FACTORS AFFECTING STUDENTS' ONLINE PLATFORM SYSTEM

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ABSTRACT: *It is very vital nowadays that universities provide an online platform in assisting students' learning as part of their strategic tools to compete in the education industry. The online platform covers learning assisted or student's administration platform. The purpose of this study is to identify the most important non-monetary based criteria in assessing online platform in assisting students learning and administration in public universities, specifically Universiti Teknologi Malaysia (UTM). In addition, this study also aims to find critical assessment determinant and suggestion to improve the development process of these two platforms. Using the qualitative method, the study discovered several criteria which are essential in the development process that relates to technology attractiveness and competitiveness. The findings affect future students' online platform development process which, need to be considered as competitive strength of organisation's core business.*

KEYWORDS: Technology Assessment, Technological Competitiveness, Technological Attractiveness, Competitive Advantage, Students' Online Platform.

1.   INTRODUCTION

Technology often considered as an asset of an organization since it is valuable for the company in maintaining its competitiveness. Generally, technology can be considered as a knowledge that fully utilizes to create a wealth of society. Assessing a technology has come forward due to any purpose and many have assessed technology to identify it usefulness [1, 2]. Previous studies discovered that technology is accessible based on two perspectives - monetary value or non-monetary value [3-5], practicing a defined as the process of collecting data and synthesize the evidence gained to make a general conclusion upon potential and consequences of technology upbringing [6].

Universities are not left behind when it comes to obtaining their competitive advantage. In the pursuance of Global Universities status, universities have to think and act like corporate entities[7]. Among the essentials for this are students e-learning and online administration systems [8]. There is two types of E-learning which are computer-based learning and internet-based learning [9]. Computer-based learning means either computer are used for storing and retrieving information or provides interactive software as a supporting tool to be used in class or outside class, or it can be both [10]. The difference is that internet-based learning made the information and knowledge available on the internet, making the information ready to be accessed anytime. However, e-learning only is incomplete. A full comprehensive learning management system support and administration especially during the implementation phase in order the system is effective and able to provide expected quality in learning [11].

The purpose of this study is to identify the most critical non-monetary based criteria in assessing online platform in assisting students learning and administration in Malaysian public universities - in the case of Universiti Teknologi Malaysia (UTM) especially during the development stage. Jolly's [3] model was made as a basis while Mohannak & Samtani's [4] criteria being integrated into it.

2.   LITERATURE REVIEW

2.1   Technology Assessment

In a competitive market, the organization will pursue to innovate more in order to escape from the competition by differentiating itself from competitors [12]. A firm that outperformed by their competitors in technology-intensive environments typically finds it difficult to catch up later on [13]. Most of the time, the competition will promote firms to be more efficient in saving the cost, resources, or even time management. Most evaluation approaches access technology solely on monetary value without considering that especially for new technology, no evident monetary value is realized [5].

In order to integrate non-monetary aspects into the evaluation, Jolly [3] proposed two major components in evaluating technology which is attractiveness and competitiveness of the technology, which also covers both internal and external factor in ensuring technology worthiness (refer to Table 1). 32 items were listed for evaluating the weight of each factor in determining what are the main factor for the technology to be a success in developing, implementing and redefining it. Market factor, competition factor, technical factor and socio-political situation are the elements used in determining technology attractiveness. As for technology competitiveness, technology is assessed based on the technological resources and complementary resources.

Meanwhile, Mohannak and Samtani [4] believed that technology is evaluated based on these for criteria which are technological readiness, economic and market factor, social benefits and impact, and lastly legal and regulatory. Items are mostly similar to Jolly's [3] above. Technological readiness, for example, looks for the competitiveness of technology in terms of newness and uniqueness, technical feasibility and potential application. Mohannak and Samtani's [4] factors on social benefits is similar to Jolly's [3] other criteria under technological attractiveness. Mohannak and Samtani's [4] considered knowledge spillover, creation of employment, enhancement of social infrastructure/networks, environmental impact and brand recognition as part of the example. Meanwhile, Mohannak and Samtani's [4] economic and market factors, including legal and regulatory are more directly similar to Jolly's [3] technological competitiveness factors.

Table 1: Two-dimensional technology assessment scale

Technological attractiveness	Technological competetiveness
Market factors	**Technological resources**
Market volume opened by technology	Origin of the assets
Span of applications opened by technology	Relatedness to the core business
Market sensitivity to technical factors	Experience accumulated in the field
Competition factors	Registered patents
Number of stake-holders	Value of laboratories and equipment
Competitors' level of involvement	Fundamental research team competencies
Competitive intensity	Applied research team competencies
Impact of technology on competitive issues	Development team competencies
Barriers to copy or imitation	Diffusion in the enterprise
Dominant design	
Technical factors	**Complementary resources**
Position of the technology in its own life-cycle	Capability to keep up with fundamental scientific and technical knowledge
Potential for progress	Financing capacity
Performance gap *vis-à-vis* alternative technologies	Quality of relationships between R&D and Production
Threat of substitution technologies	Quality of relationships between R&D and Marketing
Ability to transfer the technology from one unit to another	Capacity to protect against imitation
Other criteria	Market reaction to the company's design
Societal stakes	Timetable relative to competition
Public support for development	

3. METHODS

This research adopts a qualitative approach based on in-depth interview. Based on purposive sampling, UTM system's developer, Centre of Information and Communication Technology (CICT) is chosen as UTM is one of six public universities in Malaysia with Research University (RU) status. CICT UTM has been engaged by other universities as a consultant in previous ICT development projects. Interviews had been conducted in order to analyze the underlying technological factors been used in valuing platforms and software in its system development based on content analysis.

