Strategy for Adopting Information Technology for SMEs: Experience in Adopting Email within an Indonesian Furniture Company

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Abstract: In order to adopt IT, SMEs need to consider drivers and barriers that can influence the IT adoption success. This paper proposes a guideline to assists SMEs in adopting IT. The guidelines are formulated based on existing literature and authors' experience in assisting Indonesian SMEs. An example of adopting email have been used to illustrate the process.

Keywords: small and medium enterprises, adoption, information technology, email.

1. Introduction

Many small and medium enterprises (SMEs) try to adopt IT to support their business. Due to their limited resources, SMEs IT adoption is different from larger business (Fink 1998; Thong 1999; Welsh & White 1981). An incorrect IT investment decision can have devastating effect for SMEs. Therefore, SMEs need to be very careful in their IT investment decision-making.

So far, the existing literature seems to have concentrated more on drivers and barriers of IT adoption. There is lack of strategy to guide SMEs in IT adoption process. From our previous experience of assisting SMEs in IT Adoption, it appears that the most frequently asked question by SMEs is how to adopt IT successfully. This paper proposes a systematic IT adoption strategy for SMEs. The strategy formulated is based on the existing literature and authors' past experience.

In the literature, SMEs have been characterised using different criteria such as maximum number of employees, the annual sales, and total assets (IFG 2002; SMIDEC 1998; Utomo & Dodgson 2001; Walczuch et. al. 2000). In this paper, we adopt Indonesian government's definition of SMEs which is all business organisation who posses assets less than US$ 1 Million (excluding land and building) and have annual sales turnover less than US$ 5 Million (SMIDEC 1998). There is no explanation found in the literature on the reason this definition used.

IT adoption can be viewed from the diffusion of innovation theory (Fink 1998; Thong 1999; Thong & Yap 1996; Utomo & Dodgson 2001). In this view, IT is perceived as something new that is being introduced to members of a society for a certain period of time (Rogers 1995; Schon 1971). IT adoption is defined as using IT to support operations, management, and decision making in the business productively (Thong & Yap 1996). Another definition of IT adoption by Ayres is introducing new IT solutions to replace the old existing IT systems or non-IT systems for achieving the same goals or solving the same problem (cited by Jaakkola 1996). It can be concluded that IT adoption is defined as using some form of IT to support business operations and decision making.

The existing literature has documented some of the drivers and barriers of IT adoption within SMEs (Drew 2003; Dutta & Evrard 1999; Duxbury et. al. 2002; Thong 1999; Thong & Yap 1996; Utomo & Dodgson 2001; Walczuch et al. 2000). Drivers are the positive influences for IT adoption, while barriers are negative influences for IT adoption. The drivers and barriers may come from two different sources, those from within the internal SMEs and those from outside SMEs (see figure 1 below). In the next section, the drivers and barriers of SMEs' IT adoption will be discussed further.

The term IT has been widely used in existing literature. Some definition of IT include the technology side of Information Systems (IS) (Hollander et. al. 2000), the technology that enable computer based information systems (Laudon & Laudon 2000), and collection of computer systems used by an organisation (Turban et. al. 2002). However, the following definition more comprehensively describes what IT is:

> *"Information technology comprises those technologies engaged in the operation, collection, transport, retrieving,*

> *storage, access presentation, and transformation of information in all its forms…" (Boar 1997, p. 28)*

For this paper, the term IT would be defined as all the technology that is used by an organisation to collect, process, and disseminate information in all its form. Therefore, the component of IT will include hardware (computer, printer, scanner, etc), software (operating systems, application development language, office application, etc.), and telecommunication devices (modem, networking hub, network interface card, etc).

A specific technology used as an example in this paper is Electronic Mail (email). Email is defined as a computer-based system that facilitates written information exchange and storage (Adams et. al. 1993). The current email systems enable user to send graphical and multimedia information as an attachment to the body. Email also is known for its capability to enable asynchronous communication (Adams et al. 1993; Markus 1994). Within SMEs email have been used quiet extensively for communication (Sillince et. al. 1998; Walczuch et al. 2000). The reason for SMEs to use email is usually for cost reduction purposes as replacing facsimile communication (Sillince et al. 1998). Facsimile communication, especially international facsimile transmission, is quite expensive. Other weakness of facsimile is graphical document being transmitted are not of adequate quality for design purposes.

