



AL-TA'LIM JOURNAL, 24 (1), 2017, (9-18)

(Print ISSN 1410-7546 Online ISSN 2355-7893)

Available online at <http://journal.tarbiyahainib.ac.id/index.php/attalim>

The Development of a Computer Based Education Management Information System (MIS) Model in Elementary School Bandar Lampung

Received: 14th February 2017; Revised: 26th February 2017; Accepted: 31th March 2017

Permalink/DOI: <http://dx.doi.org/10.15548/jt.v24i1.264>

Riswandi

Universitas Lampung, Indonesia

E-mail: riswandi.unila@gmail.com

Abstract: The general objective of the research is to develop a model of a computer-based education management information systems (MIS) in Elementary schools and the specific objectives were to (1) develop a prototype model of an education MIS computer-based; and (2) to develop the procedure Manual of a computer-based education MIS models. The design of the research was research and development proposed by Borg and Gall. The samples were elementary schools in the city of Bandar Lampung. The research procedure were (1) determining the location of the research, (2) collecting data, (3) designing the initial product and validating to the experts, (4) conducting a seminar in the forum group discussion (FGD), and (5) revising the first design. The result of the product is a prototype model of computer based education MIS and the manual procedure of computer based education MIS for the elementary school.

Keywords: Model of education management information systems, computers, software, elementary school.

How to Cite: Riswandi. (2017). The Development of a computer based education management information system (mis) model in elementary school Bandar Lampung. *Al-Ta Lim Journal*, 24(1). doi:<http://dx.doi.org/10.15548/jt.v24i1.264>

INTRODUCTION

The Advances in science of information and communication technology has brought a real impact on the changes in school management operations today and in the future. The existence and the role of information and communication technologies, especially in the use of computers in the education system in schools has brought a new era in the entering, processing (processing) of data, and finding the result and finally sending an important information about the school.

The use of computers in the entering, processing data until producing information about the school is an obligation in the digital

era. In contrast, there are still schools that are not able to use the computer for making an application or software. Thus, the schools are in the category of under-developed institution and cannot update new information. Therefore, they are not able to compete with the other school. The utilization of computer is increasingly important to generate a valid, accurate and fast information in supporting the decision making process.

The development of education management information systems (MIS) in schools is a major effort of the school to face the development of technology information and communication quickly. MIS in education is a manifestation of the efforts of schools to provide an excellent service to the

internal and external stakeholders and society related to the real conditions of the school.

In relation to the current conditions, the availability of information on school has become the need of many people. There are more information needed quickly, validly and accurately to fulfill the demands, the most appropriate system of the education management information system is by applying computer-based information. Through the development of hardware and software in the application system, it allows all works within the system of school organization can be done quickly accurately, effectively, and efficiently in giving excellent service to the customers (stakeholders).

Education management information system ideally is to prepare the input, to produce the output and to communicate about the activities and conditions of the education itself. In the implementation of this model, Education MIS needs to carry out the management functions, namely planning, organizing, actuating, controlling and evaluating. These functions are used to support the achievement of the operational functions goals in educational organizations.

On the other aspects of the use of Computer based education MIS will perform its function in the field of human resources personnel, finance, manufacturing or infrastructure, and on other functions. Those kinds of functions can be enlarged the use of computer based education MIS service that will be given for the school development and can be adjusted to the needs of the internal and external users.

MIS is also known as "information system", "information processing systems", "information systems and decision-makers". Bardadi, Firdaus, & others (2014) explains MIS is a system that was created to carry out data processing to be used by an organization. Rusdiana & Irfan (2014) describes the MIS is as a system that provides information used to support the operation, management, and decision-making of an organization. Laudon

& Laudon, 2013) states MIS illustrates the availability of complete data sets which are stored in order to provide information to support the operation, management, and decision-making in an organization.

Bharadwaj (2000); Gunasekaran & Ngai (2004); Lucey, (2005) explains MIS is a set of information systems that interaction each other, which provides good information for the benefit of operational or managerial activities. While McLeod Jr (1995); McLeod & Schell (1998) defines a management information system as a computer-based systems that make information available to users who have similar needs.

