Polytechnic Management Information System For Academic Service Quality Improvement (*Analytical Descriptive at the Study Program Level at the Bandung State Polytechnic*)

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Abstract.
The Management Information System (MIS) in Higher Vocational Education such as Polytechnics functions to coordinate and monitor the planning, implementation, and evaluation of education activities, especially at the study program level. The current MISserves BAAK's data and information needs, reporting for internal management and providing PD-DIKTI Database. MIS has not fully served the needs of internal customers.The aim of this research is to describe in depth the process of planning and evaluating MIS at the study program level. This research is limited to MIS academic services and support preparation for study program's accreditation of BAN-PT. The theoretical studyis supported by theological foundation of Al Qur'an and Hadits, the philosophical constructivism and the theory of Total Quality of Management (TQM). This research uses a qualitative descriptive approach, explore deeply into the data and information needs for students, lecturers, study program, and BAAK. The informant involved internal Polban namely BAAK's person, head of department and study program, lecturers and students, reviewing statute documents, strategic plans, academic regulation, laws and government's regulations related to polytechnic's management. This research reveals that the current MIS program is not based on customer's needs yet by paying attention to business processes in planning, implementing, and evaluating teaching and learning process. MIS in implemented stage solely for BAAK needs, does not yet serve data needsfor study programs, lecturers and students, including not yet supports the preparations of program study's accreditation by BAN-PT. Customers are still difficult to get the information needed. The results of the evaluation show that there is a gap between data and information due to several inhibiting factors and a management system that is not yet based on complete data. The novelty of this research is MIS which is integrated with the current management system. MIS is designed comprehensively, not partially on project based. The conclusion is that the MIS program must be designed in the form of grand design that maps all data and information needs for internal and external customers which is customers oriented. MIS implantation will be successful if it is supported by socialization for customers, integrating existing MISs including databases and online communication networks, adequacy of MIS infrastructure include hardware, bandwidth capacity and high speed accessibility of information.

Keywords: *Management Information System, Total Quality Management, IntegrationServices.*

I. INTRODUCTION

Higher education is a level of further education after students finish high school, it can be in the form of academies, polytech[1]nics, high schools, institutes, or universities. Higher education is obliged to organize the Tri Dharma of Higher Education, namely: education, research and community service. In organizing higher education, it is required to follow the national education standards that are used as a reference for curriculum development, educational staff, infrastructure, management and financing. Ministry of Research and Higher Education Regulation No. 44 of 2015 concerning National Higher Education Standards, article (4), consists of eight standards, namely (1) graduate competence, (2) learning content, (3) learning process, (4) learning assessment, (5) lecturers and education staff, (6) learning infrastructure, (7) learning management, (8) financing for learning, learning and eight research standards and eight community service standards, are used as a reference in compiling, implementing and evaluating the curriculum.In supporting the implementation of academic functional management in Study Programs, a supporting function called the non-academic section is needed that carries out organizational, financial, student, manpower, and infrastructure tasks. The organizational work system regulates the relationship between superior command lines to subordinates and coordination lines between sections at the same level and coordination at different levels. The finance department is in charge of managing finances for educational operational costs in the form of employee salaries, spending on consumables and investment costs including financing for the maintenance of facilities and infrastructure that are damaged and must be replaced. The student department

carries out non-curricular and extracurricular activities that involve students in leadership training, character education, strengthening soft skills and developing student innovation and creativity. The personnel department which manages recruitment, education and development, the rank of educators and education. The infrastructure department is responsible for managing all instrument equipment used in the laboratory/workshop as well as infrastructure in the form of school buildings, laboratory rooms and other facilities such as libraries and so on. To be able to manage data and information from these sections, a MIS is needed which will record, classify, report changes at any time if required by the leadership. So in higher education organizations it is necessary to have an Academic MIS, Financial MIS, Student MIS, Civil Service MIS, Infrastructure MIS, etc.

