

Comparing and Contrasting E-learning Systems' Adoption in Tanzania: The Experience from Students-Instructors of Eight Universities

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Abstract

Students and instructors contrasting interests were major adoption block in e-learning systems in the world's universities like Tanzania in particular. This paper aimed at examining aspects in which students-instructors are similar and different in e-learning systems' adoption in Tanzania's universities. This paper uses results from two empirical models which were developed from two sample of 1,005 students and 86 instructors from eight universities in Tanzania. Specifically, it intends to achieve the following objectives: (1) to determine common and contrasting factors affecting students-instructors in e-learning systems adoption, (2) to examine common hypotheses and their strengths, (3) to deduce a unified model (view). The results showed that there were considerable common interests between these two key stakeholders (instructors and students) in e-learning systems however there were also contrasting interests too, this implies that specific and common interests shall always be considered in adopting and measuring these systems. These findings will help policy makers in their plan and strategy for e-learning systems' adoption and measuring in universities in Tanzania especially in environment where both instructors and students need optimal e-learning systems. The novelty of this research lies in identified common core factors between students and instructors with their corresponding common hypotheses strengths in universities in Tanzania.

Keywords: E-learning system, adoption, universities, factors, model, Tanzania, comparing, contrasting.

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1. Introduction

A number of e-learning systems have been dropping off after they have initially adopted [1-3]. Electronic learning system (e-learning system) is regarded as web-based information system which focused on distribution of learning contents in educational organisations using an Internet as the main means of integrating several users' accessing devices which the mode of interaction may be either asynchronous or synchronous [4-6]. Adoption in this research context means the way of accepting and using of e-learning systems in education institutions with special attention to universities [7].

Most of the research studies have been conducted in student side and very few in instructor [8]. Optimization of both instructor and student interests is very essential in making sure that there is a continuity of e-learning systems' use, although direction of learning is on students' centre. The role of instructors especially in e-learning 2.0 remain as a signpost by making learning objectives to be known to students to direct learning sessions but knowledge is mutually constructed among collaborating students [5].

Differences of interests between students and instructors in e-learning systems is the major problem in adoption of these systems in universities in the world [3, 9, 10, 11]. Tanzania as the developing country is also suffering from the same problem of students-instructors differs in their interests in e-learning systems' adoption. This research study is aimed at examining the core similarities and differences between students-instructors through the following specific objectives: (1) to determine common and contrasting factors affecting students-instructors in e-learning systems adoption, (2) to examine common hypotheses and their magnitude, (3) to develop a unified model (common student-instructor model).

2. Literature Review

There are limited comparative studies in e-learning systems' adoption in universities and higher learning institutions [9-10]. Most of studies are either student-based or instructor-based. These kinds of studies which have a view in a single side will not be sufficient in drawing up conclusive remarks because both students and instructors are key stakeholders in e-learning systems in universities, with students supposed to show up more especially in e-learning 2.0. According to Ehlers [5], e-learning 2.0 is characterised by access and power of students to create learning contents in e-learning systems and instructors are acting as coordinators.

McGill and his colleagues [3], Al-Samarraie and his colleagues [9], Chiu and his colleagues [12], Reference [13], claimed that user satisfaction is the key indicator for successfully e-learning systems to be continued used by both students and instructors in higher learning institutions and universities in particular. Other common factors affecting both instructors and students are information quality, task-technology fit, system quality, utility value, usefulness [9]. Moreover, Reference [11] found that five factors influencing successful adoption of e-learning systems for both student and instructor including quality of e-learning of e-learning system, quality of e-learning content, instructor/learner self-efficacy, learner/instructor use of e-learning system and learner/instructor satisfaction. Meanwhile, Reference [14] found that seven common factors for successful e-learning systems including IT-infrastructure, e-learning system quality, information quality, service delivery quality,

perceived usefulness, user satisfaction and customer value.

Reference [14] found that Service Delivery Quality (SDQ), Perceived Usefulness (PU) and User Satisfaction (US) are central/mediating factors for both students and instructors/academic staff while Samarasinghe and Tretiakov [11] suggested that Learner/Instructor Use of e-learning system and Learner/Instructor Satisfaction are central to successful adoption of e-learning system.

