Journal of Contemporary Issues in Business and Government Vol. 27, No. 1, 2021
P-ISSN: 2204-1990; E-ISSN: 1323-6903
https://cibg.org.au/

Planning Processes And Policy Implementation On The Information And Technology Resources Management

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Abstract: Information today is a valuable "commodity" which tradeable thus it has high market price because information can contribute significantly in the process of very important decision making especially for organization. The objective of this article is to analyze several variables that significantly affect the planning processes and policy implementation in information and technology resources management. To achieve its objective, this study employed content analysis and eventually formulates a model to be further emphasized in the theme of information technology management. This study found seven important points of view in order to create an effective as well as efficient activities in the organization by utilizing information, technology, infrastructure and comprehensive library and ends up with proper and well-made decisions by the top management.

Keywords: Information, technology, infrastructure, library, management.

1. INTRODUCTION

In this era of advance technology, information becomes a very vital asset and worthwhile for everyone either individual or organization especially for business purpose in order to improve effectivity, efficiency and competitiveness. Information functions as a control to adapt in various situations, include in the aspects of social, economic and political. Goggin, quoted in Stueart (1982:5) states that information is very much needed by everyone, for highly educated person or for those who are not educated, even more important for top management in order to make business decisions. Information plays a very substantial role in human life; therefore, it is considered to be a new resource (Blom, 1991: 22). Accordingly, information today is a valuable "commodity" which tradeable thus it has high market price because information can contribute significantly in the process of very important decision making.

An effective and efficient management requires multidimension perspectives, that is a combination of human resources and technological adoption. Digital advancement influences various aspects of management, activities and organizational structures. Rockart quoted in Erlita (2005) argues that the most powerful weapon in management strategic is the utilization of information technology (IT). The development and the impact of information technology have forced any organization to apply this technology with the objective to improve performance, endurance as well as organizational response. An implementation of

information technology requires a careful planning that will allows system integration in organization.

Information technology is dynamic in nature which always requires adaptation to its swift development. The increasing of organization eagerness on knowledge management is pushed by the rapid development of information technology as a considerable power of resource. The information technology indeed push forward the organization effectiveness as well as efficiency, because a lot of benefits gained for organization amid this digital advancement therefore efforts to maximize the adoption of information technology remains evolve. Information technology becomes an important infrastructure and inseparable part of the organization which is provided additional value and competitive advantage as well. Moreover, Cronin (1985a:105) asserts that information management is the heartbeat of civilization. Top management must be updated and adapt with new development of technology to provide access although require high investment with potential risk of duplicated or incompatible development.

Information management is needed to solve problems which correlate to information leap, rapid development of modern technology, telecommunication network and new technique to seek, access and collect informations. Without an effective and good information management, the organization's objectives are imposible to be achieved. Based on this fact, this article will analyze several variables that significantly influence the planning processes and policy implementation in managing the use of information technology resources. To achieve its objective, this study employed content analysis and proposes a model to be further emphasized in the theme of information technology utilization.

This article is structured as follows. The following section is literature review section that discusses thoroughly the themes of information and technology resources management, include the formulation of research model. Then followed by conclusion and recommendation section for further research.

2. LITERATURE REVIEW

Managing Information and Technology Resourches

An information management is considered effective if there is a good planning, organisating and developing a proper support of technology system (Calliueot and Lapayre in Handayani, 2007). A huge investment in technology such hardware, software and other support systems is fundamental, but without an investment on the qualified human resources who operate all the system, make a qualified information is hardly obtained, incompetence and not accurate. An on-time provision of information is one of the prominent factors in order to achieve success in the organization (Blom, 1991:21) and sometimes the manager faces a problem with too many informations received but less informations are utilized (Horton, 1985:109). This statement implies that without a good management of information, the organization cannot fulfil its need with all the given informations.

Orna (1993:257) asserts that information becomes valuable if only human transforms it into knowledge and apply it (result orientation rather than to value assessment of the information itself). Moreover, Cronin (1985a:106) and Jackson (1986:6) agree that information transformed into valuable thing only on the right hands on the right time. In other words, information has no intrinsic value, it depends on its utilization to solve problem. Therefore, Burk and Horton (1988:43) suggest threating the information similarly with human resource, money and capital, infrastructures and all the asset that organization have.

