Proposing a New Model for Quality of Service Acceptance

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Abstract: *developing an integrated model of QoS acceptance in institutions in the context of service and data has high importance in utilizing cloud service within higher education institutions (HELs) and improving the HEI's efficiency. Quality of service (QoS) has been proofed to be of great significance in the utilization of cloud service in HEI's. The lack of a theoretical model that illuminates factors affecting QoS accepting in HEI's makes a significant research problem that must be studied efficiently. Therefore, the main purpose of this paper is to propose a model that has been built by an integrated Technology – Organization-Human (HOT-fit) framework, and Technology- Organization- Environment (TOE) framework to study the most significant factors influencing QoS accepting decision to utilize cloud service. The integrated model helps decision makers to facilitate the accepting of QoS in HEI's.*

Keywords: Quality of Service; Acceptance; HEI; TOE framework; HOT framework

1. INTRODUCTION

Higher Education Institutions (HEIs) are considered to be one of the primary pillars of community change as it associates among governments, industry, and colleges (Drăgan, Ivana, & Arba, 2014). HEIs have advanced from the use of the traditional education process to achieve knowledge towards continuous modernization of the Information Technology (IT) infrastructure in order to improve research and learning events by using cloud services (Misut & Pokorny, 2015); (Shakeabubakor, Sundararajan, & Hamdan, 2015); (Albion, Tondeur, Forkosh-Baruch, & Peeraer, 2015). The quality and number of services are improved in new technology; therefore, there is an increase in the number of the HEIs that switch from the traditional form to the online service form. (Duţă & Martínez-Rivera, 2015); (Persico, Manca, & Pozzi, 2014). Cloud computing services ensure the access of a broad number of clients while it still guarantees the quality, availability, and security of its service (Ali, Khan, & Vasilakos, 2015). Also, HEIs have the capacity to improve their services, and accommodate the maximum number of students and/or staff (Alharthi, Yahya, Walters, & Wills, 2015); (Alhamazani et al., 2015). Moreover, cloud service innovation is employed as a response to a need to create a service offered by many organizations, especially HEIs, to decrease the cost of utilizing servers on the premises (Manvi & Shyam, 2014); (Shakeabubakor et al., 2015).

Quality of Service (QoS) is the combination of many properties, such as availability, which is the time during which a service is at work, security properties, which incorporate the presence and types of confirmation mechanisms the services offer, and reaction time (Akpan & Vadhanam, 2015); (Barham, 2014); (Chen, Zheng, Yu, & Lyu, 2014); (Rajput & Deora, 2017). Moreover, QoS is an expansive term utilized to depict the general experience of clients or applications provided over a network (Toney and Kale, 2014). In fact, the level of fulfillment experienced by the client (teachers or student) must be higher than that achieved by the normal service (S. Wang, Hsu, Liang, Sun, & Yang, 2014); (Ardagna, Casale, Ciavotta, Pérez, & Wang, 2014). The degree of acceptance of QoS utilizing cloud service by HEIs can be measured by the increase of service use, which is expected to help support and improve the learning process in HEIs. In recent years, organizations, particularly HEIs, have shown the enormous migration of IT applications and services to the cloud. The main concern of decision makers in HEIs when migrating to the cloud is the QoS, which is the issue of allocating resources to support services to guarantee for instance, availability, reliability and performance (Rajput & Deora, 2017); (Persico et al., 2014).