Reference [11] used sample of students and instructors from Australia to examine interests of key stakeholders in e-learning systems, Hassanzadeh and his colleagues [15] conducted research in Iran using instructors, learners and alumni students, Al-Sabawy [14] researched in U.S.A using instructors, learners and ICT supporting staff and Al-Samarraie and his colleagues [9] did a meta-analysis, none of researchers have attempted to examine quantitatively the similarity and difference of interests among key stakeholders of e-learning systems' in universities in Tanzania. In this note, this study is addressing this research gap.

3. Methods

This study pulls together the secondary results from two developed models for measuring of e-learning systems in Tanzania. One model developed and fitted in 1,005 students' opinions and the other model developed and fitted to opinions of 86 instructors of eight universities in Tanzania in 2017. Figure 1 shows empirical results from student model tested against 1,005 in Tanzania and figure 2 shows the other empirical results of instructor model tested against 86 instructors in Tanzania. The primary data which were used to develop the two models were collected at the same time as they were in the same research study.

Table 1: Sample Collected from List of Eight Public and Private Universities in Tanzania

Serial number	University name	Actual sample Students	Actual sample Instructors
1	UDSM	207	1
2	SUA	59	5
3	OUT	77	23
4	MZUMBE	217	26
5	UDOM	138	4
6	MUST	111	7
7	MUM	96	10
8	SJUT	100	10
	Total	1005	86

Notes. Public universities are UDSM, SUA, OUT, MZUMBE, UDOM and MUST; private universities are MUM and SJUT.



Figure 1: Results of Structural Equation Modelling (SEM) for Students' Data of Eight Universities in Tanzania [16].

