Designing an Information System Model of Academic Service Based on Customer Relationship management at University

W Prima*, Ganefri1, Krismadinata1, R Saputra2

1Universitas Negeri Padang, Padang, Indonesia
2Universitas Dharmas Indonesia, Indonesia

*wahyuprima341@gmail.com

Abstract. This research aims at developing an information system model of academic service based on customer relationship management at university. This research is a research and development (R&D) through Borg and Gall design. This research only focuses and discusses on design stage. The result of this research shows that there are 4 primary supports (portfolio analysis, customer intimacy, determining services strategy, and evaluation) and 4 secondary supports (facilities and infrastructure, lecturers and professional staffs, academic information system website, and book for supporting model). Based on result of this research, it can be said that a information system of academic service model that has been designed effectively can be applied to improve academic service because it is based on practical theories that have been developed.

1. Introduction
Level of academic quality at university is very influenced by a service process [1]. Quality of services can be seen by level of customers satisfaction [2]. Students are main customers at university [3]. Therefore, it needs to be developed an academic services that can increase an academic quality at university.

Many methods have been used in solving services problems such as total quality of management method [4], services based on WEB [5], and customer relationship management (CRM)[6]. Among of these methods, CRM is a precise method to increase the academic quality services at university, because CRM focuses on how to understand customers (students).

CRM method is a combination from persons, process and technology that trying to understand customers [7]. In few decades, CRM is very helpful to services process [8]–[11], yet the concept of CRM that has been developed only focuses on learning system [12], therefore it needs to be developed a CRM method that can help academic services process at university.

2. Literature Review
2.1. Information System
According to Jhon F. Nash, information system is a combination from human, facility or technology, media, procedure and control that meant to set an important communication network, process on particular transactions and routine, to help intern and extern management and users, and also to provide a precise taking decision [13].
2.2. Quality of Services

Quality of services can be measured by level of customers’ satisfaction on services [14]. In measuring quality of services, it can be determined by two things namely expected service and perceived service that consist of 10 dimensions; reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding/knowing the customer, and tangible [15]. These ten dimensions of services are divided into five main dimensions that consists of reliability, responsiveness, assurance (competence, courtesy, credibility, and security), empathy (access, communication and understanding the customer), and tangible [14]. Based on the explanation above, it can be said that it is really important to develop an academic services model that can support academic activities such as administration services and students’ services.

2.3. Customer Relationship Management

CRM is a well organized services to help a good relationship with customers and to increase the customers that can give benefits to the organization [16]–[18]. The applying of CRM method can enlarge the quality of services [19]. As a result, each university can identify students’ needs and thus it can help students to access the services easily and can help the university to maintain their students, enlarge students’ satisfaction in order to keep them not interested to move and study to other universities.

3. Methodology

This research is a part of research and development through Borg and Gall model. Then, this research only focuses on designing of academic information system services based on CRM. On this phase, this research will be done an initial analysis where it will be done needs analysis of developing model and literature review of supported theory model. After doing initial analysis, designing model will be done and after that will be done Focus Group Discussion (FGD) to get some suggestion from. This phase can be seen on the following figure below.

![figure1](image)

**Figure 1. Phase of Research**

4. Result and Discussion

4.1. Need Assessment

National Accreditation of university (Indonesian term is called BAN-PT) per January, 2016, was only 26 (0.66%) universities in Indonesia that had been accreditation and it was categorized “A”. The common of these universities were government universities (PTS) especially they had been registered in low, meanwhile private universities (PTS) were still limited that had been accreditation “A”. Among 3.181 private universities (PTS), there were only 5 PTS that had been accreditation “A”. Moreover, from the latest news, there were 3.738 study programs in government universities (PTN) and private universities (PTS) that have not been accreditation yet [20]. Data got from Central Bureau of Statistics was seen that unemployment of alumni of universities has increased. The data showed that in August 2014, numbers of employment were 495.143 alumni, meanwhile in August, 2015 became 653.586 alumni [21]. Based on the data, it can be said that increasing quality of education at university becomes first priority from Strategic Plan Ministry of Research, Technology and Higher Education in 2015-2019 period. One criterion that determining quality of education based on decree of Ministry of Research, Technology and Higher Education of the Republic Indonesia about classification and
improvement of university in 2015 was quality management. Higher Education management at university level in Indonesia in 2015 was quality management. Higher education management should be conducted based on management principle, flexible and dynamic, thus every single higher education enables to improve their quality based on their potentials. Shrode and Voich state that management goal is to be productivity and satisfaction [22].

