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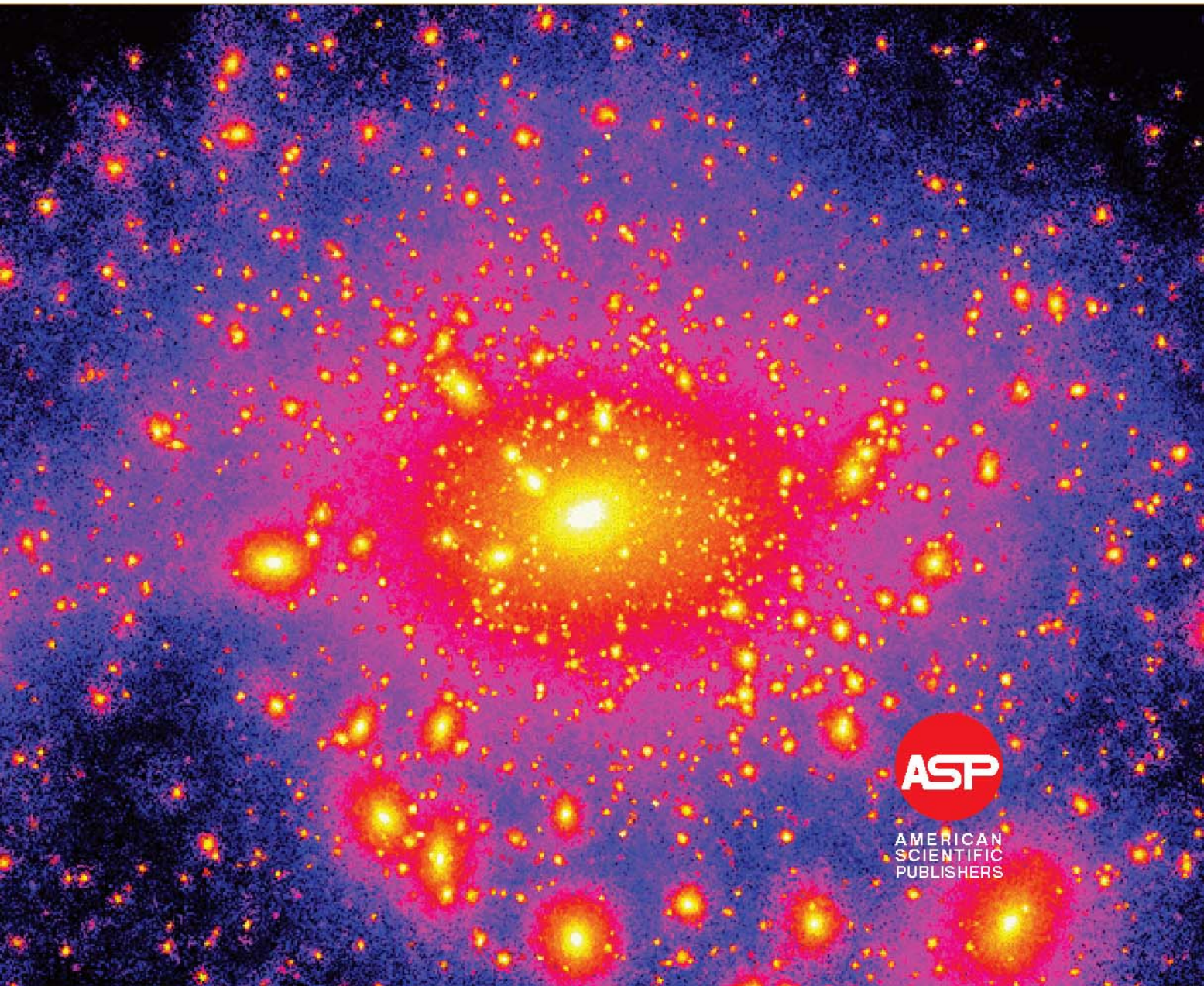
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LETTERS

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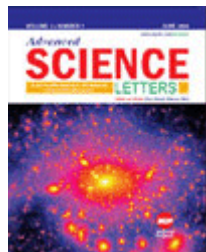
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Analysis and Design Business Architecture STIKES Harapan Bangsa Purwokerto

