E-Service Application For Online Research Proposal Guidance

Nurliana Nasution, Hasnati, Mhd Arief Hasan, Alexsander Yandra

Abstract: E-Service is an online system-based application of electronic service that facilitates government services. This application is widely used to facilitate procedural service. This paper discusses how to develop an E-Service as a communication forum for lecturers to discuss with practitioners in research proposal and community services. In Indonesia, the government has provided lecturers with a service i.e. the Information System for Research and Community Service to fund research and community service. However, there are still many lecturers who fail to make good research proposals and community service. Therefore, LLDIKTI (Higher Education Service Institution) Region X provides a system service to increase the opportunity for lecturers to get funding for their research proposals and community services.

Index Terms: E-Service, LLDIKTI X, Proposal, Research, Community Service.

1 Introduction

Technology makes it easy for humans to carry out their activities such as seeing news and looking for various information spreading in cyberspace. By using technology, all activities can run easily and practically so that it helps a lot for future activities. For example, one technology that can help human activities is information system. Information system is a system that provides management information in making decisions and carrying out company operations. The system is a combination of people, information technology and organized procedures or agencies that provide reports for certain parties. LLDIKTI (Higher Education Service Institution) is a substitute for the Coordination of Private Universities throughout Indonesia. The Coordination of Private Universities Region X is changed its name to LLDIKTI X. LLDIKTI is a government work unit in the region that functions to improve the quality of the implementation of Higher Education (Article 57). LLDIKTI will be the representative of the Ministry of Research, Technology and Higher Education in the regions. According to the Law, the establishment of LLDIKTI is not intended to differentiate services for State Universities (PTN) or Private Universities (PTS). One of the objectives of LLDIKTI is to improve public services. There is no dichotomy between State Universities or Private Universities in receiving quality improvement services for the provision of higher education. LLDIKTI X is a work unit within the Ministry of Research, Technology and Higher Education that has duties and functions in improving the quality of higher education in its working area (West Sumatra, Riau, Jambi and Riau Islands) which is headed by a Head of Institution who is responsible to the Ministry of Research, Technology and Higher Education. The change of the Coordination of Private Universities Region X to LLDIKTI X has made LLDIKTI's responsibility increasingly widespread because they have to oversee more institutions which are not only PTS but also PTN. Through LLDIKTI, the government expects to accommodate the interests and provide better services to PTN and PTS so that there is no difference between the two institutions. For its development, it is also facilitated by all devices to support information system services that have been provided by the government (Ministry of Research, Technology and Higher Education) or Information System for Research and Community Service. This information system has provided many benefits, especially in terms of research and lecturer service in the LLDIKTI X environment, starting from the process of submitting proposals to determining the winners of research and service grants from DIKTI. LLDIKTI X realizes the weakness that there are still few lecturers who receive research and dedication grants from DIKTI from all lecturers in the LLDIKTI X environment. It reflects that the Law No. 12 of 2012 concerning Tri Darma Perguruan Tinggi is not yet implemented properly. The main factor causing the problem is that there are many lecturers in LLDIKTI X who have not understood well how to make a research proposal for DIKTI. Therefore, many of lecturers' proposals in the LLDIKTI X environment were rejected or not funded. In fact, the training for writing research proposals and the services of DIKTI is very often carried out by LLDIKTI X. After a deep conversation between the authors and LLDIKTI X, they wished to continue to provide services for lecturers in the LLDIKTI X environment so that the percentage of recipients of research and dedication services from DIKTI continued to increase every year. LLDIKTI X expects that the lecturers can communicate directly with the expert in writing proposals for research and service of DIKTI through application media. In order for the experts, who have been provided by LLDIKTI X, to be able to conduct direct coaching via the online application, the previous lecturers uploaded their proposals directly to the Information System for Research and Community Service application**.**