Sutanta, Hobma, Damen, & Voskuil (2003) explain the purpose of MIS, namely: (1) enable an organization to operate efficiently; (2) enable the organization to operate effectively; (3) enable an organization to provide better services; (4) enable an organization to improve the creation or to improvise on the products produced; and (5) enable an organization to make a progress on its business.

Sutanta et al., (2003) defines the MIS as a collection of interconnected subsystem, gathering together and forming a unity, interacting with each other and working together between one to the others with certain ways to perform data processing function, receiving input in the form of data and then processing them, and producing output in the form of information. Such information is useful basis for decision-making and has a real influence at that time and in the future. For example it supports the operation, managerial, and strategic organization. These benefits can be gained by utilizing a variety of existing resources and functions of MIS to achieve the aim.

In short, MIS does data processing and then converts the data into information. According to in Rusdiana & Irfan, (2014) MIS is a regular combination among people, hardware, software, communication networks,

and data resources that collect, transform, and distribute information within an organization.



Figure 1. The Components of Information System

Bardadi et al., (2014) describes the components of a management information system in its operation. They consist of hardware, software, procedures, operating personnel, and databases.

1. Hardware: computer (central processing, input/output unit, file storage units, etc.), equipment for preparing data, and input/output terminal.
2. Software; namely: (a) common software system, such as an operating system and data management system that allows the operation of a computer system, (b) common software applications, such as analysis and decision models, and (c) application software consists of the programs that are specifically made for each application.
3. Database; executable files and data were proved by the physical storage media. The file also includes printed output and other notes on paper, microfilm and others.
4. Procedures; physical components as in the form of guidance and instruction books, namely: (a) instructions book for users, (b) instructions book for the preparation of input, and (c) instructions book for the operator of the computer center.
5. Personnel; computer operators, systems analysts, programmers, data entry personnel, and information systems managers.

Rahardja, (2004); Utomo & Ariyanti (2014) describes the education information

system is a system used to help the distribution of education information by providing data and facilitate the educational leadership in making policy or decision. The basic reason of the role of information systems for the education organization is to support the process and operations, support decision making and competitive advantages. In supporting the operation of the education system information system can very helpful in the transaction process of operational decision, communication and productivity.

Rochaety (2008) explains education MIS is a combination of human resources and the application of information technology in selecting, storing, processing, and retrieving data in order to support the decision making process in education. Moreover, the Education MIS is a system that is designed to provide information to support decision making on management activities (planning, organizing, Actuating, and controlling) in educational institutions.

Referring to the context of the school, the contents that are processed by education MIS in schools are the students' components kesiswaan, educators and educator's staff, learning curriculum, infrastructure, environment and cultural schools, Students Services, educational finance, school board and the output of the school.

At the beginning, the computer application was primarily used as data processing. In further development, it was realized that the use of computer is much larger in providing the information for the decision maker. The first computer application was as a management information system (MIS), then as a Decisions support systems, office automation, and expert systems respectively. The five applications become computer-based information system Arifin & Pendidikan, 2014; Ridwan (2015) states a computer-based management information system is an information management system that puts computer data processing tools in an important position. There are at least two reasons why computers

become a very important tool in modern management information systems. They are 1) the ability of computers to process data, (2) a computer which is automatic technology. Regarding to these reasons, a computer is required in facilitating information management system.

MIS-based computer has the following elements, namely:

1. Man; every system of computer-based information management should pay attention to the human resource in order the system created is useful.
2. Hardware (hardware); refer to the computer engine like the central processing unit (CPU) and all its peripheral devices such as output devices, memory, and communication tools.
3. The software (software); refers to the computer programs along with the manual.
4. Data; are the facts that will be made into useful information.
5. Procedure; are the rules that determine the operation of computer systems. Based on the explanation above, the purpose of this study was to develop a model of education MIS for Elementary schools in the form of computer-based software.

