IT Training as a Strategy for Business Productivity: A Framework for Small and Medium-Sized Enterprises in Asia

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Abstract

Though information technology (IT) has offered tremendous benefits to enterprises all over the world, its adoption by small and medium-sized enterprises (SMEs) in Asia remains relatively low. There are relatively few examples in the Asian SME segment where high end IT and electronic business (e-business) applications are being used for core business operations and transactions. This non-adoption of IT by these enterprises is a major impediment for enhancing their business productivity. The reasons offered for non-adoption of IT are usually the initial prohibitive cost and the perceived adoption risk. This perceived risk can be minimized by imparting “the right knowledge to the right people at the right time” in these enterprises.

This paper explores the various dimensions of this elusive “critical knowledge” and seeks to synthesize the various ideas in literature on change management, training needs analysis and IT adoption to evolve a strategic IT training framework for SMEs. The proposed framework recognizes the differences in IT training requirements for different levels of employees and suggests a differentiated training based on sequence and content for different segments of employees. The proposed training framework provides an actionable and comprehensive tool, which can be, used for imparting the necessary “critical knowledge”, leading to systematic IT adoption and consequently making these enterprises competitive in the global economy by enhancing their business productivity.

Keywords: Strategy, IT, Training, Organization, Hierarchical

1. Introduction

Information Technology (IT) has offered tremendous benefits to organizations all over the world. State of art enterprise resource planning (ERP), customer relationship management (CRM) and supply chain management (SCM) solutions have revolutionized the business operations of a number of enterprises. SMEs first felt the need for contemporary IT tools and learnt of their benefits from MNCs setting up operations in Asia. With increasing competition due to globalization, companies began to adopt technologies like ERP, CRM and SCM to improve market competitiveness within tightly governed margins. Though IT has simplified production processes, its adoption by Asian SMEs remains relatively low. In most cases, the use of IT is restricted to rudimentary practices like word processing, pay roll generation, maintaining some elementary databases, etc. There are relatively few examples among Asian SMEs where high end IT applications are being used for core business operations. The use of the Internet for e-business involving core business transactions by this segment is also minimal. While Asian companies are keen to speed up IT initiatives, cash inflow is a problem. This non-adoption of IT by Asian SMEs is adversely affecting their business productivity compared to its competitors in the western part of the world.

When IT first invaded the business space in the mid 1990s, new technologies like ERP faced stiff resistance from IT managers who had developed in-house solutions. As a result of this, most SMEs were against applications like ERP. S Srinivasan, General Manager, Business
Strategy and Systems, Sundaram Fasteners, India, says "An auto ancillary manufacturing company like ours needs an enterprise-wide solution that matches our line of business. A comprehensive solution meeting all our needs has not been found as yet. Besides, there is statistical evidence that one third of all enterprise implementation fails" (Dataquest 2002).

Some of the reasons offered for non-adoption of IT are the high cost and the perceived risk involved in using IT and e-business. SMEs generally adopt time-tested technologies and are relatively averse to adopting something radically new. This perceived risk can be minimized by imparting the right knowledge to the right people at the right time in these enterprises. The underlying real reason for these firms not adopting IT is often the lack of “critical knowledge” essential for the effective deployment of IT. This unsystematic adoption of IT by the Asian SMEs makes them less competitive as compared to their global counterparts. To remain competitive, it is imperative for them to adopt IT for their core business activities and use the potential of e-business to the fullest. This paper explores the various dimensions of this “critical knowledge” which is essential for IT adoption by Asian SMEs.

Before proceeding further with our discussion it is imperative for us to understand what is meant by “critical knowledge” for IT adoption. “Critical knowledge” seeks to explain the true value of IT to the various employees within the organizations, helping them overcome their resistance to adopt IT. Broadly speaking “critical knowledge” is imparting right knowledge to the right people at the right time in an organization, leading to an effective and efficient adoption of IT for enhancing business productivity. It includes within its ambit not only the knowledge for effective deployment of IT in an organization but also the necessary expertise to leverage IT in various functional areas.