The paper starts with the brief introduction on SMEs and IT adoption process. It describes the current problems faced by SMEs in their effort to adopt IT successfully. The next part will discuss the strategy for adopting IT that can be used by SMEs. This is followed by a brief explanation on the strategy application. An example of adopting email replacing facsimile communication within an Indonesian furniture company is used to illustrate the model.

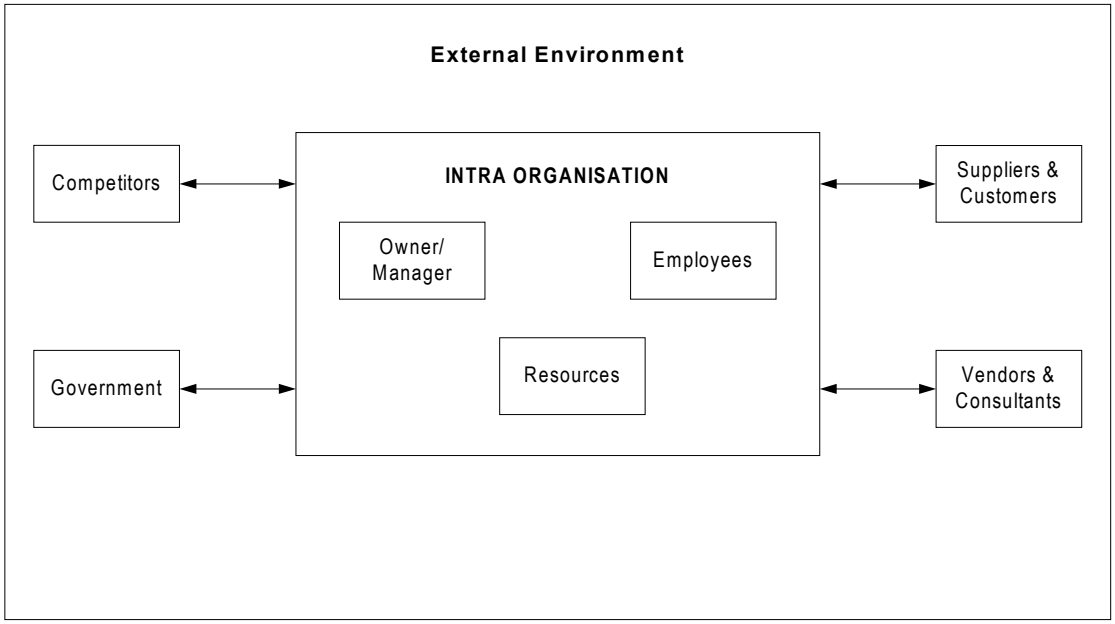

Figure 1: High Level view of SMEs' IT Adoption Drivers and Barriers

2. Drivers and barriers of IT adoption within SMEs

Drivers and barriers in SMEs' IT adoption may come from within the organisation and those from external organisations. The internal factors consist of the attitude, knowledge and support of the owner/manager, resources availability, and employees' attitude, knowledge, and acceptance. External factors consist of suppliers and customers, competitors, government and its agencies, and external expertise in form of IT product vendors and consultants. The following section will discuss these factors.

2.1 Internal drivers and barriers

2.1.1 Owner and Manager

Within SMEs, the same person often assumes the role of owner and manager. Owner is the major investor who provides SMEs with capital.

Manager is the person who is responsible to carry out managerial functions such as planning, organising, executing, and controlling (Stoner 1994). Owner/manager needs to allocate the resources and devote significant time and effort to manage adoption process. Therefore, owner/manager supports are vital for the success of IT adoption (Cragg & King 1993; Fink 2002; Lanz 2002; Mehrtens et. al. 2001; Mirchandani & Motwani 2001).

Owner/manager support comes in the form of their knowledge of IT and the perception of the benefit obtained from using IT (Attewell 1992; Chesher & Skok. 2000; Cragg & King 1993). The perceived benefit of IT could be a motivation for owner/manager to adopt IT, even for those who have limited IT knowledge and skills. On the other hand, limited knowledge of IT could be a barrier in adopting IT. Owner/manager of SMEs might be confused with the various choice and rapid development of IT (Venkatesh & Brown 2001). Adequate knowledge of IT adoption and its associated impact toward organisation might also discourage owner/manager (Agarwal & Prasad 2000; Love et. al. 2001).

