

The Effectiveness of Information Technology-Based Management Information Systems in Junior High Schools

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Abstract—SMPN 6 of Bandung continuously improves their quality of education services. To provide good education services, the school has begun to develop various innovations and support information technology which is recently developing in education field. Some efforts to support education services require a good and appropriate management information system to facilitate the process of educational information. Information technology is an indispensable tool for more effective implementation of management information systems. This study aims to analyse the effectiveness of information-technology-based management information systems in SMPN 6 of Bandung, programs of planning management information system, and the results of implementing management information systems using information technology facilities. The method used in this research is descriptive method with a qualitative approach. Data collection techniques used primary and secondary data sources, through interviews, observation and documentation studies. The results of this study showed that SMPN 6 of Bandung uses a management information system supported by information technology prepared specifically for education learning and evaluation in general. The program used to support the learning process is an application named Edubox, and any other various applications which contribute in the process of entering data and evaluating teacher performance and education. Those various information system applications used by schools result in making data more organized and accurate.

Keywords—management information systems; information technology; management

I. INTRODUCTION

Organizations as a system make progresses by improving quality services. In order to achieve the target, organizations develop information technology to support various operational activities such as more effective and efficient management. Then, this step can be more valuable in competition between organizations to be better and more competitive. Organizations in general carry out management to regulate all the processes running in the organization. In accordance with this, educational institutions as organizations must certainly implement good management for the sustainability of the institution. School is the place where the education process takes place, in which there are systems that continue to move

and are interrelated with a variety of very complex processes. In its process as an educational organization, competency and support are needed in carrying out the education process in schools.

The thing that must be considered and becomes an important thing for an educational institution is an appropriate and management of information systems. Every year, information technology continues to develop in supporting various human needs, without exception for education as well. The development of information technology has a direct impact on changes in the education system. With the advancement of information technology, teachers and parents of students are expected to be able to easily access various information about various school activities to create effective education transparency. Parents of students often face some difficulties in accessing information related to various school activities, because they are constrained by daily activities so that they are not able to fully track their children's development in the learning process at school.

Application of information technology carries the impact of fundamental changes to the organization including the structure of reporting, supervision, substance of work, and division of work. In addition, Turban also stated that the use of information technology can increase productivity of managers, increase supervision, and reduce the number of middle-level managers to obtain a flatter organizational hierarchy. This organizational structure is more horizontal, more decentralized, more coordinative, the character of the task is more specific, and the ratio of professional staff is larger [1].

Following this, information technology facilitates the work of each organization to be more productive because it is supported by technological devices with functions according to the needs of each organization.

Administration the system is something that consists of objects, or elements, or components that are related and arranged in relation to one another in such a way that these elements constitute a particular processing or processing unit [2].

The organization is very closely related to the system because it can run with the existence of interrelated systems that continue to achieve organizational goals. The process carried out by the organization forms a unit that cannot stand alone and later there are controls that are carried out from the running system. The important role of information in the management process can be seen when individuals, groups, organizations, and companies are faced with the need to make decision making. The postulate is very basic in the utilization of information that decisions will be more precise, effective, and the process will be faster if supported by information [3].

Based on expert opinion on information technology as the main support for the process of running information that has been processed using hardware as an important element of the quality of information that will be used.

Information technology is a technology used to process data, including processing, obtaining, compiling, storing and manipulating data in various ways to produce quality information that is relevant, accurate, and well-timed information used for personal, business, and government purposes which are strategic aspects for decision making [4].

Computer operating systems mentioned five tasks or activities: data collection; data processing; data management; control and security of data and information generation. Through these activities, data from various sources through a process called data processing turn into useful information for the user. Management information systems comprise the physical components of the trailer: hardware, software, databases, procedures and personnel activities [5].

Management information systems as a formal method for providing accurate and suitable information for management needed to simplify the decision-making process, and allows management functions such as planning, control, and operations of the organization to be implemented effectively. Management information systems are a collection of interconnected information systems that provide information for the interests of managerial operations or activities [6].

Based on the exposure of the experts above, it can be concluded that management information systems are a series of processes that are interrelated into a unity in producing data into information needed to facilitate the management of organizational data.

Education management information system is a combination of human resources and information technology in selecting, storing, processing and making decisions in the field of education. Definition of education management information systems is a system designed to provide information to support decision making in management activities (planning, mobilizing, organizing, and controlling) in educational institutions [7].