For unraveling the various elements of “critical knowledge” we synthesize the emerging ideas in literature on change management, training needs analysis and IT adoption to evolve a strategic IT training framework for Asian SMEs. The proposed training framework can be used for imparting systematic and result oriented IT knowledge to the enterprise personnel, leading to systematic IT adoption and consequently making these enterprises competitive in the global economy.

2. Need For Systematic IT Training

IT training in most Asian SMEs is a matter of chance rather than a planned initiative. Training, in contrast, refers to a planned effort by a company to facilitate the learning of specific knowledge, skills or behaviors that employees need to be successful in their current job (Goldstein 1993). Training in IT requires more attention and careful planning, as the content and outcome of training are often not well defined. The pressure for more training is expanding due to the increasingly popular view that people, rather than technology, represent the primary source of enduring competitive advantage (Ford 1997). Although the need for training is being realized by many organizations, in majority of the cases for “new technology”, the training is not in tandem with organizational requirements. The outcome of most of the training programs is often not known to the firm, which is spending its resources. The same has been true of IT training in Asian SMEs. Some of the employees in these firms do receive IT training but it is mostly a result of personal initiative of that employee, in the field of his/her interest. This field may or may not be of direct consequence to his/her job. In some cases, it is the mere persuasion of the “training provider” which initiates the training nominations from these firms. The content and context of IT training in such cases is often decided by the “training provider” and not by the firm. This results in incongruence between the training outcomes and the organizational requirements. There is a need to consider the interface between the organizational system and training (Goldstein 1991; London 1989). Asian business scenario is replete with examples where unsystematic IT training inhibited the business productivity of SMEs.
The case of GMP Recruitment Services (S) Pte Ltd in Singapore, illustrates the importance of proper IT training in an enterprise and how its neglect may lead to missed opportunities (Lee-Partridge & Tan 2000). In Asian SME perspective, IT training has been thought of as a “necessary evil” and not as a strategic tool for enhancing business productivity. Some firms are proactive in realizing the importance of IT training but are still not able to plan their training modules systematically for want of “critical knowledge”. There are very few examples where the firms’ success can be attributed to its well thought out and planned IT training. Housing Development Board in Singapore is one such example, which realized the importance of systematic IT, training for its employees and was able to leverage training for its success. This was possible because the top management had the right attitude towards IT adoption and training (Teo 1999).

SMEs are by definition smaller and medium-sized enterprises, which have comparatively lesser resources than larger firms. Although the definition of SMEs may vary by country, the definition used by the Association of Small-and Medium-sized Enterprises in Singapore (www.asme.org.sg) is illustrative of how companies are classified as SMEs. Specifically, SMEs are companies with:

1. Total fixed productions assets not exceeding S$30 million; and
2. Total employees not exceeding 300 (for service sectors).

The resource constraints inhibit SMEs from seeking innovative ways for gaining competitive advantage. These enterprises are characterized by lesser risk taking ability. They want to adopt time tested ways of doing business and for them venturing into unfamiliar domains is something to avoid. IT promises them remarkable ways of improving their profitability and efficiency. Most of the revolutionary IT systems like ERP, call for a major investment in terms of time, money and manpower. It also calls for a major revamping and reengineering of the existing systems and practices. Resistance to change old, time tested and reliable systems is understood to be the underlying reason for non adoption of new IT based systems. Though these state of art systems promise astronomical benefits, the “lack of critical knowledge” to deploy IT systems effectively rather than other resources emerges as the major impediment for non-adoption of these systems. “Ignorance breeds fear” is a very age-old adage, which holds true for this case also. This paper seeks to identify the “critical knowledge framework” for IT adoption by these enterprises. There is no doubt about the fact that everyone in an enterprise does not require the same kind of training in IT to enable its adoption. The proposed framework seeks to identify the training requirements for different segments of employees in an enterprise so that customized IT training programs can be chalked out to facilitate speedy and fruitful IT adoption by these enterprises. Effective training requires a systematic approach to training needs assessment which determines not only who to train but also what to train (McGhee & Thayer 1961). These authors also cited a lack of theoretical models for providing systematic training. Surprisingly this gap in IT training literature has still not been addressed in a systematic way. This paper seeks to present a comprehensive, conceptual, actionable strategic IT training framework for SMEs, which will help in efficient and effective IT proliferation in these enterprises.

