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A Measurement Framework to Assess SME Performance

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Abstract

This study proposes the development of a measurement framework to assess the performance of Small and Medium-sized Enterprises (SMEs) on the adoption of ICT strategies. The role of SMEs in any economy is a distinctive one as they contribute towards Gross Domestic Product (GDP) and employment workforce. SMEs are typically a measure of a healthy economy across the world. Like any business organization, they strive for market survival, changing technology and advancement, globalization, branding, competition while maintaining cost and profit. They react to these stiff market pressures by adopting different strategies in their efforts to remain competitive. One of such strategies is the deployment of Information and Communications Technology (ICT) as competitive weapon that comes at the expense of budget and profits. Hence, there is a great need to measure business performance as a consequence of adopting ICT strategies to ensure that the effort is not a wasted one and to moderate on the efficiency and effectiveness of the intervention. Whereas, most of the available Performance Measurement Systems (PMS) are for large enterprises, in most cases they are deemed not suitable for SMEs. The performance measurement framework being proposed will provide guidelines for future evaluation and assessment of ICT investment decisions and deployment strategies for SMEs.

Keywords — Small and Medium-sized Enterprises, Measurement Framework, Information Technology Strategic, Performance Measurement.

1.INTRODUCTION

The task of smoothly running a business to meet holders amidst numerous challenges and factors. Notably on the list of factors are globalizations, customer demands, government directives, policies and regulations, market conditions, competitions, technology, customer retention, branding and much emphasis on sustainability the goals and objectives of newly established business enterprises these days is taking a toll on business executives and stake (Gerstein and Reisman, 1982, Turban et al, 2011). To remain competitive organizations need to adopt strategies, tactical and/or operational, in order respond promptly and decisively to these factors. Some of these decisions may impact on organizations and

threaten their core business. It is imperative that businesses adopt the best fitted strategies to address their challenges as the need arise. One of the most likely strategies to be deployed by organizations is ICT.

The role of ICT in enhancing and shaping tomorrow's business operations is a distinctive one and cannot be over emphasized. ICT lies at the heart of business models and is one of the foremost choices for business strategy. The potential use of ICT as a competitive weapon is fast growing as a popular niche. ICT has positioned itself as one of the main mechanism for growth among major business organizations and SMEs because it facilitates a more cost-effective way of doing business.

In societies where commercial competition is accepted as an economic system, the adoption of ICT to derive competitive advantage appears to be a challenge that is faced by many SMEs both domestic and international. The concept of competitiveness is defined as the long-term performance of SME organizations and their individual growth coupled with their contributions to the creation of jobs and wealth in the economy. SMEs are defined as an integral part of any nation's economic growth. It is important for any small business enterprise to benefit from ICT investments and flourish. However, ICT is not a panacea for all business problems, so there is still a lack of understanding of the issues that determine the influence of ICT on a particular organization and the process that will allow smooth coordination of the technology and the corporate strategy. As a result, this study proposes the development of a measurement framework that will be used to assess SME performance.

According to the Balridge (2011:2012) criteria, performance measurement can be best understood through considering the definitions of the words 'performance' and 'measurement':

(A) Performance refers to output results and their outcomes obtained from processes, products and services that permit evaluation and comparison relative to goals, standards, past results and other organizations. Performance can be expressed in non-financial and financial terms.

(B) Measurement refers to numerical information that quantifies input, output and performance dimensions of processes, products, services and the overall organization outcomes. Performance measures might be simple, which is derived from one measurement or composite, which is derived from several measurements.

The performance measurement framework being proposed in this study is based on the performance impact of ICT on overall business success. It recognizes the strategic impact of ICT and performance measurement as a tool to continuously improve the SME's economic status. It further recognizes the unique characteristics of SME and critical success factors by iteratively tackling one objective at a time. This research seeks to develop a tool that would enable SMEs to derive maximum benefits from their performance measurements efforts in relation to their ICT investments to improve their sustainability and survival rate.

2. PROBLEM STATEMENT AND RESEARCH QUESTIONS

In order for a business organization to succeed, there is the need for timely information about its operations. In order to get timely information, the operations have to be monitored and measured constantly. The key role that ICT plays in the unlocking of potential business value cannot be overstated, yet small business enterprises often find it difficult to implement technology for a variety of reasons, including behavioral characteristics and resource constraints (Street and Meister 2004).