Acceptance Theories in Organization Context: (Tornatzky, Fleischer, & Chakrabarti, 1990) present the TOE framework, provides a useful analytic framework that can be utilized to contemplating the institutions acceptance of various categories of technology (Oliveira & Martins, 2011); (Khan & Woosley, 2011). It is the organizational level theory that predicts the technology acceptance decision (M. W. Wang, Lee, & Lim, 2007). A study of the literature indicates that the TOE framework (Tornatzky et al., 1990) provides a supportive framework for understanding QoS acceptance of cloud service utilization. The TOE framework includes three main factors related to an organization's context that could affect the acceptance of technological tools: (1) the technological dimension, (2) the organizational dimension, and (3) the environmental dimension. As shown in (Fig.1).
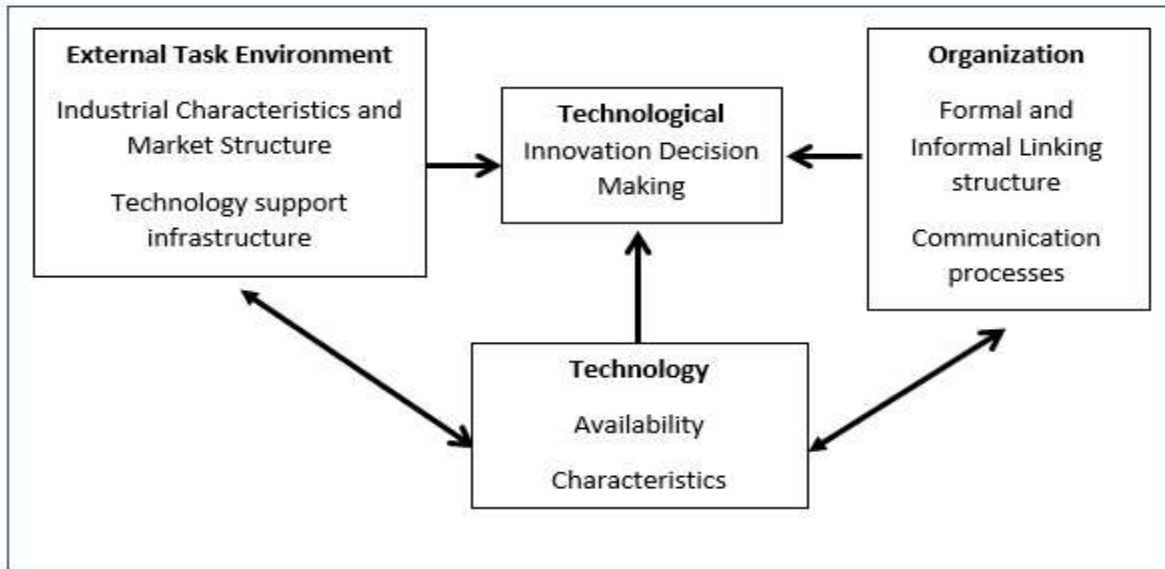
Figure 1: The TOE framework (Tornatzky et al., 1990)

A study about IT t utilizing HOT structure conducted that it builds up a superior and clarifying intra-firm development acceptance (Paul Jones, Dr Martin Beckinsale, Ramdani, Chevers, & A. Williams, 2013). However, the clarification control for institution technology acceptance reception must become acquainted with different factors that can be considered as various layers of the case that impact the outline and the utilization of data innovation For example the individual, the assignment (Premkumar, 2003); (Kwon & Zmud, 1987) , human variables (Yusof, Kuljis, Papazafeiropoulou, & Stergioulas, 2008), variables to consolidate with the environmental, technological and organizational settings. The HOT-fit framework includes technological and organizational factors, and, unlike the TOE framework, also considers the human dimension, which helps to identify the human capital in organizations; this dimension plays a critical role in the acceptance of QoS of utilization of cloud services in HEIs. As shown in (Fig.2).
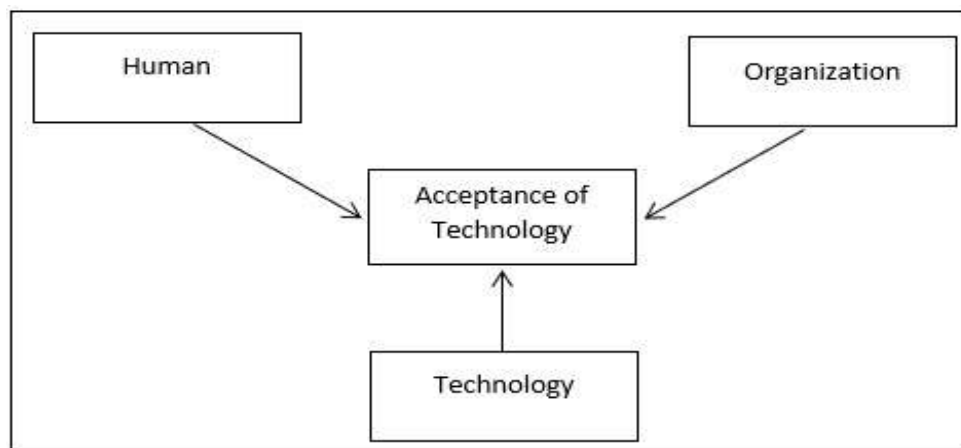

Figure 2: HOT-fit framework (Yusof et al., 2008)

2. RESEARCH METHODOLOGY

The primary exertion of this section is to exhibit the underlying finding of the investigation. To accomplish this objective, the researcher review factors by conducted many studies, and research material has been studied to conduct the factors influencing QoS acceptance. The primary studies include more than 20 papers in the conferences and journals from 2013 to 2018. 14 factors which came from reviewed studies were perceived as the most significant factors in the previous investigations. At that point, QoS acceptance factors which were recognized were build up in the research model.