2.1.2 Resources

Resources, especially financial resources are needed to finance the adoption process (Chau 1995; Utomo & Dodgson 2001). Since SMEs have limited financial resources, it might be difficult to obtain desired IT products. Limited financial resources also forces SMEs to be very careful in selecting and implementing IT. This limitation manifests itself in the effort of SMEs to prioritise which features of IT solutions should be selected. An incorrect IT investment decision can have significant financial consequences for SMEs and in extreme condition, it may lead to a bankruptcy. The associated high risk of IT investment could discourage some owner/manager to adopt IT for their company (Agarwal & Prasad 2000; Love et al. 2001). Limited financial resources also mean that SMEs might not be able to obtain necessary external expertise such as consultant or additional training from the vendors (Attewell 1992; Cragg & King 1993). SMEs would have to rely on the availability of government assistant or voluntary consultancy from higher education institution (Utomo & Dodgson 2001).

2.1.3 Employees

Employees are the users of IT within SMEs and use IT on a regular basis. Employees' acceptance will have positive impact toward IT adoption (Fink 1998; Lanz 2002). Employees will likely accept and support IT adoption if they can be convinced of the relative advantage and perceive IT as easy to use (Davis 1989).

The rate of adoption and usage of IT by employees is affected by the training provided (Attewell 1992; Love et al. 2001). Better IT knowledge would help employees in adopting the new technology. However, it is often the case that the employees refuse to adopt the new technology due to various reasons, such as dangers of job loss (Love et al. 2001) and reluctant to change the work practices (Drew 2003; Love et al. 2001). In this regard, owner/manager has the power to influence, motivate, or even force the employee to adopt the new technology. After all, the acceptance of new technology by employees and end users is one of indicator of successful adoption (DeLone 1988).

2.2 External drivers and barriers

2.2.1 Competitors

Competitors could be one of the important external factors considered by SMEs in IT adoption. IT could be used as a tool to gain competitive advantage (Earl 1989; Galliers & Sutherland 1999; Turban et al. 2002). SMEs could use IT to stay ahead of or to keep pace with the competitors. IT adoption decision would be influenced by the relative advantages gained by SMEs compared to their competitors. If there is no relative advantage gained by SMEs, IT might not be adopted.

2.2.2 Suppliers and customers

Suppliers and customers are another factor being considered in IT adoption. IT can be used to support the business relation with suppliers and customers, for example by processing transaction more efficiently, improving response time, reducing cost of transaction, increasing the amount of transaction processed, etc. (Hollander et al. 2000). However, from previous experience, it is unlikely that the adoption decision would be influenced by compatibility with the customers' and suppliers' systems. The decision on what type of IT solution to adopt IT is more likely to improve services rather than focusing on how effectively it integrates with customers and suppliers systems.

2.2.3 Government

Since IT, in most cases, might not be SMEs core business or competence, they need

external assistance. In some countries, government and its agencies often provide such assistance to help SMEs in improving their business (Drew 2003; Utomo & Dodgson 2001). However, in European SMEs, government assistance is not desirable due to the gap between what is really needed and what is provided by the government (Dutta & Evrard 1999). For example, the government might provide series of IT workshop and training for SMEs. However, what the SMEs really need is consultation during the adoption process. The government role can be either encourage or discourage IT adoption depending on what kind of policy is implemented to assist SMEs. Some governments use welfare model where they hand out the assistance package directly to SMEs (Dutta & Evrard 1999), others choose to formulate policy and provide access to enabler infrastructure to allow SMEs development (Walczuch et al. 2000).

2.2.4 External consultants

Another source for assistance is independent and impartial consultants and IT product vendors (Chau 1995; Fink 1998; Utomo & Dodgson 2001). They could provide expertise regarding IT adoption for SMEs. However, SMEs need to consider the budget available for hiring consultants' service since they usually involve considerable expense.

Drivers and barriers of IT adoption within SMEs are important factors to successful adoption. SMEs need to be aware of those drivers and barriers in managing IT adoption process. By recognising what kind of positive and negative influence may exist, SMEs could prepare a plan to adopt IT successfully. SMEs should be able to utilise the drivers and avoid or reduce the negative impact from the barriers.

So far, the majority of existing literature only describes the drivers and barriers of IT adoption within SMEs as mentioned above. Knowing the drivers and barriers is not sufficient to adopt IT effectively and successfully. How to manage those drivers and barriers during IT adoption process is equally an important issue to study.