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Strategic planning information is identified as a key factor in creating a balance of IT and business organization. This paper takes a case study on STIKES Harapan Bangsa located in the province of Central Java. Problems encountered in the STIKES Harapan Bangsa is, although it has already implemented information systems architecture business existing but not yet well integrated so that it takes a business design architecture and IT components to the integration process, especially business main business process. The purpose of this paper is to analyze baseline business architecture and business architecture design in accordance with the standards and also analyze whether a component of IT in business architecture was sufficient to support the STIKES Harapan Bangsa became an international educational institution. TOGAF methodology used to design the development of business architecture. Results of TOGAF methodology is a model and blueprint for the integrated floating business architecture and IT support the business architecture will be obtained. Blue print obtained will serve as a guide to plan the development of business architecture that fits your business processes at STIKES Harapan Bangsa.

Keywords: TOGAF, Information Systems, [Enterprise Architecture](#)

1. INTRODUCTION

Strategic planning information is identified as the key factor in creating IT and business alignment in organization [1]. Increasing IT on STIKES Harapan Bangsa is needed to support business architecture thus STIKES can integrate business process well and manage staff, students as well as develop business in accordance with STIKES Harapan Bangsa strategy. Application of great information systems and information technology (IS/IT) within organization is built from various units involved in organization, so it will generate simplicity to access data or information inside organization [2].

The purpose of this paper is to analyze baseline of business architecture and business architecture design according to the standard and to analyze whether IT components of business architecture adequate to promote STIKES Harapan Bangsa to be International Class Educational Institution. This paper takes case study on STIKES Harapan Bangsa located in Central Java Province. The problem faced by STIKES Harapan Bangsa is although information systems has been applied, the current

business architecture has not well integrated so an architecture business design and IT components which may integrate business process particularly major business process is needed.

The development of methodology to design business architecture has been developed recently [3]. There are some methodologies to design business architecture such as EAP, TOGAF, DODAF, Gartner, and FEA [4]. TOGAF methodology is used for business architecture development design. The results of TOGAF methodology are model and basic framework (blue print) in developing integrated business architecture.

By using TOGAF to define business process on STIKES Harapan Bangsa then blue print to integrated business architecture development and IT which support business architecture will be obtained. Later, the obtained blue print is made as a guide to a plan of business architecture development in accordance with business process on STIKES Harapan Bangsa.

2. LITERATURE REVIEW

Design of enterprise architecture on both company and college has been done successfully for the need of information systems and information technology alignment toward business strategy [5], [6]. Research on how strategic information systems planning are carried out to obtain blue print from information systems [7], [8]. Research which studies how the role of strategic planning to plan information systems on the management of information systems [1]. From existing literature review, proposed a research aimed to design enterprise architecture which is suitable with STIKES HarapanBangsa.

3. RESEARCH METHOD

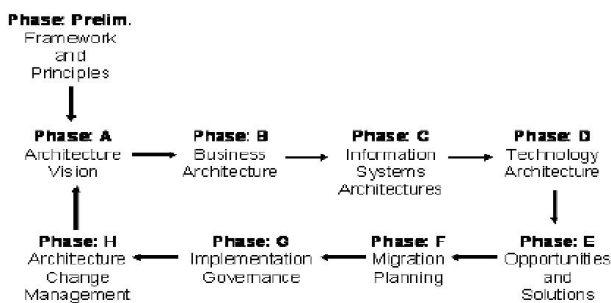
Data is collected using qualitative method. This research uses two data sources; those are primary data and secondary data aimed to get accurate data. The main source uses interview approach. Interview is categorized as the right source to acquire deep understanding about business and TI in STIKES HarapanBangsa. Interview is done to related stakeholder such as chief assistant I, chief assistant II, chief assistant III, quality assurance, and staff. This research also uses secondary sources. Secondary source is a source to get information from other existing researches. Secondary sources for this research include journals and papers.

4. THE OPEN GROUP ARCHITECTURE FRAMEWORK

During 25 years of development, many frameworks of enterprise architecture have been done [3]. Enterprise architecture framework used in this paper is TOGAF. TOGAF (The Open Group Architecture Framework) is a method for enterprise architecture which provides methodology to analyze business architecture of an organization as a whole [9].

TOGAF enterprise architecture has 4 phases consisted of Business Architecture, Architecture Data, Architecture Application, and Architecture Technique. Business architecture describes business process which is appropriate with the purpose of organization. Application architecture describes and design application which supports business process. Data architecture describes data usage within business process. Architecture business describes how the interaction of application is and application will be supported by hardware and software infrastructure [10].