3. Strategic IT Training Framework
Noe and Ford (1992) have stated the need for training practice to be used as a part of the strategic planning process of the firm. In contrast to this training, most SMEs in Asia viewed IT training as an operational or a functional necessity rather than as a strategic tool to gain competitive advantage. In the past, the number of players in the field was limited. But now with rapid globalization, the scenario has undergone a complete metamorphosis. In line with the changing market conditions, the training systems in SMEs also have to continuously evolve. Using training, as a strategic tool is equally valid, not only for IT, but also for all
other functions as well. IT training presents a yet more challenging endeavor because it calls for a complete transformation of most of their existing systems. Especially the proliferation of ERP and CRM techniques are based on the concept of business process reengineering which require a major revamping of the existing systems. The rate of evolution for all new technology tools and methods, including IT has to be definitely at a much faster pace. Tannenbaum and Yukl (1992) have stressed on the need for training to be viewed as a system embedded in organizational context. Training should be conceptualized as integral to the strategic goals of the organization (Schuler & Walker 1990) and a component of the human resource planning process (Jackson & Schuler 1990). The orientation of training has typically been micro in its orientation, with a focus on individual learning development and change. This is true despite the fact that at the conceptual level, training needs assessment (McGhee and Thayer, 1961), evaluation (Kirkpatrick 1967) and instructional design models (Goldstein 1992) state that training should be aligned with the organizational goals. A key question to be addressed is “what is to be learned?”(Campbell 1988) and equally important is to know “by whom” and “when”.

Figure 1 presents a strategic IT training framework for SMEs especially in Asian context (which tend to have an organizational structure that is hierarchical in nature). The framework recognizes that the IT training needs for the different levels of employees in SMEs are quite divergent in terms of content as well as timing. The three broad contents of IT training are attitude towards IT, knowledge of IT and actual IT operational skills. The change in the breadth of the triangle and quadrilateral in figure 1 indicates the change in requirement of the training content for different levels of hierarchy.

![Figure 1: Strategic IT Training Framework](image)

McGhee and Thayer (1961) and Goldstein (1993) argued that a thorough need analysis will include: (a) organizational analysis, (b) task analysis, and (c) person analysis. In this framework, we are including all the three. At the organizational level, we are concentrating
on SMEs. At the task analysis level, we are considering the job requirements of various levels of management and at the person analysis level, we are generalizing the personnel at different levels. Ostroff and Ford (1989) applied a multilevel perspective to needs analysis, and noted that the previous three facets may reside at different or even multiple, levels of analysis. The training program of the organization needs to be linked to the organizational business strategy (Brown & Read 1984), the changes in the strategic plan should be reflected in the revised training objectives (Hussey, 1985) and the needs assessment must incorporate a future orientation (Scheinder & Konz 1989). The proposed framework seeks to offer answers to questions regarding training components and training sequence for different levels of the organization and serves as a practical tool for the SMEs in Asia for planning their IT training initiatives.

3.1. Levels in an Organization

All personnel in an organization can be classified into three distinct levels based on the kind of work that level performs. Anthony (1965) made the distinction between the three levels of management based on their decision-making functions (strategic, tactical and operational decisions). The three levels into which all the employees of an organization can be classified are top, middle and frontline. In the context of the SMEs, the top level includes the CEO and different unit heads. They are the people who are responsible for spelling out the roadmap of the company. Their decisions have long-term implications not only for the company but also all its employees. The role of this level in SMEs is even more important because here they are also aware of the key strategic problems of the company. The comparatively smaller size of the company brings them closer to the actual workplace; hence they are better able to monitor the effects of their decision. The middle level includes the functional managers. They are largely responsible for the smooth functioning of the areas under them within the broad framework of policies and guidelines spelt out by the top management. They are required to plan and source the various resources for production and marketing. This group of personnel requires having a thorough knowledge of working procedures for the industry. The frontline personnel include all the employees excluded from the upper two categories. They include the supervisors, inspectors, and workers. They are the employees who are actually involved in the day-to-day business operations. They are required to have well developed skills in handling the various devices and systems, which they operate.

