MEASUREMENT OF THE ECONOMIC BENEFITS OF INFORMATION SYSTEMS / INFORMATION TECHNOLOGY IN SMALL AND MEDIUM INDUSTRIES

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Abstract- At present, almost every organization needs Information Systems / Information Technology (IS / IT) to support operational activities to improve profitability. The same thing also happened in the small and medium industries, especially in Central Java province which is the manufacturing industry. However, many industries are not aware of the issues surrounding IT investments. In fact, there are implementations of IS / IT is sorely lacking in providing the results or benefits in accordance with the costs incurred. Based on this, it is necessary to assess the analysis and processes so that small and medium industry in Central Java province got a clear description regarding the feasibility of the implementation of the IS / IT is. In order to analyze it can use the framework of Val-IT and Ranti's Generic IS/IT Business Value. Val-IT framework and methods Ranti's Generic IS / IT Business Value aims to quantify the economic benefits of the implementation of SI / IT conducted by small and medium industries. The process of measuring the economic benefits of IS / IT produces a causal relationship to the business benefits available to describe the mapping of business benefits.

Keywords- Economic Benefits, Information Systems, Information Technology, Val-IT Framework, Ranti's Generic IS / IT Business Value, Small and Medium Industry.

I. INTRODUCTION

Use of Information Systems / Information Technology (IS / IT) by small and medium industries (SMI) is an interesting thing to know. IS / IT is used as a driver of development plays an important role in the sustainable growth of a business organization. Increased investment in IT and the strategic role of the SI made the implementation IT as an important issue in the discipline of Information Management System (Bostrom and Heinen, 1997). IT changed the way of doing business, because it offers new opportunities and challenges. The whole supply chain is done with IT-based, so that the organization can be more competitive in doing business. Supply chain is a network that facilitates the procurement of materials, conversion of raw materials into products, and the distribution of the final product to the customer. While supply chain management is the coordination of these activities three (Laudon, 2000).

In addition to increased business growth, the use of IS / IT in SMI is expected to have an impact on public welfare, either directly or indirectly. IS / IT also can improve people's welfare through increased income per capita (Atkinson and McKay, 2007). In that study, they argued that government policies through the use of IS / IT in an organization is expected to increase productivity, expand the availability of employment information, market efficiency, increase the quality of goods and services, and improve product innovation and services produced so as to increase income per capita. So, in addition aimed to increase business growth, the use of IS / IT in SMI is also expected to benefit the public welfare widely.

In Indonesia, SMI become one lifter Indonesian economy, especially after the crisis that occurred in 1997 ago. One of the advantages of SMIs are able to absorb the labor very large, because SMI generally do not require specific educational qualification in operation (Kusbiantono, et al., 2010). Total SMIs in Indonesia there are currently 3.9 million units with manpower absorption of 9.14 million people, 75% of SME growth is concentrated in Central Java province, and 25% are outside Java. In the eastern part of Indonesia, the growth of SMIs is still below 5% (Saedah, 2013). SMI growth in Central Java province is greater than outside Java. However, an increasing number of SMIs are not necessarily matched by the development of labor in it. SMEs in Indonesia have contributed to Gross Domestic Product (GDP) of the National Year of 2012 by 10%, which is targeted contribution of SMIs can touch the figure of 50% in 2025 (Hidayat, 2013). The Ministry of Industry has directed SMIs in Indonesia to have competitiveness in order to face global competition (http://www.kemenperin.go.id/artikel/5210/Daya-Saing-IKM-Perlu-Ditingkatkan, accessed on 5 April 2014).

Competitiveness is an effort that must be owned by the entrepreneurs in order to survive and grow in carrying out its activities. Competitiveness is a program that is exhaled by the government, but becomes a major issue for entrepreneurs, particularly SMIs. SMIs consider that competitiveness requires "fundamental change and a specific strategy". Competitiveness requires qualified human resources, advanced technology, capital adequacy, as well as a conducive environment. Current business conditions change radically, which resulted in every industry

must remain able to compete with domestic products (Wiyadi, 2009). One way is that the industry should be able to offer good quality products at low prices to the consumer. Therefore, there must be competitiveness in each industry.