2 E. SERVICES

E-Service (electronic service) is the design of software (provided through internet mediation) that is used to interact with other clients. Clients can be people or other electronic services. It is by carrying out certain actions and also interacting with other e-services directly to delegate other programs (Berardi, Calvanese, De Giacomo, Lenzerini, & Mecella, 2004), e-service can be defined as human action, effort, performance mediated by information technology. E-service consists of the support of consumers and customers. This definition reflects the three main components consisting of service providers, service recipients, and service transmissions; i.e. the technology. For example, if we talk about public e-services, institutions that are related to the public interest are recipients of services, citizens, and businesses as service recipients. The advantage of e-service (Wu et al., 2006) is to identify a number of benefits that can be provided by e-services including: accessing a larger customer base, increasing markets, reducing barriers to new markets and the cost of acquiring new customers, becoming an alternative communication transmission for all customers, improving service to customers, improving company image, gaining competitive advantage and increasing customer knowledge. E-service offers a relationship between organizer

services and the community as users of services that is mediated by information technology (Fauzi, Hidayah, & Kumaladewi, 2014) A distinctive feature of e-service is technology mediation. The theory and practice of e-service is still in its developmental stage (Santos, 2003). One result of the relative novelty of this concept is that there is no agreement on the definition of e-service or e-service experience. E-service has been defined as web-based services (Ganesh, Arnold, & Reynolds, 2000) or interactive services delivered on the internet(Boyer, Hallowell, & Roth, 2002) Some authors have conceptualized e-service as an information service. (Hoffman & Bateson, 2011) stated that "services can be defined as actions, efforts, or performance". Defining e-service is very appropriate to embrace this concept. However, to make it broader, it embraces all applications where the service might be delivered by information technology mediation. It means that it embraces all media and all types of interactions. In this case, e-service is defined as: E-service is an act, effort or performance that is mediated by information technology (including web, information kiosks and mobile devices). The e-service services include elements of e-tailing services, customer support and services, and service delivery. E-service, for the purposes of this paper, is marked by the following attributes:

- This service is intended for the needs of novice lecturers in starting research.
- Lecturers, as researchers, can discuss through this service system to start their research proposals with practitioners within the system (Nasution, Hasan, & Yandra, 2018)
- Lecturers can upload the draft of their proposals to the system.
- Practitioners can provide responses to proposals submitted into the system for the improvement of the proposal.
- This service also provides a general discussion forum where lecturers and practitioners can discuss together within the system.
- This service is run by application software (service software) that is owned by the provider (usually a company) and this service can be accessed on the internet.
- Service provider software can use service software from other providers to run its services; in this case, the provider is also a lecturer and practitioner.
- The provider has a security policy that determines what security steps will be used to secure its services.
- The provider also has a privacy policy that describes what consumers' personal information needed to run the service and how that personal information will be handled.
- This service can only be accessed by service account users.
- The consumer also has a privacy policy that determines what personal information he/she wants to provide and how that information must be handled by the provider.
- Admin of the system can filter comments or files that violate service procedures (Nasution et al., 2018)

3 RESEARCH METHOD

This research is in the form of a survey that uses R&D (Research and Development) and analytical methods. The application design applies the RAD method. Needs analysis in electronic commerce system design, specifically furniture products, began by identifying a number of similar competitors who had not used the internet media much in the online marketing model so that it was a good opportunity (Liu & Wang, 2012). The analyzing market expansion, to obtain a number of important features for consumer needs, was carried out by using market opportunity analysis and designing business models, customer interfaces, market communications and implementation designs. There were also limitations to technical factors such as access speed, server capabilities, and easy access. Providing easy access to information is still a problem. Dynamic promotional media can increase the number of transactions and customers. Not all of them have a stable and normal internet infrastructure network. The product has a special peculiarity factor so that it requires a digitization of sales media through the website media. The interface design applied the 7C approach (Context, Content, Community, Customization, Communication, Connection, Commerce). Market communication was conducted through search engines, online advertising, print media, and magazines. Meanwhile, the implementation must pay attention to HR skills and information technology resources. Furthermore, the software system design applied the RAD method. The RAD method has phases which include planning the requirements of the system requirements, involving users to design and build the system (this activity is carried out repeatedly until it reaches a mutual agreement), and finally implementing the system design. Modeling of the RAD method includes Business Modeling, Data Modeling, Process Modeling, Application Generation, Testing and Turnover (Sommerville, 2007) The RAD method attaches great importance to user involvement in the process of analysis and design. Therefore, it can meet user needs properly. In fact, it will increase the level of overall system user satisfaction. The research instrument was used through interview and observation techniques where the sampling was carried out using purposive sampling technique. The sample is 30 forms of trading businesses that market furniture products with the same economic scale of the company. The selection of testing methods was carried out using easy values, typical realistic values, extreme values and illegal values.