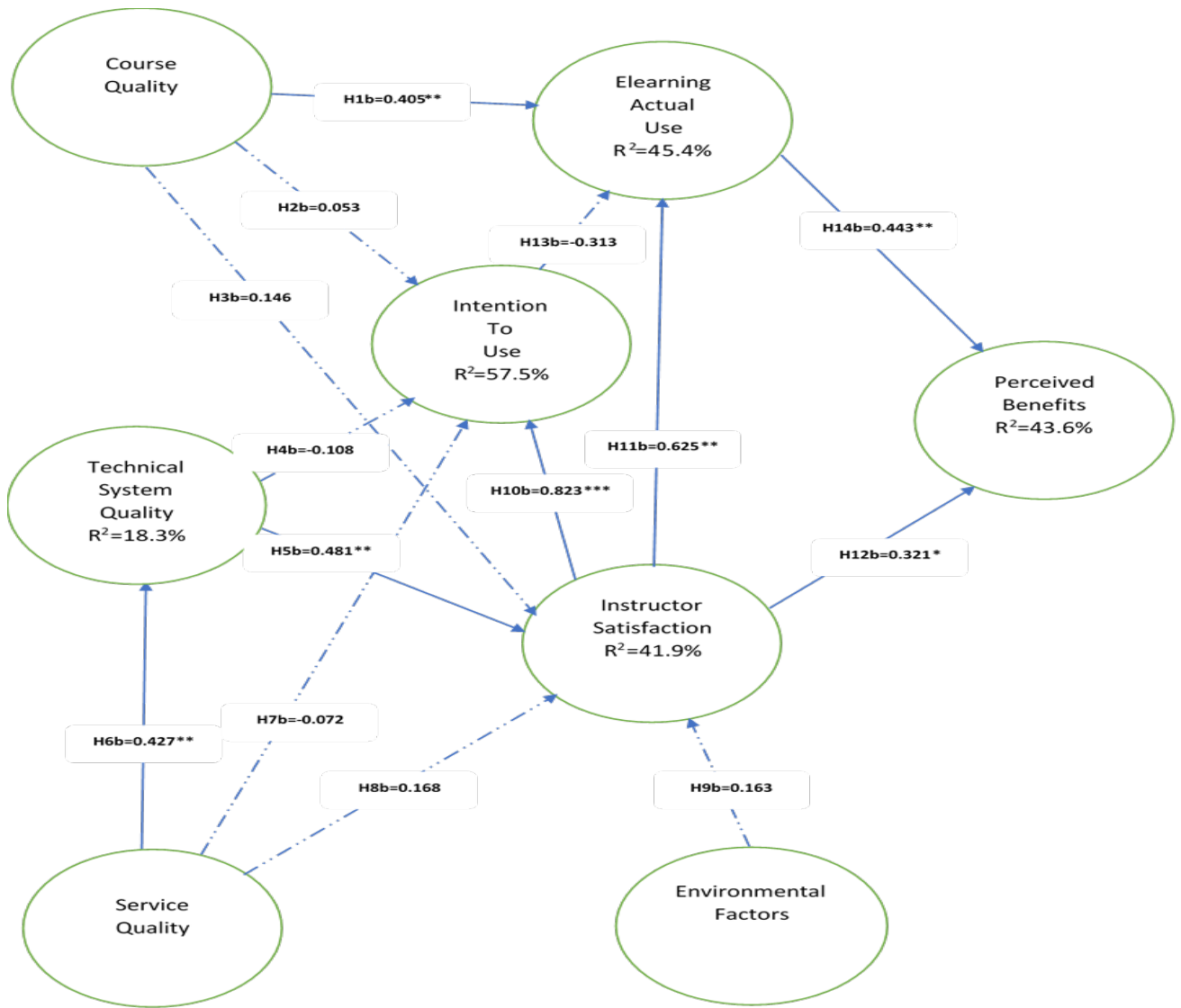


Figure 2: Results of Structural Equation Modelling (SEM) for Instructors' Data of Eight Universities in Tanzania [17].

4. Results and Discussion

Figure 1 shows modelling of multiple factors affecting students for eight universities in Tanzania and figure 2 indicates modelling of multiple factors affecting another key stakeholder (instructor), the two figures indicate results of factors affecting e-learning systems in universities which help to achieve the objectives of this paper which are: -

- (1) To determine common factors affecting students-instructors in e-learning systems adoption

To achieve this objective one, comparison of two figures (figure 1 and figure 2) was taken, the common factors were: (1) Technical System Quality (TSQ), (2). Service Quality (SQ), (3). Intention to Use (ITU), (4). Learner/Instructor Satisfaction, (5). Elearning Actual Use (EAU), (6). Perceived Benefits (PB). These common factors found are articulated in table 2.

Table 2: Common Success Factors in Student-Instructor View (Unified View) Relative to Previous Studies

S/n	Common Factors	Samarasinghe and Tretiakov [11]	Hassanzadeh and his colleagues [15]	Al-Sabawy [14]	Al-Samarraie and his colleagues [9]	This study
1	Technical System Quality	√	√	√	√	√
2	Service Quality		√	√	√	√
3	Intention to Use		√			√
4	Learner/Instructor Satisfaction	√	√	√	√	√
5	Elearning Actual Use	√	√	√	√	√
6	Perceived Benefits	√	√	√		√

Table 2 shows that, when comparing six common factors of student/learner-instructor with previous studies, it found that, study of Hassanzadeh and his colleagues [15] conducted in Iran had same the results among its common factors between students and instructors.

In both figure 1 and figure 2, Satisfaction is the only predicting factor which impacting direct the key indicator of successful adoption of e-learning system which is Perceived Benefits (PB). The other common factors in both models are predictors to Perceived Benefits (PB) of using e-learning systems but not direct. Therefore, Satisfaction of user in e-learning systems is the main (central) predicting factor and this is consistent with studies by Al-Samarraie and his colleagues [9], Chiu and his colleagues [12], Limayem and Cheung [13], McGill, Klobas, and Renzi [3].

(2) To determine common hypotheses for both students-instructors model and their corresponding strength.

To achieve this objective two, table 3 was constructed which combined total hypotheses from two empirical models (figure 1 and figure 2) obtained from a single research, with their standardized strength (β) and statistical significance (p).

Key

Strengths levels ($\beta < 0.2$ =weak; $0.2 \leq \beta < 0.5$ =medium; $\beta \geq 0.5$ =strong)

Statistical significance ($p < 0.05$ =*; $p < 0.01$ =**; $p < 0.001$ =***).

Table 1 shows common strengths between two models are:

Strong hypothesis: number 15 (LS/IS→ITU).

Medium hypotheses: number 5 and 16 (TSQ→LS/IS and LS/IS→PB).