Management Information System (MIS) in general has the meaning of a comprehensive and coordinated series of information subsystems that are rationally integrated and capable of transforming data into information through a series of ways to increase productivity in accordance with the style and nature of the manager or the basis of predetermined quality criteria. The information system itself is a combination of information technology with data, procedures and humans. Information that is managed properly can have strategic value for the organization or institution that uses it. The strategic values of MIS for organizations include, firstly, for automation processes that can work quickly, cheaply and have high accuracy for routine tasks so that organizational performance can be increased in productivity; both MISs are used to support superior organizational learning; The three MIS can be used to support strategies in order to achieve the vision of an organization.Based on this understanding, MIS at a university can be used as a key operational (key operational), high potential tools and service functions, especially academic services which include operational management of study programs, student affairs, research and community service, as well as institutional management in order to achieve the vision and mission of the higher education organization [2] The development and development and implementation of a university MIS should be planned according to the needs of the organization through certain stages by taking into account the impact of sociotechnology, both internal and external. This is important because the application of the MIS cannot be separated from the people who work as users of the MIS. MIS planning should also be part of organizational development planning, while MIS should be developed according to the short-term and long-term needs of the organization through the stages of needs analysis and identification of critical success factors.

Related to the learning process services, the implementation of information systems is still constrained by the availability of information technology infrastructure. The online learning process (interactive discussions, academic consultation/guidance, conferences, online lectures) has not been fully implemented due to limited infrastructure capacity. The development of the Polytechnic organizational capacity is constrained by the development of infrastructure capacity due to the limited funding system from the government budget. This has an impact on the limited accessibility of information systems for the POLBAN academic community. MIS problems related to services to lecturers, including the existing MIS have not been able to distinguish the absence of a lecturer caused by a national holiday (official) with a lecturer who left the assignment due to permission (because of other assignments), or because of illness or for no reason. This often results in errors in making teacher performance assessments. The accuracy of this data is important because it is directly related to the performance value of lecturers, punishment and reward systems. Based on this data, the implementation of MIS cannot be fully used as a good and fair decision support system, this is a general description that some academic services have not been fully provided for internal customers, namely students and lecturers as well as external customers, namely the wider community and POLBAN share holders.

II. METHODS

In this academic service management information system research, qualitative methods are used. Qualitative research is aimed at describing and analyzing phenomena, social events, beliefs, thoughts individually or in groups. Qualitative research is inductive in nature, where problems arise from the data and are open to interpretation. Data were collected by careful and detailed observations with notes from in-depth interviews and the results of documentation studies and field observations [3] Qualitative research is built

from constructivism philosophy which views that reality is plural, interactive and requires interpretation based on social experience. Constructivism is also defined as the fact that social construction, individual or group, will give meaning to something by constructing it.Qualitative research has two main objectives, firstly to describe and reveal (to describe and explore), secondly to describe and explain (to describe and to explain). Qualitative research is also referred to as naturalistic research according to Lincoln and Guba cited (Sukmadinata, 2006). In general, qualitative research has the following characteristics: 1) based on naturalistic concepts, 2) reality with multiple dimensions, intact, open and changing, 3) interaction between researchers and research objects and researchers as instruments, subjective, 4) natural research settings related to place and time, 5) subjective, intuitive and rational analysis, 6) research results in the form of descriptions, interpretations, tentative-situational (Sukmadinata, 2006).

The main purpose of this study is to obtain an overview of the Polytechnic Management Information System (MIS) especially those used for academic services as part of a decision support system. Judging from the nature of the research, this research is more focused on evaluative research. Therefore, a logical research question is how the Polytechnic MIS can be used as a data support system for decision makers in order to improve the quality of academic services. The results of this study are expected to provide advice to the Polytechnic to improve the quality of academic services.The places chosen in the study were the Bandung State Polytechnic, the Civil Engineering Department at the D3 Civil Engineering Study Program and the Accounting Department at the D3 Banking Finance Study Program and the D3 Accounting Study Program. There are at least five reasons for choosing the research site, namely:

a. Bandung State Polytechnic (POLBAN) is a state polytechnic with the largest number of majors and study programs in Indonesia.
b. POLBAN is a reference polytechnic for other polytechnics, both public and private.
c. The three selected study programs above have the potential for sufficient information needed.
d. The three study programs have MISilar typical characteristics so that they can be used to broaden the generality of qualitative research.
e. Ease of access to primary and secondary data.

Research on academic service MISs at POLBAN was carried out from March 2015 to October 2017 followed by updating the findings of changes in access to the academic field and the field of research and community service until early 2020. This study involved 21 people as resource persons consisting of from.