Figure 1 explains the phases of TOGAF. The process of each phase in TOGAF is defined in detail, implementation on each phase will determine appropriate activities to get the required and needed systems.



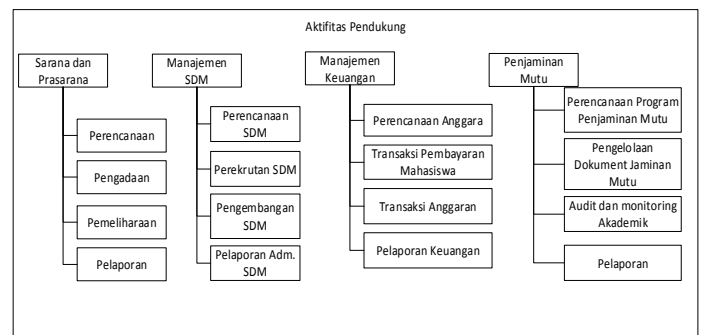
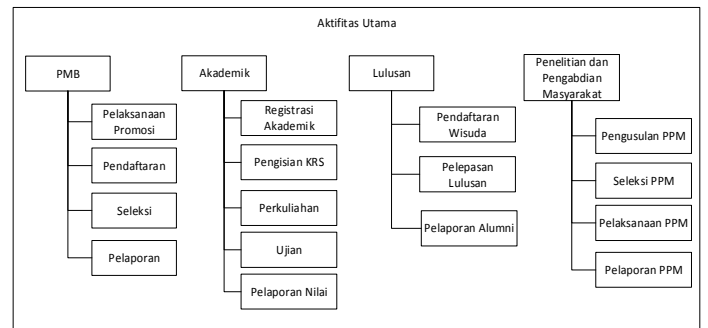
5. ANALYSIS

A. Value Chain of STIKES HarapanBangsa

Value chain Michael Porter is used to explain the main activities and supporting activities [3]. Value chain of STIKES HarapanBangsa is documented as in the figure 1. Value chain of STIKES HarapanBangsa is cooperation between main activities and supporting activities to give output to customers. The main activities cover Inbound Logistics: admission of new students, research and community service; Operations: academic, research and community service. The supporting activities consist of infrastructure management, human resource management, finance management, and internal quality assurance.



From the main activities and supporting activities in value chain is formulated derivative business process as shown in figure 2 to identify sub-process business activities so that be more detail in order to be able to identify the problem on each sub-process business.



B. SWOTAnalysis

SWOT analysis identifies internal factors of STIKES HarapanBangsa as strengths and weakness whereas identifying external factors as opportunity and treat.

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Strengths

- 1) The head supports in developing information and communication technology (ICT) to sustain Tri Dharma Perguruan Tinggi activities.
- 2) Availability of adequate computer network infrastructure and internet.
- 3) Have adequate information systems which support ICT-based teaching and learning activities.
- 4) Utilization of ICT among lecturers and students to conduct teaching and learning activities.
- 5) Have human resource to do ICT management.

Weakness

- 1) The number of human resources is still lacking to manage information and communication technology compared to demand that has to be served.
- 2) Database centralization has not been applied on the information systems thus the current information systems are not integrated as a whole.

Opportunities

- 1) The need of ICT-based educational method increase.
- 2) The need of ICT-based service is larger.
- 3) Cooperation with third parties to enhance ICT.

Threats

- 1) Competition in academic service on college sector is increasingly tight.
- 2) Society is more selective in choosing college.

Matrix SWOT

	Strengths	Weakness
Opportunities	<ul style="list-style-type: none"> • Peningkatkan kualitas SDM pengelola TIK melalui pelatihan. • Meningkatkan produktivitas divisi IT dalam mengembangkan sistem informasi dan teknologi informasi. • Meningkatkan pelayanan informasi untuk meningkatkan kepuasan pelanggan. 	<ul style="list-style-type: none"> • Meningkatkan aksesibilitas jaringan komputer internal. • Meningkatkan jumlah SDM pada divisi IT. • Melakukan pelatihan internal terhadap staff dan manajemen untuk meningkatkan pelayanan.

