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Designing an Effective Collaboration using Information Technology Towards World Class University

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Abstract

One of the challenges in achieving success in the global competition for the government is to set up higher education institutions to be able to become a World Class University (WCU). It is believed that to address this challenge they need effective collaboration for both internally and externally where information technology (IT) is set as an enabler. However, in fact, this research has found that it is still not utilized effectively although the need for the collaboration has clearly stated in the organization's strategic direction. This paper aims to increase such an effective collaboration model for higher education in Indonesia towards WCU. By using one of reputable state Islamic universities in Indonesia as research object, UIN Maliki Malang, which consist of more than 17,000 students and staffs, this paper proposing a collaboration architecture model equipped with suitable supporting tools. As approaching methods, we use business model design and transformation by mapping study object's business strategic programs into proven collaborative model and their strategic planning of IS/IT. The result of the analysis conducted in the research shows that the majority of the strategic direction of UIN Maliki Malang requires collaboration using information technology both internally and externally. Additionally, UIN Maliki Malang also has facilitated by several collaborations tools within the organization. However, they still need a formal collaboration architecture model to achieve their strategic direction goals effectively. Thus, through the achievement of collaboration effectiveness using information technology, the achievement of a world class university can be realized.

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Keywords: Collaboration; Information Technology; World Class University

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1. Introduction

Since the implementation of AFTA (ASEAN Free Trade Area) and MEA (ASEAN Economic Community) in 2015, one of the issues that have been facing by the government is the readiness of human resources. It is believed that higher education have an important role in providing such a good human resource capabilities. Therefore, the Government of Indonesia became very focused in the development of higher education competencies, and one of their regulations is directing several universities to become a World Class Universities (WCU). However, there are several challenges in achieving WCU's predicate, and one of them is to build an effective collaboration in both the internal and external structures of the university [1, 2]. One of the enabler that can be used to address the challenges is Information Technology (IT). However, in fact, it cannot be done by building a technical application only [3]. The overall system development and involvement of the factors that supporting IT adoption in the organization are the requirement keys in achieving that success [3–6].

This paper is intended to be one of the scientific reference for higher education institutions who want to use IT as enabler in effective collaboration toward WCU which provide a model and architecture that equipped with suitable supporting tools. The approaching methods used are business model design and transformation through successful adoption of IT [3–7]. Study object that used in the research is State Islamic University Maulana Malik Ibrahim of Malang (UIN Maliki Malang), which was one or reputable state Islamic university in Indonesia that currently consist of more than 17,000 students and staffs, and 7 faculties and 24 educational programs [8]. At the end of 2013, UIN Maliki Malang, has been projected by the Government to become one of two WCU in 2019 [9]. In this case, this achievement target was setup a challenge to build such an effective collaboration for UIN Maliki Malang. However, when the research began in 2015, there were still no pattern, model and architecture to address the challenge. Thus the research results could be set as a complement of other studies of achieving such a target.

2. Literature Review

A complete study of the literature review and the position of the research is presented in Fig. 1. Since the research uses business model design and transformation as its approaching methods, which were based on business direction of UIN Maliki Malang, it only included aspects that have relevant relations with UIN Maliki Malang's strategic programs, including several aspects from people, process, materials, and management challenges.

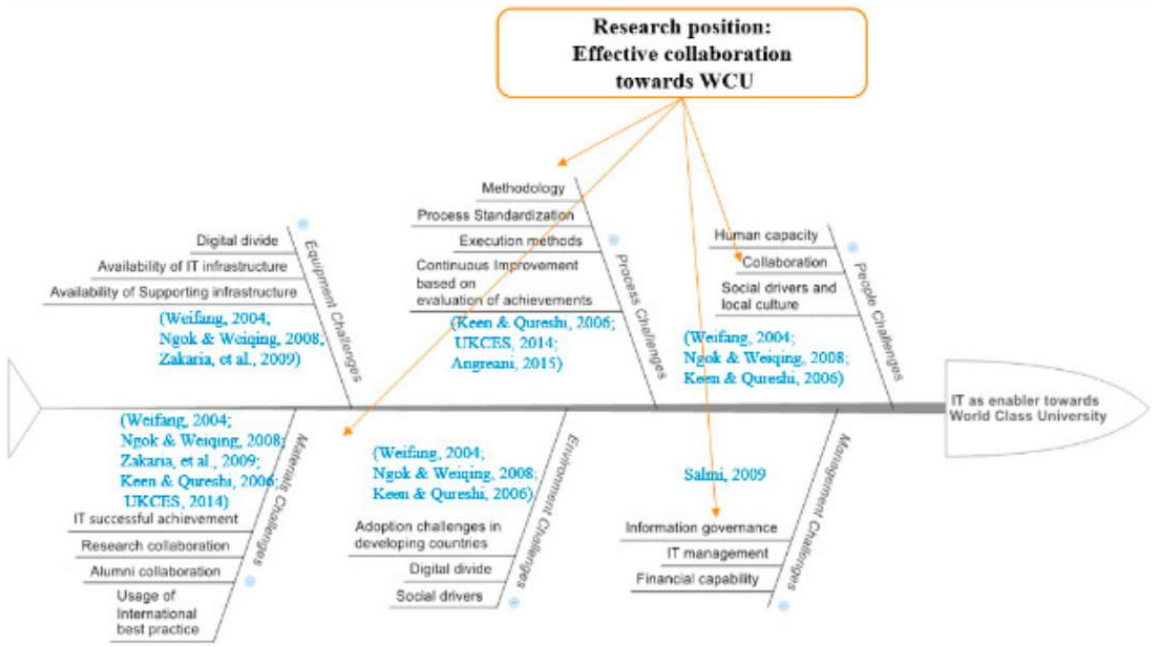


Fig. 1. Position of the research in the literature study.