1) Head of Civil Department and Head of Accounting Department, two people
2) Two people Chair/Accounting and Civil Studies Program
3) Administration of Accounting Studies Program, Civil two people.
4) Representatives from BAAK head office two people
5) Representatives of former assistant director, two people
6) Representative of Information System Center (PSI), three people
7) UPT Library Representative, one person
8) Representative of UPT JPAC, one person
9) Student representatives, four people

Processing Techniques At this stage the data collected was obtained from various data collection techniques (in-depth interviews, documentation studies and observations) written in field notes separately for each method. These records are then compiled in a data collection system, each of which will be assigned a separate code. The steps used to analyze the data, the research was carried out as follows:

- Data reduction

Data reduction is a form of analysis that sharpens, directs, classifies, discards unnecessary, organizes data in such a way as to obtain a final conclusion. Data reduction can be interpreted as a process of selecting, focusing on MISplifying, abstracting and transforming rough data that emerges from field notes. Data reduction was carried out continuously during the research, even before the data was actually collected, anticipation of a data reduction had been collected, this was seen when deciding the conceptual framework, research area, research problems and finding data collection methods. During the data collection, there will be a reduction stage, and then make a summary, explore themes, make clusters and write memos. This

process continues until after the data collection in the field, even at the end of making the report until it is fully compiled.

- Data Display

Presentation of data in this study is intended to find a meaning from the data that has been obtained. The data is then arranged systematically from complex information into MISple yet selective data. This agrees with what was stated by [4] who argued that: "data presentation is intended to find meaningful patterns and provide the possibility of drawing conclusions and taking action". The data obtained from the results of this study can be in the form of words, sentences or paragraphs. The presentation of data in this study is in the form of narrative text, although it is not practical, but it would be better if it is supported by data presented in the form of matrices, graphs, networks and charts.

- Drawing conclusions and verification

The third stage in data analysis activities is drawing conclusions and verification. The analysis carried out during data collection and after data collection is used to draw conclusions, so as to find patterns about the events that occurred. Since data collection, the author has tried to find the meaning or meaning of the symbols, noting the regularity of patterns, explanations, and causal paths that occur. From this activity, conclusions that are still open are drawn, but then go to specific or detailed ones and finally, it is hoped that final data can be obtained.

III. RESULTS AND DISCUSSION

Academic Service MIS Planning

The design of an academic MIS is supported by legal legality in the form of laws, government regulations, ministerial regulations relating to the national education system and/or higher education, including Law No. 20 of 2003 [5] concerning the National Education System, Law No. 12 of 2012 [6] concerning Higher Education. High, Law No. 16 of 2016 [7] concerning Information and Electronic Transactions (ITE). This includes Government Regulation No. 04 of 2014 concerning the Implementation and Management of Higher Education. Permenristek Dikti No 44 of 2015 [1] concerning National Standards for Higher Education. Legality within the internal scope is in the form of the Strategic Plan for the Polytecnic Bandung of the Republic of Indonesia from 2011 to 2015 including the Academic Regulations of the Politeknic Bandung 2013. In the Academic Regulations of the Politeknic Bandung there are detailed arrangements for registration of new student selection, implementation of learning, administration of examinations and assessment of learning outcomes, provisions for graduation and transcripts of grades. , academic sanctions include academic warning letters and dropout rules and academic leave conditions for students. The existence of an academic MIS in higher education is needed in addition to regulating the complexity of managing information from all study programs as well as being part of the openness of accountable and transparent higher education management that can be seen by the wider community as well as accountability to the Director General of Higher Education.

The subsystems are 1) MIS academic registration service for new student selection (PSMB), 2) MIS academic learning service, 3) academic MIS for graduation and alumni services (MIS Polban Roadmap, 20013). The academic MIS for the new student selection registration service (PSMB) is used only during the admission process from February to July each year. MIS learning academic services take place since student registration and during learning and evaluation of learning including Field Work Practice (PKL) and Industrial Visits (KI) activities in odd and even semesters. MIS for graduation and alumni services, providing administrative terms and conditions for prospective graduates who have passed the graduation. The alumni service MIS manages all feedback and information from alumni as part of the college alma mater. The three academic MIS subsystems are integrated with each other so that the database generated for the registration of new student selection is connected to the learning service MIS database, also connected to the graduation and alumni service MIS. The existence of an academic MIS is because there is a need for academic information that is easily accessible by internal and external customers, of course the MIS also meets the requirements of reliability and the confidentiality of the data and information contained in it must be maintained, for that information security is absolutely necessary and not misused by irresponsible parties. [2]. As a MIS system,

of course, there needs to be financing which is divided into investment costs for the procurement of hardware and software components as well as monthly operating costs and system maintenance costs. The ability to budget for operational costs on an online system also affects the level of system reliability because it is related to the speed of bandwidth that can be provided. This MIS financing must be included in the standard component of financing and is included in the planning of the higher education household budget every year.