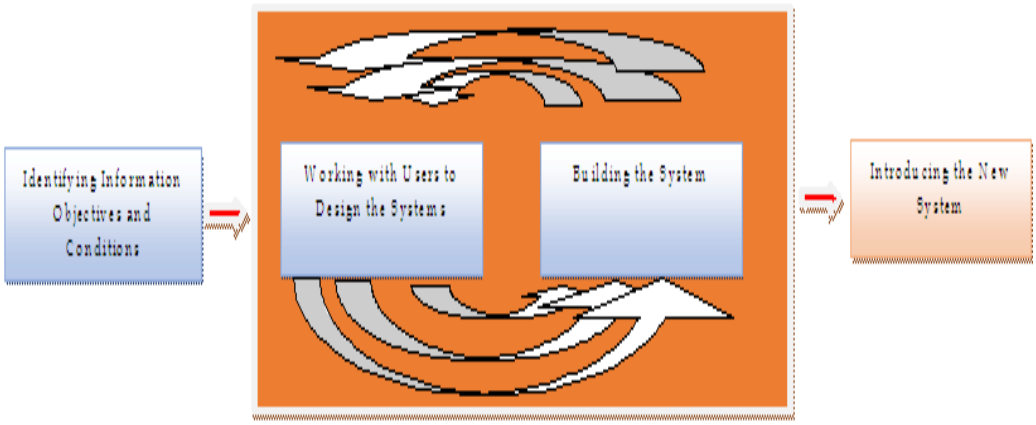

Fig. 1. RAD (Rapid Application Development) Method. *The RAD method is utilized to develop this service system. In this case, the system can be built simultaneously using this service. This is very suitable for E-Service development in this study.*

6. Finding And Discussions

Business process can be defined as a collection of processes that contain a collection of tasks that are related to one another in producing an output that supports the strategic goals and objectives of an organization. The purpose of this business process system is to describe how the process is passed by the users later. In addition, the business process system of this system can be seen in Figure 2 below