3. CONCEPTUAL RESEARCH MODEL

The model of this study is gotten from the TOE framework (Fig.1) and HOT-fit framework (Fig.2). The primary objective of the proposed model is to contribute in the QoS acceptance process within HEI. In this section, the details behind integrating TOE framework and HOT-fit frameworks to proposition the conceptual research model are explained. QoS acceptance of cloud service utilization uses TOE as the main framework, and at the same time, the HOT framework is used to include the human dimension. In QoS acceptance of cloud service utilization in HEIs, the decision maker needs to consider four factors or dimensions (technological, organizational, environmental, and human) to support the decisions regarding QoS acceptance of cloud services; therefore, to help support decision makers in HEIs, the researchers have built a theoretical model called TOEH to help determine the factors with the most influence on QoS acceptance.

The researcher included that TOE framework overcomes the control of technical viewpoint and recognizes the distinction between the intrinsic quality of a cloud service and abilities, inspirations, and the more extensive ecological part of the organizational acceptance by giving an appropriate analytic instrument. However, considering the author's (RUI, 2007), technical specifications of DOI are yet critical keys for the model. Singular clients and top management are commented as pivotal and fundamental accepters. In view of evidence by anecdotal and systematical study, the human context is considered as a critical element for prospering improvement of QoS acceptance. (Szewczak & Snodgrass, 2003) stressed the critical and crucial role of the human during the process of QoS acceptance of innovation. the absence of a human in QoS acceptance has been a deterrent to the achievement of QoS acceptance.

Subsequently, human comprehension has been an essential item of top management and staff information about QoS. The institutions and human measurements are considered as critical issues in the execution and development of QoS acceptance. In a research, led by (Mayer & Mayer, 2001), major boundaries to the QoS acceptance of innovation where the absence of human expertise and ability prerequisites changing in developing countries. Considering the discussion in this study, it is contemplated that human as decision makers in institutions are noticeable and indispensable factors in the IS researchers. Since the TOE framework does exclude the human factors of QoS acceptance, the human dimension has been included to assess the impact of the connection between technological, organizational and environmental factors and QoS acceptance. Additionally, integration between TOE framework and HOT-fit framework will help the researcher to understand QoS acceptance of utilizing cloud service in HEIs, as integrating TOE framework and HOT-fit framework helps to study the critical aspects affecting QoS acceptance and decision maker to present cloud service in HEIs.
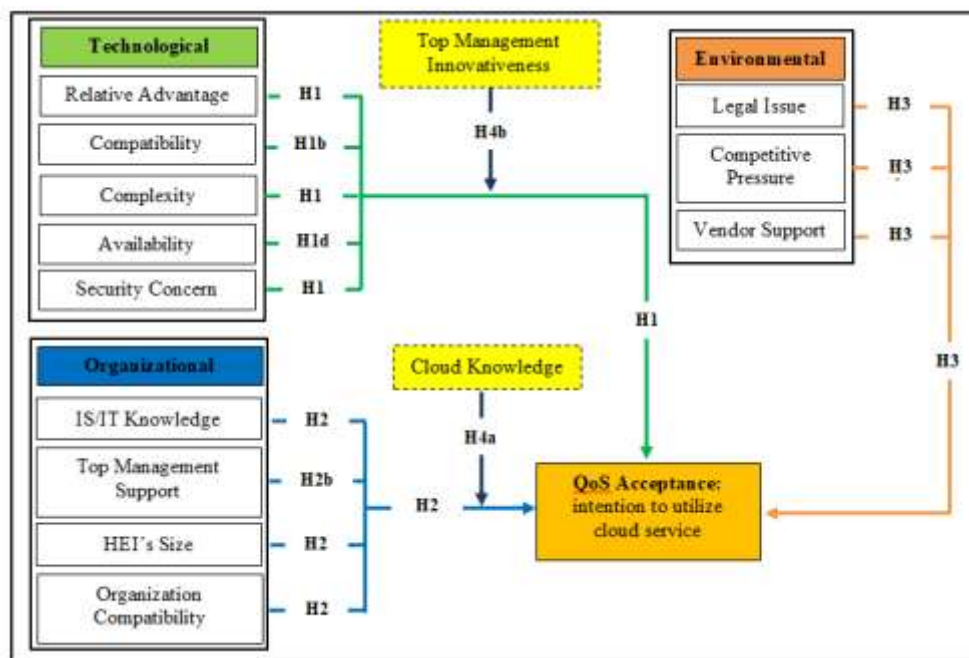

Fig. 3. The Initial Integrated Model

4. CONCLUSION

Based on the finding of this research, it could be concluded that prior studies found that human factors have a significant impact on the QoS acceptance of utilizing cloud service in HEI's. In fact, decision makers have important roles in QoS acceptance. TOE framework is the most used theory in analyzing the decision of accepting technology and its QoS at organization level, and this framework does not only focus on the human dimension, but also on the technological intra-firm factors and external factors (environmental). the current scholars aim to suggest a new model based on TOE framework and HOT-fit framework. The Integrated model will contribute to understanding the factors that influence the accepting of QoS and decision making in HEI's.

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