The interviews involved a previous and current team, who developed and maintaining students learning management systems of *e-learning* and students' *myportal*. E-learning is the online learning assistance courses to complement classroom learning while myportal is students' administration system. Participants vary from technical developers, system maintainers and project director.

Data collected is analysed based on appearance frequency of certain keywords including phrase and words that convey a similar meaning. As the interview sessions were conducted in Bahasa Melayu, records of every session were transcribed and translated into English. Several keywords are used to group and classify the finding based on the research objective. The frequency of word mentioned counted and rank accordingly to identify the most appropriate criteria in choosing a technology.

4. FINDINGS

The highest-ranking of criteria applied in technology assessment by UTM in adapting the e-learning technology from Moodle platform is based on the stage of the technology. Due to the stability of the technology and ability for the technology is allowing for customization during the usage period become a major reason why Moodle is selected as the E-learning system in UTM.

The financial status of UTM as a public university is also taken into consideration in adopting new technology. Since the public university is not a self-generating-money institution, financial status is among the important thing to be considered for UTM to acquire new technology. This is in contrary compared to Rusia. In Russia, the first thing

taken into consideration in developing the E-learning is the readiness of teaching staff to adopt the technology. The desirability to learn a new technology is the key ingredient to help the teaching staff able to use the technology and adopt the technology [14].

However, the situation differs from students' myportal. From this research, it is found out that the origin of technology is important. The developer referred to track record and review of technology before adopting it. The justification given by the development team on this issue are stability and performance. As students' myportal is going to be the main landing page for students to access their learning and co-curricular activities, origins of technology are part of the criteria to ensure the importance of the platform is uninterrupted.

Another criterion of technology assessment in students' my development is the potential effect from it i.e comparison between cost and benefits. The developing team analysed into the benefits offered and assess this not only from the view of users, but includes administrator, which highlight the other factor - design of technology. Technology design will increase ease of use and perceived usefulness of the technology, as explained through technology adoption model, TAM [15].

Yet, both interfaces e-learning and students' my lead to similar assessment criteria. For a technology to be implemented in UTM, it has to bring a positive impact toward UTM core business which is an educational purpose. Due to the implementation of E-learning, student is able to learn independently thus increase the student performance in education. The number of people demanding for additional education has been increasing correlate with the increasing number of the population [16]. Even though E-learning probably will never beat the traditional way of education, but so far this is the most efficient alternative way in complement today standard teaching and learning. Students' myportal on the other hand, should act as a stable platform that allows students to be facilitated in learning and taking parts in co-curricular activities.

As far as this study concern, not all criteria are being used in assessing technology in UTM. This is not an indication

either the criteria is not important but for this kind of technology and considering the selected organisation, mostly this is the criteria that is used to assess the technology.

Results are found different between e-learning and students' myportal because myportal is built in-house. However, it is suggested that students' myportal are able to be synced with many other universities systems such as the financial system from Bursary, and easily accessible from outside the campus. Scheduled maintenance is consistently needed; thus, the platform is able to serve students' need better.

Meanwhile, E-learning is fully adapted from another platform, which is Moodle and not self-develop by UTM, there is nothing much can be improved in term of the features of the technology. Updating E-learning now is not a choice that can be made since it is a must for every public university under government order to improvise the learning version. Under the E-learning department in the Ministry of Education, E-learning is envisioned to be centralised as a MOOC (Massive Open Online Course) in the future.

5.   CONCLUSION

From this study, it can be concluded that even for non-monetary purposes, for a technology to be adapted in an organisation, the financial status of the organisation also needs to be considered. Even though the first criteria that are assessed for a technology to be adapted is depending on the stage of the technology in its cycle, the second most influencing factor is the financial state. The impact given by the technology toward organisation core competency is the third thing being considered to technology implementation. These three criteria are actually interrelated from one to another which is for a technology to be developed for further progress without relying on single platform, financial status is at a stake for the organisation to adapt other technology. Not to mention, when the E-learning is at the best version of development, it will give a positive impact on student performance hence indirectly giving UTM a competitive advantage in competing with other universities.

It is recommended that UTM need to focus on developing additional features as complementary to E-learning technology from Moodle instead of licensing from other developers. Not only could cut cost, but the features' developers are also able to learn to develop a likely same platform for E-learning and be prepared for any unexpected changes such shut down of Moodle platform for E-learning in future.

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