From the above classification, we observe that different levels of employees have different kinds of functions to perform. This implies that these three levels have different “informational needs” in relation to their function; hence their training needs are also quite different from each other. With regard to IT training also, the different levels require different kinds of knowledge, skills and attitudes (KSAs). The different types of knowledge acquisition require different types of training methodologies. Anderson (1982) made a distinction between declarative knowledge, which is fact knowledge (knowing what), and procedural knowledge, which is knowledge of procedures (knowing how). The frontline level may require more of the procedural knowledge whereas as we go higher, the personnel may require more of declarative knowledge related to IT. The profound problem with IT training has been that in most of the cases, the training is not directed to the informational needs of that level and often there is a mismatch. There are instances where a CEO of the company may have attended a course on nuances of Visual Basic and a frontline worker of the company may have had a brush with the managerial implications of e-business. This mismatch of the IT training content with the informational needs of the employee results in a two fold wastage. First, the money spent on training that employee is wasted since it will not help him in his job. Second, the time spent on the training is also a wasted resource. This paper presents a conceptual strategic IT training framework for SMEs so that they are able to
plan fruitful IT training for its personnel. There is no doubt that IT training is essential for systematic IT adoption by enterprises, but this effort has to be planned in a systematic way so as to avoid wastage of resources and derive the intended benefits. The proposed framework (Figure 1) explores the IT training for SME personnel on two dimensions – training content and training sequence. Training content expounds the broad parameters (in terms of knowledge, skills and attitudes) on which the “planners” should organize the training for its different levels of employees. The training sequence spells out the order in which the employees should be imparted the IT training for maximum impact on the firms’ performance. A summary of the training content is illustrated with examples in Table 1.

3.1.1. Top Level
Fishbein and Ajzen’s (1975) theory of reasoned action proposes that both an individual’s attitude towards a behavior (development) and the perceptions of the wants and wishes of important others (supervisors or peers) determine behavioral intentions. Fishbein and Stasson (1990) hypothesized that the wishes and wants of important others would be mediated by intentions of the individual. These important others are mostly members of the top management. Hence for the success of any training program in an organization, the support of top management is of utmost importance. More so for training related to new technology and IT adoption, the explicit sponsorship by the top managers is an essential prerequisite. The top management support elevates the role of IT in an organization leading to greater business use of the Internet (Teo & Too 2000). This proposition is equally valid for a successful transformation in SMEs. Top management support is related positively to innovation adoption in organizations (Meyer & Goes 1998). It is also an essential prerequisite for successful adoption and implementation of information systems in organizations (Premkumar & King 1992; Grover 1993).

As spelt out in the framework the top management of an enterprise should be the first to receive IT training. They have to understand the nuances of IT and the benefits it can impart to the firm. A positive attitude of the people at the top about IT will proliferate its adoption in the entire organization. Though we have realized from the above discussion that the top level should be the first in the sequence of IT training in SMEs, it is also very important to understand what their actual training requirements are and what methodology can be used for training them so that the scarce resources are put to efficient use.