METHOD

The method used was the Research and Development (R & D). The aim of this research was to produce a specific product and test the effectiveness of it (Sugiyono, 2014). R & D is directed to look for, formulate, refine, develop, produce, test the effectiveness of products, models, methods/strategies/ways, services, certain procedures that are superior, new, effective, efficient, productive, and meaningful. Research and development procedure refers to the procedure proposed that have been revised. The site of the research was conducted to elementary schools in Bandar Lampung city.

The results of field research became a reference for the design of the model of the

computer-based education MIS. The research product is the prototype of the computer-based education MIS model and its manual procedure.

The procedures of the research were (1) determining the location of the research, (2) collecting the data, (3) designing the initial product and validating to the experts, (4) conducting an early seminar models in the forum group discussion (FGD), (5) revising the initial design and (6) producing the prototype models of computer-based education MIS and creating MIS models manual procedure.

The techniques of collecting data were observation, interviews, questionnaires and documents. Based on these data types, the researchers analyzed data using the concept of Miles & Huberman (1992) which consists of three flows of activities occurring simultaneously, namely data reduction, data presentation, and conclusion or verification.

RESULTS AND DISCUSSION

The early development of prototype model of computer-based education is a conceptual-theoretical framework that describes a systematic procedure to produce the required information about the school by community and to help the school in making decisions to improve the quality.

The design of computer-based education MIS model developed refers to O'Brien concept in (Rusdiana & Irfan, 2014). This design could be viewed from three aspects. They are (1) the information system covers the basic concepts, the process development, application, management, and information technology, (2) the main role of information systems includes in support and operational processes, implementation support, and strategic support for competitive advantage, and (3) the development procedure which includes three phases, namely the use of a product, the process design, and the needs analysis.