Previous studies related to the steps towards WCU stated that WCU universities must have a strong technological foundation [10–12]. Furthermore, they have to have a strong collaboration as it was one of WCU's characteristics [10–11]. The similarity between those studies and this research is on the aspect of effective collaboration, both internally or externally. In the other side, the difference between both of them is the development of effective collaboration, where in this research it was done by strengthening the use of information technology aspect.

Salmi [2], who studied the challenges of establishing the WCU, illustrates the alignment of several key factors for WCU involving technology transfer and collaboration as one of its characteristics as shown in Fig. 2. This research will also use the same aspect of alignment, while the difference with the Salmi's research is this research will explain about the collaboration architecture and the alignment model in terms of IT usage.

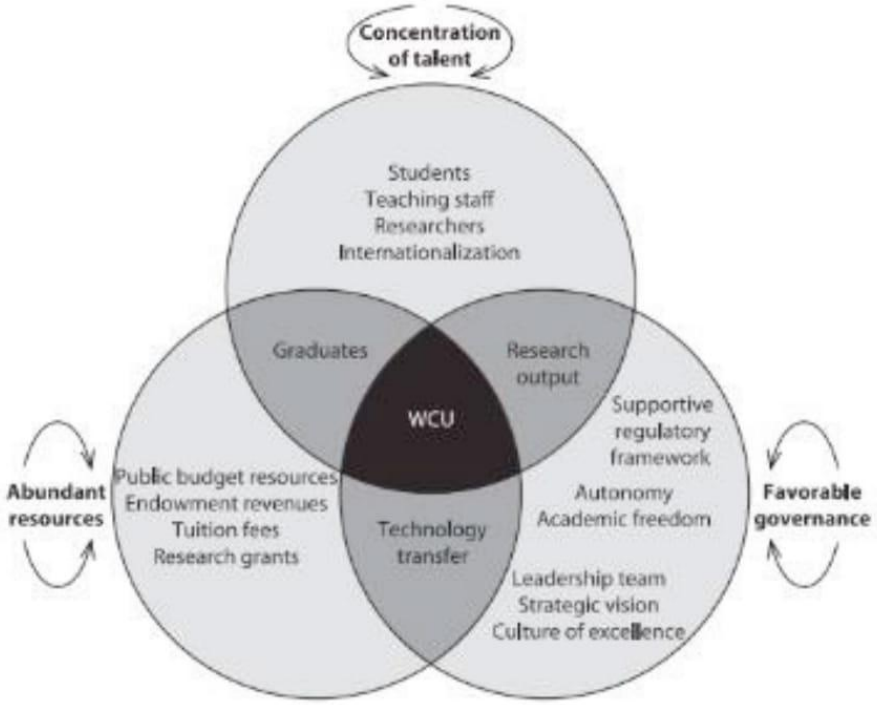


Fig. 2. Alignment of key factors of WCU characteristic [2].

In order to achieve an effective collaboration, the transformation process which require a business model design approach is consider necessary [7]. Keen and Qureshi [7] show there are several principles that will be use in the business model design, as shown in Table 1. In addition, an effective collaboration will also require an appropriate model from the design phase until the implementation phase [13], which includes: models of engagement, delivery methods, and models of delivery. This research will use those business model design and its principles in order to increase the chances of success of the results. However, by using UIN Maliki Malang as study object, there will be a unique characteristic in the model, which will refer to valid strategic direction within the institution.

Table 1. Principles of business model design [7].

	Efficiency	Complementarities	Lock-in	Novelty
Value chain analysis	Medium	Medium	Low	Medium
Schumpeterian innovation	Low	Low	Low	High
Resource-based view	Low	High	Medium	Medium
Theory of strategic networks	Medium	Medium	High	Medium
Transaction cost economics	High	Low	Medium	Low

When the research were in progress, we found that the characteristics of research object was match with the characteristic of distributed collaboration model from Olson & Olson [14]. Table 2 shows 8 types of distributed collaboration model.

Table 2. Types of distributed collaboration [14].

Name	Definition
Distributed Project or Enterprise (DPE)	Aggregated talent, effort, and resources with a common purpose
Shared Instrument or Resource (SIR)	Remote access to an expensive or rare instrument, or a resource such as high-end computation
Community Data Bases (CDB)	A database that is created, maintained, or improved by a geographically distributed community
Open Community Contribution System (OCCS)	An open project that aggregates the efforts of many geographically separate individuals through micro-contributions
Virtual Community of Practice (VCP)	A network of individuals who share an area of interest and communicate about it online
Virtual Learning Community (VLC)	A network of individuals who have banded together to jointly learn a rare skill or topic
Community Infrastructure Project (CIP)	A distributed community that builds the infrastructure and tools to collaborate
Remote Expertise (RE)	Access to problem solving from a remote person