The top level managers are usually the perpetrators of “underlying currents” and “culture” in an organization. In most traditional organizations, especially in the Asian context, the top managers are often viewed as “trendsetters” whom all employees in the organization try to emulate. Hence it is very important for top management to have positive and favorable attitude towards IT and new technology adoption. This has implications on the training content for these top level managers. This group of people requires more of attitudinal training towards IT. They should be able to realize the importance of IT and the impact that it can have in transforming their enterprise. They require relatively little IT-specific knowledge or skills. These leaders should be trained in a way so that they understand the potential benefits of IT adoption as well as the potential costs of not adopting IT. Such understanding by top management would enable them to be better able to enthuse and motivate their employees for IT adoption. The tapering cone in the proposed framework expounds training mostly in understanding “whys” (i.e. attitudes). The requirement of training about “what” (i.e. knowledge) and “how” (i.e. skills) is comparatively lesser.

Their preparation should be aimed more on the “developmental” dimension rather than on the “training dimension”. They require having a broad understanding of the various ways in which IT can help in their business. They should be aware of the various kinds of IT technologies available in the market and the latest trends in the industry worldwide. They
should have enough knowledge so as to decide about the kind of systems relevant for the business.

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<tr>
<th>Training content</th>
<th>Fundamental question</th>
<th>Explanation with example</th>
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| **Attitudes**     | *Why?*  
The answers to such questions determine the “strategic direction” of the firm and are usually provided by the top management | It seeks to explain the importance of IT and why it should be adopted by the organization, the kind of benefits (long term as well as short term) that can be derived from the use of IT. The emphasis is more on molding the views towards leveraging IT to improve business productivity and competitiveness. In the case of ERP, such training will inform the participants about the significant benefits that IT is capable of giving to the firms. It seeks to develop the enthusiasm and remove inhibitions by informing about the “real business value” of IT. The trainees are also taught about the different technologies available as well as their potential impact, so that they can better decide on the choice of technology for the company. |
| **Knowledge**     | *What?*  
These decisions determine the “tactical course” of action of the firm and are mostly in the domain of the middle management of the firm | This seeks to inform about the details for a particular technology. It aims at empowering the trainees with the requisite background to distinguish and decide which among the options available for a particular technology may be beneficial and suited for their business. Going further with the ERP example, the knowledge component of the training provides the ability to decide which one of the ERP systems (SAP, BAAN, Oracle or JD Edwards) is most suited for them. |
| **Skills**        | *How?*  
The frontline workers require this expertise to “operate” the various systems in an enterprise | This aspect of training provides the necessary “ground tools” to the workers to actually work on the chosen systems. It provides the workers with the necessary expertise to operate the specific software and hardware chosen by the company. An example of skills may include the techniques for operating the different modules in SAP ERP system. This “skills training” logically comes after the two vital preceding decisions have been taken (1) to use ERP system in the company and (2) among available ERP systems to use SAP |

Table 1: Summary of Training Content

The objectives of employee development are not necessarily tied to a specific job or task. London (1989) defined development as courses, workshops, seminars and assignments that
influence personal and professional growth. Development is less focused on specific skills instead it focuses on the comprehensive knowledge and attitudes required for improving the long term personal effectiveness of the employee which results in an overall benefit to the firm. The top management in a firm is responsible for deciding the course of action for the enterprise hence their overall development in IT will result in empowering them with the right attitudes for executing this function effectively and efficiently.

3.1.2. Middle Level
The middle level is mostly concerned with the tactical decisions in an enterprise. Middle level managers are required to make decisions on how to best utilize the existing systems in an enterprise as per the directions of the top management. Suppose the top management has been imparted an “attitudinal training” in IT and they decide that ERP system is suitable for their enterprise. They give necessary directions to the middle level management to implement ERP in their organization. Now the middle level management should have the “critical knowledge” to appreciate the functionality of ERP. They should be able to spell out the relative benefits of using SAP, BAAN, ORACLE or J D Edwards and consequently help the top level management in choosing the required system, consultants, etc. Thus their training sequence is next in importance to the top level and their training content is more focused on the “knowledge” aspect of training. They require having a thorough knowledge and understanding of the various systems of the firm and the IT capabilities and more importantly how they can be integrated. Through this knowledge, these managers may realize that the cost for implementing an ERP package may be quite less in many SMEs as the cost for certain software may be linear, based on the number of users (Hill 2003).

