Key Successful Factors of Executive Information System Implementation in Higher Education : A Systematic Literature Review

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Abstract—**Providing easy access for university executives that refers to key success factors is a must for universities. The information system integrates with all departments to obtain fast and accurate information for decision making. The purpose of this paper is to determine the factors that affect the application of executive information systems in universities in view of technological factors, data factors and internal factors of college. The results will be used by all stakeholders of higher education internally and externally. Internal side for the purposeof improving the quality and performance of universities, while the external side can be utilized for the purpose of the institution accreditation process. The method used is to collect research results relating to executive information systems in colleges and review based on predetermined keywords and analyze the results of reviews into a complete report.**

Key words—*key success factor, executive information system, data warehouse, higher education*

I. INTRODUCTION

This professional quality and accreditation guarantee is more important for higher education[1]. Universities are increasingly required to improve their quality standards in accordance with the provisions of the Directorate General of Higher Education.[2].

Higher education is generally considered as an important contributor to the socio-economic development of any countries [3]. In carrying out the vision, mission and strategic plan is required good management support,

implementation of management systems and hardware and software in Information systems and technology to obtain performance more effectively and efficiently [4].

The Executive Information System (EIS) is an interactive computer-based system that allows executives to access data and information so that problem identification, solution exploration can be identified and the basis of strategic planning processes[5].The assessment approach used to make this formula is to use Key Performance Indicator (KPI) [2], [6]. Executive information systems are needed in higher education because of the often limited problem of knowledge about the importance of technology for executives, the data presented less accurately and internal problems of college itself such as miss communication between executives with subordinates, executive dependence on others, executive activity density

The question in this paper is "What factors determine the successful application of information systems in Higher Education?". The purpose of this paper is to determine what factors determine the successful application of executive information systems in universities in view of technological factors, data and higher education so that these factors can be developed in further research.

II. LITERATURE REVIEW

Executive information systems can be defined as computerbased Information Systems that support

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communication functions, coordination functions, planning functions and control functions of managers and executives within the organization. [5].
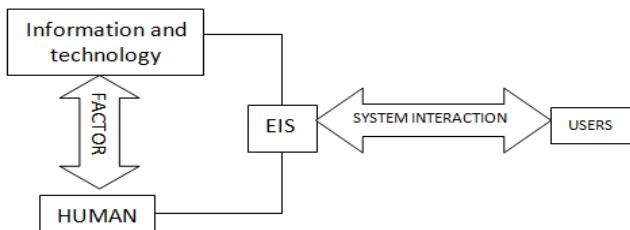

Fig. 1. EIS model (source : Jose L. Salmeron &Ines Herrero, 2005)

There are 3 factors of success of Executive information system that is 1). human resources are a major factor in the successful implementation of executive information systems including competent and competent Human Resources placements, 2). information technology has a major benefit that can reduce the cost, is very important and system interaction that means flexible and sensitive system, the development of prototypes and systems quickly adapted to the needs.

According to O'Brien (2006, p457), the Executive Information System (EIS) is an information system that combines the features of information management systems and decision support systems to provide quick and easy access to information for top executives about the company's critical success factors. [9]

III. METHODOLOGY

The author collects reference data in the first way, the process of searching papers using keywords to define research questions in "Indicators of executive information systems in Higher Education". Each reference taken focuses on publications published in journals, proceedings, conference results from 2004 to 2018. Most of the texts mentioned by the authors focus on discussions on "Executive system information" and / or "EIS" for Higher Education institutions, excluding training institutions.

Systematic Literature Review is a method for conducting a full literature review. There are three steps to be taken: the first stage of the introduction that covers the scope, determines the research question. The second stage is a search process involving the selection of literary sources and keywords. The third stage of determining inclusion and exclusion criteria for sorting paper types and extracting data from selected papers for further exploration [13]

A. Search Process

a) The scope of this research is to know key sucessful factor of application of Executive Information System in Higher Education. The first process in this riview literature is defining the source of literature to find good articles derived from journals, conferences or papers that fit the topic. Sources of systematic literature review are as follows:a). Science Direct (www.sciencedirect.com), b). Google Scholar ((scholar.google.com), c).IEEEXplore Digital Library http://ieeexplore.ieee.org), d). DOAJ/Directory Open Access Journal (http://doaj.org),e). Springer Link (link.springer.com).