Table 3: Comparison of Hypotheses for Student and Instructor Models in Eight Universities in Tanzania

S/n	Hypotheses	Student model		Instructor model	
		Standardized Strength	p-value	Standardized Strength	p-value
1	IQ→EAU	Weak	**	Not applicable	-
2	IQ→ITU	Not applicable	-	Not applicable	-
3	IQ→LS	Medium	***	Not applicable	-
4	TSQ→ITU	Weak	***	Not significant	-
5	TSQ→LS/IS	Medium	***	Medium	**
6	SQ→TSQ	Strong	***	Medium	**
7	SQ→ITU	Not significant	-	Not significant	-
8	SQ→EAU	Medium	***	Not significant	-
9	SQ→LS	Not significant	-	Not significant	-
10	EF→ITU	Weak	***	Not significant	-
11	EF→EAU	Medium	***	Not significant	-
12	EF→PB	Medium	***	Not significant	-
13	UR→PB	Weak	***	Not applicable	-
14	UR→ITU	Weak	***	Not applicable	-
15	LS/IS→ITU	Strong	***	Strong	***
16	LS/IS→PB	Medium	***	Medium	**
17	ITU→T	Strong	***	Not applicable	-
18	ITU→EAU	Not significant	-	Not significant	-
19	T→EAU	Weak	*	Not applicable	-
20	EAU→LS	Not significant	-	Not applicable	-
21	EAU→PB	Not significant	-	Medium	**
22	CQ→ITU	Not applicable	-	Not significant	-
23	CQ→LS	Not applicable	-	Not significant	-
24	CQ→EAU	Not applicable	-	Medium	**
25	IS→EAU	Not applicable	-	Strong	**

Learner Satisfaction/Instructor Satisfaction (LS/IS) → Intention to Use (ITU) appears to have the strong relation, which is consistent with the result of Hassanzadeh and his colleagues [15].

Medium strength which are common are Technical System Quality (TSQ)→Learner Satisfaction/Instructor Satisfaction (LS/IS), this result is different from the results of previous studies of Hassanzadeh and his colleagues [15], Reference [11] who found strong relation, however they are all significant hypotheses.

Learner/Instructor Satisfaction (LS/IS) → Perceived Benefits of using system (PB) which is medium strength, this result unlikely previous study of Hassanzadeh and his colleagues [15] who found strong relation.

(3) To develop common learner-instructor view (unified view).

This objective three has been accomplished by integrating common factors and common hypotheses found on both of learner model and instructor model, thereafter assembling them together. Figure 3 shows that common view of both users (student and instructor).