	Strengths	Weakness
Threats	<ul style="list-style-type: none"> • Meningkatkan kualitas SDM pengelola TIK melalui pelatihan. • Meningkatkan kualitas sistem informasi untuk pelayanan akademik. 	<ul style="list-style-type: none"> • Integrasi seluruh sistem informasi menjadi sistem informasi terpadu. • Peningkatkan kualitas layanan informasi kepada masyarakat. • Peningkatan aksesibilitas website STIKES Harapan Bangsa

6. Business Architecture of STIKES Harapan Bangsa

The purpose of this phase is to describe business architecture baseline and to do development of business architecture target. In architecture business, a description towards how enterprise operates to achieve college goal, and to

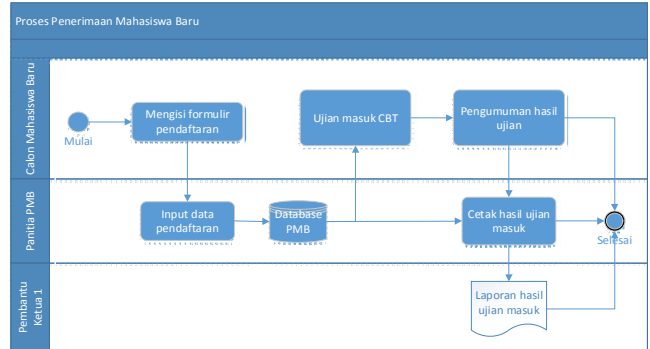
identify architecture components according to business process analysis is also conducted.

A. Business architecture baseline of STIKES Harapan Bangsa.

Initial condition of architecture is a description of how the current business process in STIKES Harapan Bangsa. Business activities are derived from value chain that has been done and consist of main activities and supporting activities.

• Admission of new students architecture

The current business architecture for admission of new students' process is described on the following form of Business Process Modeling Notation (BPMN):

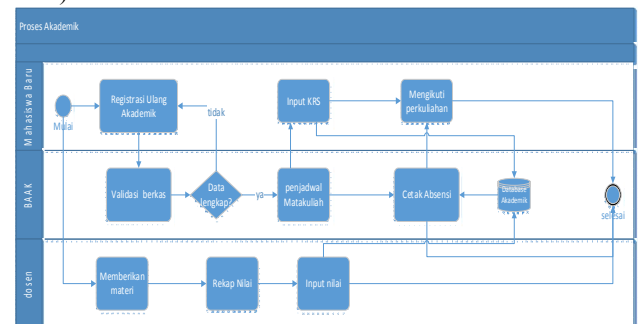


Business architecture for admission of new students is explained as follows:

- 1) Prospective students do registration process by filling registration form which is done by directly comes to STIKES Harapan Bangsa.
- 2) Prospective students directly take CBT test after doing registration.
- 3) Entry exam is composed by exam team then entered into exam bank of PMB. The question composed by exam team is accordance with qualification of the desired prospective students.
- 4) Students who has taken entrance exam and passed then directly get graduation letter after taking CBT entrance exam.
- 5) Responsibility of PMB report is performed by PMB committee in the form of excels to department and finance division.

• Academic business architecture

Business architecture for academic process is described in the following form of Business Process Modeling Notation (BPMN):



The business architecture for academic admission process is explained as follows:

- 1) Students do re-registration by completing documents requirements as well as have made a payment. Re-registration is done in academic section.
- 2) BAAK arranges course schedule.

- 3) Students fill study plan card in e-KRS system online. Course taken is course package which is packaged every semester.
- 4) Students print out KRS and come to PA lecturer to know KRS taking.
- 5) BAAK print out students' attendance.
- 6) Students attend lectures and practice according to taken KRS schedule. Students lectures also can be conducted through e-learning such as download materials, work on quiz, and upload assignment.
- 7) Lecturers recap students' score which is then given to course coordinator lecturer for input into systems. BAAK print out KHS.

