



IMPROVING IT SERVICE MANAGEMENT IN HIGHER EDUCATION

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ABSTRACT

This paper aims primarily at examining the mediating role of the information technology (IT) governance in the effect of IT adoption to IT service management. For this major purpose, both dimensions of quantitative and qualitative research were applied including an empirical survey with active participation of 99 private Colleges of Informatics and Computer Management in Indonesia. In addition to the survey, follow up interviews were conducted with the College Heads and Study Program Heads. Results of quantitative data analysis affirm that IT governance had positive and significant mediating effect on the improvement of IT service management. It was also found that the adoption of IT had high positive and significant direct effect on both IT governance and IT governance. This paper suggest the signicance of IT adoption in the efforts of improving IT service management of higher education institutions in both developing and developed countres.

Key words: IT Innovation Adoption; IT Governance; IT Service Management; Indonesia.

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1. INTRODUCTION

Management of information technology (IT) service has become an inherent need to realize efficiency and effectiveness in managing higher education institutions (Reis et al., 2013). In this context, the integrity of IT services management has been evidenced to improve the level of efficiency of academic data processing, transparency and accountability, as well as accelerating decision making, increasing productivity, and utilizing human resources (Huda & Hussin, 2013). Accordingly, the ability to manage IT services quickly and responsibly is very crucial to anticipate every academic process requirement. More particularly in Indonesian higher education context, improvement of IT service management is to ensure that everything runs smoothly to realize the goals of higher education: developing education, research, and community services (Maria et al., 2012; Phahlane et al., 2014).

Previous studies (Carlos & Rodrigues, 2012; Salavati & Hashim, 2015) affirm that adoption of IT innovation had significant effect to improvement of IT service management for decision-making process. More particularly for instance, Website service facilities can accelerate and improve information accessibility, avoid the queue of delays in obtaining information in carrying out both academic and administrative activities (Salavati & Hashim, 2015). Other scholars also assert that IT governance mediate the the success of IT service management for academic process performance (Veronika and Suryawan, 2017). This implies that IT governance has an important role in integrating and ensuring the availability of all IT services to support academic needs. In relation to this, other researchers state that processes and mechanisms are the core elements of IT governance for improving higher education information services to be more interactive, dynamic, and transparent (Bianchi et al., 2017, Tjong et al., 2017; Yudatama et al., 2017).

However, the difficulties often arise in the form of incompatibility of data formats, not only in accordance with operating standards and procedures, but also the document validity has not been able to provide certainty in achieving overall information integrity in the processing of College's academic data. Currently, utilizing IT service management has only been limited to the application of the system and have not optimized the relations between these systems with the processes they support (Maria et al., 2012; Phahlane et al., 2014).

Previous studies also indicate that the information communication through various different platforms also causes inconsistencies and difficulties in carrying out information inter-operability in managing the IT service application portfolio (Hermanto & Kusnanto, 2017; Yeh & Ramirez, 2016). Consequently, these conditions reduce the value and quality of information (Hasan et al., 2017). Moreover, the use of media platforms that tend to vary causes information communication to be biased and unstructured (Maria & Fibriani, 2013), thus creating difficulties in improving IT service management for universities (Indrajit & Djokopranoto, 2016).

Meanwhile, several researchers (Montenegro & Flores, 2015) pinpoint that the availability of varied information without clear rules and standards regarding its use causes a discrepancy in the process of adopting IT innovations and governance application portfolios. This results in a low guarantee of information accuracy for universities. In the context of Indonesian higher education, IT application portfolio services are no longer limited to processing academic data only, but covers all activities of each work unit in implementing the education, research, and community services of lecturers (Karamti, 2016; Kosasi et al., 2017). Likewise, the availability of varied information without clear rules and standards leads to difficulties in providing college academic information (Putri et al., 2015).

This paper is filling the gap in the current existing literature that very limited studies are conducted in examining the effect of IT innovation adoption to improvement of IT service management as well as how IT governance mediate the relationship between IT innovation

adoption to IT service management improvement. Several researchers report that studies on the the influence of IT innovation adoption to IT service management through IT governance are still limited (Bianchi, Sousa & Pereira, 2017; Yudatama, Nazief, Hidayanto & Mishbah, 2017). This paper then addresses direct and indirect effect of IT innovation adoption to IT service management improvement.

2. RESEARCH METHODS

2.1. Research Design

This study applied dimensions of both quantitative and qualitative research, with particular reference to explanatory-follow up mixed-methods research model. Accordingly, first of all, quantitative data collection through an empirical survey was conducted, followed by in-depth interviews with selected key informants to verify the findings.