Data validation is needed to provide confidence that the data entered by participants is correct and has high validity. Crosby's Zero defect theory in eliminating errors is an effort to achieve high quality [8] In this case, validation is an effort to minimize errors from academic data (reports and diplomas) and non-academic data (personal data, non-academic achievements) that are entered by participants, matched with original documents from report cards/diplomas from the school. Validation is also for bidikmisi route participants by checking at the location that the parents of the prospective participants really come from poor families or are economically incapable of paying for lectures. Validation was carried out by a team of lecturers in the registration committee for new student selection, in 2015 – 2016 the validation that was mostly carried out was equating the academic numbers from high school report cards with the 2013 curriculum and high school with the non-2013 curriculum. letters with weights A, B, C and D, while in the non-2013 SMA/SMK curriculum, the academic assessors are assigned a numeric notation with a scale of 0 – 100. The service MIS (PSMB) is designed to process numeric numeric data from SMA/SMK report cards from semester 1 to semester 6. There is a need for standardization in the process of transferring the value of letter report cards (2013 curriculum) to value report cards with numbers (non-2013 curriculum), so that there is equality and fairness in determining the graduation of participants. Participants (PSMB) who have passed (about 1,800 people), are required to re-register at the BAAK, in a few years there are around 10% of participants who do not re-register for various reasons [9]. This vacant seat will be filled from participants who are included in the reserve pass list.

The output of the academic service MIS in the form of academic information is used in making internal environmental decisions at the BAAK level such as registration of new students, registration for old students, filling out credits at the beginning of the semester, as well as the final student grade ledger and the graduation ledger for final semester students. The output of the academic service MIS at the Study Program level is in the form of weekly lecture activity reports, semester-end increments, graduation for graduation, provision of warning letters (SP-1, SP-2, SP-3) by the head of the / PD-1, student dropout decisions by director. The output of this academic MIS should be accessible to students, lecturers, homeroom lecturers and the administration of study programs and departments. Utilization of decision support system DSS is used as an organizational decision-making tool from the lower, middle to strategic levels [10] Academic data and information stored in the database as well as the final results of the academic MIS should be used as the basis for operational decision making at the study program and department level, but must also be able to support strategic decisions at the head office level.

The need for hardware technology in building a MIS must be adjusted to the number of internal customers in this case the total number of students, lecturers, administrative staff, also adapted to the need to access data and information online. The larger the number of the academic community, the more complex hardware specification infrastructure needs and large investment costs are required. Utilization of internet technology (online) with WIFI is a necessity because it has the advantage of being easily accessible in the campus environment. To optimize hardware capabilities so that they can be accessed online optimally, it must be adjusted to the number of users on campus and also the type of application used. With an average requirement of 256 Kbyte/person, Polban institutions with 5,000 students and 800 lecturers and administration staff with concurrent users of 20% to 30%, bandwidth required = 5,800 people x (20% to 30%) x 256Kbps = 300 MegaByte to 450 MegaByte. The high level of operational financing for internet access providers by universities should provide benefits to the outputs produced and have a significant impact on organizations such as establishing inter-institutional collaboration and increasing the number of publications of accredited international national scientific journals that are beneficial in increasing institutional excellence. The benefits of the availability of a WIFI network for students can get broad access

to upload coursework assignments from lecturers, as well as download scientific journals and the latest technological developments used in learning or doing final assignments.

Planning software requirements (software) in the form of data, information, applications, programmers and databases in the academic MIS infrastructure is the main requirement [11] Even sophisticated hardware devices without adequate software support will not support optimal results. Data is the initial input that can come from students, lecturers. Data before being processed into information must be verified based on evidence and facts (such as: doctor's statement, permission for family needs, permit for activities outside the Polytecnic Bandung). Academic information is the result of processing data according to their needs, for example information on lecture schedules, KRS, transcript information, information on lecturers' teaching load, etc. The application in the academic MIS allows data and information to be connected to other databases, the application also manages customer access with the MIS. Applications can process data and generate information as needed. Human resources are not only programmers, but internal and external customers must also be able to operate and utilize academic MISs optimally.Training on how to use an academic MIS is needed to provide knowledge and procedures for the proper operation of an academic MIS. The training is intended for new students and new lecturers who are required to attend training on how to use an academic MIS correctly. The database functions to store a set of academic and non-academic data that are grouped according to their categories. There are student databases, academic databases, personnel databases, infrastructure databases. Databases are integrated with one another to process data into information. In an academic MIS, data integration is very necessary considering that academic problems are also related to other supporting databases, such as a student single tuition financial database (UKT), a database of infrastructure facilities for the availability of lecture buildings, a lecturer staffing database, a student final project database and a database of E-learning teaching materials.