For the implementation of knowledge management in an organization, the main component that needs to be considered first are skill and formal education. Several studies

that have been done before revealed an issue to be faced by the research and development department, that is the low level of human resources. In order to create competitive advantage in this digitalization era, a good management capability is needed to exploit all the resources and also the organization capability to posit the products in the market.

Another important thing in management aspect is the commitment from the top leaders of the organizational structure because they have the authority to make the decision. Simanjuntak (2010) states that support from a strong leadership is the key factor of transformation. Moreover, aldiani (2010) states that the availability of supporting infrastructure allows the employee to carry out their job earnestly, for instance the availability of computer and its software in order to apply the SAP program for particular division or department. The needs of hardware such as internet connection, intranet or local area network (LAN) also provide easiness to carry out their tasks. Without it, another challenge to be faced.

A work has been conducted in this theme entitled with "The influence of human resources and supporting tools toward the success of government law enforcement No. 24 year 2005 in the Administration of Medan Region". The study found that human resources and its supporting tools have a positive influence toward the achievement of particular policy implementation. The impact of information technology on organization can be seen from the improvement of operational efficiency, strategic initiative, broader organizational coverage, transform the working style and push forward the individual competence (Suadi, 1993:37-46). In line with the result of Seminar's work (2010:7), that information technology advancement indeed requires for efficiency and effectivity inside the organization. This situation gains additional values or competitive advantage.

O'Leary *et al.*, quoted in Elita (2005:22) assert that the implementation of Information Management only gives positive impact if it is integrated properly among technology, social and organization factors. Information technology is one of the important things to be succeeded but not ultimate. Without a support from good human resources management thus information technology is nothing. Even worse, it could be become a burden for the organization because the implementation of this information technology is quite expensive.

Instrument Development

According to the presented theoretical development above, this study therefore generated a model which include four independent variables namely information, technology, infrastructure and library toward the implementation of policy and planning processes. The structure of the model can be seen as follow:

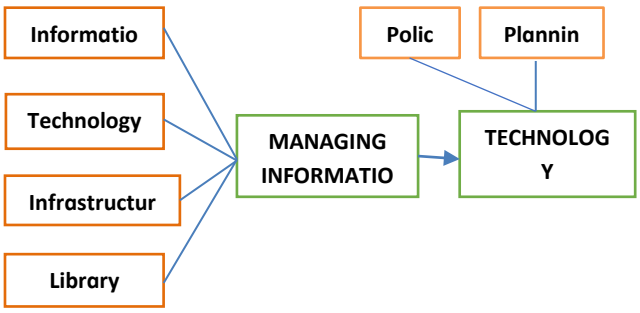

Figure 1. Information and Technology Resources Management Framework

Numbers of researches have been studied in the themes of information system and information technology utilization in public sector organization. The empirical findings and discussions show that analyzing data using information technology (e.g. computer and network) gives plentiful eminence either on the side of accuracy of operation results or its identity as multiprocessing machine. The use of information technology also decreases potential error/mistake. This condition has been experienced by numerous regional administrations in Indonesia as stated by the former Vice President of Indonesia, Jusuf Kalla, to Philip Kotler, the prominent scholar in Marketing in Jakarta several years ago. He admitted that Indonesia peoples are still left behind in the utilization of Information technology and communication compare to other countries in Asia.