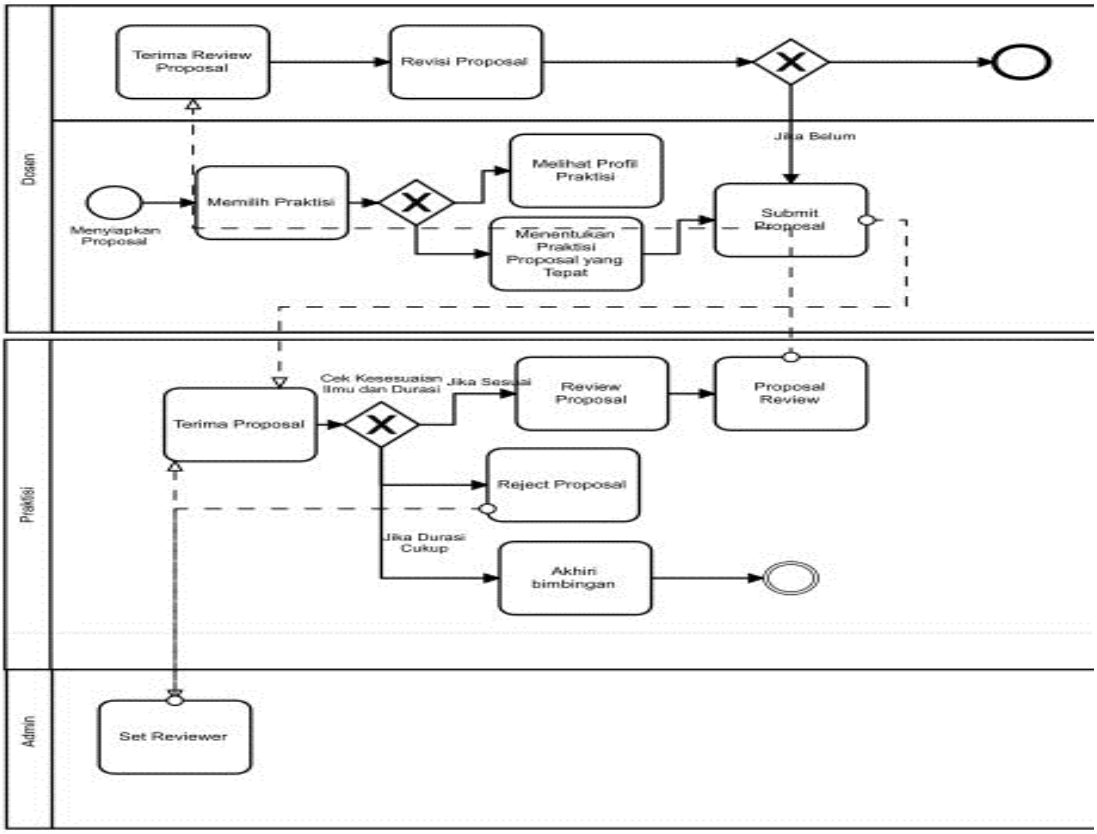

Fig. 2. Business Process Model and Notation in Online Clinic of Proposal Guidance. *This business process is a general description of the system to be built. This is the E-Service for clinical research proposal services and community service for lecturers at LLDIKTI X*

The picture above explains that there are important actors from the system. Lecturers can carry out the process of submitting the draft of their proposal to the system. Moreover, reviewers (practitioners) can see the draft proposals of the lecturers. Practitioners are experts in writing research proposals. They responded to the draft proposal in the form of input/ suggestions for the need for feasibility of the proposal. The practitioner can submit a proposal if the proposal is not in the realm of their field. Admin is in charge of managing data traffic. In addition, the admin can filter incoming proposals. More detailed actor roles can be seen in the use case below.

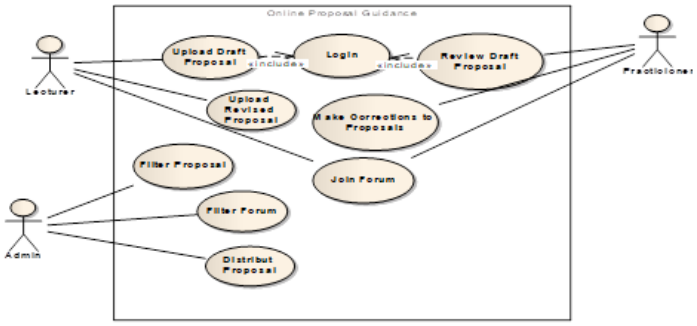

Fig. 3. Use Case Diagram of Online Research Proposal Guidance. *This Use Case provides an overview on how this e-service can provide clinical research proposal services and community service for lecturers at LLDIKTI X*

Data flow in the system is described through ERD. ERD describes the relationship between an entity that has a number of attributes with other entities in an integrated system. ERD is used by system designers to model data that will later be developed into a database. The ER diagram shown in Figure 4 illustrates the data relations that occur from the Online Research Proposal Guidance at the DIKTI Service Institution in Region X.

Description

1. In the proposal uploading process, the lecturers are required to have an account in the clinic system of online guidance. They are required to log in to the system and fill in their data profile. After that, they can upload their proposals into the system.

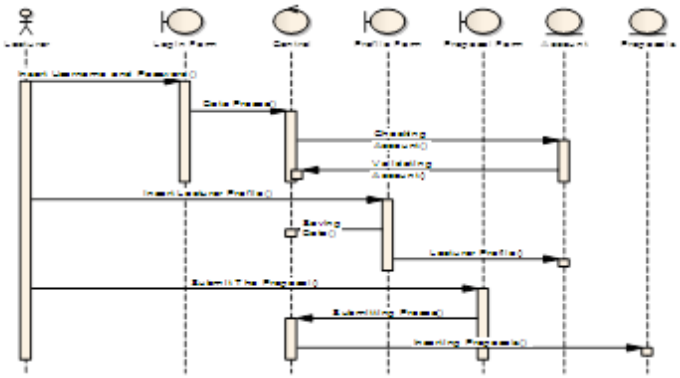

Fig. 4. Proposal Uploading Process. *This is a sequence diagram illustrating the process of uploading proposal*