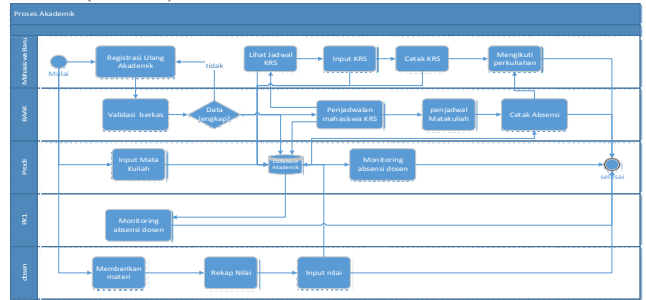
• Graduate business architecture

The existing business architecture for academic process is described in the following form of Business Process Modeling Notation (BPMN):

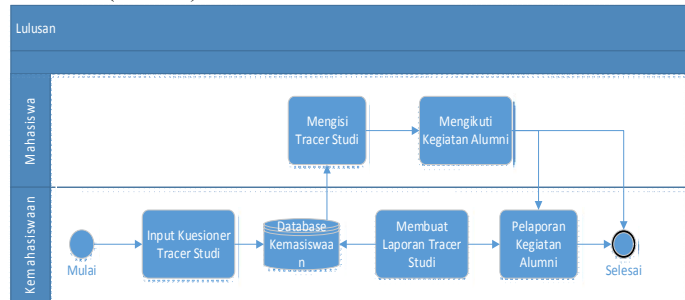
and data sharing can be done effectively and efficiently.

• Academic Business Architecture

The proposed business architecture for academic process is described in the following form of Business Process Modeling Notation (BPMN):



That proposed business academic is expected to provide solution for enhancing the quality of academic information systems become more flexible, easy, and efficient by updating the existing academic information systems, and adding information systems which support teaching learning activities accordance to strategic program which has been appointed through college policy stated in *Renstra*. Academic counselor becomes easier to control students' academic progress. Department can see lecturers' performance through monitoring attendance. Chief assistant 1 and chief are easier to get academic progress report. Students' parents/ guardians can easier to control study progress of their children.



Students' mark transcript and certificate is taken in BAAK.

- 1) Alumni fill study tracer in alumni website and participate in alumni activities that can expand college.
- 2) Students section input study tracer questioner on the alumni website and manage alumni tracer and students' activities to be reported.

B. Proposed business architecture

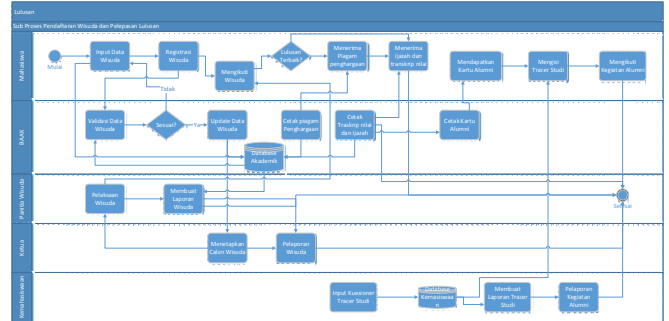
Business architecture modeling begins with defining business architecture in STIKES Harapan Bangsa by deriving business activities from value chain of STIKES Harapan Bangsa which consist of main activities and supporting activities. There is no change on value chain of STIKES Harapan Bangsa either main or supporting activities because solution proposal for business process emphasize on increasing or eliminating business process.

• Admission of New Students Architecture

The proposed business architecture for new students' admission process is described in the following form of Business Process Modeling Notation (BPMN):

• Graduate Business Architecture

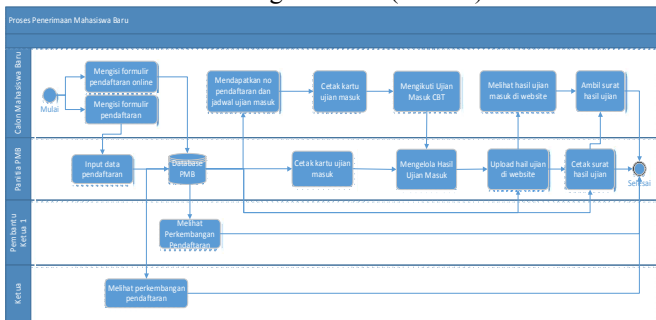
The proposed business architecture for graduation process is described in the following form of Business Process Modeling Notation (BPMN):



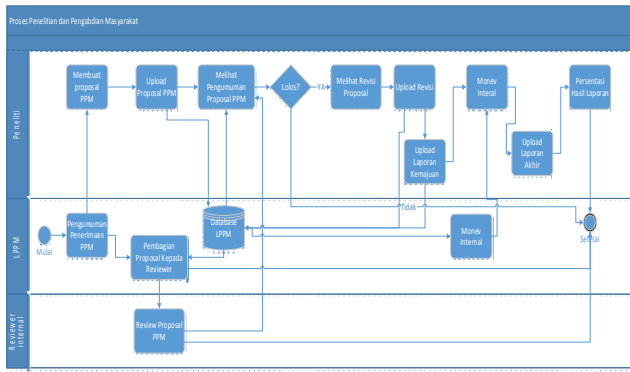
That proposed graduation business process is expected to provide solution for enhancing the quality service of academic information systems and graduate information systems become more flexible, easy, and efficient by updating the existing information systems, and adding information systems which support activities for graduate such as information systems to upload graduation necessity file and reporting graduated students like study tracer.