Implementation of the Academic Service MIS.

Implementation of the Polban MIS Roadmap, using Porter's value chain model which adopts four main activities, namely, firstly, MIS legality is supported by university laws and regulations and Law No. the three learning administration activities and learning evaluation are supported by an academic MIS, the four graduation administrations and alumni with a MIS [12]. The foundation of legality of the Polytecnic Bandung license academically using education law regulations such as Law No. 20 of 2003 [5] concerning the National Education System, Law No. 12 of Higher Education, Law No. 11 of 2008 concerning Information and Electronic Transactions, Permenristek Dikti No 44 2015[1] concerning National Standards for Higher Education, Polytecnic Bandung Academic Regulations 2013. The laws and regulations mentioned above are the basis for and provide legal protection in the event of a violation. Organizational and management arrangements and positions of vocational tertiary institutions are clearly adopted from Law No. 20 of 2003 [5]. The regulation on learning quality assurance standards from graduate competency standards etc. adopted from Permenristek Dikti No 44 of 2015.

The implementation of the MIS service (PSMB) registration for new student selection has been carried out on an online basis since 2010 and from time to time the system is improved to get new students according to qualifications that meet excellent academic and non-academic requirements. There are seven stages of the new student selection registration business process that prospective students must undergo from the beginning of the registration process until they are declared to have passed the selection at the Polban as follows 1) register online, 2) fill in personal data and academic data based on report cards / diploma scores, validation process by the new student selection registration team 4) the process of assessing academic and non-academic portfolios (achievement/bidikmisi pathway) 5) conducting written exams on the Polban campus (for participants in the written exam selection) announcement of new student selection results 7) registration for new students (BAAK, 2017).MIS learning services have been implemented in Polban since 2005 from offline services with MISple applications to meet learning administration needs. The development of online-based web-based information technology, MIS applications for learning services are also tailored to the needs. The scope of MIS learning services includes the availability of syllabus and courses in Study Programs, recording the attendance of students and lecturers, and E-learning learning services and processing end-of-semester grades and determining graduation. The implementation of the academic service MIS

process is a manual process and an online-based process that is limited to campus scope. The manual process is used in data entry for student and lecturer attendance which is carried out by the admin in the Study Program. An online-based process has been carried out, namely for processing UTS and UAS evaluation scores, E-learning-based learning and access to final grade transcripts. All applicable provisions in the learning service MIS are based on the 2013 Polban Academic Regulations.

The process of making academic decisions based on critical performance indicators (CPI) will satisfy customers [8] Every academic decision related to academic achievement must be proven with true and accurate data and information. CPI is an analytical method used to determine the final grade of the semester. The final decision on semester grades, including the determination of graduation, must be decided in a meeting of the lecturers with the Head of Study Program, based on the learning achievement figures and GPA scores. In vocational education, discipline during the important learning process, every absence from class will be recorded as an indicator of discipline. Warning letters are given in stages from SP-1 (10 hours attendance) from the Head of Study Program and the head of the department, SP-2 (20 hours attendance) and SP-3 (30 hours attendance) are issued by PD1 academic section, and if absenteeism from class reaches 36 hours it will be issued (dropout) as a student through the director's decision letter. Dropout status can also be done if the student gets the final grade of semester E or if the status of the semester increases with the predicate of passing the trial twice in a row. Starting from the class of 2016, data entry for grades from lecturers is done online to avoid mistakes in the tiered manual process.