The competitiveness of SMIs in Indonesia can be established through the implementation of IS / IT in order to conduct its business processes. Through the implementation of IS / IT, then the flow of information from the supplier to the consumer to be able to be controlled through a process which is on each SMI. IS / IT also can be a media transfer of knowledge that will be grown among industry players in the environment (Dayasindhu, 2002). IS / IT will foster innovation, then it will form a collective innovation and competitiveness of the region, especially in Central Java province. Concretely on the ground, implementation of the IS / IT in SMIs, especially in Central Java province still has many obstacles faced by both government and the perpetrators of SMEs themselves.

Therefore, in this study will measure the economic benefits of the implementation of the IS / IT so that every perpetrator of SMIs in Central Java province can determine the extent of the benefits or results given by the IS / IT for growth and business innovation. To evaluate and measure the economic benefits of implementation of IS / IT in SMIs, the steps that need to be done is to identify and quantify the economic benefits of each type of investment based SI / IT (Ranti, 2006). The process of identification of the economic benefits of investment IS / IT can use Ranti's Generic IS / IT Business Value (Ranti, 2008) which is a framework to simplify the naming and identification of the economic benefits of investment SI / IT, especially in Indonesia. This framework can be used as a reference in the identification and quantification of the economic benefits of investment IS / IT in SMIs in Central Java province. Once the identification is done, then the next stage is to quantify the economic benefits of IS / IT use Val-IT (Ranti, 2008).

II. LITERATURE REVIEW

II.1. Research Literature

Some studies related to the identification of economic benefits by using Ranti's Generic IS / IT Business Value (Ranti, 2008) in Indonesia have been carried out by Yerro Haryonti which generates a frame of reference measurement of the economic benefits of investment SI / IT based on the direction of development of the IS / IT is hardware, software , human resources systems and procedures at the Ministry of Transportation (Haryonti, 2010). Other studies that also use Ranti's Generic IS / IT Business Value (Ranti, 2008) is a study conducted Stanley Sualang which generates skeleton utilization Ranti's Generic IS / IT Business Value (Ranti, 2008) in the preparation of strategic plans / IT to increase regional Revenue Office area in North Sulawesi (Sualang, 2009).

The above research was only partial and not yet complete, particularly in the development framework of economic benefits are identical to the work processes of SMIs and investment management / IT. Based on this it is necessary to do in-depth study regarding the development of the framework of the economic benefits of IS / IT investment management and modeling of IS / IT in line with the goals and objectives of the use of SI / IT in SMIs. Investment management strategies IS / IT can use the framework of investment management / IT, developed by Governance Accountability Office (GAO), the United States, namely Information Technology Investment Management (IT-IM). Related research investment management / IT that utilizes Ranti's Generic IS / IT Business Value (Ranti, 2008) conducted by Johan Tambotoh found an increased level of maturity investment management / IT after the implementation Ranti's Generic IS / IT Business Value (Ranti, 2008) at PT PLN (Persero) using the framework Val-IT (Tambotoh, 2010).

II.2. IT Governance

IT Governance is the responsibility of the organization's capacity as directors, executive management, and management of information technology to control the formulation and implementation of strategies IS / IT resources to ensure aligned IS / IT with the business organization (Grembergen, 2003). Grembergen emphasize understanding of IT governance in how organizations view, manage and optimize resources / IT he has in support of organizational goals. IT governance is also about the management of rights in decision-making and accountability framework to encourage the realization of things that are expected in the use of IS / IT (Weill and Ross, 2006). Weill and Ross propose five main pillars of IT governance that need to be managed by all stakeholders of the organization. The fifth pillar of IT governance is IT Principles, IT architecture, IT Infrastructure, IT Business Application Needs, IT Investment.

