Investigating the Factors Affecting Business Intelligence Systems Adoption: A Case Study of Private Universities in Malaysia

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ABSTRACT

This study explores the factors influencing the adoption of Business Intelligence Systems (BIS) in Higher Educational Institutions (HEIs), and also evaluate the extent of adoption in the universities. A research framework was developed based on the Technology-Organization-Environment (TOE) framework and the Diffusion of Innovations (DOI) theory, comprising of ten factors which were hypothesized and tested for the adoption of BIS in HEIs. Data was collected through a paper survey questionnaire from a sample of 120 managers and academicians in twelve private universities in Selangor State, Malaysia which were analyzed through Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings revealed that Absorptive Capacity, Competitive Pressure, Complexity, IT Infrastructure, Presence of Champion, Top Management Support, and Vendor Selection, are the factors influencing BIS adoption in the universities. The results also indicate that most private universities in Malaysia are currently involved in level 2 of BIS adoption. Other implications are also discussed.

KEYWORDS

Adoption, Business Intelligence Systems, Developing Countries, Diffusion of Innovations Theory, Higher Educational Institutions, Malaysia, PLS-SEM, Technology-Organization-Environment Framework

INTRODUCTION

Information Technology (IT) plays a key role in today’s competitive business environment. The adoption of appropriate technology can help a firm achieve greater business competency, improve business performance, and also ensure the company retains its hard-won competitive advantage (Al-Haraizah, 2011).

The relevance of IT in the scheme of university activities has been widely acknowledged in recent times. Increase in competition among Universities for student admission due to globalization coupled with the recent advancement in Information Communications Technology (ICT) have led to a very strong competition not only among companies, but also universities (Kabakchieva, 2015). High volume of student intakes, the need for efficient management of students, human resources, academics, finances, and infrastructure which leads to gathering huge volumes of data in universities, have brought enormous pressure on University administrators especially on how to increase efficiency and improve performance in their operations (Kabakchieva, 2015).

Moreover, the quest to satisfy the information needs of major stakeholders of universities have necessitated the need to adopt and implement Information Systems (IS) that will help them generate accurate and reliable reports for planning and decision making.
Consequently, many universities have adopted and implemented some form of IS with the aim of increasing efficiency and improving performance. Nonetheless, the form of IS adopted by these institutions have usually been restricted to the online transaction processing (OLTP) systems, merely used for data collection, and which has been recognized to be limited in terms of its ability to analyze massive data and adding meaningful values to them for efficient decision making (JISC, 2011).

In a bid to address these challenges, many institutions mostly in the developed world have adopted, implemented and are currently using Business Intelligence System (BIS) tools to analyze their data for decision making (Dawson & Van Belle, 2013; Olszak & Ziemb, 2012; Yeoh & Popovic, 2016). Consequently, significant amount of research attention has been devoted to the adoption, application and implementation of BIS in recent times. While a number of studies have examined the key factors that influence corporate organizations to adopt BIS in different industries, very few studies have looked at it from the academic administration perspective (Sujitparapitaya, Shirani, & Roldan, 2012).

Moreover, most of these studies have largely focused on countries from the developed world with little attention on developing countries (Durso, 2009; Head, 2010; JISC, 2011; Kelly, 2005; Kabakchieva, 2015). Impliedly, within the context of developing countries, very little research effort has been devoted to the BIS adoption especially from Higher Educational Institutions (HEIs) perspective. Given that huge differences exist in environmental (socio-economic), organizational, and technological factors between the developed and developing countries, findings in these studies cannot be generalized to the developing countries without empirical support. This study therefore contributes to the BIS literature by examining the current state of BIS adoption in Malaysian universities. In particular, the study investigates the prominent factors influencing the adoption of BIS among Malaysian universities. The analysis on Malaysian universities is relevant for a number of reasons.

First, there have been a number of reforms within the educational sector aimed at improving the quality of education and also to attract international students (Sohail & Daud, 2009). These reforms have resulted in the influx of foreign students in Malaysian universities. Available statistics as at the year 2015 indicate that, a total of 74,748 foreign students from over 150 countries enrolled in Malaysian universities (mohe.my). 26,405 of them are in public universities whilst the remaining 48,343 are in private universities. Given the rise in foreign students’ enrollment in Malaysian universities from diverse background, the adoption of a novel system like BIS remain critical in the efficient management of students’ data and other university operations.

Secondly, within the Asia Pacific region, BIS adoption is increasingly becoming popular among organizations in Malaysia (Ong & Siew, 2013). Gartner Inc. for instance estimates BI software revenue in Malaysia in 2013 to be RM114.5 (US$37 million) representing a 9% increase from the 2012. A survey of companies in the Asia Pacific region by Gartner in 2012 from IT Leaders also put Malaysia ahead of its peers in terms of their commitment to invest BI infrastructure in the future (AvantiKumar, 2013). Thus, the future prospect of BIS is undoubtedly bright within the Malaysian context and hence the relevance of BIS research in this environment cannot be understated.

The organization of the rest of the paper is as follows: the next section discusses the literature review, which is followed by a section explaining the methodology of the study. The subsequent section discusses data analysis and findings with the final section presenting the summary and conclusions of the study.

**LITERATURE REVIEW**

Most of the previous studies of BIS have focused on the benefits and applications of it in many organizations across different industries (Aruldoss, Lakshmi, & Venkatesan, 2014). The reported benefits of BIS from these studies include providing faster and more accurate reporting, an improved decision-making process, improved customer satisfaction, increased revenues, savings in IT resources required, and lastly, an improved communication within the company (Hocevar & Jaklic, 2010).
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