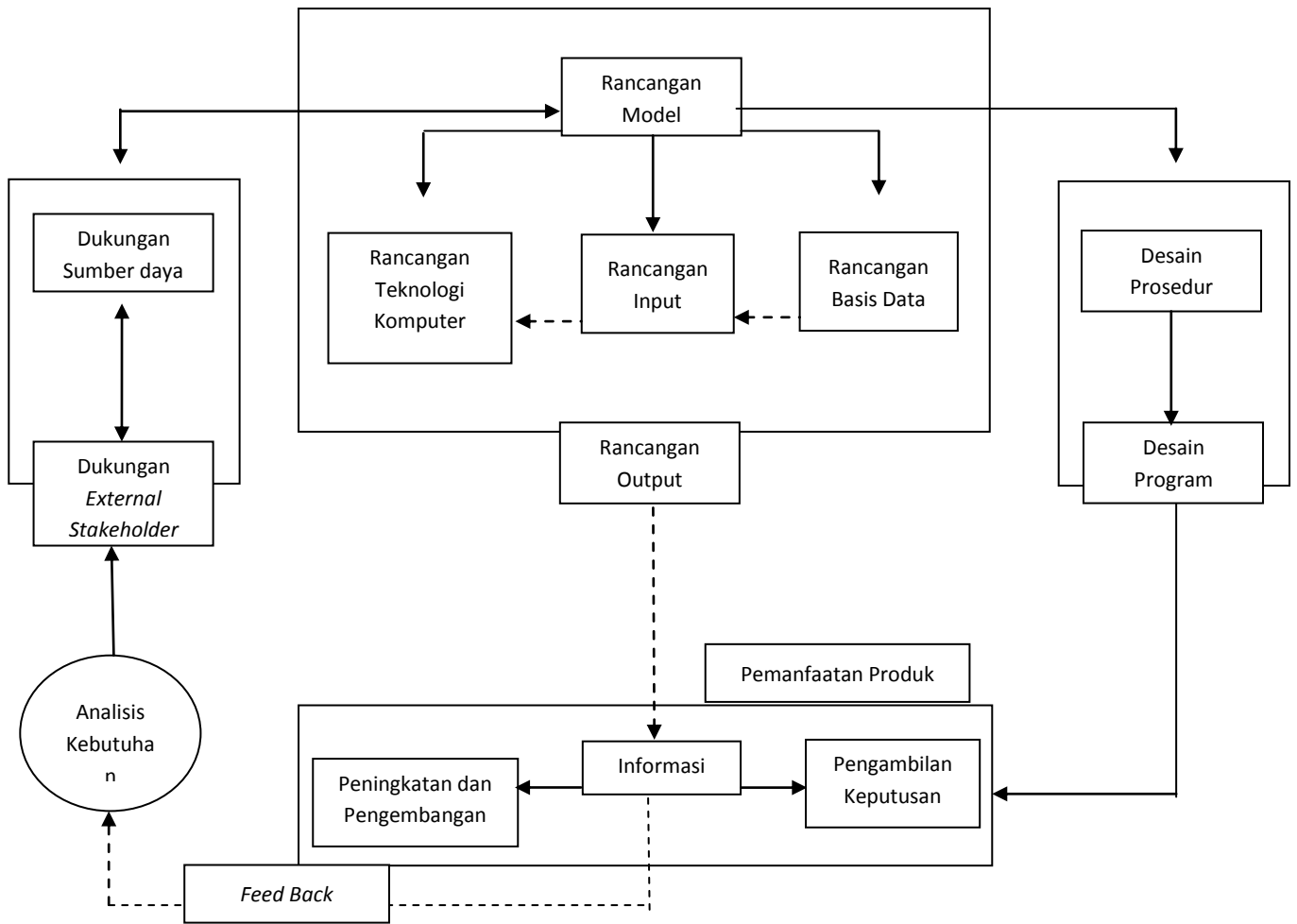


Figure 2. Schema of Prototype Model SIM-P SD based Computer

The design of the model above illustrates the steps that must be done in developing computer-based education MIS for Elementary school. In this model there are three main stages, namely:

Needs Analysis

Needs may occur as a result of the development of the organization (school) and the increased of the volume exceeds beyond the capacity. This step It was necessary to get a full support from the externals stakeholder and the resources owned by the school. The support from stakeholder’s externals meant there was the existence of parties outside of the school that needs information about the school. While the support of resources meant the availability of everything needed for the

continuity of computer based education MIS in those schools.

Sutanta et al. (2003) asserts that for a leader, information will serve as the basis for better decision making. Sutanta et al. (2003) also ensures the information category as easy to obtain, widen scope and comprehensive, rigorous accuracy, matching to the user, timeliness, valid, flexibility, provable, unprejudiced, and measurable.

Hardware and software are the most important components of a computer that directly serves to support the process of computerization. West (2001) states that the hardware consists of an input device processing, storage, and output devices. Meanwhile software is an application developed to work on a specific task.

The human resources support or the brain ware is part of the physical components of management information systems. Sutanta et al. (2003) explains that the man involved in the education MIS are operators, programmers, system analysis, and information systems managers, managers at the operational level, managers at the managerial level, and the manager at a strategic level, technicians, and other individuals involved in it.

The availability of data is important to note when doing need analysis. Sutopo (2012) describes the data is a collection of facts such as text, numbers, audio, and video that have not been processed yet. The information is the result of processing the data that has been processed by a computer and it is useful for users.

The other important Support is the availability of the cost to fund the creation of computer-based education MIS and its maintenance. Therefore schools need to allocate funds for this purpose in the school work plan (RKS) and annual action plans (RKT) which are laid out in the plan of activities and Budget of the school (RKAS).

Design

Designing models such as the input design, design of computer technology, database design, and the output design. In addition, the design stage should be equipped with designing procedures and programs. A model design is a simplification or abstraction of something that represents a number of objects or activity called entity (Sutanta et al., 2003).

The input design is a component of the system, i.e. everything that needs to be entered into the system as a material to be processed further to produce and useful output. In management information systems, input refers to the data or the data source (Marimin & Prabowo, 2006). Processing input design was done with data capture, data preparation, and data entry. Regarding to this

process, Input can be grouped into internal input that comes from within the organization and external inputs that come from outside of the organization.