II.3. Val-IT Framework

IT Governance Institute (ITGI), the agency that issued the IT governance framework, around the month of April 2006 issued a complementary framework that can be used to measure IT value called Val IT. Currently, Val IT focuses on new IT investments and will be developed to include all services and IT assets (Stephen, 2006). Val IT initiative objectives include research, publications and support services to help management understand the value of IT investments and ensure that the organization can obtain optimal value on IT investments in the context of cost and acceptable risk. Val IT consists of guidelines, processes and some practical suggestions to help the management and executives to understand and carry out its role in IT investments (ITGI, 2006). Val IT can be applied to IT

investments that support the business, continuity of business investment, growth or business transformation with the support of critical IT components which TI provides full support end-to-end of the entire process of value creation in the company. Specifically, Val IT focuses on the investment decision (whether we are doing the right thing) and the realization of benefits (are we getting the benefits).

II.4. IS/IT Business Value

Business benefits of IS / IT (IS / IT business value) are defined as benefits or results obtained from an investment SI / IT that can improve organizational performance. Understanding the benefits of this business, is more than just provide benefits or financial benefits. Business benefits is based on the premise of how the IS / IT can provide a certain competitive advantage for the organization. Understanding these benefits follow the opinion of Parker, which according to Bannister and Remenyi Porter based on the definition of value (Remenyi, 1995). It should be noted that, efforts to identify and classify business benefits of IS / IT abovementioned done positivist-based approach methodology. According to Bannister and Remenyi, besides using the above approach, the identification and classification of the business benefits of IS / IT, can also be done by hermeneutic approach. The process of identifying and classifying using this hermeneutic approach as practiced by Ranti. According to research done by taking a case study in Indonesia, there are 13 categories and 73 sub-categories of the business benefits of IS / IT. When compared with other developing countries, then there are three benefits of business / IT is unique to Indonesia (Ranti, 2008).

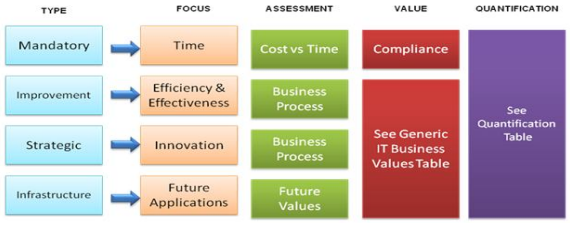


Figure 1. Ranti's IS/IT Valuation Matrix

Ranti explained several methodologies to evaluate the business benefits of IS / IT that Information Economics (IE) of Parker, Real Option Valuation (ROV), Balanced Scorecard (BSC), Economic Value Added (EVA), Return on Management (ROM), and Multi- Multi Objective Criteria (MOMC). Basically, the sixth measurement method has advantages and disadvantages of each. If will use the IE method, it is suggested, to use some of the measurement matrix that takes into account the financial approach (such as calculation of simple-ROI, EVA and ROM) and non-financial approaches (such as creating a business domain scores and technological domain). Remenyi advised to use 2 or 3 measurement matrix, and avoid using the measurement matrix that is too much. Ranti develop an evaluation method investments IS / IT based business benefits of IS / IT. This method is called IT Evaluation Matrix ver 1.0 (Ranti, 2008). Methods Ranti's IT Valuation Matrix ver 1.0 distinguish the type of investment SI / IT into 4 types of investment that is mandatory, improvement, strategic and infrastructure. Once the strategy IS / IT is found, then the investment SI / IT strategy / IT is classified in one of the types of investment. Once classified, the type of investment can be traced to the benefits, by mapping the existing business benefits in Table Ranti's IS / IT Business Values. The next step is quantification based on the table quantifying the business benefits of IS / IT. These methods facilitate the identification and quantification of the business benefits of IS / IT in an organization.