Accordingly, A. Davis suggests a series of basic principles to control design processes as follows:

1. Design cannot be suffered because tunnel vision.
2. Design cannot be repeated.
3. Design must be measureable in order to accommodate transformation.
4. Design must be measureable to be well-degraded, even when the data and deviated events or facing the operation condition.
5. Design is not a coding and coding is not a design.
6. Disign must be measured in term of quality when it is produced, even after the design is formed.
7. Design must be evaluated in order to avoid conceptual errors (semantics)

The role of information technology and communication (ITC) in education system is in line with the blueprint of the Ministry of Education Indonesia which covers four aspects, namely: (1) ICT as the library of scientific knowledges, (2). ICT as a supporting tool for study, (3). ICT as an education facility, and (4). ICT as a standard of competence. Therefore, it can be concluded that the existence of ICT at the education institution is fundamental to be granted. Through the official letter from the Ministry of Education No.19-year 2015 is written that Schools in Cntral Java will implement an online based examination or computer-based test (CBT), thus every schools have to prepare the infrastructure such as computer and internet network in order to implement this policy.

At the moment, there are still obstacles in the utilization of ICT at the school. The lack of teacher's ability to use the ICT tools is one of the challenges because training for particular competence was extremely rare from the school board or by the Ministry of Education.

Moreover, although ICT's infrastructures are getting popular in education institution, there are still plenty of teachers cannot integrate those equipments in the learning process (Nikolopoulou and Gialamas, 2016). Besides skill issue, those teachers also face problem such as confidence and their attitude. According to Papanastasiou and Angeli (2008), confidence and attitude are important on how the teachers apply the ICT tools on learning processes and empirical research have eveidenced this argument.

Ward and Parr (2010) shows that teacher who understand the benefit in the utilization of technology tends to apply it in the learning processes. Meanwhile, many teachers also lack in confidence to apply the technology to support their daily teachings because less knowledges about the technology (Mirzajani et al., 2016).

The lack of ICT infrastructure that belong to the school is also another issue. This is because of financial constraints to provide such expensive tools, include the high cost of maintenance and renovation (Sumintono, et. al. 2012). Departed from this issue, analysis of

resources that school already have is needed? Does the resource remain function? Therefore, a working plan can be designed which involve ICT resources in order to support the establishment of ICT strategic plan at the schools.

Ward and Peppard method have been employed in the construction of ICT resources development at the secondary school in Salatiga Region. This approach was a method to generate an ICT strategic plan which combine various analysis tools such as SWOT and Vɑlue Chɑin Activity (Wɑrd, et. al., 2002), which allow to analyse the information gap between school activities and the used of ICT and also to provide competitive advantages for the school.

There are several model standard of IT managements that widely known and applied, they are as follows: Using "Activity Theory", the model advocates that implementation in itself is an activity system. The implementation activity in Nyvang (2006) was made up of three processes: Selection of ICT; adaptation of ICT and change of practice with ICT.

AIDS. An ICT model with objective to increase the use of ICT in education through major stakeholders namely teacher and student. The AIDS model is made up of four components as follows: Awareness, Incentives, Demand and Support Services. (Asabere, et. al., 2017).

Engida (2011) proposed the ICT-enhanced teacher development model (ICTeTD), which is technology used in teaching. The ICTeTD model provides a visual representation of the concepts/knowledge bases from which teachers draw during their teaching. In the ICTeTD model, teaching is understood to be broader and involves all the activities of a teacher relating to a specific subject such as lesson planning, classroom instruction, assessment/evaluation, curriculum review and development.

ISO-IEC 17799 was developed by *The International Organization for Standardization* (ISO) ɑnd *The International Electrotechnical Commission* (IEC) [5]. ISO-IEC 17799 have purpose to strengthen three basic elements of information security, namely:

1. *Confidentiality* – to make sure that information is accessed by the right authority.
2. *Integrity* – to keep the accuracy, proper processes and information accomplishment.
3. *Availability* – to make sure that authorized *user* is able to access to the connected information and asset when needed.

COSO stands for *Committee of Sponsoring Organization of the Treadway Commission*, an American organization with high dedication to improve the quality of financial report that covers business ethics, internal control and *corporate governance* [6]. COSO frɑmework consists of three dimension, namely:

1. COSO control component
   COSO identifies five control components which integrated and carried out in every business unit, and contribute to achieve the internal control target. Those components are as follows:
   a. *Monitoring*
   b. *Information and communications.*
   c. *Control activities.*
   d. *Risk assessment.*
   e. *Control environment.*

2. Internal Control Target
   Internal Control Target is categorized into several areas such as:
   a. *Operations* – efficiency and effectivity in order to achieve business goals which covers performance and profit.
   b. *Financial reporting* – trusted financial report preparation.

c. *Compliance* – trusted fulfillment of law and regulations.