3. Methodology

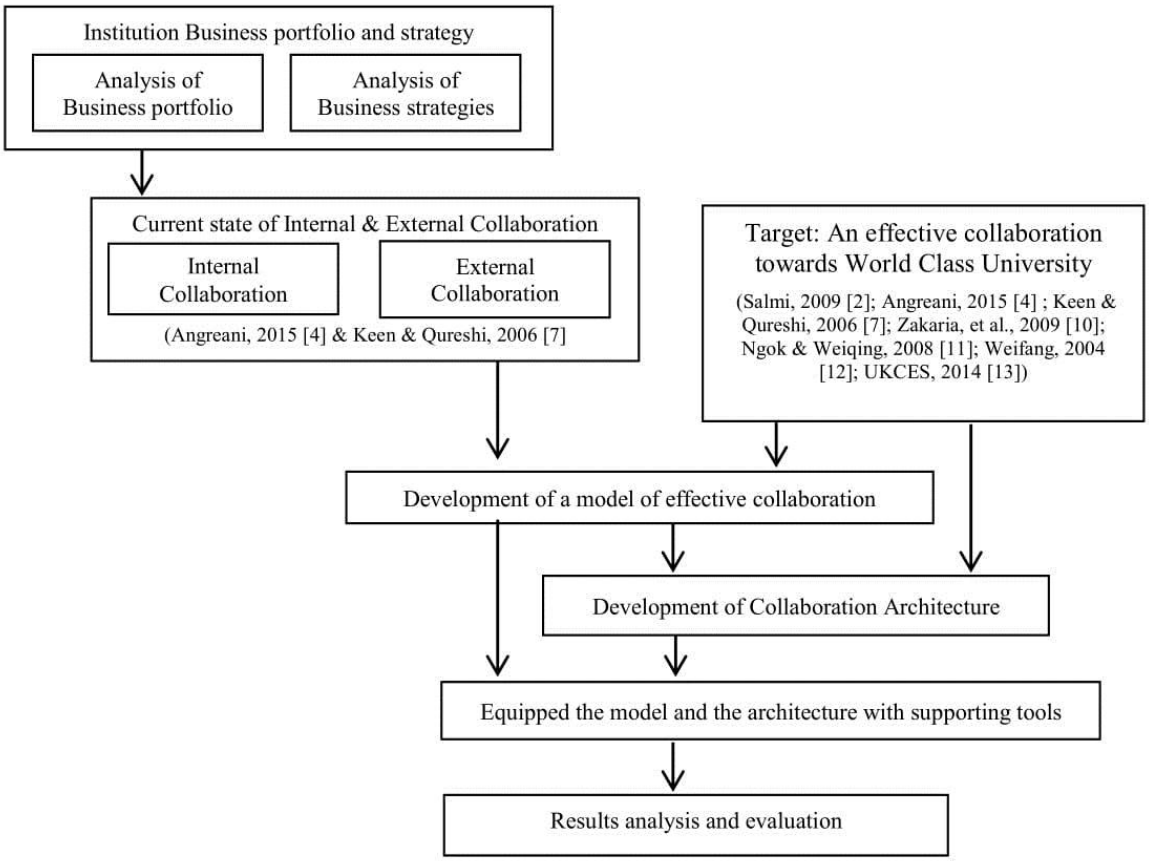


Fig. 3. Research methodology.

Fig. 3 shows the research methodology which includes references of literature review involved in the research. The research was a single case study model [15] begins with a study of profile, portfolio, and object research strategies to map the direction and need for collaboration for the object. The next process is observing and mapping of collaboration that occurs in the research object, internally and externally. In parallel, it also formulated targets of effective collaboration for WCU.

4. Results

Results of the research presented in several sub chapter, start from the observation result and the determination of collaboration architecture model for UIN Maliki Malang.

4.1. Mapping business strategy into IT based distributed collaboration

Based on a document of business strategic planning of UIN Maliki Malang 2016-2020, there are 9 strategic objectives which consists of 26 targets and 85 programs [16]. The research make an observation for all those programs and its implementation and compared it to key factors alignment of WCU characteristics [2] as well as principles of business model design [7]. As a result, all of 9 strategic objectives are related to key factors of WCU characteristics, while only 3 strategic targets and 28 programs are not. The research also doing the analysis to mapping all of those filtered strategic programs into IT based distributed collaboration [14]. Fig. 4 (a) shows the chart of mapping result of the number of business strategic programs related to IT based distributed collaboration mode, where Fig 4 (b) shows comparison between internal and external collaboration of the programs.