The implementation of the graduation service MIS business process is still partly done manually and the graduation administration registration is done online. The output of the learning process in tertiary institutions is when students complete their education and are declared to have graduated from graduation and take part in graduation. Graduation administrative requirements must be completed and validated by the Head of Study Program. Graduation registration is done by students online by including the graduation administration requirements. The data used for graduation administration must be guaranteed to be correct and free from errors and must be validated by the Head of Study Program, because it will be used in making three important documents, namely: original diploma documents, certificate accompanying diploma documents (SKPI) and transcripts of grades from the first semester to the final semester. Crosby in the concept of zero defects can be applied to produce quality services and satisfy customers even though it is difficult to achieve but if it is cultivated continuously and with focus it can be implemented [13] MIS academic services are in the form of academic data and information that are used by management in making decisions at the operational level in Study Programs as well as strategic decisions at the upper management level. Academic decisions at the Study Program level are in the form of determining the status of a level increase for students at the end of the semester, determining outstanding students, determining academic sanctions for students with warning letters, determining lecturers who are in charge of courses, teaching burden for each lecturer, and determining homeroom teachers in each study program. Academic strategic decisions by PT leaders include determining the results of new student selection registration, determining graduation, determining student termination (DO), determining annual budget plans (RAB) in the form of proposals to ministries, cooperation between educational institutions (D3-GMF Garuda, D4- Ultrajaya). Non-academic strategic decisions such as periodic salary increases, appointment of structural officials, proposals for promotions for lecturers and administration, retirement applications, termination of employee status. The fact that out of 38 study programs in Polban, the results of BAN-PT accreditation with the predicate B or C (20 study programs), are due to the completeness of the administrative forms that are not supported by credible evidence.

Academic reporting is addressed to internal parties and to the Dikti database (PD-Dikti). Internal reporting is addressed to internal customers in need, namely students, lecturers, study programs, departments and BAAK, as well as central management. Reporting to the Dikti database has been carried out since the enactment of EPSBED (self-evaluation-based study program evaluation) in 2004 with the enactment of Law No. 20 of 2003 concerning the National Education System. Reporting of academic data and information internally only reaches students, study programs and departments, BAAK and Central management. Lecturers and internal interested parties such as the BAN-PT committee do not directly get access to an

academic MIS. Reporting academic data to the Dikti database as a form of quality assurance and the implementation of the principle of accountability for universities in the education management process at the study program level. Law No. 12 of 2012 concerning Higher Education, article 56 states that the information in the Dikti database serves as a source of information for Study Program accreditation, Study Program organizers and Study Program performance assessments.

Reporting of study data and academic information is carried out at the beginning of the semester by sending KRS data taken by students, and at the end of each semester the reported capacity of lecturers, active students and students who are on leave, entry of student grades, IP and GPA semesters and students graduating from graduation. Constraints faced in sending data, not in sync with data recorded in the Dikti database, synchronization is needed such as changing course codes, different course names, etc. In winning the competition, information excellence is needed to respond to the market quickly [2] Each organizer of a higher education program is required to report on the implementation of education, part of the accountability and transparency of higher education to the government and also to the wider community. Competition between universities to provide the best quality to the community and the industrial community as graduate users is increasing. The ranking of academic quality is given through accreditation by BAN-PT, either the study program rating or the institution level ranking. In the 2016/2017 academic year, Polban received an institutional accreditation rating of A. The 2017/2018 academic year was ranked A (21 study programs), B (15 study programs) and C rank (5 study programs). Based on the assessment of the Directorate of Science and Technology of Higher Education Institutions in 2017, Polban ranks 7th out of 10 other state polytechnics. This is an indicator that Polban as the provider of higher vocational education has not been supported by a quality academic MIS.

Academic MIS infrastructure is needed in carrying out the whole process, starting from how to get academic data, processing data into information, storing data and information in databases, as well as sharing and communicating data and information to customers. Infrastructure needs for software components (data, information, application software, databases and programmers) and hardware components (computer, network and communication) are required to be adapted to customer characteristics [10]Academic data that is text requires low bandwidth data rates when compared to data or information in the form of images or videos (movies) requiring high speed bandwidth. Currently available bandwidth of 360Mbyte with 200Mb for international connections and the greater the availability of bandwidth, there are two things that must be prepared, namely the monthly internet bandwidth rental fee will be higher and high infrastructure specifications are required with more expensive investment costs. To reach most of the internal customers on campus, WIFI has been installed in every classroom building, in laboratories, workshops, rooms and locations where many students gather.