2.2. Population and Sample Size

For the purpose of this study, census method was applied to include all Colleges of Information Management and Computer Sciences in Indonesia with the total of 99 Colleges which have been accredited by the National Accreditation Voard of Indonesian Higher Education (or BAN-PT). The targeted samples appropriate for the study were Colleges Head and Head Study Programs. There were 112 questionnaires delivered online to these respondents and there only 99 questionnaires returned (response rate of 88%).

2.3. Data Collection Techniques

Questionnaire was used in the study to collect quantitative data. The questionnaire adapted Likert-type scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Tend to Disagree, 4 = Tend to Agree, 5 = Agree, 6 = Strongly Agree). For the purpose of collecting qualitative data, open-ended questions were provided during the in-depth interview with the active participation of five key informants who required the inclusion criterions.

2.4. Validity and Reliability of Instruments

For the purpose of measuring the construct validity of instruments, confirmatory factor analysis (CFA) was applied in the study, with the usage of SEM-PLS Analysis. The SEM-PLS measure both measurement model and structural model (Ghozali & Latan, 2015). As presented in Figure 1, there were three dimensions of IT innovation adoption, including: (1) technology, comprising of three indicators: perceived benefits of IT, conformity of IT infrastructure support, and perceived ease of IT usage; (2) organization, comprising of top management support, organizational readiness, and experience in IT; (3) environment, consist of competitive pressure and external support. The factor loadings were high, ranged from .75 to .92, indicating a good construct validity.

In relation to the IT service management, there were two dimensions, including: (1) service support, consist of three indicators: adjusting changes in information needs, expediting the availability of information, and adjusting IT infrastructure configuration; and (2) delivery service, including: providing continuous information, providing timely information services, and smooth operation of IT services. As presented in Figure 1, the loading factors were very high, ranged from .85 until .96, indicating good and excellent validity.

In relation to IT governance, there were three dimensions, including: (1) structure, comprising of three indicators: IT steering committee, IT strategy committee at the board of directors, and IT project steering committee; (2) process, to include: portfolio management, information system strategic planning, and project governance; and (3) relations mechanism,

consist of two indicators: IT governance awareness and IT leadership. As presented in Figure 1, the loading factors were very high, ranged from .84 until .91, indicating a good validity or good relationship between constructs and indicators (Dachlan, 2014; Schumacker & Lomax, 2015).

Furthermore, Table 1 presents the reliability coefficient of the items. In this research, internal consistency of these items were measured with Cronbach’s Alpha.

Table 1. Constructs of Reliability and Validity

Constructs	Items	Cronbach’s Alpha	Composite Reliability	Average Variance Extraced (AVE)
IT Innovation Adoption	8 items	0.906	0.925	0.610
IT Governance	8 items	0.904	0.923	0.601
IT Service Management	6 items	0.934	0.948	0.753

On the basis of Cronbach’s Alpha’s coefficient, all items related to IT innovation adoption, IT service management, and IT governance had excellent reliability which is higher than .90 (Gregory, 2000; Nunally, 1978; Manning & Munro, 2006; Budiastuti & Bandur, 2018). The reliability test of the questionnaire also generates the Composite Reliability (CR) value (> 0.70) and Average Variance Extracted/AVE value (> 0.50).

3. RESULTS OF DATA ANALYSIS

Results of data analysis with regard to relationship among variables in the study is presented in Figure 1. An effort was made to conduct a path analysis to measure the direct effect of IT innovation adoption to IT governance and improvement of IT service management. The results show that the IT innovation adoption is proven to influence IT governance (0.75) and IT service management (0.58), indicating positive and singifcant effect. This implies the crucial roles of technology (perceived benefits, perceived ease of use, conformity of IT infrastructure support), organization (top management support, organizational readiness, IT experiences), and environment (competitive pressure and external support) on the improvement of IT service management, such as service support and provision of continuous information. The result also shows the significance of IT innovation adoption to IT governance, i.e. IT governance awareness and IT leadership, and even information strategic planning.