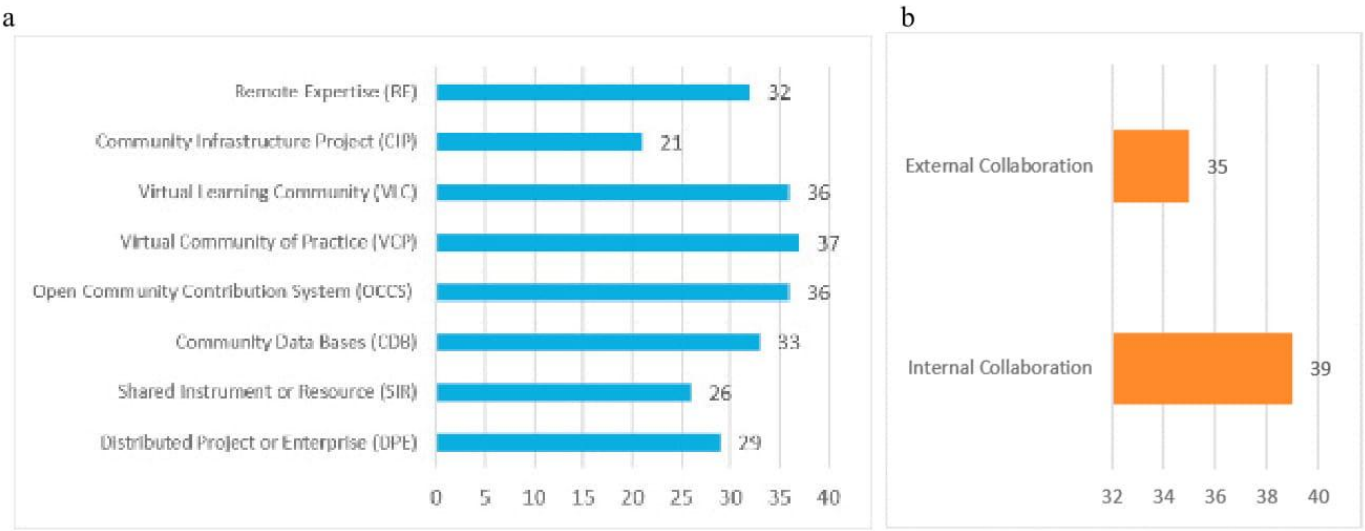


Fig. 4. (a) The number of strategic programs of the research object which has compatibility with IT based distributed collaboration model; (b) Comparison between internal and external collaboration of UIN Maliki Malang's strategic programs.

4.2. Collaborative application mapping on the key factors alignment of WCU

To realize the WCU it is necessary for the university to set up an alignment of several key factors to WCU characteristics (Fig. 2) [2]. Based on our observation, UIN Maliki Malang included some of them in their strategic programs. However, it still need to be mapped to WCU characteristics to define suitable collaborative applications.

As management of UIN Maliki Malang requested to us, unfortunately, we cannot show the detail mapping of strategic objectives into collaboration model as it contents confidential information from strategic planning document. However, the schema of the mapping model is shown in Table 3.

Table 3. Mapping of strategic objectives/targets/programs into collaboration model.

Objectives/ Targets/ Programs	Have relation with collaboration model (Y/N)/ Model and types of Collaboration	Category of collaboration applications
1. STRATEGIC OBJECTIVE No. 1		
1.1. Strategic target no. 1.1.		
1.1.1. Strategic Program no. 1.1.1	Y Collaboration model: CDB, OCCS, VCP, VLC Type of collaboration: Internal, External	• Communication Tools • Coordination Tools • Information Repositories • Computational Infrastructure
2. STRATEGIC OBJECTIVE No. 2		
2.2.*Strategic target no. 2.2*		
2.2.1. Strategic Program no. 2.2.1	N	N/A

4.3. Collaboration architecture

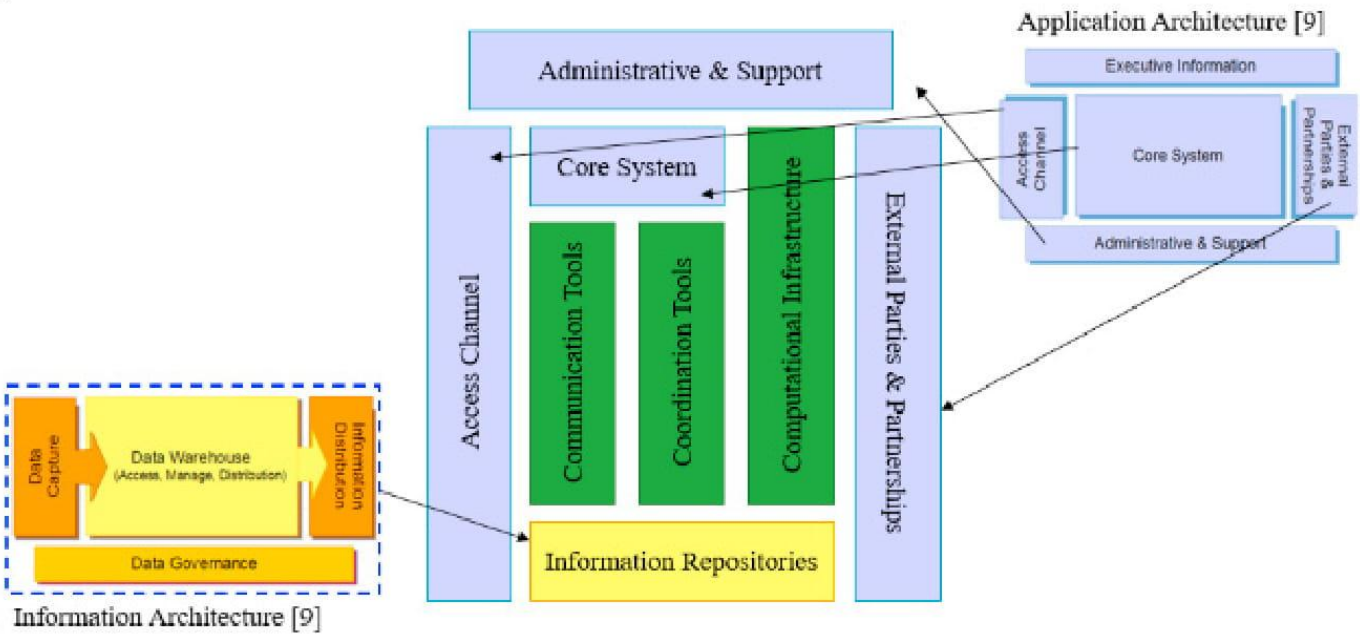
The development of collaboration architecture from utilization perspective of IS/IT is based on IS/IT enterprise architecture that formed in the proposed strategic planning of IS/IT initiated by Angreani in 2014 [9]. The IS/IT enterprise architecture consist of business architecture, application and information architecture, and IT infrastructure architecture. This perspective is intended to form an effective collaborative architecture which have consistencies with the development of IS/IT in the research object. However, the collaborative architecture created in the research is not limited to this perspective only, but also included other aspects of collaborative roles in order to get a successful execution of strategic programs.