Governments and financiers invest huge funds in the development of SMEs, but tools to monitor this phenomenon are not readily available. Different performance and analysis tools exist, but they have been developed from the perspective of large business enterprises. Hence there is a need for an orderly investigation of the unique characteristics of the SME phenomenon in order to propose effective solutions that are tailored for this particular domain. The recommendation of proper performance measurement and evaluation mechanism will be an added tool to guide business and provide necessary interventions in the future and thus lead us to our research question:

How can we effectively measure the performance of SMEs after their ICT investments and deployment?

The SMEs compete in the same global and vibrant market as their counterpart in the large business enterprises. But in order for the SMEs to remain in business while

retaining their competitive advantages they need to evaluate and measure their performance and ensure that their ICT investments are spot on. Unfortunately, most of the available performance measurement and evaluation systems are biased toward large business organizations. The set of criteria being used to measure and evaluate performance will relatively be that of large organizations and therefore prompting the need to establish a set of suitable criteria for SME performance. This leads us to the following research sub-questions

a) What set of criteria will be suitable to measure SME performance based on ICT investment to derive competitive advantage?
b) What is the relationship between the SME performance and proposed set of criteria's?

The solutions to these questions will help us to fine tune our proposed framework for measuring performance of SMEs. The proposed framework will lean towards the peculiar nature and business requirements of SMEs.

3.RESEARCH AIM AND OBJECTIVE

This current study aims to develop a measurement framework that will be used to assess SME performance based on ICT investment. In order to achieve this aim, the following objectives would be met:

a) To discover suitable criteria to evaluate ICT investment on SME performance.
b) To determine whether there is a relationship between ICT investment and the discovered criteria
c) To design a framework that will be used to measure the impact of ICT investment on SME performance.

4.LITERATURE

Researchers have shown a fair amount of heightened interest in the area of performance measurement. As a field of research, performance measurement has seen a substantial growth in the past 20 years. Organization performance influences actions that companies embark on for their future direction. Measurement of such performance is perceived as important (Folan and Browne 2005). Measurement is crucial to improving business performance (Sharma et al, 2005). A performance measurement and management system (PMS) is a balanced and dynamic system that enables support of decision-making processes by gathering, elaborating and analyzing information (Neely, et.al, 2002). There has been a notable shift in focus from a financial to a non-financial perspective when measuring performance. Some of the challenges facing business organizations including SMEs today are how to match performance measures with business strategies, structures and corporate culture, type and number of measures to use, balance between merits and costs of introducing these measures and how to deploy the measures so that the results are used and acted upon. Performance measurement systems in general should be able to:

a) Provide SME with tools needed to extract, collect and elaborate data characterizing their business
b) Allow organizations to identify relationships between their business processes
c) Translate information from measurement of processes into effective tasks
d) Understand the cause-effect relationships the value of financial and quality indicators is based on.

The traditional version of balanced score card (Kaplan and Norton 1992, 1996) consists of four perspectives of financial, customer, internal process and innovation and learning perspectives.

One of the concerns though with the balanced score card (BSC) is the omission of other stakeholders such as end-users, employees, suppliers, and regulators. These stakeholders can have the potential to impact on the organization and its ability to perform. The BSC does not take a broad enough view of the stakeholders who interact with an organization. The Dynamic Performance Measurement System(DPMS) (Laitinen, 1996) merges the strengths of models previously developed, by integrating the use of ICT infrastructure and a quantitative model to manage cause-effect relations of performance indicators. Lack of implementation guidelines makes it difficult to use by SMEs. The Activity Based Costing(ABC) (Gunasekaran, et al, 1999) provides guidelines and criteria for implementation in SMEs but focuses exclusively on cost. A System for Organizational Performance Measurement (OPM) (Chennel et al., 2000) developed form an empirical case study research in both large and small enterprises focuses on helping organizations find performance

measures needed to monitor all aspects of organizational performance. Its objectives are not clearly defined and the system still has to be tested. On the other hand, the Measuring Performance of SMEs(MPoSME) (Gin Chong, 2008), performance measures used by SMEs were identified recognizing the importance of both financial and non-financial measures. No specific guidelines for implementation are covered.