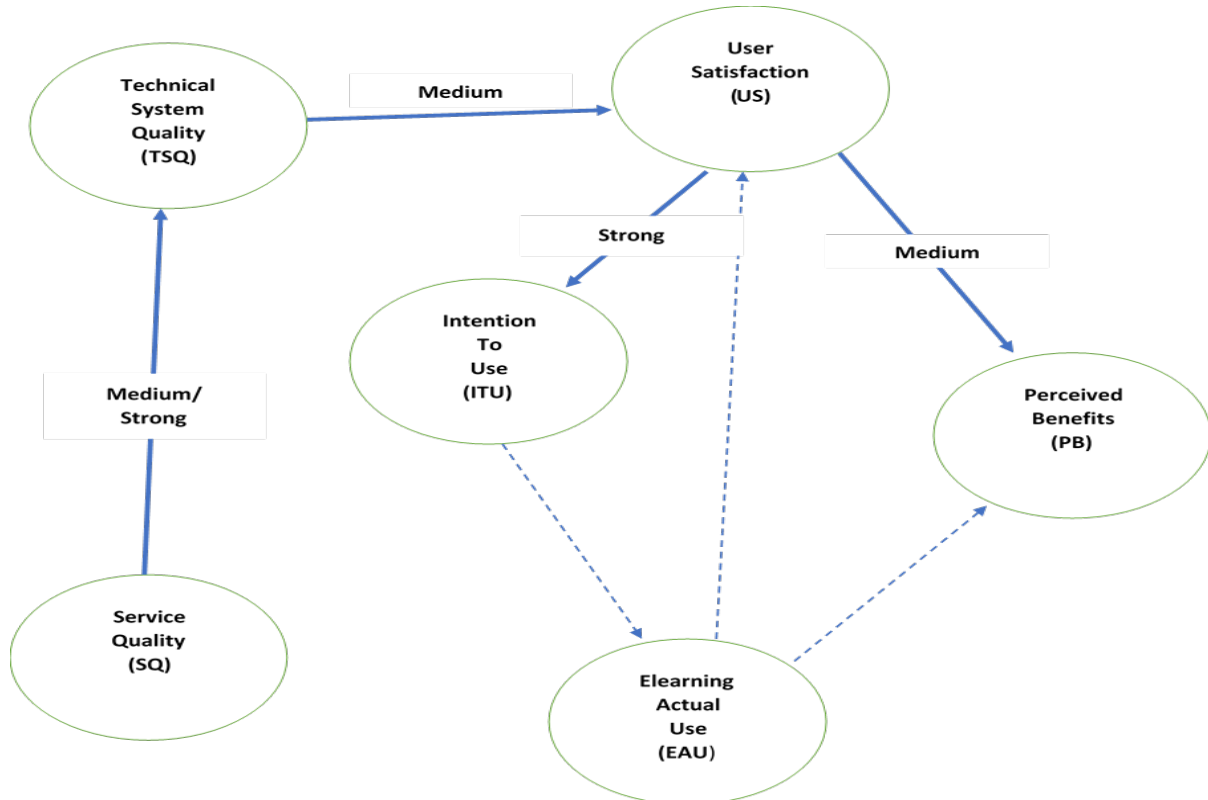


Figure 3: Student-Instructor common view (unified view)

Key

Line means that the hypothesis is significant in both user (instructor and learner).

Dotted line means that the one of hypothesis (either instructor or student) is not significant.

Figure 4 shows explicitly that there is the difference in interests between students and instructors in terms of number of factors to accept and use of e-learning systems in universities in Tanzania. This further implies that students interest is far from common interest (unified model) whereas instructor interest is close to common interest.

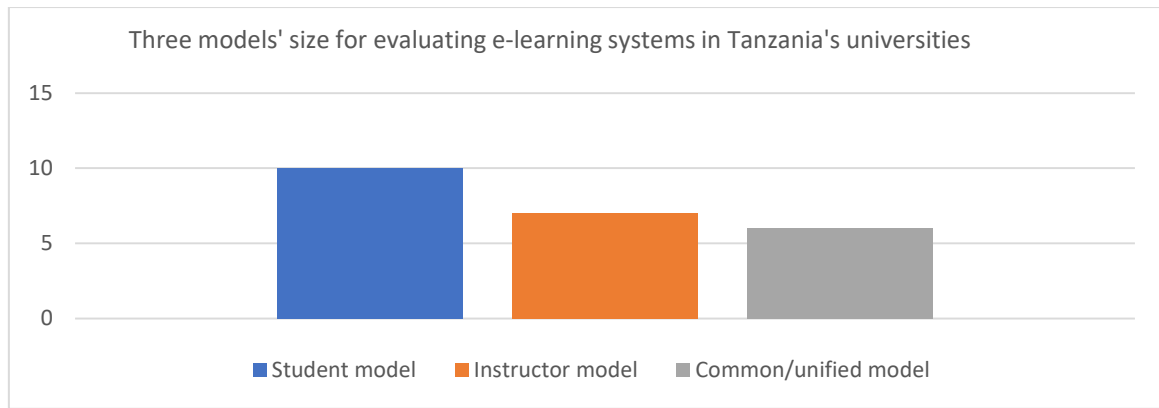


Figure 4: Students’ model and Instructor model which deduced to unified (common) model

5. Conclusion and Future Studies

The main purpose of this study was to compare and contrast between factors affecting student-instructor in e-learning systems’ adoption in universities in Tanzania, with this note, then this study presents six core factors which applied to both user (student and instructor) of e-learning systems in Tanzania, which will make e-learning systems successful whereas user satisfaction is central factor (refer figure 3). This study found that apart from those six common factors, there are factors which affect only student’s adoption of e-learning systems (student view) these include trust, university readiness, environmental factors and instructor quality, while course quality is supplementing up on six common factors on instructor side (instructor view). It also unveils the different strengths of hypotheses existing in e-learning system’s environment (unified view). This research found strong relationship between user satisfaction and intention to use e-learning system. It further found that service quality has a medium to strong relationship with technical system quality and medium strengths in both technical system quality and user satisfaction, user satisfaction and perceived benefits as shown in figure 3. The unified view is the unique model developed for e-learning systems in Tanzania which has capability to measure adoption of e-learning systems in both student and instructor concurrently. This study recommends the following studies as future research in a unified view: the investigation between intention to use and e-learning actual use, e-learning actual use and user satisfaction, also e-learning actual use and perceived benefits as indicated by dotted line in figure 3. Further studies may be conducted by incorporating view of ICT supporting staff and other stakeholders apart from student and instructor. The unified model in figure 3 is the open model hence, further additions of construct (s) when necessary may be done to reflect actual changes of context and technology.

This study is limited to only undergraduate students of eight public and private universities in Tanzania, which were selected as sample students.

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