Information systems have several important elements. The first elements, are the organization includes people, structures, operating procedures, politics, and culture. The second elements, are management, observing opportunities, making strategies to answer needs, allocating people and sources of funds to support the strategies that have been made, coordinating work or activities within the organization. The

third element is information technology, a tool which can be used by management to help control and make new activities. Technology consists of three main components, they are human (brain ware), hardware, and software, which are used to help receive input, process, and issue results (output), and can be used to disseminate results processed or analysis [8].

Based on the explanation above, the important elements of management information systems allow the entire process of implementing SIM in the education to run with output that can later be used according to the objectives of each educational institution.

The main component needed to produce an effective and quality education management information system is the availability of information technology used by human resources who are capable to operate it [8].

Therefore, it is necessary to apply a technology-based management information system (SIM) comprehensively to support various needs in the education management process.

Based on the Government Regulation of the Republic of Indonesia No. 17 of 2010 concerning education management and implementation article 59 which narrates: (1) in conducting and managing education, units and/or educational programs develop and implement information and communication technology-based education information systems. (2) The unit education information system or education program as referred to in paragraph 1 is a subsystem of the national education information system. (3) The education information system as referred to in paragraph (1) and paragraph (2) provides access to educational administration information and access to learning resources to educators, education staff and students [9].

Following the elaboration of the points above, the government makes regulations specifically regulating the implementation of management information systems in education units. Schools in particular must prepare in implementing management information systems. Therefore, principals as education managers must design applications to support the implementation of management information systems in educational institutions.

The management information system application in education will help education leaders take the right decisions in making education planning in the form of Strategic Plan and Annual Work Plan. The benefits of the SIM education application are mainly to achieve education quality standards mandated in eight national education standards.

Based on the results of preliminary observations at SMPN 6 of Bandung, information becomes very important for the transparency of all school activities that later all education stakeholders can access. The use of information technology is expected to increase the performance of all teaching staff and education in preparing data that produces information for improving the quality of education.

The problem that often arises in SMPN 6 of Bandung is the lack of human resources to utilize information technology that has been provided and planned by the school. Various administrative tasks have begun to be handled by using various

applications, especially in the implementation of school management. In addition, teachers and education staff are required to fulfil obligations in filling out various information which will later become school data that are interrelated with the results of the education process. Based on this, the teacher often experiences obstacles to independently use devices that have been designed to support the educational process. This phenomenon often occurs for several reasons; (1) Schools carry out school management using information technology-based management information systems, but are not yet technically ready to be implemented as a whole; (2) The number of administrative tasks of each teacher and education staff that enables the overall use of information technology to be not optimal; (3) Too many types of applications to support various activities related to school data processing; (4) Lack of reinforcement regarding the use of information technology to support the duties of every teacher and education staff.

The effectiveness of management information systems is expected to be a solution to various problems in the process of operating education both administratively and directly impacting on the quality of education services accurately and accountably.

Based on the explanation of the various problems above, this research is expected to be able to answer the question, "How is the effectiveness of technology-based management information systems in SMPN 6 of Bandung?

II. RESEARCH METHOD

The method used in this research is descriptive method with a qualitative approach. The data used uses primary and secondary data sources. The data needed from this study is in the form of related data about management information systems in the educational environment located in SMPN 6 of Bandung. The data is obtained from various parties related to research such as principals, school administration staff, school operators, laboratory staff, teachers, and students.

This study uses data collection techniques through research interview instruments, observation and documentation studies. The researcher conducted data collection through field visits.

III. FINDINGS AND DISCUSSION

Based on the earlier observations at SMPN 6 of Bandung. That the person in charge of implementing the management information system in the school is the principal as the manager of the school. While those responsible for processing school information data are school administration staff who have special tasks to do data processing and also control school data. Researchers get findings about information systems already implemented in various management activities at the school. The school conducts a needs analysis in determining the initial plan for implementing management information systems in schools.

Educational of Administration Lecturer Team UPI (2015) explaining work process of a management information system is a continuous process flow from planning to feedback. This flow starts with a plan of standards, which involves achieving certain goals. Which then determined the standard of purpose

and carried out the data input process, then continued with the data processing. The processing results are used as feedback to standard planning. When fulfilling plans and standards, it is continued with the delivery of results to management to move the organization. Aside from being a feedback to evaluate the SIM work process, which will then move again as needed [2].

The implementation of management information systems is carried out based on management activities needed in various stages of data processing. Each activity certainly has input and processing data that becomes information. Data processing referred to in this study is divided into three parts in processing data including; data collection, data processing, and data storage.

SMPN 6 of Bandung used a data processing system with DAPODIK. This data processing system is used to accommodate school data according to national education standards including teachers, facilities and infrastructure, school financing, content standards, process standards, graduate competencies, management, and assessment standards.