The training program planning procedures need to identify and consider the technical as well as managerial skills needed for advanced technologies well in advance of its implementation (Kozlowski 1987; Majchrzak 1988). This requires knowledge of planning techniques that are not well represented by the conventional needs assessment models (Kraut, Pedigo, McKenna, & Dunnette 1989). The diamond shown in the framework emphasizes the need for having a greater emphasis on “knowledge related” aspects of IT in their training rather than attitudes or skills. Once they are able to spell out what is to be adopted by the enterprise then the frontline workers can be imparted the specialized training of “skills set”. Thus the training programs for the middle level managers should be more knowledge related so that they are able to comprehend the IT options available in the industry and are able to make “informed decisions” (Srivastava 2001). Many German midsize firms are adopting Linux as their cost effective platform (Blau 2003). Such a decision can come only from a well-informed middle management which has a thorough knowledge of the various options and has the capability to make a comparison.

3.1.3. Frontline Level
Training system must be viewed in context of ongoing organizational processes, and the effectiveness of training depends on the program as well as relevant individual and situational factors. A systematic, multilevel needs analysis should be employed to help: (a) researchers identify the critical variables that should be incorporated in studies of training effectiveness; and (b) practitioners consider what other aspects of organizational environment need to be addressed, as well as to determine the ideal sequencing of training and other organizational interventions to realize the greatest organizational effectiveness (Mathieu and Martineau 1997). In line with this requirement, we have to understand the functional requirements of the frontline level managers before spelling out their training requirements.

The frontline workers are the actual executors of the various tasks in an organization. The top level management brings in the “idea” (concept) in the enterprise, the middle level
management gives “form” (methodology for operationalizing the concept) to that idea and the frontline workers actually “execute” (operationalize) this idea. The frontline workers should have rigorous training in the actual systems and IT modules related to their job. If we consider the ERP implementation example again, then the frontline workers require requisite “skills” for operating the selected modules of the IT systems chosen. Their training may be very specialized depending on the skills set required for operating the particular systems. As shown in the proposed framework, they require training in the specialized skills the maximum and comparatively less of knowledge and attitudes related training. There is no doubt about the fact that they do require having a positive attitude towards IT, but this attitude will be instilled in them through “socialization” and “proliferation” from the top management. Their training need not be directed towards IT related “attitudes” and “knowledge” but they should be focused towards the specific skills required by them for execution of the particular job. Since their skill acquiring activity can begin only after the “top management is prepared to embark upon the IT odyssey and the middle management has chosen the ship for this journey”, hence logically the sequence of their IT training in an enterprise is after the top and middle management.

4. Implications and Contributions

IT has offered tremendous benefits to the industries throughout the world. Its efficient adoption by firms is leading to an enhanced business productivity resulting in greater profits. Large manufacturing and service industries all over the world have benefited from the use of state of art enterprise wide systems like ERP, CRM and Internet based transactions. SMEs are generally limited in their resources and hence their risk taking ability and attitude towards new technology is often skeptical. They are the ones who are extremely risk averse and want to adopt time tested technologies. Though SMEs all over the world have these limitations, we observe that SMEs especially in Asia are adopting a “wait and watch” approach in leveraging IT systems in their business. This lackadaisical attitude towards IT adoption is having adverse consequences on their business productivity leading to a gradual erosion of their competitive position in the emerging global economy. In this paper, we have argued that the major reason for non-adoption of IT by Asian SMEs is the lack of “critical knowledge” required by the personnel of these enterprises. This “critical knowledge” is essential for adoption and sustained use of IT for enhancing business productivity and competitiveness. Without having this “critical knowledge”, these firms will continue to experiment with IT without deriving the full benefit that these systems have to offer. Lack of this “critical knowledge” leads to “technological shyness” and overcoming this shyness is a major challenge for these enterprises. This “technology shyness” is itself a consequence of inadequate and inefficient training programs for the employees. Wherever training programs are present, they are poorly designed and hence are not resulting in the intended benefits to the organization. In this paper we explore the various elements of IT training and how SMEs should conceptualize IT training for enhancing their business productivity and competitiveness. It is our contention that this “critical knowledge” can be imparted to the managers and workers of these enterprises through a well-designed customized training program.