Satisfaction can be seen from services quality to customers [2]. At university, students are main customers [23]. Academic success in higher education depends on institutions in communicating to students in achieving needs [6]. Yet, the result of initial study done to students, lecturers, staffs at Universitas Dharmas Indonesia on 6th of April 2016, shows that information system academic services applied was still partial, inconsistent, and it was needed to be improved. It can be proved such as: 1) academic service conducted was still limited and was done precisely and accurately; 2) academic services done was not continuous. Based on need analysis above, it can said that it needs a information model of academic services that can increase quality of education.

4.2. Literature Review

Quality of Information system must have 4 components, namely: 1) Accuracy, is differences between correct information toward total information got in one period; 2) Timeliness, is an activity to deliver the information at the time the information is capable of closing an opportunity for competitors to take decision correctly and fast; 3) Completeness, there is relevant between information and users; 4) Conciseness, is an information delivered that is a main point based on the users’ needs [24].

Information system and technology combined to other components such as process, procedure, organization structure, human sources, management, organization culture and other components that related to customersatisfaction [25].

Academic services at university consists of various types of services such as registration of new students, college schedule, final test, result of the test, college fee, active students, academic calendar, etc [26]. level of quality services at university is influenced by 8 factors, namely: various education, ease access and using facilities, interaction between lecturer and students, study result, learning process, quality of lecturers, ability to use technology, lecturers’ experience in teaching [1]. There are some important things of academic services: it can give some information for students especially for candidate students (activities, college fee, schedule, reputation and number of students per class), it can help students make their own decisions in understanding needs and guiding their studies, system supported by providing information center (technique or call center), time management well, having services (academic guiding, learning, information, etc), having other supports from digital library service, and counseling career service [27].

Result of this research also shows that there are some problems in academic services such as limited access of academic information thus students are reluctant to ask [28], It is related to wasting time, over financial, needing much time: using papers, collecting information etc [29], limited information for stakeholder in taking decision of promotion [1], limited information about university itself for candidate students [30], and a lot of alumni that cannot find appropriate jobs and based on competency [31].

Based on the result of this research above, it can be said that it needs an information system of academic services flexibility and actively at university thus it can full fill students’ needs.

4.3. Design Model

Design model consists of 4 primary supports model and 4 secondary supports model, namely:

4.3.1. Primary Support

a. Analysis Portfolio

Doing portfolio analysis continuously is to collect information systematically. it is useful to identify type of academic services needed by students [32].

b. Customer Intimacy

Customer intimacy along with students is by giving a total solution. Customer intimacy can be built through effective communication. Effective communication needs at 5 low of effective communication [33], namely: 1) Respect, respect to every individual that targets of message delivered; 2) Empathy,
done by understanding and hearing other people at first thus it can build a link to them; 3) Audible, meant: it can be heard or understood well; 4) Clarity, it is a clear message that does not have different multiple interpretation; 5) Humble, having services attitude, respectable, listen, accepted critique, modest, forgivable, etc.

c. Determining of services strategy
In determining of services strategy, it must have 5 indicators [14], [15], namely: 1) Tangibles, the services given must have real evidences such as concrete facilities, equipment, lecturers, staffs, and communicative facilities; 2) Reliability, services given have to rely on in giving services; 3) Responsive, services given have an ability to help and provide services precisely and fast, perceptively towards students’ needs; 4) Assurance, services given must involve knowledge, ability, politeness, and trustworthiness, no risk, uncertain; 5) Empathy, ease in doing communicating and understanding of students’ needs.

d. Evaluation
After portfolio analysis, customer intimacy, determining services strategy thus it is needed a continuous and planned evaluation to describe, get, and present an useful information based on customers’ needs (students).