3. Guidelines for adopting IT

The following guideline is based on the existing research literature on IT adoption within SMEs and authors' experience in assisting IT adoption within Indonesian SMEs over the last 6 years. One particular experience to illustrate the application of the process model is email adoption. The process model is shown on figure 2. The guidelines have been formulated to manage drivers for supporting IT adoption and to reduce negative impact from the barriers.

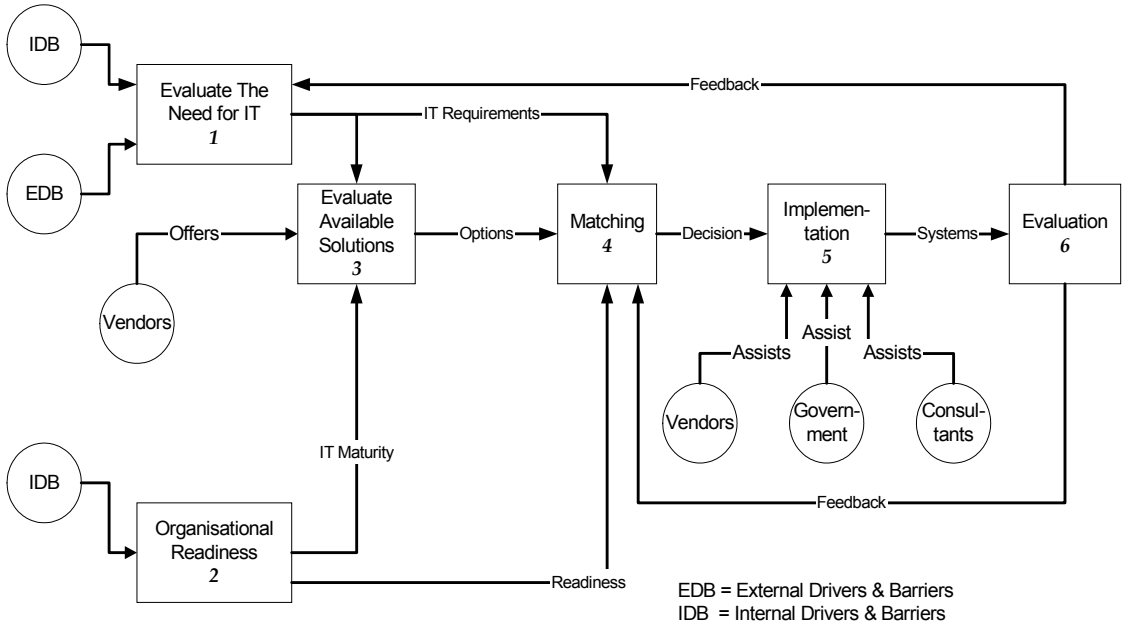

Figure 2: Process Model for SMEs' IT Adoption

The description of the process model is as follows:

1. **SMEs need to evaluate the need for IT.** SMEs have to find out why they need IT and explore the relative advantages of IT

for their organisation. SMEs must consider what are the costs and benefit of using IT. SMEs should find out what is the foreseeable impact of IT on their business, their customers and suppliers, as well as competitors. At the same time, SMEs need to consider what kind of external assistance such as consultants, government agencies, and vendors available to help them in adopting IT. Last but not least, SMEs need to consider compliance to the current government policies regarding the use of IT.

SMEs also need to define general requirements for IT solutions (Nikula & Sajaniemi 2002). The goal of this stage is to determine what kind of IT solution is needed immediately and define the essentials features desired. There are existing methods from the requirements engineering discipline to assist organisation in determining their IT requirements. In general, the processes to define the requirements are requirements elicitation, requirements analysis, and requirements validation (Hay 2002; Kotonya & Sommerville 1998; Sommerville & Sawyer 1997). The more specific process can be adapted from the requirements engineering for commercial-off-the-shelf (COTS) products (Alves & Finkelstein 2002; Kontio 1996; Rolland 1999). Since the process involves finding high-level organisational requirements, owner and manager should be involved. Owners and managers are the sponsors and the key decision makers within SMEs. The output of this stage is a list of agreed features of IT solutions needed by SMEs. The list can be drawn in a spreadsheet or they can be captured in a requirements management tool such as Requisite Pro™, if a consultant is involved who has access to them. It is not unusual to produce an extensive list of features. The limited financial resources would have to force SMEs to prioritise their needs. SMEs need to select the most important features to be implemented immediately. The other less important features can be obtained if they still have enough time and money. The priority list will guide SMEs in the selection of IT solutions.