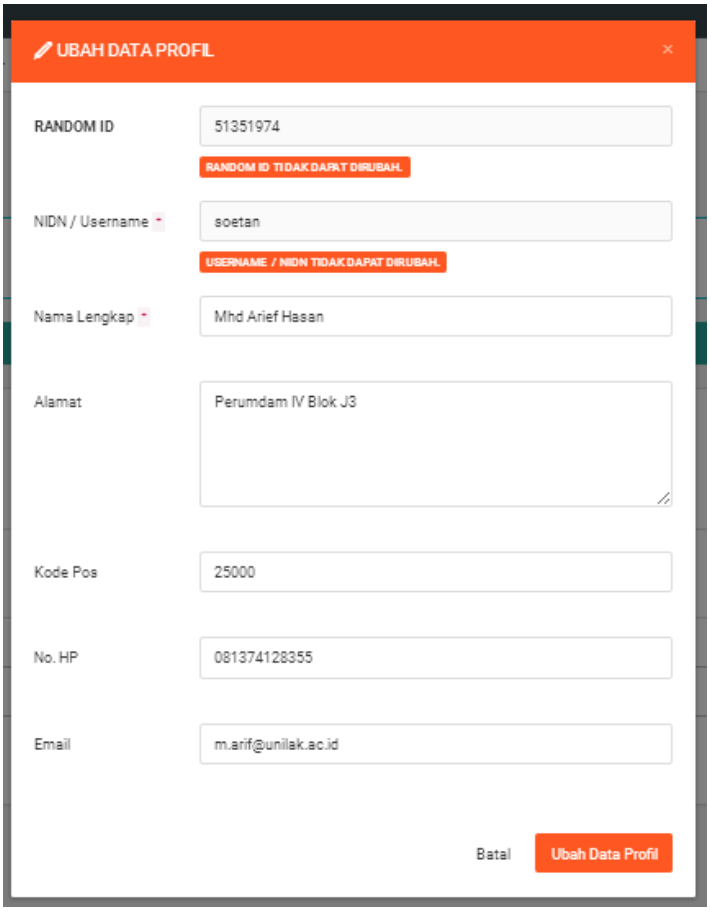

Fig. 5. Lecturer Profile. *This form is used to fill in the profile of the lecturer as the researcher who will present the proposal*

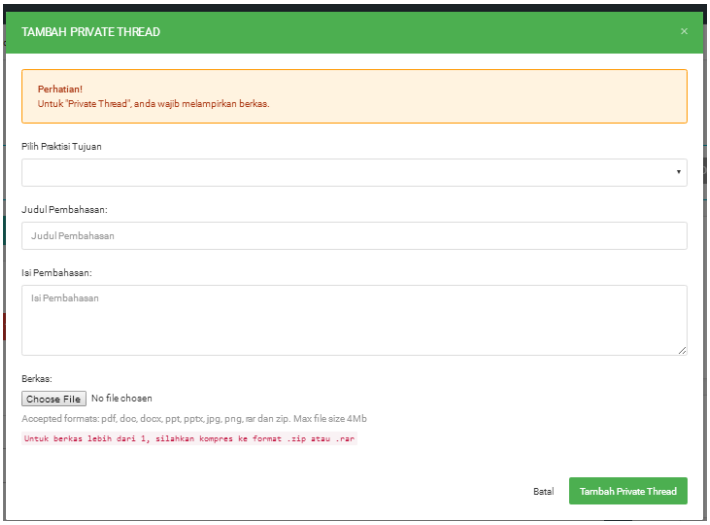

Fig. 6. Uploading Proposal. *This is the form for uploading proposals.*

2. Admin can filter incoming proposals. It is carried out to prevent misuse of the system by irresponsible individuals.

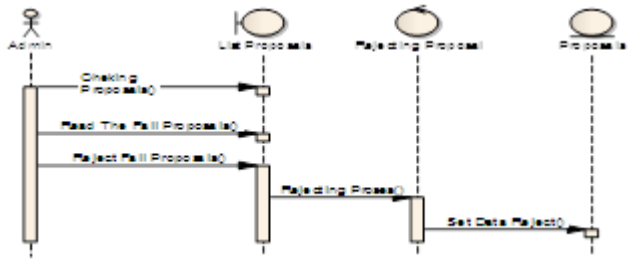

Fig. 7. Proposal Filter Process. *This sequence diagram presents the filter process for submitting proposals.*