3. Unit or activity on organization dimension identifies unit or activity that associate internal control. Internal control involves the whole organization activities include all the divisions.

COBIT framework was developed by the *IT Governance Institute*, an organization who study about the model of IT management which based in the United States. COBIT stands for Control Objectives for Information and related Technology which framework consists of four main dimensions, as follows:

1. *Planning & Organization.*
   This domain focuses on the planning and aligning process of IT strategy with the company's strategy.
2. *Acquisition & Implementation.*
   This domain concerns on the process of selection, procurement and implementation of the used information technology.
3. *Delivery & Support.*
   This domain focuses on the IT services as well as its technical support.
4. *Monitoring.*
   This domain concerns on the process of management IT supervision in the organization.

COBIT has maturity models [7,8,9] to control IT processes using scoring method with the result that an organization is able to evaluate their IT processes from the scale of non-existent to the optimized scale. Besides, COBIT also provide other measurements as follows:

1. *Critical Success Factors* (CSF) – to determine things or important activities which can be used by the management to control their IT processes.
2. *Key Goal Indicators* (KGI) – to define indicators that present description to the management whether the existence IT processes have met the needs of business cycle. KGI generally in the form of information criteria:
   a. The availability information in order to support in the business requisite.
   b. The absence of integrity risk and data confidentiality.
   c. Cost efficiency derives from the proses and operational activity as well.
   d. Reliability confirmation, effectivity and compliance.
3. *Key Performance Indicators* (KPI) – to assign measurements for the determination of IT processes performance in order toa chieve the targeted goals. KPI sometimes in the form of capability indicators, implementation and IT resources capability.

4. CONSLUSION AND RECCOMENDATION

According to the objective in this study, it can be presented several results of analysis qualitatively as follows:

1. Information management with control indicator in the form of information, technology, facility and infrastructure and also library play an important role on technology resources which contains planning and policy indicators. Organization must have a good information management system that supported from a proper technology resource. The utilization of this information must be endorsed by a well-planned strategy and implementation program from the top management.
2. Organization must have accurate information to be managed and set as a reference in decision making. Those informations might be obtained either internally or externally. In this situation, the organization's leaders should maximize the technology resources, thus the informations can be a good reference to make a decision.

3. An organization must have tools to manage an accurate information. Thus, the top managements have a reliable reference to make a decision.
4. Facilities and insfrastructures for information management play an important role for policy making in the use of technology resources. Thus, wise decision needs to be taken carefully in order the obtained information that can be managed properly, besides the investment cost on this technology is not cheap. Eventually, consideration on these two aspects will lead to the creation of effectiveness and efficiency.
5. Information management should have a comprehensive library for decision making references on technology resources. The purpose of this library is to make an effective and efficient decisions because there are many technologies used in this industry and its investment cost is quite expensive as well. Therefore, this library allows the top management to make them as guidance for a smart and wise decision.
6. Accurate information can be managed and end up as a reference in the making of technology resources plan. This information could be an advantage for organization to take a strategic decision in order to achieve the targeted goals.
7. The utilization of technology resources also determined by the existence of good infrastructures of information management. It leads to an effective and efficient of organization's operation.

Reccomendation

This article contributes to the sphere of knowledge and theory. Several suggestions are proposed for further research in this particular theme. They are as follows:

1. Research in the theme of technology especially technology resources is very dynamics therefore this study suggests a comparative study before and after the used of technology.
2. This study suggests a research to observe potential and technology resource cycle with particular focus on national level of organization or could be a comparation among countries for instance poor countries, developing countries and developed countries.
3. Further research may focus on the perspective of risk potentials and its mitigation during the implementation of technology resources.
4. This research also suggests including other variables from the perspective of management and classified them into several aspects such as marketing management, financial management or accounting, production management in the implementation of technology resources.

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