In our experience within Indonesian SMEs, the immediate need for SMEs who do not have IT at all is initially to support marketing and order processing functions. In marketing areas, SMEs need to maintain customers and potential customers record, followed by providing immediate response to customer's inquiry, and to design marketing plan (Hollander et al. 2000). In order processing functions, SMEs need to effectively process customer's orders, report the order status to customers, and process order documentation (Hollander et al. 2000). The next functions that usually need to be computerised may be accounting and financial management. This is necessary to manage financial and accounting information such as financial statement, income statements, and tax related report.

2. **Evaluating the SMEs' organisational** readiness for IT adoption. First, SMEs need to assess their organisation's IT maturity as shown in table 1.

   SMEs could assess their position in term of IT maturity by looking at the element of organisation's IT. For each element (strategy, structure, systems, etc.), SMEs could assess their current condition according to the stage column. For example, an SME might find that their strategy for IT is in stage 1 where they only acquire IT solutions needed. In the skills possessed by employees and owner/manager the SME might find that they have some systems development skills. By assessing the current organisation's IT maturity and considering the desired IT features formulated in step 1, SMEs could determine the gap between what is the current condition and the desired condition. This will guide SMEs in finding the appropriate solutions available in the market in step 3. SMEs can ask external consultants to help them in assessing the IT maturity.

   The output of this stage is also considered in step 4 when matching the vendors' offer and the current SMEs' IT readiness. The SMEs' IT maturity will reflect the readiness to adopt new technology. SMEs can determine whether the available IT solutions can be implemented with the current condition.

Table 1: Organisation's IT maturity assessment x (adapted from Galliers & Sutherland 1999)

Element	Stage					
	1	2	3	4	5	6
Strategy	Acquisition of IT	Reactive	Top-down Planning	Integration	Environment Scanning	Strategic advantage
Structure	None	Subordinate	Centralised	Information Service	Coalition	Central Coordination
Systems	Ad-hoc Independent	Overlapping systems	Centralised	Decentralised	Coordination	Inter-organisational
Staff	Programmers/ Contractors	Systems Analyst	IS Manager	Business Analyst	Corporate IS	IS Director
Style	Unaware	Ignorance	Delegation	Democratic	Individualistic	Business Team
Skills	Low level technical	Systems development	Project management	Organisational integration	Entrepreneurial	Senior Management
Organisation goals	Unaware	Confuse	Concern	Cooperation	Opportunistic	Interactive Planning

3. By considering the output from step 1 and step 2, SMEs can evaluate the available and relevant IT solutions on the market, assuming that there is no internal capabilities to develop IT solutions (in sourcing). SMEs need to consider the following information in their evaluation:
   - Total cost of ownership refers to the total cost to acquire, implement, operate, and maintain the systems (Computerworld 2003)
   - Ease of use and user friendliness. These two characteristics said to be drivers for successful IT adoption (Adams et. al. 1992; Davis 1989; Igbaria et. al. 1998) This information can only be obtained either by trying the products or obtaining information from former users.
   - External support availability such as vendor and consultant to assist SMEs in adopting IT (Fink 1998; Utomo & Dodgson 2001). Consultants can fill the internal knowledge gap within SMEs, while vendors can assist SME in implementing the IT solutions.
   - Flexibility to be used by other functions within organisation and multi function capabilities to serve different purposes within organisation. This is important due to the SMEs' limited financial resources(Welsh & White 1981). This means that SMEs need to purchase a flexible technology product that can be immediately customised for different purposes. Office suites software package and multi functions centre (printer, scanner, fax, and copier in one product) are the examples of such capabilities.

   In our experience, cost and benefit analysis (CBA) for particular application as used in typical systems development would not be used here. In reality, it is often that the IT solutions acquired would not be used just for particular application but also for other applications within the organisation. Instead, the flexible and multi functional hardware and software would be more useful. Therefore the CBA methods applied would need to consider the benefit of IT solution for the whole organisations not only for particular systems.

   There might be more than a handful of IT products and their vendors in the market, while the time to consider the options might be limited. In our experience, it is not unusual to invite as many vendors as possible in the given time to bid on a simple tender. Based on received proposals, the evaluation can be conducted.
4. Matching the available solutions to general requirements for IT solutions as defined in the first step. The matching process can be done by comparing the desired features of IT solutions from the first step with the proposals from vendors. It is more helpful if the vendors' product features are listed in a spreadsheet and compared with the desired features (also in a spreadsheet). The IT products should be selected with respect to how many features are matched to the desired features and cost to acquire, operate, and maintain. As discussed in step 1, only essentials desired features needs to be compared with offered features from vendors. It is important to

comply with the priority list due to limited financial resources available.