This paper has a query based on the keyword: ("factor" OR "element") AND ("success" OR "excellence") AND ("Executive Information System" OR "EIS" AND "Higher Education" OR "Univesity" "Executive information system for Higher Education" OR "Data warehouse for higher education".

B. Data Extractions

Exception criteria are required in this riview literature so that topics that do not fit the criteria are not included in the discussion. Articles used published from 2004 to June 2018.

TABLE I. NUMBER STUDIES IN SELECTED SOURCES

Sources	Studies found	Candidate studies	Selected studies
IEEE – Explore	2	2	2
Science Direct	60	51	24
Springer Link	4	4	4
DOAJ	8	5	4
Google Scholar	21	14	10
Total	98	76	44

The data has collected 98 articles consisting of 38 journals, 56 conferences and 4 working papers. Of the selected 98 selected 76 paper papers are candidates and finally there are 44 papers referenced in this paper consisting of 17 journals, 24 conferences and 3 papers, as shown in Table 1.

IV. RESULT & DISCUSSION

A total of 104 authors contributed to the literature review process consisting of 44 papers (journals, proceedings and working papers) and 61 institutions..The author's academic background iscomputer science department (15% with 8 papers), followed by Information system (9% with 5 papers), followed by Education (31% with 17 papers),followed by economic and management (20% with 11 papers), followed by Enginering (18% with 10 papers),
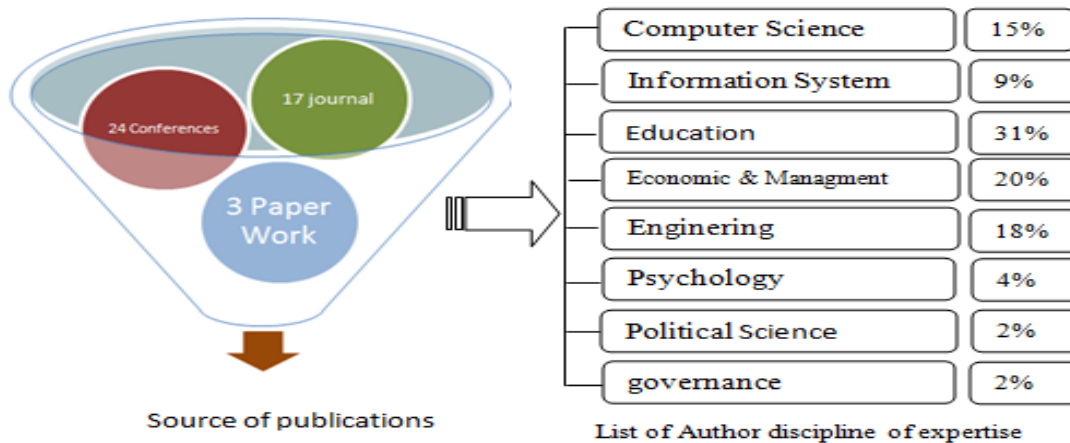
Fig. 2. Sources of publications and list of author discipline of expertise

Psychology (4% with 2 papers), followed by Political Science (2% with 1 paper) and Governance (2% with 1 papers). The first picture its shows list of author discipline of expertise.

