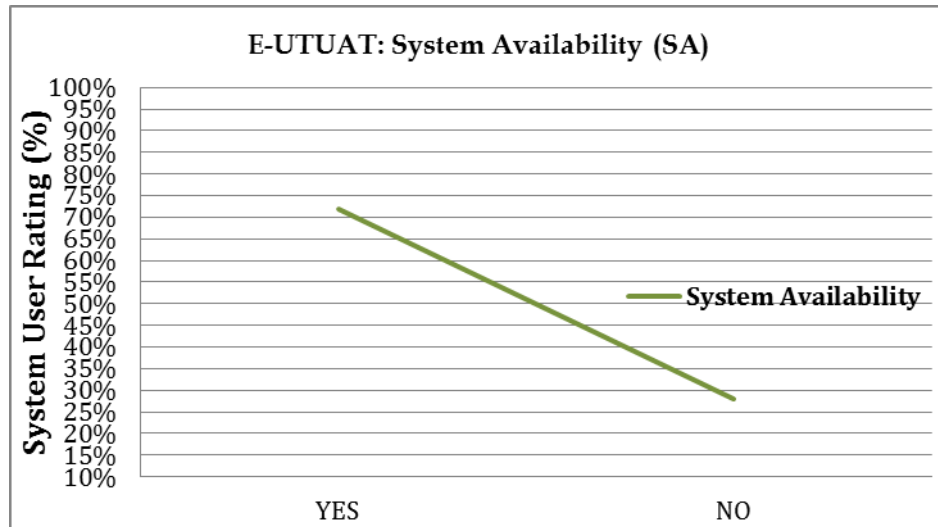


Figure 4.5: E-UTUAT: Ease of Use (EU)

Figure 4.5: portray the graph for E-UTUAT: System Availability (SA). The graph shows clearly that all thirteen system users (13 equating to 72%) agreed that the system can be used by any system users easily while five system users (5 equating to 28%) disagreed that the system cannot be used to any system user easily.

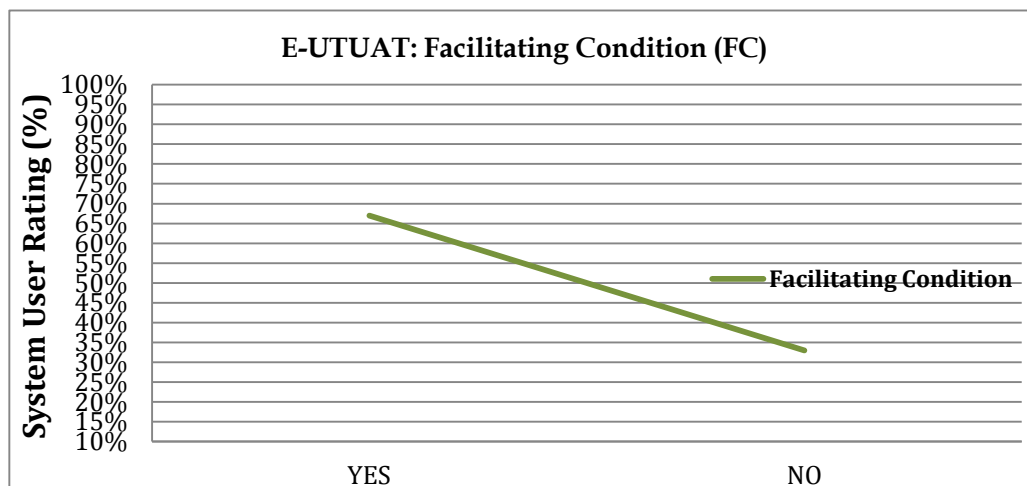


Figure 4.6: UTUAT: Facilitating Condition (FC)

Figure 4.6: portray the graph for E-UTUAT: Facilitating Condition (FC). The graph shows clearly that twelve system users (12 equating to 67%) believe that the system will integral into its environment while six system users (6 equating to 33%) believe that the system will not integral into its environment.

The graphs from Figure 4.1 to Figure 4.6 specify certain fundamental point which could be identified as the finding of this research.

- Figure 4.1 portray user responds as regard system performance
- Figure 4.2 portray user responds as regard user effort
- Figure 4.3 portray user responds as regard social influence
- Figure 4.4 portray user responds as regard ease of system usage
- Figure 4.5 portray user responds as regard system availability
- Figure 4.6 portray user responds as social influence

registration has been identified with this research. This extended mode (E-UTAUT) has addressed the fundamental issued aligned with student course registration. The model was implemented using eighteen (18) system user from the perspective of Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating condition (FC) and the two accommodated constructed tied to course registration: Ease of Use (EU) and System Availability (SA). A sample size of 18 students cutting across six (6) universities was employed. The result shows the more need for improvement in effort expectancy, while the rest five construct are fairly accepted. Therefore, for improvement in using student registration system, more effort should focus on effort expectancy.

VI. CONCLUSION

The extension of Unified Theory of Acceptance and Use of Technology (UTAUT) with the aim of addressing student

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