5. Implement the selected IT solutions. Vendors and consultants' assistance can be very useful at this stage. There maybe several scenarios that could occur at this stage, which are (Bridge & Peel 1999; Chen et. al. 2000; Chesher & Skok. 2000):
   - **Internal development**, where SMEs develop their IT solutions from scratch using internal IT human resources.
   - **External development**, where SMEs outsource their IT development from scratch.
   - Implement **Commercial-Off-The-Self (COTS)** solutions, where SMEs acquire COTS products with or without adjustment. The software producer could do the modification of COTS by request or the modification is done by the SMEs by using either internal or external expertise.
   - Any combination of three above.
6. Evaluate the IT adoption (post adoption) using the existing measurement of success (DeLone 1988; Thong & Yap 1996):
   - *Impact on the business*, whether the IT adopted have changed the way SMEs conduct business. It might be as simple as reducing time for transaction processing, cost reduction, increase in transaction volumes, etc.
   - *The extent of actual use of the IT* refers to what kind of application being used, frequency of used, and the duration of use.
   - *User satisfaction* refers to whether the users (employees and manager) are satisfied with the performance and features of the systems.

4. Example of adopting email

In this section, we provide an example of IT adoption to illustrate the application of our proposed process model. The IT component being adopted was electronic mail (email).

4.1 Problems

Company A is a furniture company situated in Central Java region, Indonesia. The company needed a new way of communicating with their buyers, which are mainly from outside Indonesia. The previous mode of communication was using facsimile to send and receive documents. These documents are involved in order negotiation process. The negotiation process usually starts with the buyers sending the design and specification of the furniture. Company A would reply with their offer, time frame to manufacture the order, and any technical improvements necessary for the furniture design. The process will continue until both company A and the buyer reach an agreement. During the production process, Company A is required to send regular reports on the production progress and any technical changes needed for the order shown with the picture from the workshop and furniture being produced at that time. Both Company A and their buyers often send and receive graphics document. Facsimile was considered unfavourable due to the high cost of operation and maintenance, limited graphical capabilities where facsimile transmission could not deliver sufficient detail on the documents, and the difficulties to organise hard copies of the document from facsimile communication.

The need for replacement for facsimile communication, which was too expensive and lack of necessary graphical details forced the company to start the process of adopting a new IT solution. Recognising the need, Company A then could initiate step 1 to assess the real need for IT solution. In this case, Mr D as the owner/manager has taken the initiatives himself.

4.2 The process of adopting email

Company A's IT consists of 1 Personal Computer (PC) for administrative duties (word processing, spreadsheet book keeping, etc.), 1 PC for technical drawing and furniture design, a facsimile machine, a low level digital camera, and an ink jet colour printer. Both PCs are using Microsoft Windows 98 operating system. There are 3 staffs who use the PCs on a regular basis, which are the book keeper, interpreter (to negotiate with overseas buyer), and the furniture designer. Both the book keeper and interpreter are university graduates with accounting degree. The furniture designer is an architect student.

The owner and also manager of Company A (Mr D) believes that he can utilise Internet as a cheaper alternatives to facsimile but with better quality especially in delivering graphical documents. This believes was based on various information he received from local newspaper, trade magazine, and few fellow furniture exporter. In this stage, Mr D has identified the need for particular type of IT that can help his company in replacing facsimile communication (Step 1). He also briefly access the existing technology possessed by

Company A as the part of organisational readiness part. At the same time Mr D also aware that his company did not possessed sufficient manpower to handle neither complex IT systems nor financial resources to finance massive IT investment (Step 2).

Initially Mr D informally requested proposals from the local IT vendor who has delivered him the previous IT components. The vendors came up with a solution of a website with a full electronic order processing capabilities. The package will cost Company A about 30 million rupiah (approximately US$ 3000 – 4000). Since the vendor's offer was the biggest investment for Company A, outside production facilities, Mr D was discouraged and did not continue with his plan for quite sometimes. Mr D also thought that the offer from the vendors was too high since he only needed cheaper alternatives to fax without sacrificing the quality of information. In this stage, Mr D has conducted stage 3 and 4. He sought available alternatives solution from the marketplace and at the same time matching the alternatives with his company's requirements and availability of resources. Company A simply did not have enough manpower and financial resources for the solution offered by vendor.