By using an evidence in Fig. 4 (b), the most effective solution for successful collaboration is to bring the collaborative model closer to the organization's business process. Thus, several collaborative applications are included as complementary functions when information technology system is implemented. In terms of IS applications, this can be as an additional feature of applications, or it also can be a stand-alone system which run separately from the main system as a communication mediation. For example, email and texting applications could run separately as a stand-alone system, while other applications use it as communication media. Furthermore, for collaboration with external parties, the use of IT tools is not always being provided by UIN Maliki Malang itself. They can use sharing facilities from others. Nevertheless, they should provide basic IT collaboration tools within the relationship. Based on these, and also by reviewing the application and information architecture in the strategic planning for IS/IT of UIN Maliki Malang, the proposed model of collaborative architecture is shown in Fig. 5 (a). Following it, Fig. 5 (b) shows components of each part of the architecture as we breakdown the collaboration architecture. Based on research of Olson et. al. [14] and Sarma et. al. [17], who were categorize collaboration tools in four types, we found that UIN Maliki Malang already have all of those categories through UIN Maliki Malang's IS/IT strategic plan, except collaboration's computational infrastructure. All of them are already have proven relation within others component in the IS/IT infrastructure [9]. Hence, in the development of IT based collaboration architecture as shown in Fig. 5 (a), all of those categories were placed and synchronized with other architecture artefacts, including detail applications that UIN Maliki Malang's users familiar with.

In the area of access channel in Fig. 5 (b), there is a collaborative portal component. This component may be included in the university portal, but in fact, the university portal was set as a stand-alone application and has no communication with other components. The new component, named the collaboration portal, is temporary set until a time when it can be merged with university's main portal in order to achieve an effective maintenance process.

On the application level, there are several applications that have direct interface with the user. Currently, various types of applications can be used directly to meet collaborative functionality. However, users are able to customize their own collaborative functionality on the top of organization's applications.

a



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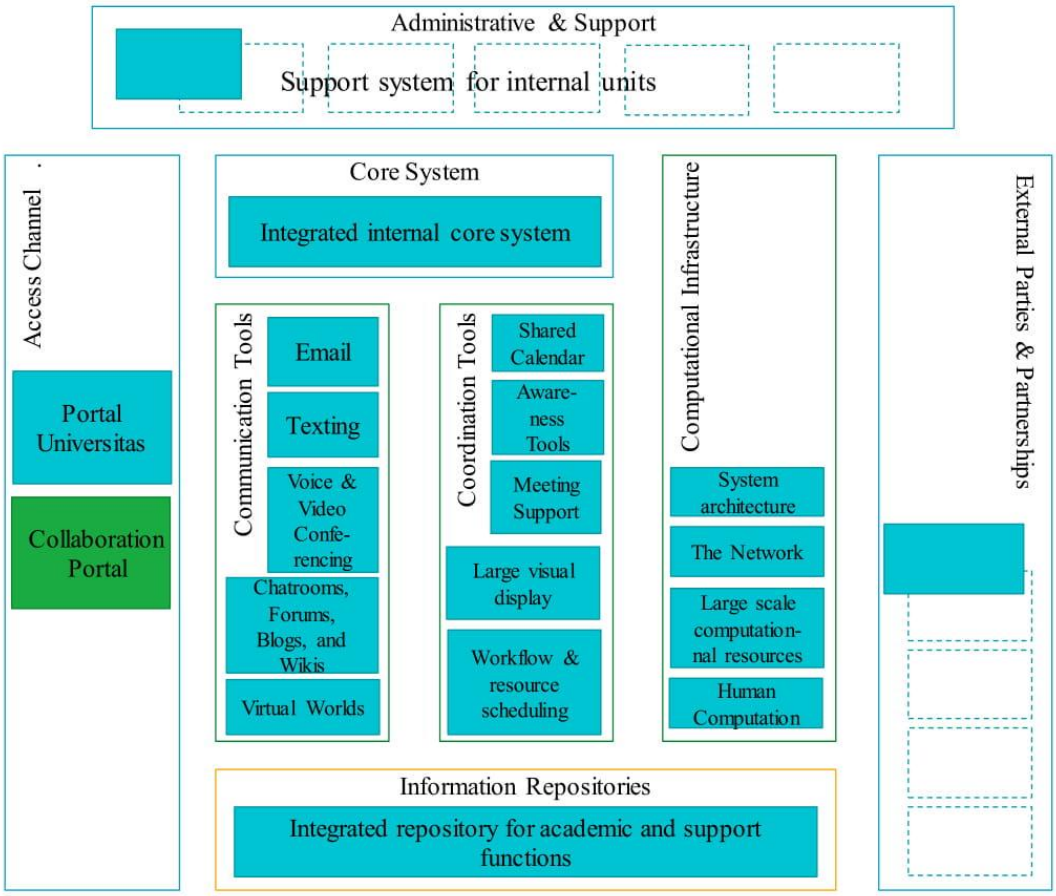

Fig. 5. (a) The collaboration architecture.; (b) Components of the collaboration architecture.