The motivation for this paper is to provide a theoretical basis for providing an IT training framework applicable for Asian SMEs. We seek to present a comprehensive, actionable, conceptual strategic IT training framework for SMEs, which will help in the efficient and effective IT proliferation within these enterprises. As systematic training is an important input for IT adoption in enterprises, we hypothesize that the presented IT training framework will help in transforming “technological shyness” to “technological savviness” leading to enhanced business productivity and competitiveness.
Training should be viewed not only as a means for serving operational needs but it should also be used as a strategic tool (Schuler & Walker 1990; Noe and Ford 1992). The proposed training framework segments SMEs in the traditional hierarchical structure and identifies the broad content and sequence of IT training in context of these levels of employees to facilitate IT adoption in a systematic way. The top management personnel of an enterprise who are supposed to provide a strategic direction to the enterprise are the ones who should have a “positive attitude” towards IT adoption and should understand the tangible and intangible benefits that IT offers to them in the short as well as long term. They should not only be the first ones in an enterprise to be trained in IT but their training should also be focused towards empowering them with the “attributes” which result in fruitful IT adoption by these enterprises. Once the top management sets the ball rolling with their right attitudes, the middle management should be in a position to execute the IT plans in an enterprise. Hence they must have the “right knowledge” to make the right decisions about the choice of platforms, software etc. Their training should therefore infuse in them the knowledge to understand and take decisions best suited for the firm. The role of the frontline workers is at the delivery stage of the IT plan, conceptualized by the top management and operationalized by the middle management. These frontline workers should be “skilled” in operating the chosen software and hardware systems, so that right results are delivered to the firm by IT adoption. Hence their training requirement is more on the skills aspect and actual performance at the delivery stage. Enterprises are faced with the problem of dwindling resources and increasing competition. The proposed framework provides guidelines to practitioners and managers to efficiently deploy their resources on fruitful IT training. It gives a direction to the managers for planning IT training of its personnel so that there are no wastages and the various levels of personnel get the IT knowledge which is “functionally and strategically relevant” for them.

This framework reiterates that not all employees in SMEs require similar kinds of IT training. The “informational needs” of top, middle and frontline level personnel are very different from each other. Hence the IT training programs for different levels must be designed according to their “roles and requirements” to avoid wastage of scarce resources. Systematic IT training as per the proposed framework will make these enterprises competitive in the global economy. Overall, the framework provides researchers and practitioners with a useful tool to better understand the different training requirements for different levels of the organization. Such understanding would pave the way for more effective usage of scarce resources to ensure that personnel at various levels are adequately trained to leverage IT effectively to improve business productivity and enhance competitiveness.

There are three main limitations of this framework. First, in the present day world, organizational structure is itself undergoing a major transformation. We are gradually moving towards flatter organizations, where the classification as per the traditional structure may not hold good. However, Asian SMEs tend to be slow in adopting newer organizational structure and tend to continue to have a hierarchical structure. Second, some SMEs are relatively small and the top management at times may also be performing the operational and tactical role, apart from the strategic role. Hence the framework has to be suitably modified for such enterprises. Third, we have assumed that IT adoption should be driven from the top. Sometimes, the middle level and frontline personnel are the ones who bring to management attention what the competitors are doing with regard to the deployment of IT. Nevertheless, top management support for IT is an essential element for successful IT deployment. Such support would be difficult if top management does not have favorable attitudes toward IT adoption.

Future research can identify the detailed elements of KSAs required for the various levels of personnel for particular IT system implementation e.g., ERP and CRM. Extensions of this
paper can also be done by studying some of the successful Asian SMEs and analyzing their IT training strategy for its employees in comparison to the proposed strategic IT training framework.

5. References