Fortunately one of the administrative staff, who helped Mr D in negotiation as interpreter, came up with an idea of using Email. His argument was the existing IT infrastructure was sufficient, majority of their buyers have an email address, and what they needed was just an Internet connection. He also pointed out that the Indonesian telecommunication company, PT Telkom, provides an Internet access through the ordinary phone line called Telkomnet Instant. Users just need to set their PC and modem and dial-up to Telkomnet Instant. The cost of connection will be included in the monthly telephone bill and they only pay on how long they are connected to the network. Telkomnet Instant also provides free email that can be accessed using any Email client software or through the web (webmail). At this stage, Mr D once again found other alternatives from his staff and he repeated step 3 and 4 from the model. Once the need and capability of the organisation have been recognised, finding and matching available IT solution would more simple.

Considering the cost of using Email was much cheaper, Mr D decided to try the Email alternatives. Company A moved to the implementation (Step 5). Since the PCs have already been installed with Microsoft Windows 98, all they needed was just activating the internet connection facilities. After setting up the internet software and a short training session by a volunteer consultant from a local university, Mr D and his staffs tried to send their regular production progress report to a buyer located in North America. They send a word processor documents (with pictures taken using digital camera was embedded) to the buyer as an Email attachment. The buyer was quite happy with the new mode of communication, especially with better quality on the picture send within the report. In this stage, Company A have been assisted by an external consultant. Fortunately, since this consultancy were on voluntary basis, it was affordable.

After the first buyer's trial, Mr D and his staffs gradually introduced Email as the preferred mode of communication to other buyers. After evaluating the trial, Mr D and his staffs immediately recognised the benefit of using email compared to facsimile communication. The immediate benefit of using email were the cost of communication with the overseas buyers was significantly reduced. In the evaluation process, they also addressed the possibility of using email to manage all email communication with their buyers. Since this was not on the previous training, they needed more assistance. Again with the help of the volunteer consultant, additional training was held to help Mr D and his staffs manage the Email from various buyers using the built in capabilities of Microsoft Outlook Express to organise and sort email. This facilities enable Company A to track the negotiation process and the production reports.

5. Discussion

Although the process model seems like a sequential process, it is possible to have iteration between steps. Experience has shown that the first and second steps are crucial for the adoption process. These two steps can be done almost in parallel. The idea of step 1 and 2 is to assess what the current condition of organisation's IT is and what is needed. After knowing what is really needed and what is available internally, SMEs can fill the gap by searching for suitable IT solutions available in the marketplace. Mr D have been postponed the adoption of IT (the web based systems proposed by the vendors) due to the unavailable funds and the fact that the offer was not appropriate. In the next initiatives from his staff, Mr D once again reassessed Company A's readiness and requirements.

This time an email alternative was considered sufficient and feasible to be implemented.

Step 3 is the evaluation of what is available in the market. It might be in a simple tender process by inviting as many vendors as possible in the given time. In step 4, SMEs need to compare vendors' offers with the desired features of the IT solution needed. The selection criteria can be as simple as the IT solutions that match the most desired features and also with reasonable and affordable price. This process might need to be repeated if SMEs could not find suitable solutions n the first time. In this stage Mr D and his staff already possess the IT components needed to use email. They only need the Internet connection. There is more than a handful of ISPs in Central Java region. However, Telkomnet Instant does not require the user to subscribe to certain plan. As long as they have a telephone connection and modem they could utilise the network as a gateway to the internet. The billing is also simple, it will appears as separate section on the monthly telephone bill.

Step 5 is the implementation of selected IT solution. Since there is several different IT solutions' procurement strategy (internal development, external development, COTS, and their combinations), SMEs will go through different process. However, in our experience majority of SMEs might like to select external development and COTS solutions rather than internal development due to lack of internal knowledge and expertise in developing systems in-house. For external development, SMEs could use external consultants for developing systems, while in COTS solutions the vendors will provide installation, training, and maintenance of the systems. It all depends on how much is their budget and if they can afford external consultants. It is also possible that SMEs will combine the development strategy such as purchase COTS solutions and have external consultants for adapting the COTS product to suit SMEs' working environment. In this stage Company A have been helped by a consultant from a local university for setup and training. Since all the necessary hardware, software, and telecommunication line were available, Company A only need to activate them. The consultant helped Mr D and his staff to activate, setting up, and use email package. The next step was to introduce their email capabilities to their overseas buyers gradually. And the last step was utilising the email client software to manage all email communication.