5. Conclusion and future work

In conclusion, the use of IT as enabler in collaboration toward WCU has created new opportunities for the institution in terms of effectivity and productivity. In our case, it enabled collaboration both internally and externally, and also supported for more than 60% of UIN Maliki Malang's business strategic programs. By mapping the filtered strategic program into proven collaborative model and strategic planning of IS/IT of the research object, we created an effective collaboration model equipped with its collaboration tools categories. The research has found that several collaboration tools in UIN Maliki Malang were not utilized effectively caused by such a reliability issues. To address this challenge, a business process approach and an integration with current strategic planning for IS/IT in the architecture development are required.

Although this paper has described a collaboration model using IT towards WCU, based on previous studies, the success of collaboration also relies on other factors such as culture and user readiness for technology usage. Therefore, further research will need to consider on these factors in order to develop such a holistic model towards the effectiveness of collaboration in higher education in Indonesia. This paper also described a way to develop an effective collaboration model which starts from strategic direction of UIN Maliki Malang to achieve the alignment between business and IT. However, the research does not include the review from user perspectives who run daily operational activities. Thus, it will be necessary to explore on that perspective in order to get a complete point of view of people, process, and technology.

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PROGRAM BOOK

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2017

ISICO 2017

6-8 NOVEMBER 2017

SANUR PARADISE, PLAZA HOTEL , BALI

"Innovation of Information Systems – visions, opportunities and challenges"

open-ended questions survey has been conducted to explore what factors motivate citizens to use the City113. The findings factors were compared to existing prominent technology adoption models (including TAM, DOI, UTAUT, TRA, TPB, and DTPB) and suggested the *Decomposed Theory of Planned Behavior* (DTPB) model with a new construct specific to gamification called *playfulness* is the most suitable model for representing user acceptance of the e-government citizen report application. We perform the analysis using SPSS and SmartPLS for validity and reliability test and inferential analysis for validating the model. The data were collected using questionnaire targeting citizens in 7 sub-districts of Surabaya city. The number of sample size is calculated using Slovin formula collecting 156 valid responses. This study suggests that the most significant determinant of user's intention to use the City113 mobile application is attitude (R^2 = 0.435, t=5.238). There are only two factors influencing the attitude towards using the City113: Perceived Ease of Use and Perceived Usefulness. Citizens may have a positive or negative feeling towards using an e-government citizen report system mainly influenced by their perceptions on whether the system is easy to use and whether the system will deliver benefits for them or not.

Keywords: User Intention, mobile apps, Decomposed Theory Of Planned Behavior, DTPB, City113, citizen report systems, smart city

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RISKS ASSESSMENT OF INFORMATION TECHNOLOGY PROCESSES BASED ON COBIT 5 FRAMEWORK: A CASE STUDY OF ITS SERVICE DESK

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Directorate of Information Technology and Systems Development (Direktorat Pengembangan Teknologi dan Sistem Informasi, DPTSI) is an organization unit of Institut Teknologi Sepuluh Nopember (ITS) Surabaya which responsible for providing services related to information technology and system for all stakeholders. Incident management and requests fulfillment are part of the services managed by Service Desk unit of DPTSI. Incident management and requests fulfillment hold significant role yet prone to error, they could pose threats and risks for the organization. Hence, identification and assessment of risks, especially risks of IT processes, are highly required to avoid problem or disruption in organizational business processes and to minimize losses. In this research, COBIT 5 Enabling Process is used as a framework to identify the IT processes, whereas COBIT 5 for Risks is used to conduct the risk management activities. Risks are identified from Service Desk's business processes and existing condition of DPTSI. Data and information are obtained from interviews and observation, then they are mapped to corresponding ideal conditions based on COBIT 5 process DSS02 Manage Service Requests and Incidents. Furthermore, risks related to information technology processes are being identified, assessed and managed based on COBIT 5 process APO12 Manage Risks. The output of this research is a document containing list of IT risk assessment and risk control justification which can be used as a reference document for Service Desk unit of DPTSI ITS in managing risks associated with IT Processes. A good risk management processes will help the decisions' maker of the organization to make strategic decisions. In addition, the document may be used as a reference for other organizations with similar business processes.