The design of a database used an entity relationship technique that data model was developed based on the object in order it can be explained to the user about the relationship between data in the database and the perception of the real world logically. The basic objects that are interconnected were visualizing into the graphic symbols. The database will manifest themselves in the form of file collections. They are master file, transaction file, report files, history files, backup files, and working file. Men awhile the steps in database design were to determine the needs of database files to the new system, determine the parameter file of the database, normalize the database file and optimize the database file.

The output design is a system component such as various forms of output generated by the processing component. In education MIS, the output is information generated by the application program to be used by the users as decision making for improvement and development. Type of output can be in the form of display on the computer screen (softcopy) or printed on paper (hardcopy), such as paper and microfilm.

In order to be implemented systematically as the scheme, the system should receive additional support by designing procedures and programs. Procedures Design set standard operating procedures for education MIS at school. Thus, in the operating system, the deviation can be avoided. While the program design is a system software that consists of programs controlling or maintaining the operation of computers and tools. Software acted as an interface among the user, application software, and computer hardware as the operating system and utility programs.

The operating system is a set of programs that coordinates all activities of computer hardware. The operating system that is widely used is Microsoft, called Windows XP while the utility program helps the user running maintenance tasks usually associated with computer settings, equipment, or programs. Most operating systems consist of several utility programs to regulate disc drives, printers, and other equipments. Users can also add other utility programs that can work on additional function to manage the computer.

The program was used in the implementation phases or production in the development system. One of the activities during the implementation phase was to create a program (coding). In order the information required by the user can be fulfilled, the programmer need to write or modify the program. The computer program is a set of commands that tell the computer how to perform its duty. To write commands in program, a programmer used a programming language. Programming language is the number of words, symbols, and codes used by programmers to deliver commands to the computer. Programmers use various languages and programming tools to write or create the program. The programming language is designed for specific purposes, such as scientific applications, business, multimedia, or web site.

The development of computer-based education MIS model for elementary schools will be designed by programmers. The result of its design will be in the form of application software. The characteristics of the program application will depend on the desired content, which refers to a procedure manual.

Utilization Products

Education MIS application aims to serve the information needs for each unit of management activities at all levels in an organization. Besides that, considered to the service quality, it can be seen from the

perceived service the information given was related to the expectation of the stakeholders. Therefore, education MIS output can be viewed from the meaningfulness of information services to the users, use of information in decision making, and use of information as a control for quality improvement and organizational development.

Education MIS should provide educational information starting from the collecting, processing, and storage of data or information. Information submitted to the person in charge can be used as the consideration for effective decision making (Kaner, 2014; Sutanta et al., 2003)

The implementation of management information systems will support the leader to decide the quality policy or decision. The level of quality in the organization (particularly education) depends on the intangible factors, especially from the attitude of the leader. By using computer-based education MIS, the system will work as a disseminator of information to the people within the organization. To have a right decision-making in education, the leader should understand the overall system. Therefore, in making decisions the leader should be suitable with the value, the facts, and the culture of the organization.

The application of education MIS can improve the quality of education continuously so that it can be supported by the data or information that is accurate, precise, and relevant. The process of continuous improvement can be done based on the plan, do, check, action (PDAC).

Feed Back

Each component of MIS needs to be kept working in accordance with the role and each function. This can be done if there is a part that keeping the role, that is in the control section. The control section has a major role to keep the process in the system taking place normally as the limits set. Controlling can

also be done by validating input, process and output that can be designed and developed programmatically. Thus, the feedback is required by section control system to check the occurrence of irregularities in the process of the system and restore it to a normal condition. After the results obtained from the feedback and then it goes back to the step of conducting a need analysis.

In implementing the above model, a model is just a prototype scheme which contains the manual procedure. By having education MIS model at school, every data will be used to extract to be information. The information will be used by stakeholders for decision-making and continuous quality improvement.

Decision-making according to Salusu (2004) is the process of selecting an alternative way of acting with an efficient method according to the situation. This process was to find and resolve organizational issues. Before the organization's leaders take a decision, he/she need sufficient information as his/her consideration. The core of administrative leadership lies in how decision-making process. A successful leadership can take a decision correctly and precisely.

