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An Integration between Information Systems Engineering and Software Engineering Theories towards Engineering a Novel Instrument and Framework of Web-Based Systems Success: Results of the Pilot Test

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Abstract. Due to globalization and speedy of ICT and systems development, more emphasis needs to be on quality of systems and it requires an accurate, fast, effective system so that the success measure of system is essential. Currently systems rate of fall is still a high one of the reasons behind that is the weakness of the available instruments that being used for systems success measurement. This study aims to come out with a successful instrument for successfully system quality measuring. In this article, the results of the pilot test have been illustrated.

1. Introduction

Due to globalization and speedy of ICT and systems development, more emphasis needs to be on quality and customer orientation, but it requires an accurate, fast, effective system so that success measure of system is essential. It does not only calculate the performance of hardware, software, computer network, and data but also achievement of all objectives of the enterprise. Systems implementation has been increasing in the last years not only in private business enterprises, but also in public and government enterprises so that systems success framework can be considered in all



contexts. System nowadays plays an important role in every stage of e-commerce, non-e-commerce as well as educational management system (Sirsat & Sirsat, 2016).

Systems and software's are implemented by organizations to help facilitate employees in their work tasks, enhance usability, satisfy target audience and deliver superior quality products and services to the market. Hence, through evaluating the success of the systems, it helps to ensure that the tangible and intangible prospects of are all responsively achieved (Moh'd Al-adaileh, 2009; Mwangi, 2016; Petter et al., 2008).

The quality is considered as one of the most important criteria for the success of systems and it is reflected by the desired characteristics of these systems materialized (Al-Hashimi & Aqleh, 2018). Measuring the success of the implemented systems from the user's satisfaction measure is highly significant, because the users of the system are its actual customers, and in this purpose, identifying the factors affecting users' satisfaction and studying them will help enhancing the system quality and possibly will be positively reflected on the quality of patient care (Al-Hashimi & Aqleh, 2018). The identification of effective determinants and measures on the success of hospital information systems could significantly lead to the improvement of their performance (Kargari, 2017).

This importance coupled with the complexity of assessment of effective information systems has raised several factors to consider. Precisely, it demands for a more comprehensive framework to help assist corporations as well as educational institutions to understand and outline the effective design and development of robust information systems for profound services to end users. At present, information systems have transformed into web-based information systems (WIS) due to advancements in internet and technology. Therein, it provides a holistic one stop platform to cater for all information needed pertaining to the organization and its offerings (Fadhel, Idrus, Ibrahim, Omar, Baheshwan, et al., 2018)

Henceforth, it's essential for businesses to have a strong hold WIS that could enable them to reach up to the expectations of the end users and help enterprises achieve its planned goals. Nevertheless, the assessment of information systems, especially of the ones that is web enabled is essential for making sure that the end user requirements are fulfilled. Such assessment will also be very healthy in helping resolve critical issues pertaining to the existing information system and/or website through highlighting its strengths and areas that it requires further improvement (Fadhel, Idrus, Ibrahim, Omar, Bahashwan, et al., 2018).

Currently noticed that systems success measurement tools are weak. There is a need for an instrument for systems success measurement in higher education domain. This research aims to illustrate the results of the pilot test for the instrument under develop.

2. Method

A survey questionnaire has been used to collect the user's respondents. This pilot test was conducts in three different universities in Mukalla and 33 students were responded in this process. In this research, validity test was conducted to be sure that instrument measures what it is intending to measure (Abbot & Bordens, 2011).

The pre-test was in consonance to check whether respondents have any form of multifaceted nature in understanding the complexity of the research questionnaire, or whether there exists any vulnerability uncertainty or inclination in questions (Wahab, 2016) the pre-test performed with three experts and with a three students from each university the students are randomly selected.

Consequently, nine students from the three universities and three of experts who already involved in the process of this research validation were reached for the pre-test keeping in mind that, the main objective or the end goal is to clarify the contents of the questionnaire. Authorized translation (English to Arabic and Arabic to English) for the questions has been done before doing the pilot test.

Quoted in Adebola (2014) pilot test importance in research cannot be overemphasized because it helps in reducing pressure on researcher experience amid the final analysis (Cavana, Delahaye & Sekaran, 2001). However, it is of utmost importance to direct a pilot test in helping researcher to fabricate a decent establishment for analysis of the study (Adebola, 2014). As earlier said, significance of a pilot

test in research contemplate can never be overemphasized claiming it diminishes the pressure that the researcher could have experienced amid the final analysis of the research (Cavana et al., 2001). Based on (Emory & Cooper, 1991) 25 to 100 respondents are best suitable for a pilot study.

3. Results and Discussions

In the pilot study, 33 students were answered According to Pallant (2013) the Cronbach's Alpha higher than 0.70 is considered as perfect. Average Variance Extracted should be above 0.5 and Composite Reliability must be bigger than 0.6 (Hair et al., 2017; Fornell & Larcker, 1981; Huang, Wang, Wu & Wang, 2013). As shown below results of the pilot test for the instrument was excellent no violation issues in any of the tests Cronbach's Alpha, Composite Reliability and Average Variance Extracted.

Table 1. Pilot Result - Cronbach's Alpha, Construct Reliability & Validity

Factors	Cronbach's Alpha	Composite Reliability	Average Variance Extracted
Benefit	0.8177	0.8726	0.5784
Ease of Use	0.7734	0.8550	0.5976
Efficiency	0.8019	0.8635	0.5597
Functionality	0.8097	0.8769	0.6435
Information Quality	0.8520	0.8950	0.6317
Loyalty	0.8011	0.8633	0.5591
Reliability	0.7905	0.8569	0.546
Satisfaction	0.8189	0.8749	0.5857
Security	0.8097	0.8682	0.5693
System Quality	0.8328	0.8827	0.6023
Usability	0.8191	0.8741	0.5825

AVE of 0.5 is advocated by (Hair et al., 2017). Composite reliability recommended value is 0.7 (Hair et al., 2017). If the value of AVE is low than 0.5 researchers can still accept AVE values until 0.4 as long as composite reliability CR is > 0.6 in case of AVE = 0.4 and value of CR is > 0.6 no worry about the convergent validity of the factor (Fornell & Larcker, 1981; Huang, Wang, Wu & Wang, 2013). Cronbach's Alpha as recommended by Julie Pallant (2013) should be higher than 0.7. The value of spearman's reliable ρ_A should be > 0.6 (Garson, 2009).

4. Conclusion

The pilot test showed an excellent result. Composite Reliability of the constructs is excellent, and Cronbach's Alpha is perfect. AVE values are decent. Pilot test give a sign for the success of this instrument in the future and gives a trust step for the researchers to complete towards real data collection and final approval for the instrument.

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