III. RESEARCH METHODOLOGY

Based on the objectives to be achieved, then the phases of research that will be done is as follows:



Figure 2. Research Phase

In the preparation phase of research, conducted research that preparation of the work plans and operational standards of the research team, the preparation of criteria and determination of the SMEs which will be the study sample, the collection of documents and literature as well as a review of related research. At the identification stage is to identify the economic benefits based framework Ranti's Generic IS / IT Business Value (Ranti, 2008) which has 13 (thirteen) categories and 73 sub-categories of the economic benefits of IS / IT. The process of identification refer to identification and measurement of the economic benefits of IS / IT, developed by Yerro Haryonti (Haryonti, 2010). To facilitate the identification of the economic benefits of IS / IT, the investment IS / IT categorized into 4 (four) parts, namely hardware, software, human resources and systems and procedures. At this stage of quantifying the economic benefits do quantification or calculation of the economic benefits of IS / IT that have been identified in the previous stage. The quantification of the economic benefits are based on reason and measurement matrix that has been discussed with the respondent resulting in significant economic benefits for the SMI. At the stage of maturity level measurement of investment management / IT in SMIs measurement of investment management maturity level of IS / IT in SMIs into the sample based on the framework of Val-IT (ITGI, 2006). At this stage of the preparation of investment management model SI / IT investment management

carried out modeling of SI / IT maturity level based on the results of measurement of investment management / IT has been done in year 1. Strategy investment management / IT include utilization Ranti's Generic IS / IT Business Value (Ranti, 2008) in each phase of the process of investment management / IT is a pre-selection, selection, control and evaluation framework based on the stages of the process of investment management / IT proposed by David Van Over (Over, 2009).

RESULT AND ANALYSIS

Based on the work plan as it was presented on the research proposal, the activities and the results of research that has been done until the month of June 2015 is as follows: Develop a work plan document and operational standards of research and conduct an initial review of the theory which will be discussed in the study. Perform a search of information related to the object of research is number 10 (ten) IKM in the District of Semarang and Salatiga. Information obtained from the Department of Industry and Trade of Central Java. Determine the category of investment SI / IT undertaken or planned by the Department of Industry, SMEs and Central Java through the strategic plan of IS / IT. Determination of investment categories is based on the terms of reference identify the economic benefits of IS / IT. Identify the economic benefits of IS / IT that builds on the framework Ranti's Generic IS / IT Business Value and Val IT. To strengthen the identification is carried out in-depth interviews and focus group discussions (Focus Group Discussion) with respondents who understand well the investment SI / IT performed on SMEs. Create an application based on a questionnaire quantification of the benefits of IS / IT that exist in the framework Ranti's Generic IS / IT Business Value and Val-IT in Figure 3 and Figure 4.

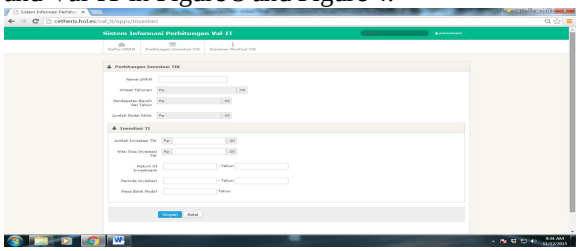


Figure 3. IT Investment Menu

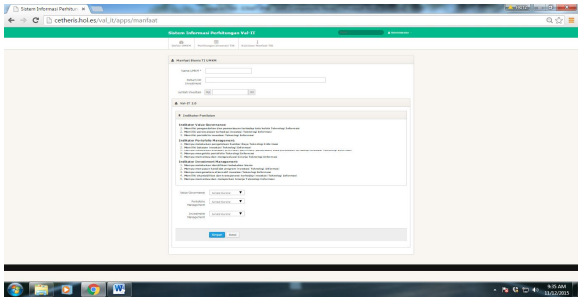


Figure 4. IS / IT Business Value Menu

That application is used to quantify the economic benefits of IS / IT based on the identification and measurement matrix and assuming that there are resulting in total economic benefits which include four (4) categories based on terms of reference for the economic benefits of IS / IT.

CONCLUSION

The results showed that the identification of economic benefits based framework Ranti's Generic IS / IT Business Value (Ranti, 2008) which has 13 (thirteen) categories and 73 sub-categories of the economic benefits of IS / IT can be done well. The identification process refers to the reference frame identification and measurement of economic benefits of IS / IT developed facilitate the identification of the economic benefits of IS / IT investment is SI / IT categorized into 4 (four) parts, namely hardware, software, human resources and systems and procedures , By using an application that has been developed it will be easier for SMEs to determine the economic benefits of the investment that has been made at this time.

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