Post adoption evaluation (step 6) should be conducted to assess the impact of new systems and also to learn from the experience (DeLone 1988; Thong & Yap 1996). The result from post adoption evaluation can be used as feedback to improve the SMEs' IT requirements and the matching process between what is available in the market and what is needed. In the future, this can be useful to adopt any new IT solutions needed by SMEs. In Company A, this step has been conducted informally and in parallel with the implementation. Mr D felt that email have been very useful for his company. As the result, the buyers also satisfied with

6. Conclusion

Adoption of IT within SMEs is different from larger business. SMEs have limited resources to be allocated for managing IT adoption process. Therefore, SMEs need to be more conservative in their IT investment. Currently, the existing literature seems to concentrate more on drivers and barriers of IT adoption within SMEs. There is lack of rigorous strategy on how to manage IT adoption process.

The guidelines for adopting IT for SMEs formulated based on existing literature and authors' experience in Indonesian SMEs. It consists of assessing the SMEs' IT requirements (step 1), assessment of organisations' IT maturity (step 2), evaluation of available IT solutions in the market (step 3), matching the available solutions with the SMEs' IT requirements and SMEs' IT maturity/readiness (step 4), implementation of selected IT solution (step 5), and post adoption evaluation (step 6). Even though the guideline seems like a sequential process, it is possible to use the guidelines in iteration.

Since the guideline is based on authors' past experience in Indonesia, it might not be applicable in different context. Culture plays an important role in any technology adoption, be it national or organisational culture (Rogers 1995). Currently a multiple case study is prepared to investigate this phenomenon further. The case study will collect more data from Indonesian SMEs to improve the understanding of IT adoption process within Indonesian SMEs. The case study will also validate and refine the strategy for IT adoptions within Indonesian SMEs. The collection of IT adoption process and specific strategy for adopting IT solutions proposed in this paper would be of great benefit for future decisions that SMEs have to make.

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@inproceedings{Sarosa2003StrategyFA, title={Strategy for Adopting Information technology for SMEs: Experience in Adopting Email within an Indonesian Furniture Company}, author={Samiaji Sarosa and D. Zowghi}, year={2003} }. Samiaji Sarosa, D. Zowghi. Published 2003. Business. In order to adopt IT, SMEs need to consider drivers and barriers that can influence the IT adoption success. This paper proposes a guideline to assists SMEs in adopting IT. The guidelines are formulated based on existing literature and authorsâ€™ experience in assisting Indonesian SMEs. An example of adopting email have been The core competence for SMEsâ€™ survival and growth involves creating and sharing knowledge and information, and innovating, learning and adapting to changes through strategic deployment of knowledge capital (Eikebrokk & Olsen, 2007; Federici, 2009).Â 10. The company mission of an SME significantly determines the possibility of adopting EC. Firmâ€™s size. Much exists in literature, which supports that firm size is a major factor affecting the adoption of a technology (see Jeyaraj et al., 2006; Sabherwal et al., 2006) and that size makes for resilience to environmental shocks.Â Most SMEs use internet facilities mainly for communications and research and EC seems under-played in their business processes (European Commission, 2007; Metaxiotis, 2009). PDF | IT adoption within SMEs has been covered extensively within literature, most of which have considered IT adoption from narrow perspective such as | Find, read and cite all the research you need on ResearchGate.Â SMEs could be more prepared in adopting IT. They could make an informed decision based on their knowledge. of their organisation condition, the availability external support, and customersâ€™ demand. Ever attempted to adopt new technology in the workplace? Our blog helps you to develop strategies for an effective rollout for your organisation.Â The following five employee technology adoption strategies can help. #1 Choose your new tech tools carefully. Ensuring employee adoption doesnâ€™t begin with training programs after youâ€™ve rolled out a new solution.Â Leave us a note below sharing your experiences and suggestions: Guide. Ensure success with employee adoption of your chosen intranet. Indonesia is now presenting many opportunities for information technology, especially e-commerce and fintech, where it's catapulting itself to a position of a global player.Â Indonesia has become the largest spender on Information Technology (IT) in Southeast Asia. The internet in Indonesia contributed to 2.5% of national GDP in 2016. Indonesia will gain 125 million internet users by 2025.Â A large number of companies are experiencing digital transformation all over the world. According to NetApp Indonesia, three information technology (IT) trends are currently on the rise in Indonesia.