Various models were made to decision-making, depending on the nature, timing and use of the decision itself. One of the models in decision making is a classic model. The classic decision making model which assumes that the decision is a rational process where decisions are made on one of the best alternatives. The classical model based on the concept of complete rationality with six logical step, namely the identifying the problem, determining the alternatives, assessing alternatives, choosing an alternative, the implementing of the alternative, and evaluating decisions.

It is obvious that in the decision-making process, there are three elements, namely, data, model or decision-making procedures, and human as decision makers.

The decision making process will be accurate when supported by good data, good model or decision-making procedures, and good decision-makers as well.

Model or good decision-making procedures, in education MIS, can be supported by computer-based software tools. The software for supporting decision making was built on the basis of a three-stage process offered by They are intelligence, design, and choice (Alavi & Leidner, 2001)

Moreover the focus of decision making is the ability to analyze the situation by obtaining accurate information as possible, so that the problem can be resolved. In practice, the decision can be seen from the aspect of the process and decision-making styles. The accuracy of the information depends on the source and the processing of existing data. This procedure can only be done in an effective MIS.

In the context of the use of computer-based MIS product, the more effective MIS models used the more appropriate decision making to improve the quality of school. Fernandez, Labib, Walmsley, & Petty (2003) describe a computer-based information system is a data processing system reverting the data into quality information and is used as a tool in helping a decision making. With the integrated subsystems, the information system will be able to provide quality information precisely, fast and accurately in accordance with the needs of the users.

It is described by Mcleod Jr (1995) that managers make decisions to solve the problem and the information uses as references in making decisions. The information is presented in the form of an oral or written by an information processor. The portion of computers in information processing consists of some computer-based applications, such as AIS (accounting information system), MIS (management information system), DSS (decision support system), OA (office automation) and ES (expert systems). McLeod, Jr. himself used a

computer-based information system or CBIS. To illustrate those five subsystems that use computers. All models of CBIS provide information for troubleshooting.

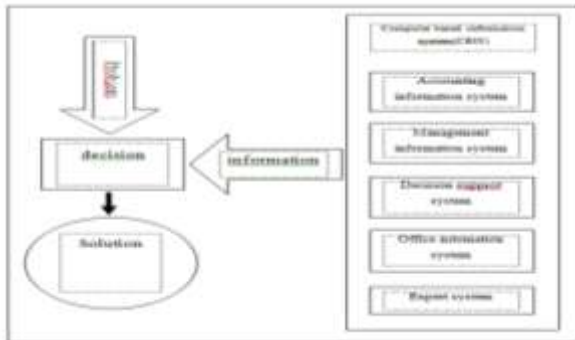


Figure 3. Computer-based Information System

From the perspective of specialists/experts, the prototype models based computer MIS in elementary school developed have met the requirements in terms of rational theoretical, procedures of the development, the support data from the site in developing a prototype models, the use of models, the application models, the support systems, and the impact.

Based on the above study that developed the schemes of a prototype model shows that the procedures of the implementation of the development stage is very clear, patterned and logical to produce a manual procedure of which can lead to create a computer based education management information system software (MIS) in elementary school. Thus, a conceptual theories and empirical facts clearly accommodated in the scheme of this prototype model. Even this prototype model scheme does not stop at the stage of product use, but it continued to the feedback so that the whole stages were evaluated from the beginning of the stages.

CONCLUSION AND RECOMMENDATION

The development of Scheme of computer-based education MIS model in the elementary school consists of some stages, namely, (a) the needs analysis, which include externals stakeholders and resources; (b) the

design, including the design of computer technology, input, output, database, and procedures and programs design; and (c) the use of the product, including the improvement and development, information, and decision-making. In accordance with the above conclusion, it can be recommended that in order the application or the software of computer based education MIS in elementary school can be used for real; it is needed enhancement as follows.