DAPODIK is a one-door data processing system online. This allows the school administrator in processing data in the database to always be connected to the internet network to be able to operate school data processing. In DAPODIK, processing systems data must always be input to become a database that will be connected to several other information system applications. Thus the administrator as the person in charge of information data must input correctly and according to the procedure so that the data is accurate.

DAPODIK according to Ahmad (2017) aims to create a database for integrated education data management and produce representative data to achieve the needs of ministries and other stakeholders. And the next goal is to support the improvement of efficiency, effectiveness and synergy in the activities of collecting basic data integrated in a data collection system.

The process of management information system in SMPN 6 of Bandung is carried out with several stages of data processing that have become procedures in implementing it. The process is divided into 3 stages, which are the process of data collection, data processing, and data storage.

A. Data Collection

Actual data collection starts with identifying information needs in the environment and throughout the organization. It is understood that data is raw material or raw material that is further processed so that its shape changes to information. The data processing unit can only produce high-quality information and in accordance with the needs of the organization if the data is collected and processed is also of high quality. Therefore, all efforts must be made to ensure that the data collected to be processed is indeed of high quality [3].

Data collection is carried out by the school by first analysing the type of data needed for further classification according to school needs. These types of data are classified into school internal data and school external data. The method used to collect the data was direct interviews with related

stakeholders, for example each teacher who was interviewed to gain information about educational background and curriculum vitae for the needs of the school database at DAPODIK.

B. Data Processing

Data processing is a process of thinking activity with the help of a hand or an equipment by following a series of steps in formulation or a particular pattern, to convert certain data into shaped, organized, more useful properties or characteristics [2].

Data processing, including the use of electronic devices, requires a device or hardware known as a computer. As has been commonly known, computers are electronic machine tools that receive and process data in such a way as to produce information. It has also been commonly known that computers operate their tasks based on instructions given to them called programs by the computer operator.

Data processing activities at SMPN 6 of Bandung are carried out with the help of hardware such as computers, laptops and tablets that facilitate the work of managing data electronically. For the categorization of devices used in schools, including: (1) Large computers, this computer is used to become a school data base that requires storage for various types of data that are diverse and numerous, for example server computers to be used by administrators from schools or laboratory; (2) Mini computers, used for the purpose of managing data quickly but are simple in its use. This can be used for the needs of each individual in school flexibly. An example is a laptop that can be used offline and online and is not limited by place.

Data processing is done by first checking the data that has been collected, classified, and archived in special data storage, for example computer electronic devices through the application of Microsoft Word, Excel or other data storage supporting applications.

C. Data Storing

As an integral part of the data processing process, storing information is important due to these four main considerations, they are information security, information confidentiality, information storage costs, and access to information if needed [3].

Electronic data storage is carried out by schools to minimize data loss or data damage. Administrators who are responsible as SIM executors store data from the data collection and processing system. Information storage that has been processed into this data is usually input and processed using basic applications such as Microsoft Excel and Microsoft Word, which will be uploaded periodically into DAPODIK. This data is in the form of information about the institution's data as a whole includes (1) institution profile, (2) data of teacher and education staff, (3) Facilities and infrastructure, (4) Student Affairs, (5) Subjects.

Every subject teacher has the obligation to input personal data and learning outcomes. The data usually requires every teacher to enter their respective accounts in the SIMPATIKA application. This is still experiencing obstacles, which is not all teachers are capable to operate computers. This condition is

enough to give effect to the processing of data which is usually determined by deadlines but has been delayed. Administrative staff and school operators always intervene to complete the task of processing the data that each teacher should do. Even though the hardware has been supported, human resources are not all ready to use the equipment provided by the school.

D. Management Information System Program

The management information system program in the SMPN 6 of Bandung uses several applications that have been integrated with the school data base.

1) *Learning:* Learning activities are at the core of all educational processes held in schools. In the implementation of the teacher and students become an important component for the creation of learning in school. This allows schools and teachers to prepare learning devices in carrying out classroom teaching to students.

Learning in the digital age requires every school to think and innovate to support more effective learning based on information technology. SMPN 6 of Bandung designed a program for implementing management information systems in learning through technology-based learning applications or e-learning.

E-Learning is applied in learning using Bandung Smart School which is connected with Edubox. This application allows each teacher and student to have an account that is mutually integrated in the system. This application can also be accessed by parents to directly review children's activities at school starting from the attendance report, grades and position of the child. The advantages of this program do not have to always be connected to the internet but can be through a school network or local area network (LAN). The benefits of this program allow the teacher no longer to check the test results conventionally but can pass applications flexibly. Then the child is not charged with carrying a lot of lesson books, only carrying digital books that have been registered for use in learning. The results of this program which of course can be directly accessed by parents as a form of transparency of student activities at school.