Fulfillment of MIS infrastructure must provide better MIS performance to assist in decision making, as well as have a positive impact and make the resulting data and information as a competitive advantage for vocational higher education institutions. Infrastructure maintenance includes routine maintenance activities by qualified technicians to ensure that the MIS infrastructure is in optimal condition and has optimal reliability. There are two types of damage, namely, first, data/information damage caused by being infected with a virus originating from one of the users in the online network, secondly, communication network damage by rats that damage the cable network from the modem to the computer/laptop. The limited number of technicians who are only two people to serve the Polban campus infrastructure, in the future it is necessary to increase the number of human resources for maintenance personnel and the number and level of competency skills. To prevent intrusion by external parties to damage or steal important academic data and information, multiple layers of software security and hardware security have been installed.

Evaluation of Academic Service MIS

Evaluation of an academic MIS from the aspect of the vision, mission and goals of a university is very important to be understood by the entire academic community, the vision and mission reflect the highest ideals to be achieved by higher education institutions. The vision, mission and objectives are reduced to a five or ten year strategic plan that has been made by the Polytecnic Bandung (POLBAN, 2011 – 2015). The vision and mission of Polban is to be the leading provider of superior vocational education that is innovative

and adaptive. To become a vocational education institution that excels in quality management, excellence will be obtained if eight National Higher Education Standards (graduate competency standards, learning content standards, learning process standards, learning assessment standards, lecturers and education staff standards, learning facilities and infrastructure standards, management standards) learning, learning financing standards), there are also eight National Research Standards and eight Community Service Standards that have been met [14].

Currently, connectivity and accessibility only serve administrative staff in Study Programs, majors and BAAK. Lecturers and students as well as the Head of Study Program, Kajur and Polban leaders cannot directly access the academic MIS. In fact, students have a need to be able to access academic information such as transcripts, graduation certificates, permits for field practical work and industrial work. Lecturers are also interested in academic data and information such as filling out the Lecturer Employee Performance Target (SKP) which is filled out periodically every year, filling in to determine the performance to be achieved and also assessing the performance achievements that have been carried out by civil servants including the lecturer profession. For the BAN-PT Study Program committee team, they need academic data and information to fill in the seven standard BAN-PT Prodi forms and institutional accreditation forms which are carried out regularly every five years. The integration of academic MIS has not been fully implemented, especially database integration to support decision making. Some databases are still separate and independent such as financial databases, personnel databases, research databases, student databases. The results of the academic MIS should support the process of making quick and appropriate decisions [10]. Academic decisions must have legal force and are binding on the parties, both institutions and individuals, so that decisions can be implemented without causing doubts and implications for the parties.

The evaluation of the PSMB service MIS for new student selection registration, which became a problem focused on three things: 1) validation of academic and non-academic data was still manual, 2) increasing the percentage of new student re-registration from 90% to 95% (BAAK, 2017). PSMB Polban online registration since 2010, the system continues to be improved from time to time. Performance of accessibility and useability of MIS PSMB services from the user side is good, that customers must be provided with satisfactory service (Sallis, 2012). The crucial process is that the validation of participant data checks by the PSMB Team is still done manually with a large volume of files reaching more than 17 thousand (BAAK Polban, 2017). PSMB participants register and submit administrative requirements online. PSMB participants in the academic PMDK path from registration until graduation status is announced, the entire process is carried out online. For PSMB participants who take the written exam, they come to the Polban campus when the written exam is only done, the announcement of graduation is made online.

The evaluation of learning MIS focuses on three problems, namely 1) connectivity and accessibility, 2) routine data entry automation, 3) integration of academic support databases. First, connectivity and accessibility for internal customers (students, lecturers, study programs) for learning administration services, such as curriculum, short syllabus, semester learning plans (RPS), list of courses and class schedules cannot be accessed either by students, lecturers or even study programs, academic driving license only operated by the administrative staff of the Study Program. The problem of connectivity and accessibility of data and information on academic MISs has not been fully accessible to students, lecturers and other internal users. Accessibility limitations are due to the application being used not yet connected and not yet integrated with academic support databases such as personnel databases, student databases, financial databases, infrastructure databases, industrial partner databases, library databases, etc.