1. Instruments to validate the computer-based MIS software in elementary school by the expert of Information Technology (IT) especially the computer programmer expert.
2. The guidance book for computer-based education MIS software used for users.
3. Affirming the material or content that will be used as raw material data to be processed until they are interpret becoming useful information.

Designing the clear and unambiguous working procedures for manager, and designing programs effectively and efficiently will be important to make the study more comprehensive.

REFERENCES

- Alavi, M., & Leidner, D. E. (2001). Review: Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS Quarterly*, 107–136.
- Arifin, R. N., & Pendidikan, J. A. (2014). Kontribusi sistem informasi manajemen berbasis komputer terhadap kinerja pegawai pusdik intelkam polri Bandung.
- Bardadi, A., Firdaus, M. A., & others. (2014). Pengembangan sistem informasi manajemen perkuliahan pada fakultas ilmu komputer Universitas Sriwijaya. *Jurnal Sistem Informasi*, 2(1).
- Bharadwaj, A. S. (2000). A resource-based perspective on information technology

- capability and firm performance: an empirical investigation. *MIS Quarterly*, 169–196.
- Fernandez, O., Labib, A. W., Walmsley, R., & Petty, D. J. (2003). A decision support maintenance management system: development and implementation. *International Journal of Quality & Reliability Management*, 20(8), 965–979.
- Gunasekaran, A., & Ngai, E. W. (2004). Information systems in supply chain integration and management. *European Journal of Operational Research*, 159(2), 269–295.
- Kaner, S. (2014). *Facilitator's guide to participatory decision-making*. John Wiley & Sons.
- Laudon, K. C., & Laudon, J. P. (2013). *Management Information Systems* 13e.
- Lucey, T. (2005). *Management information systems*. Cengage Learning EMEA.
- Marimin, T. H., & Prabowo, H. (2006). *Sistem Informasi Manajemen Sumber Daya Manusia*. Jakarta: Grasindo.
- McLeod Jr, R. (1995). Systems theory and information resources management: integrating key concepts. *Information Resources Management Journal (IRMJ)*, 8(2), 5–15.
- McLeod, R., & Schell, G. P. (1998). *Management information systems*. Prentice Hall Upper Saddle River, NJ.
- Miles, M. B., & Huberman, A. M. (1992). *Analisis data kualitatif*. Jakarta: Universitas Indonesia.
- Rahardja, A. T. (2004). Hubungan Antara Komunikasi antar pribadi Guru dan Motivasi Kerja Guru dengan Kinerja Guru SMUK BPKPENABUR Jakarta. *Jurnal Pendidikan Penabur*. III (3).[Online]. Tersedia: [Www.bpkpenabur.or.id/jurnal](http://www.bpkpenabur.or.id/jurnal). [20 Oktober 2005].
- Ridwan, A. (2015). Tinjauan terhadap penerapan aplikasi software tiger (studi kasus pada cv musipulsindo palembang). politeknik negeri Sriwijaya.
- Rochaety, E. (2008). *SIM Pendidikan*. Jakarta: Bumi Aksara.
- Rusdiana, H. A., & Irfan, M. (2014). *Sistem informasi manajemen*. Bandung: Pustaka Setia.
- Salusu, J. (2004). *Pengambilan Keputusan Strategik*. Grasindo.
- Sugiyono. (2014). *Metode Penelitian Kombinasi*. Bandung: Alfabeta.
- Sutanta, H., Hobma, T. W., Damen, M. J., & Voskuil, R. (2003). Preliminary assessment of the impact of land subsidence and sea level rise in Semarang, Central Java, Indonesia. *Ilwis Exercise Handbook, Refreshing Course in Geo-Information for Hazard and Disaster Management*, Gadjah Mada University, Yogyakarta, Indonesia and International Institute for Geo-Information Sciences and Earth Observation. ITC, Enschede.
- Utomo, P., & Ariyanti, D. (2014). Sistem Informasi Pembayaran dan Pendaftaran Siswa Baru Berbasis Web. *Jurnal Sisfotek Global*, 4(2).
- West, T. D. (2001). *Computer system with storage device mapping input/output processor*. Google Patents.