Keywords: incident management, requests fulfillment, risk management, risk of IT process, COBIT 5 for Risk

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DESIGNING AN EFFECTIVE COLLABORATION USING INFORMATION TECHNOLOGY TOWARDS WORLD CLASS UNIVERSITY

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One of the challenges in achieving success in the global competition for the government is to set up higher education institutions to be able to become a World Class University (WCU). It is believed that to address this challenge they need effective collaboration for both internally and externally where information technology (IT) is set as an enabler. However, in fact, this research has found that it is still not utilized effectively although the need for the collaboration has clearly stated in the organization's strategic direction. This paper aims to increase such an effective collaboration model for higher education in Indonesia towards WCU. By using one of reputable state Islamic universities in Indonesia as research object, UIN Maliki Malang, which consist of more than 17,000 students and staffs, this paper proposing a collaboration architecture model equipped with suitable supporting tools. As approaching methods, we use business model design and transformation by mapping study object's business strategic programs into proven collaborative model and their strategic planning of IS/IT. The result of the analysis conducted in the research shows that the majority of the strategic direction of UIN Maliki Malang requires collaboration using information technology both internally and externally. Additionally, UIN Maliki Malang also has facilitated by several collaborations tools within the organization. However, they still need a formal collaboration architecture model to achieve their strategic direction goals effectively. Thus, through the achievement of collaboration effectiveness using information technology, the achievement of a world class university can be realized.

Keywords: collaboration, information technology, world class university

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UNDERSTANDING OF PUBLIC BEHAVIORAL INTENT TO USE E-GOVERNMENT SERVICE: AN EXTENDED OF UNIFIED THEORY OF ACCEPTANCE USE OF TECHNOLOGY AND INFORMATION SYSTEM QUALITY

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This study aimed to assess the factors that influence public behavior towards e-government service in Indonesia. The model used in this study was UTAUT which this model we have enriched with the addition of ISQ extracted from two dimensions of credibility and usability. Total respondents were 279 validated, the method used in evaluating the sampling data was Structural Equation Modeling (SEM). From the result of the hypothesis, it was found that all existing hypotheses showed a significant, valid relationship and positive value.

Keywords: e-Government; ISQ; UTAUT Model

No	Time	ID	Paper Title	Author(s)
3	13.45 - 14.00	118	Spatial Data Utilization for Location Pattern Analysis	Dyah Lestari Widaningrum, Isti Surjandari and Aniati Murni Arymurthy
4	14.15 - 14.30	114	Surveying LinkedIn Profiles of Data Scientists: The Case of the Philippines	Jerina Jean Ecleo and Adrian Galido
5	14.45 - 15.00	92	The Performance of Ant System in Solving Multi Traveling Salesmen Problem	I Putu Eka N. Kencana, Ida Harini and Kadek Mayuliana
6	15.00 - 15.15	62	Community Detection on Citation Network of DBLP Data Sample Set using LinkRank Algorithm	Satrio Baskoro Yudhoatmojo and Muhammad Arvin Samuar
7	15.15 - 15.30	69	The Utilization of Filter on Object-based Opinion Mining in Tourism Product Reviews	Aris Tjahyanto

1st SESSION: Legian Room, Lobby Level
TRACK: Data Acquisition & Information Dissemination

No	Time	ID	Paper Title	Author(s)
1	11.00 - 11.15	7	Engaging with Customer using Social Media Platform: A Case Study of Malaysia Hotels	Kamarul Faizal Hashim and Nawar Abbood Fadhil
2	11.15 - 11.30	22	Self-Branding on Social Media: An Analysis of Style Bloggers on Instagram	Rendan Liu and Ayoung Suh
3	11.30 - 11.45	137	Social Network Extraction Based on Web: 2. Comparison of Superficial Methods	Mahyuddin K M Nasution and Noah S A
4	11.45 - 12.00	135	Effects of Word Class and Text Position in Sentiment-based News Classification	June Ling Ong Hui, Keng Hoon Gan and Wan Mohd Nazmee Wan Zainon
5	12.00 - 12.15	143	Academic Data Warehouse with Big Data Technology for Higher Education	Leo Santoso
6	12.15 - 12.30	144	Teenstagram Timeframe: A Visualization for Instagram Time Dataset from Teen Users (Case Study in Surabaya, Indonesia)	Irmasari Hafidz, Alvin Rahman Kautsar, Tetha Valianta and Nur Aini Rakhmawati

2nd SESSION: Legian Room, Lobby Level
TRACK: Information Systems Management, and Data Engineering & Business Intelligence

No	Time	ID	Paper Title	Author(s)
1	13.15 - 13.30	49	A Modification Complexity Factor in Function Points Method for Software Cost Estimation Towards Public Service Application	Renny Sari Dewi, Apol Pribadi Subriadi, and Sholiq
2	13.30 - 13.45	74	A Comparative Study of Software Development Size Estimation Method: UCPabc vs Function Points, Which One is Closest to the Actual Effort?	Sholiq, Renny Sari Dewi, and Apol Pribadi Subriadi
3	13.45 - 14.00	68	A Hybrid Cuckoo Optimization and Harmony Search Algorithm for Software Cost Estimation	Alifia Puspaningrum and Riyanarto Sarno
4	14.15 - 14.30	82	Cyclomatic Complexity for Determining Product Complexity Level in COCOMO II	Muhammad Asep Subandri and Riyanarto Sarno
5	14.30 - 14.45	168	The Performance of ARIMAX Model and Vector Autoregressive (VAR) Price in Indonesia Model in Forecasting Strategic Commodity	Wiwik Anggraeni, Faizal Mahananto, Kuntoro Boga Andri, Sumaryanto
6	14.45 - 15.00	176	Simple Symbolic Dynamic of Heart Rate Variability Identify Patient with Congestive Heart Failure	Faizal Mahananto, Arif Djunaidy