Background of the author of the papers that have collected 44 papers are as many as 91 authors (88%) of university academic professors and 12 authors (12%) of the public sector and one author (1%) of the industry.
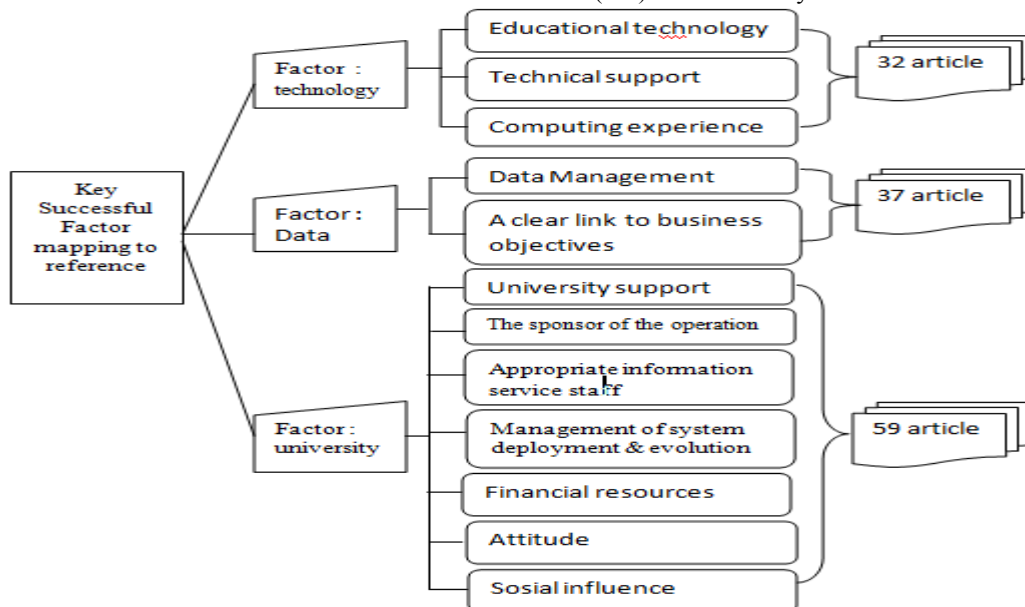

Fig. 3. Key Successful Factor mapping to reference

based on mamping key success factor of executive information system at the above university then the authors can explain that there are three factors kesukesan application of executive information system in higher education are:

a. Technology

Technology is divided into three groups namely education technology, technical support, and computing support. These three components are critical to the successful implementation of executive information systems. Technology is an absolute necessity for the company has even become a basic necessity because of the technology memapu answer all the problems and help and simplify the work Of articles collected there are 32 articles discussing about technology

b. Data

Clear Data Management and links for business purposes are critical to success in implementing executive information systems. One of the keys to the success of a company is to make good use of the data, to make the right decisions. Inevitably, the data became of the company's strategy. Companies need good data preparation to help employers and managers make decisions. Data warehouse is a collection of data that has the nature of subject-oriented, integrated, time-variant, and fixed from data collection to support the process of management decision-making. From the articles collected there are 37 articles discuss about the data factor.

c. University

Universities have a big role in the successful implementation of Executive information systems. The

university's factors consist of university support, operations sponsorship, appropriate information service staff, system & evolution deployment management, financial resources, social attitudes and influence. Articles collected by universities have the greatest role in implementing Executive information systems as many as 59 articles discussing the role of universities.

V. CONCLUSION & IMPLICATION

Executive Information Systems in Higher Education can be used to measure indicators of technology implementation, completeness and data accuracy owned by highereducation and can increase the value of college perfomance both internal & external. Colleges can monitor directly the problems exist without waiting for reports from staff under it.

With executives of this information system executives can monitor and evaluate, analyze competition, monitor key success factors of executive information systems. Factors that determine the successful application of executive information systems in Higher Education have three categories: technological factors, data factors, and university factors. The executive information system provides easy access for executives to internal and external information relevant to the critical success factors. Practically a system that provides information to the executive about the overall performance of the company. Information can be easily taken in various levels in detail. The system provides executive information about company performance from multiple perspectives and provides a flexible and easily understood image by executives in viewing the source of the problem and its solution and provides an easy way for executives to provide quick access to current information and direct access to reports management.

VI. LIMITATION & FUTURE RESEARCH

A. Limitation

In this SLR only discusses the success factor of applying executive information system in college. Where the executive information system as one indicator of organizational success. The main role of executive information systems is to extract large volumes of data and information to improve its usefulness and not to discuss the software used in executive information systems applications where the software will present management with the exception. These factors can be strategic, managerial, or operational, and come from three sources, namely: tecnology, data and universities. The research here is still very limited because it deals only with three factors. The successful implementation of executive information systems requires many factors and for human resources

and government policies have not been discussed in this article.

B. Future Research

After systematic literatureriview is done then proceed with the making of other basic concepts such as failure factor of information system implementation forwarded by making application or software executive information system that will assist in conducting assessment of college performance so that assessment can be utilized by stakeholders including BAN-PT in visit both study program visits and institutional visits without experiencing problems in the case of incomplete data

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