• Research and community service business architecture

The proposed business architecture for research and community services process is described in the following form of Business Process Modeling Notation (BPMN):



Business process of new students' admission which is proposed will give solution to do service maximally by giving fast, exact, and clear information to each stakeholder especially perspective new students. By creating MPB information systems, the business process that occurs can be integrated with business process in academic and finance so that information



That proposed research and community service process is expected to provide solution for enhancing researcher, reviewer, and PPM division easiness in running research and community service administration process such as uploading research proposal and reviewing proposal.

C. Gap Analysis

IT gap analysis in business architecture focused on components from value chain of STIKES HarapanBangsa. Gap analysis shows that there are some differences between old systems and proposed systems. Gap analysis is documented on table 2.

	learning, PMB, and finance has not happen yet.	and finance so that BAAK staff does not need to re-input students data and to check payment can be seen directly.
Academic counselor	PA lecturers cannot access academic information systems to see students' attendance, KRS and students' KHS.	PA lecturer has access to academic information systems to monitor students.
Teaching and learning activity	The use of e-learning as media to support teaching and learning activity has been applied but students' data have not integrated with academic database. Thus, to be able to use lecturers' data, course's data, and students' data is still inputted manually. Department does not have access to academic information systems to monitor lecturers attendance information, and students' mark.	E-learning takes data from academic database, so when there is new students and new semester, e-learning is ready to be used. Department can access academic information systems to monitor lecturers attendance and students' mark.
Mark Reporting	Students' mark reporting cannot be seen online by students and students' parents.	Students' parents and students can access KHS mark reporting online.

Graduate		
Activity	Old Systems	New Systems
Registration of graduation	Files collection for graduation does not have information systems and BAAK staff has to see file one by one.	Files is uploaded and BAAK staff validate the uploaded data. Students' status update becomes graduated and directly input into graduate database.
Printing Certificate and Mark Transcript	Need more time because the making of certificate is done one by one.	Printing is done through academic information systems according to graduation status that has been updated by BAAK.
Reporting	Data source for reporting is done manually.	Reporting is made automatically, either numbers of graduate report and alumni data, and study tracer can be seen real time by the chief party, thus becoming a self-evaluation materials for the improvement of academic quality and service to graduate.

Admission of New Students		
Activity	Old Systems	New Systems
Registration	Registration systems cannot be done online which directly intergrade with PMB systems.	Registration can be done online which has been integrated with PMS information systems, so prospective students directly get registration number and registration card.
Entry Selection Process	SBT entry exam systems are not integrated with PMB information systems so the report of PMB result is recapitulated in excel.	CBT test systems are directly integrated with PMB information systems.
Reporting Process of PMB Development	Reporting process is done manually using excels, this reporting process is perceived less efficient and effective, and information is not real time.	Information can be seen directly any time by the chief according to the needed information.
Final report of PMB	Reporting is done manually using excels which is only in the form of number.	Final reporting presents all data in details a result of incorporation of PMB registration until graduation basil, information can be seen using graphic so that make the chief easier to analyze and can make policy to upcoming PMB.

Academic		
Activity	Old Systems	New Systems
Academic registration	Data integration with another information systems such as e-	Integration is done with PMB information systems

7. Conclusion

Business architecture analysis conducted using TOGAF describe business architecture baseline in STIKES HarapanBangsa. State analysis also has been conducted such as

main activities analysis using value chain and environmental state analysis using SWOT.

From the analysis which has been done resulting proposal of business architecture design that is able to integrate occurring main business activities using TOGAF framework. This also shows that business architecture becomes one of key components to determine how well IT has aligned with its business' goal.

According to the presented gap analysis, information systems of new students admission has to be increased from admission process, entry exam to announcement. Graduate systems are suggested to have real time study tracer report and alumni activities report. Academic systems are suggested to have real time report about ongoing activities to the related stakeholder.

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