1st SESSION: Kintamani Room, Lobby Level
TRACK: Information Systems Management

No	Time	ID	Paper Title	Author(s)
1	11.00 - 11.15	5	Motivational Factors for Knowledge Sharing using Pedagogical Discussion Cases: Students, Educators, and Environmental Factors	Narumon Sriratanaviriyakul and Jamal El-Den

No	Time	ID	Paper Title	Author(s)
2	11.15 - 11.30	6	The impact of Knowledge Management on Organizational Productivity: A Case Study; Koosar Bank of Iran	Fatemeh Mina Torabi and Jamal El-Den
3	11.30 - 11.45	90	Multi Methods for Knowledge Management Strategy Roadmap of Government Human Capital Management	Elin Cahyaningsih, Dana Indra Sensuse and Handrie Noprisson
4	11.45 - 12.00	1	Quality Aspects Priorities of Malaysian Universities Websites from End-Users and Decision-Makers Perspectives Based on QinUEM	Nedal Nwasra, Nurlida Basir and Mohd Fadzli Marhusin
5	12.00 - 12.15	133	Designing an Effective Collaboration using Information Technology towards World Class University	Linda Salma Angreania and Annas Vijaya
6	12.15 - 12.30	66	A New Approach of Indonesian University Webometrics Ranking Using Entropy and PROMETHEE II	Handaru Jati and Dhanapal Durai Dominic

2nd SESSION: Kintamani Room, Lobby Level
TRACK: Information Systems Management, Data Acquisition & Information Dissemination, and IT Security & Infrastructure

No	Time	ID	Paper Title	Author(s)
1	13.15 - 13.30	59	Understanding the Total Value of Information Technology Services from the Perspective of Students and Academic Staffs	Anisah Herdiyanti, Nanda Restanena Listyawati, and Hanim Maria Astuti
2	13.30 - 13.45	101	Users' Motivation in Sharing Information on Social Media	Afira Putri Ghaisani, Putu Wuri Handayani and Qorib Munajat
3	13.45 - 14.00	20	The influences of Task-Technology Fit, Attitude, Subjective Norm and Perceived Behavioral Control on Textile Cyberpreneur's Intention to Adopt Cloud-based m-Retail Application	Wan Safra Diyana Wan Abdul Ghani, Nik Zulkarnaen Khidzir, Tse Guan Tan and Mohammad Ismail

No	Time	ID	Paper Title	Author(s)
4	14.15 - 14.30	187	Network Intrusion Detection Systems Analysis Using Frequent Itemset Mining Algorithm FP-Max and Apriori, on Indonesia in 2013	Bekti Cahyo Hidayanto, Rowi Fajar Muhammad, Renny Pradina K, Achmad Syafaat
5	14.30 - 14.45	160	Context-Sensitive Normalization of Social Media Text in Bahasa Indonesia Based on Neural Word Embeddings	Renny Pradina Kusumawardani, Stezar Priansya
6	14.45 - 15.00	120	User's Acceptence of E-Government Citizen Report System (A Case Study of CITY113 App)	Tony Dwi Susanto, Made Mira Diani, and Irmasari Hafidz
7	15.00 - 15.15	78	A Study on Intrusion Detection Using Centroid-Based Classification	Bambang Setiawan, Supeno Djanali and Tohari Ahmad

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PREFACE

ISICO 2017 is the fourth edition of the Information Systems International Conference (ISICO). ISICO 2017 has taken place at Sanur Paradise Plaza Hotel, Bali Indonesia, between 6th and 8th November, 2017. The theme of the conference is "Innovation of Information Systems – visions, opportunities and challenges". ISICO 2017 has been hosted by Department of Information Systems, Institut Teknologi Sepuluh Nopember (ITS). In 2013, ISICO becomes the official Association for Information Systems (AIS) Indonesia Chapter (named AISINDO) affiliated conference.

The main philosophy of ISICO's presence is that to widen the research collaboration among IS researchers worldwide. Especially (but not limited) those that of developing countries. To this point, ISICO does not aim to replace existing IS Conferences such as PACIS, AMCIS, ICIS, or ECIS but rather it complements their presences.

The salient features of ISICO are the keynotes and Scopus-index Elsevier publication support. In terms of Keynotes, we regularly invites Global AIS President such as Prof. Douglas Vogel, Hong Kong (ISICO 2013), Prof Jaekyu Lee, Korea (ISICO 2015), and Prof Matti Rossi, Finland (ISICO 2017).

This year ISICO was able to attract more than 153 submissions from 16 different countries. From those submissions only 93 were selected for publication, so the acceptance rate this year was 60.7%. This Conference Proceedings volume contains all papers accepted for publication in ISICO 2017. ISICO 2017 comprises a series of independent tracks that are relevant to Information Systems discipline. The conference cover enterprise systems track, information systems management track, data acquisition and information dissemination track, data engineering and business intelligence track, and IT infrastructure and security track.

We would like to thank Department of Information Systems, Institut Teknologi Sepuluh Nopember for hosting the conference, as well as all participants for their contributions. We would also like to thank our distinguished program committee members for the efforts they have put in reviewing the papers. Special thanks to Prof. Matti Rossi, Dr. Ahmed Imran and Prof. Caroline Chan for the keynote speech.

We are looking forward to the Fifth Information Systems International Conference (ISICO 2019).

Conference Chair:

Faizal Mahananto, PhD (Institut Teknologi Sepuluh Nopember, Indonesia)

Peer-review under responsibility of the scientific committee of the 4th Information Systems International Conference 2017
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