4.3.2. Secondary Support
Supporting components of academic services can be supported the information system of academic services model based on CRM that are; 1) facilities and infrastructure; 2) lecturers, professional administration staffs; 3) Website of academic services of information system; 4) book for supporting model.

4.4. Focus Group Discussion
Focus Group Discussion (FGD) was done on Wednesday, 30th of January 2019. The results of discussion along with 5 experts were: language expert, model expert, services expert, information system and technology expert can be concluded as follows:

| No | Draf Model       | Validators’ Recommendations                                      |
|----|------------------|------------------------------------------------------------------|
| 1  | Primary Support  | 1. Add theory of supported model.                                 |
|    |                  | 2. Give concrete examples on every step to get implementation easily. |
| 2  | Secondary Support| 1. Facilities and infrastructure used must match to the need model|
|    |                  | 2. Do socialization on how to use the model for lecturers         |
|    |                  | 3. Website used must be more interactive                         |
|    |                  | 4. Cover of supported book should describe the model itself.      |
|    |                  | 5. Be consistent of using words terms                             |

5. Conclusion
Referring to the need analysis and literature review, this study produces a model service of academic services of information system based on CRM that has 4 primary supports (portfolio analysis, customer intimacy, determining services strategy, and evaluation) and 4 secondary supports (facilities and infrastructure, lecturers and professional staffs, academic information system website, and book for supporting model). Based on result of this research, it can be said that a information system of academic service model that has been designed effectively can be applied to improve academic service because it is based on practical theories that have been developed.

References
[1] M. M. Cardona and J. J. Bravo, “Service quality perceptions in higher education institutions: the case of a colombian university,” *Estud. Gerenciales*, vol. 28, no. 125, pp. 23–29, 2012.
[2] A. Taman, A. Ratna Sari, N. Setiawan, and A. Pustikaningsih, “Analisis Kualitas Pelayanan
Terhadap Kepuasan Mahasiswa Pada Fakultas Ekonomi Universitas Negeri Yogyakarta,” J. Nominal, vol. II, pp. 99–111, 2013.

[3] T. B. Chui et al., “Evaluation of Service Quality of Private Higher Education using Service Improvement Matrix,” Procedia - Social Behav. Sci., vol. 224, no. 224, pp. 132–140, 2016.

[4] S. Sahney, “Use of Multiple Methodologies for Developing a Customer-Oriented Model of Total Quality Management in Higher Education,” Int. J. Educ. Manag., vol. 30, no. 3, 2016.

[5] M. L. Pandini, Z. Arifin, and D. M. Khairina, “Design web service academic information system based multiplatform,” in International Conference on Information Technology, Computer, and Electrical Engineering: Green Technology and Its Applications for a Better Future, ICI TACEE 2014 - Proceedings, 2015, pp. 297–302.

[6] H. Gholami, M. Z. M. Saman, S. Sharif, and N. Zakuan, “A CRM Strategic Leadership Towards Sustainable Development in Student Relationship Management: SD in Higher Education,” Procedia Manuf., vol. 2, pp. 51–60, 2015.

[7] I. J. Chen and K. Popovich, “Understanding customer relationship management (CRM),” Bus. Process Manag. J., vol. 9, no. 5, pp. 672–688, 2003.

[8] K. Imasari and K. K. Nursalin, “Pengaruh Customer Relationship Managemen Terhadap Loyalitas Pelanggan Pada PT.BCA Tbk,” Fokus Ekon., vol. 10, no. 3, pp. 183–192, 2011.

[9] A. J. Kundre, I. Wisnubadhra, and T. Suselo, “Penerapan Customer Relationship Management Dengan Dukungan Teknologi Informasi Pada PO. Chelsy,” Teknol. Inf. dan Multimed., pp. 7–11, 2013.

[10] A. O. Carissa, A. Fauzi, and S. Kumadjji, “Penerapan Customer Relationship Management (CRM) Sebagai Upaya Untuk Meningkatkan Loyalitas Pelanggan (Studi Kasus pada Bandung Sport Distro Malang),” J. Ilm. Mhs. Univ. Surabaya, vol. 15, no. 1, 2014.