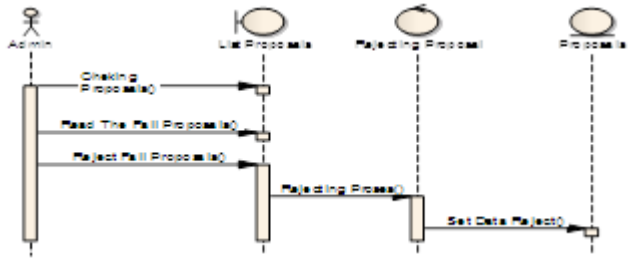

Fig. 8. Rejected Proposal. *This form presents a list of proposals rejected by practitioners*

3. Practitioners provide responses to proposals submitted by the lecturer by commenting on the provided column. Therefore, the comments can be read by the lecturer. This activity can take place as long as practitioners still give permission to continue to revise it.

Fig. 9. Providing Comments on the Proposal. *This image is a form of refusal by practitioners regarding the topic to be taken*

4. Admin is able to distribute proposals to other practitioners. It aims to prevent the proposals submitted by the lecturers from being abandoned by practitioners. While practitioners do not respond to proposals that enter the admin, admins can distribute it to other practitioners.

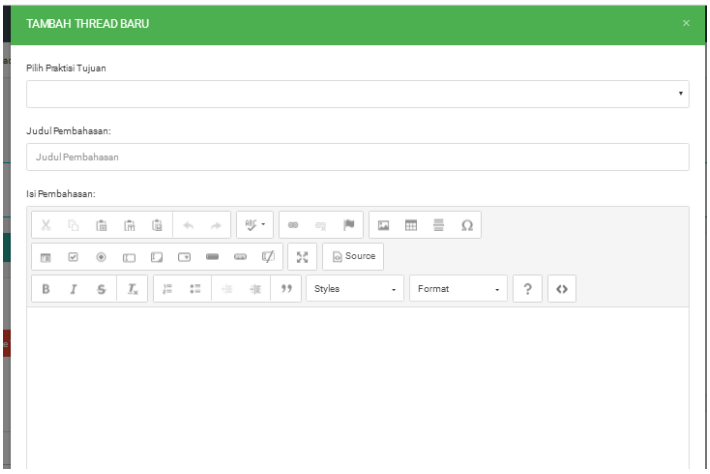

Fig. 10. General Discussion Forum. *On this form, practitioners and lecturers can give comments to each other*

5. There is a general discussion forum. This forum is used as a means and infrastructure for public discussion for lecturers and practitioners. In this general discussion forum, lecturers and practitioners can ask each other questions and give any response to general problems relating to research proposals and community service.

Since this system is built online, the network architecture that is qualified for this service needs are very required. The network architecture for this service is built on the concept of a client server in which the client is the receiver device that will display and run the application (computer software) and the server is the provider device that acts as the application, data, and security managers. This server is classified into two consisting of Service Providers and Database Servers.

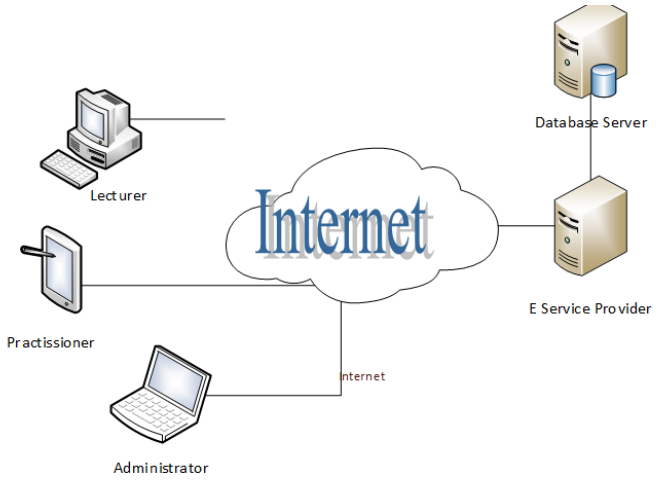

Fig. 11. Network View on E-Service*. This is a picture of network topology from the E-Service which is built on LLDIKTI X*