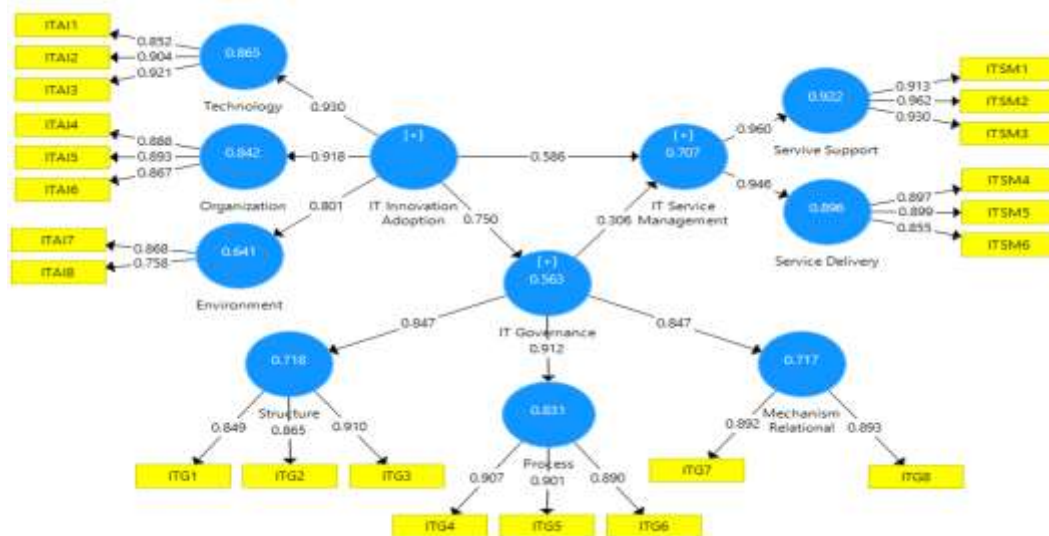


Figure 1. Result of Structural Model Analysis

Moreover, the IT innovation adoption has indirectly positive influence on IT service management with a path coefficient value of $(0.750 * 0.306) = 0.230$. This implies that even though the indirect effect of IT innovation adoption to IT service management is smaller compared to the direct effect, IT governance is still needed to help and facilitate the adoption process of IT innovation for improving IT service management. The significances of IT governance were expressed by several key informants below:

"IT governance is clearly needed because it can make it easier for us to organize all IT service infrastructure especially guaranteeing and ensuring IT services can operate properly" (Key informant 1).

In essence, good IT governance is strongly influenced by the readiness of the IT innovation adoption process (Key informant 2).

The role of our IT steering is to develop the required portfolio of applications (Key informant 3).

When talking about governance . yes, I agree that it is indeed very much influenced by the ability of the IT innovation adoption process (Key informant 5).

4. DISCUSSION

This research indicate that IT innovation adoption provides significant and positive effect to IT governance that lead to improve IT service management. This findings support previous study conducted by Pereira and Silva (2012c). They affirmed for the purpose of achieving clarity for the provision of college academic information service, implementing IT service application portfolio requires good and structured governance. Previous studies confirm that implementing IT governance which includes the structure, process, and mechanism of relations, is to facilitate and ensure the synchronization and interoperability process in integrating and ensuring the suitability of higher education information services (Debreceeny & Gray, 2013; Kosasi et al., 2017).

IT governance can guarantee the performance of academic process so that it becomes more effective and efficient. In turn, it can increase expectations values for all stakeholders (Noaman et al., 2015). Information service connectivity from each part or work unit is an important platform to ensure the synchronization and interoperability process in providing integrated information services so that college academic activities can operate smoothly (Fichman et al., 2014; Petter et al., 2012).

This research also support the studies of other scholars (Hameed & Counsell, 2014a, 2014b). They consistently affirmed that the involvement of the relationship between the adoption process of IT application innovation and changes in the product and process determine the composition of the information flow from each business process work unit of each department. The novelty of this study, however, is related to measure both the direct and indirect influence of IT innovation adoption to IT service management. Most of previous studies focused only on direct effect between IT governance to IT service management, which was proven to have small influence in this study.

5. CONCLUSIONS

On the basis of results of both quantitative and qualitative research of this study, it can be concluded that IT governance and IT service management improvement are strongly influenced by the ability of adopting IT innovation adoption. This suggests about the needs of strengthening the perceived benefits of IT, conformity of IT infrastructure support, and perceived ease of IT usage. This study also suggests the significance of organizational

dimension of IT innovation adoption, including top management support, organizational readiness to adopt IT, and experience in IT.

This research then implies that to improve the IT service management in higher education, it is crucial to focus on both IT innovation adoption and IT governance. More particularly, an emphasis should be made to set up information system strategic planning and the formation of IT steering Committee. More importantly, higher education institutions need to pay attention on relevant IT governance such as their awareness to govern IT and IT leadership roles. It is then strongly suggested that as this research was limited only to private colleges of information system management and computer sciences, further research research should be expanded to include government universities, institutions, and colleges.

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