[11] P. Siriprasoetsin, K. Tuamsuk, and C. Vongprasert, “Factors affecting customer relationship management practices in Thai academic libraries,” Int. Inf. Libr. Rev., vol. 43, no. 4, pp. 221–229, 2011.

[12] M. Vuli, D. Bara, and Z. Bogdanovi, “CRM as a Cloud Service in E-education,” in Telecommunications Forum TELFOR, 2011, pp. 1470–1473.

[13] J. F. Nash, Sistem Informasi Akuntansi I Pendekatan Manual Praktika Penyusunan Metode dan Prosedur. Bandung: Lembaga Informasi Akuntansi, 2000.

[14] K. Philip, Manajemen Pemasaran. Jakarta, 2000.

[15] V. Zeithaml, M. J. Bitner, and D. Gremler, Services Marketing: Integrating Customer Focus Across the Firm. McGraw-Hill Education, 2017.

[16] P. Kotler and K. L. Keller, Marketing Management. Pearson Prentice Hall, 2009.

[17] B. H. Schmitt, Customer Experience Management: A Revolutionary Approach to Connecting with Your Customers. Wiley, 2010.

[18] D. H. Brown, Principles of Language Learning and Teaching (Etext). Pearson Education Esl, 2014.

[19] D. Hamidin, “Model Customer Relationship Management (CRM),” Semin. Nas. Apl. Teknol. Inf. 2008 (SNATI 2008), vol. 2008, no. Snati, pp. 31–34, 2008.
[20] D. N. Martono, “Mendongkrak Mutu Perguruan Tinggi Indonesia,” Kelembagaan Ristek Dikti, 2016.

[21] BPS, “Penggaruran Lulusan Perguruan Tinggi,” 2016.

[22] N. Fattah, Landasan Manajemen. Bandung: Rosda Karya, 1999.

[23] J. de Jager and G. Gbadamosi, “Predicting students’ satisfaction through service quality in higher education,” Int. J. Manag. Educ., vol. 11, no. 3, pp. 107–118, 2013.

[24] N. Widjadjanto, Sistem Informasi Akuntansi. Jakarta: Erlangga, 2001.

[25] R. Sidh, “Peranan Brainware Dalam Sistem Informasi Manajemen,” Peran. Brainware Dalam Sist. Inf. Manaj., vol. 7, no. 1, pp. 19–29, 2013.

[26] Supriyanta, “Knowledge Management Untuk Peningkatan Pelayanan Akademik,” J. Bianglala Inform., vol. II, no. 1, pp. 63–70, 2014.

[27] T. L. Bailey and A. Brown, “Online Student Services: Current Practices and Recommendations for Implementation,” J. Educ. Technol. Syst., vol. 44, no. 4, pp. 450–462, 2016.

[28] K. H. Cheng, J. C. Liang, and C. C. Tsai, “University students’ online academic help seeking: The role of self-regulation and information commitments,” Internet High. Educ., vol. 16, no. 1, pp. 70–77, 2013.

[29] O. S. Oluwu and B. B. A. Enefaa, “Application of Education Information Management Support Tools in the Promotion of Teaching/Learning and Management of Students’ Performance in Federal Universities in the South-South Zone of Nigeria,” J. Educ. Pract., vol. 7, no. 11, pp. 120–126, 2016.

[30] E. Magaji, “Marketing strategies of United Kingdom universities during clearing and adjustment,” Int. J. Educ. Manag., vol. 30, no. 4, pp. 493–504, 2016.

[31] L. Xiangqian and G. Fuqing, “Development-Driven E-learning Education Model and Application in Teaching Information Technology,” IERI Procedia, vol. 2, pp. 854–858, 2012.

[32] W. J. Popham, Classroom Assessment: What Teachers Need to Know. Pearson Education, 2016.

[33] A. P. P. Hartono, Self Management Series: Make Yourself A Leader. 2005.

Acknowledgments
The completion of the study must not be separated from the support of various parties. Therefore, the authors would like to thank:
1. Strengthening the Directorate General Research and Development of the Ministry of Research, Technology and Higher Education of the Republic of Indonesia who have given doctoral dissertation research grants to researchers
2. Prof. Ganefri, Ph.D. as promoter 1
3. Krismadinata, ST., M.T., Ph.D as promoter 2