4 CONCLUSION

This study has succeeded in developing a clinic of online service and research proposal guidance. This place is used as a discussion forum for lecturers and practitioners in discussing their research proposals before being submitted to services

provided by the Ministry of Research, Technology and Higher Education. Therefore, the existence of this service provides benefits to lecturers because they can prepare their proposals better. Thus, the chances of receiving funds for their proposals are greater because it has been guided by practitioners who are reliable and experienced in their fields. This research has not discussed the actual process in submission in the Ministry of Research, Technology and Higher Education. At other times, LLDIKTI X can become an institution that funds research and community service. Thus, this system needs to add its service facilities in terms of the process of submission, assessment, determination of winners, monitoring of activities, progress reports and seminar on the results of the research process and community service itself.

ACKNOWLEDGMENT

The researchers thank RISTEKDIKTI for funding this research through the scheme of “Higher Education Applied Research” through the contract number: 007/K10/KM/KONTRAK-PENELITIAN/2018 February 12, 2018.

REFERENCES

[1] Berardi, D., Calvanese, D., De Giacomo, G., Lenzerini, M., & Mecella, M. (2004). A foundational vision of e-services. Web Services, E-Business, and the Semantic Web, 3095, 28–40. Retrieved from https://pdfs.semanticscholar.org/9740/6504e3c1dd606b5d3e7d91c3111424132724.pdf

[2] Boyer, K. K., Hallowell, R., & Roth, A. V. (2002). E-services: operating strategy—a case study and a method for analyzing operational benefits. Journal of Operations Management, 20, 175–188. https://doi.org/10.1016/S0272-6963(01)00093-6

[3] Fauzi, A. S., Hidayah, N. A., & Kumaladewi, N. (2014). E-service system design in registrating certification and presentating halal product information on the Indonesian Olema Council (Case study: Indonesian Olema Council (MUI) Bogor Regency). 2014 International Conference on Cyber and IT Service Management, CITSM 2014, 93–97. https://doi.org/10.1109/CITSM.2014.7042183

[4] Ganesh, J., Arnold, M. J., & Reynolds, K. E. (2000). Understanding the Customer Base of Service Providers: An Examination of the Differences Between Switchers and Stayers. Journal of Marketing, 64(3), 65–87. https://doi.org/10.1509/jmkg.64.3.65.18028

[5] Hoffman, K. D., & Bateson, J. E. G. (2011). Services Marketing: Concepts, Strategies, & Cases. Retrieved from http://202.74.245.22:8080/xmlui/bitstream/handle/123456789/304/Services Marketing%3A Concepts%2C Strategies%2C %26 Cases?sequence=1

[6] Liu, C., & Wang, K. (2012). An online examination system based on UML modeling and MVC design pattern. Proceedings - 2012 International Conference on Control Engineering and Communication Technology, ICCECT 2012, 815–817. https://doi.org/10.1109/ICCECT.2012.189

[7] Nasution, N., Hasan, M. A., & Yandra, A. (2018). The Clinic Online Proposal as a Lecturer Research Discussion Forum, 16–24.

[8] Santos, J. (2003). E-service quality: A model of virtual service quality dimensions. Managing Service Quality: An International Journal, 13(3), 233–246. https://doi.org/10.1108/09604520310476490

[9] Sommerville, I. (2007). Software engineering. Harlow, UK: Pearson Education LimitedPearson Education Limited.

[10] Wu, Y., Luo, Q., Liu, Y., Yu, Y., Zhang, Z., & Cao, Y. (2006). Research on Personalized Knowledge Service System in Community E-Learning, 124–131. https://doi.org/10.1007/11736639_17