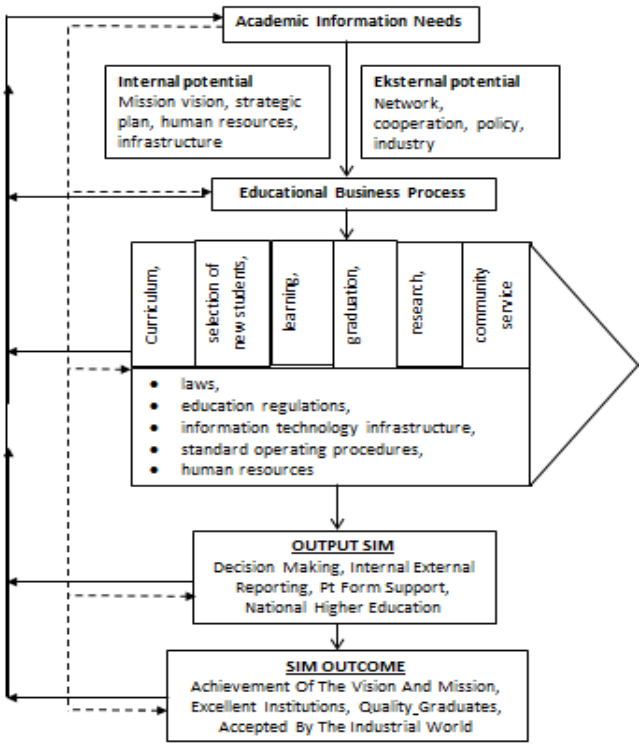
Business evaluation of the graduation service MIS process is the final stage after students complete all learning programs at the D3/D4 or Postgraduate level. The stages include the completion of a problem-free certificate followed by filling in the graduation registration form and the validation process by Study Programs and departments, online graduation registration and graduation administration arrangements at BAAK. There are two things that need to be evaluated with the MIS business process for Polban graduation services, namely: completion of a trouble-free certificate that takes several days, validation of graduation registration letters by the Study Program manually. Evaluation of the alumni service MIS becomes very important for Study Programs and other interested parties (the committee of BAN-PT Study Program). Data

and information on alumni in the thousands since Polban conducted their first graduation in 1984, cannot be accessed online by internal parties. Alumni data can be processed for various needs such as competency development for graduates, curriculum development, as well as conducting a treasure study of industry trends in the absorption of graduates from year to year. Accessibility for alumni on a Polytecnic Bandung Polytecnic Bandung license can be done reciprocally, alumni if they need administrative requirements for work or continuing education can easily be done online.

Outcome evaluation of academic MIS in the form of academic reporting at Polban is intended for internal Polban parties and external customers. There are three in the evaluation of reporting that are academic MISs, 1) aspects of the connectivity and accessibility procedures of academic data and information produced cannot be accessed optimally by internal customers, especially lecturers who need academic data for teaching preparation, and monitor learning progress and to fulfill the need to fill out forms. - Lecturer performance report form (LKD). The data validation procedure at the Study Program level is not optimal, as evidenced by the process of sending it to the Dikti database, still found rejected academic data and the synchronization process must be carried out. New connectivity and accessibility are enjoyed by students, study programs, majors and BAAK. In terms of the benefits principle, the results of the new academic MIS report are used for academic decision making in study programs, departments and the head office, the report on the results of the academic MIS can be used for research needs for vocational education, as well as useful academic data and information in filling out BAN PT accreditation forms for study programs and accreditation politeknic institution.

Quantitative evaluation of the Polban academic MIS infrastructure, both software (data, information, software application, database and programmer) and hardware (computer, server, network system and communication) are under standard conditions. Qualitatively, the information technology infrastructure has not met the standard needs of customers, including the limitations of connectivity, accessibility and the academic support database has not been integrated. The rapid development of information technology with a fully online tendency has not been able to be realized in an academic Polytecnic Bandung license. The hardware specifications currently used are 70% out of date whose performance is not optimal and, only 30% of the hardware specifications support the Polban academic MIS software and applications.

IV. MODEL HIPOTETIK MIS LAYANAN AKADEMIK.



V. CONCLUSION

Based on the results of the study, it was shown that the academic service MIS had not been optimally supported in making strategic and operational managerial decisions in Polban. The academic service MIS is planned to provide services to internal customers (students, lecturers, Study Programs and BAAK) as well as external customers, to provide data in academic decision making, to provide reports to management and external parties. In practice, the academic service MIS has been used in teaching administration, supporting research activities and community service by lecturers. The academic service MIS is not optimal because the database has not been integrated and accessibility is carried out by the study program admin. The results of the evaluation of the academic service MIS have not been optimal in academic services, which is caused by usability factors, accessibility and limited system connectivity. The security factor is still vulnerable to the intrusion of malware viruses, which can damage and even delete important academic information and employee data.

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