In its implementation, this program has not been optimally implemented. This is because the readiness of each teacher in using technology-based learning tools still needs to be reinforced in their use. Then, the limited hardware that eventually allows use is limited to daily assessment activities and midterm examinations.

2) *Management of institutions:* The program used for management of institutions still uses the DAPODIK program as a school data base. The financial management listed in the financial plan and budget (RKA) is applied using the CEKAS RKAS Online application that is used by all public schools in Bandung. Then for the presence of teachers and education staff there is READY. Its function is to control attendance from each teacher and staff to minimize absenteeism that is usually done. Then to evaluate performance using the E-RK program, its use is certain to monitor each employee's activities according to their duties and functions. This

performance report is carried out every day and for report data input, it can be done once a week.

The effectiveness and efficiency of all management information system programs applied to SMPN 6 of Bandung showed quite good results, although not optimally. This can be seen from the ease of the school in accessing various PTK data, even periodic performance reports for each teacher and education staff. Then, information on the development of students in schools can be directly accessed by parents as a form of education and control transparency by each parent to their children.

The program implemented is certainly not always smoothly implemented by the school. This is caused by some teachers who are not ready to face the challenges of the times to use technology as a support for the needs of each educational process. If this is allowed to go away, the government and the school will be free to organize and support the implementation of management information systems, but the resources within them are not yet ready to operate optimally. Full strengthening of human resources is needed to receive and operate technology-based management information systems. Efforts to overcome this can be done by providing workshops for all school human resources about the use of information systems at the beginning of the school year or once a quarter. In addition, monitoring and evaluation of the use of information systems is carried out by each school human resource. Human resources that are ready for information technology, allow every information to be produced accurately and with quality.

IV. CONCLUSION

Based on the concepts, findings and discussions regarding management information systems above, it can be concluded that the results of the effectiveness of information technology-based management information systems consist of the main points of information:

- Technology-based Management Information Systems in SMPN 6 of Bandung are carried out in accordance with government regulations with various hardware and software according to school needs in conducting the educational process.
- The effectiveness of management information systems, which is the ease of the school in accessing various PTK information data, even regular performance reports

for each teacher and education staff. Then in learning it is very helpful to facilitate teachers in inputting values and information quickly and accurately. Transparency of information about students in schools that can be accessed directly in the access of parents.

- Human resources that are not ready for the implementation of management information systems require that the government and educational institutions continue to hold workshops or mentoring on the use of information technology so that no more lay technology.
- Monitoring and evaluation by the school principal regarding the implementation of management information systems in schools with various application programs that are used to support management activities and the education process in SMPN 6 of Bandung. Then improvements and additions to infrastructure such as management information systems hardware and software.

REFERENCES

- [1] H.M. Susanto, W. Mantja, I Bafadal, and A. Sonhadji, "Developing Management Information System for Teachers and Education Staff," *Jurnal Pendidikan Humaniora*, vol. 3(2), p. 93-105, 2015.
- [2] Tim Dosen Adpen UPI, *Manajemen Pendidikan*, Bandung: Alfabeta. 2015.
- [3] S.P. Siagian, *Sistem Informasi Manajemen*, Jakarta: Bumi Aksara. . 2015.
- [4] Badrudin Dasar-dasar manajemen. Bandung: Alfabeta. 2013.
- [5] A. Berisha-Shaqiri, "Management Information System and Decision-Making," *Academic Journal of Interdisciplinary Studies*, vol. 3(2), pp. 19, 2014.
- [6] G.M. Scott, *Prinsip-prinsip sistem informasi manajemen*, Jakarta: PT Raja Grafindo Persada, 2002.
- [7] Honkis, "Aplikasi Sistem Informasi Manajemen Sekolah Dasar Pilar Bangsa Untuk Meningkatkan Layanan Pendidikan," *Jurnal Administrasi Pendidikan*, vol. XXIV(2), pp. 52, 2017.
- [8] L.I. Ahmad and R. Sinen, "Penerapan Sistem informasi manajemen," *Jurnal Idaarah*, vol. I(2), pp. 290, 2017.
- [9] Indonesian Ministry, *Peraturan Pemerintah Republik Indonesia Nomor 17 Tahun 2010 Tentang Pengelolaan Dan Penyelenggaraan Pendidikan* Pasal 59, Jakarta, 2010.