The principal characteristics and dimensions of an ideal SME performance measurement system should include assessment, design, implementation, communication/alignment, and review. None of the models and frameworks reviewed in the literature satisfies all criteria at the same time. Time, quality and flexibility are commonly cited as the main operational dimensions, which should be measured (Kaplan 1983; Lynch and Cross 1991; Neely et al., 1995; Collier, 1995; Laitinen, 1996; Medori and Steeple, 2000).

Finance in various different forms is also considered to be a critical dimension of performance (Keegan et al. 1989; Meyer, 1994; Bititci 1994; Ghalayini etal. 1997). In addition, customer satisfaction and human resources are repeatedly cited as critical measurement areas (Eccles, 1991; Kaplan and Norton, 1992; Fitzgerald and Moon, 1996).

5. METHODOLOGY

The approach to this study would be descriptive and quantitative. It is very important that we gather information on business strategies and ICT intervention with the resultant progress. Survey method will be used to collect the necessary data for performance evaluation. This will provide us with an opportunity to uncover factors that influence SMEs performance and at the same time uncover strategies that influence SMEs performance. At the end, we will be able to obtain grounded evidence on the existence and importance of key variables needed for the measurement and evaluation of SMEs performance vis-à-vis ICT alignment strategy.

The sample population for the study will be business executives and managers of various SMEs in and around our vicinity. They are our target group because they are involved in the day-to-day running of their business and would be in better position to provide us with an insight and resourceful data (Dix et al, 1998). We will avoid sampling a large group of SMEs and would rather focus on few participants with managerial experience with hands-on facts and figures. The convenient sampling method is highly favored and would be practical to our study (Leedy & Ormrod, 2001).

The scalar style of questions would be used, which is the adoption of the Likert technique where users are judged on a specific question on numeric scale of 1 to 5, usually corresponding to a measure of agreement or disagreement and may be in ascending or descending order of importance (Corbetta, 2003). Also, a "Yes" or "No' question was included to get affirmative answer from the respondent even though we are aware that it does not give the respondents ample opportunity to state the issues the way they see fit. The analysis for the survey data will be done by collating all the responses.

Table I below gives a summary of factors that informed the design of the performance measurement framework as proposed in this study. Factors listed in column A are known to have an influence on performance. The first 5 measures listed in column A are common measures used by firms that are members of Computerworld's Premier 100 (Sethi et al. 1993). Determining which measures are most suitable for SMEs is the subject of this study.

Our proposed measurement framework as depicted in Figure 1(Appendix A) has four stages with clearly defined set of activities within the stages. The first stage of the framework starts with strategic planning where business identifies objectives which are targeted at improving certain areas of the business. This objectives are also informed by SME critical success factors.(TABLE I, column D). Identified areas of improvement are those that will lead to improved performance in the business. The stage 2 continues with the whole re-alignment process between ICT and business. At this stage, the objectives for ICT investment and business objectives identified in stage 1 are then integrated into the ICT strategic plans for solution identification. At this stage business identifies ICT projects and develops performance measures in line with improvement plans. Details of these projects are captured in business case documents and project charters which will later feed the PMS.

Furthermore, stage 3 can be described as the heart of the performance measurement system (PMS). ICT solutions are applied to the identified improvement areas. The ICT investment portion is measured as input into the overall PMS. The impact of ICT

investment as a contribution to overall business performance is also measured. The last stage, stage 4 is where the review of the PMS output takes place. The review of the performance and the relevance of the performance measures are important at this stage as it forms the basis for lessons learned which could be used as input into future strategic plans. Results are communicated to relevant stakeholders and the process goes back to stage 1. Our proposed framework is an attempt to develop an integrated framework which has the potential to provide significant benefits viz.:

a) Respond to the needs of SMEs,
b) Support management by helping them to measure business performance, analyze and improve business operational efficiency through better decision making processes.
c) use ICT to support the development and implementation of the performance measurement system
d) Use ICT to improve performance

6.GUIDELINES FOR IMPLEMENTATION

The performance measures will be guided by the following principles and the measures would be designed in such a way that they:

a) Accurately reflect the performance of the process and its people
b) Are easily (and transparently) translated into business processes for implementation.
c) Are dynamically maintained and revised in response to today's ever changing business environments

Figure 2 in Appendix A below provides further guidelines for implementation. Firstly the objectives should be identified based on critical success factors (**D**). The objectives must be prioritized as informed by variable **E** which is also informed by **D**. The selection of the performance measure (**B**) is informed by priority for survival (**E**). The performance dimension (**B**) is influenced by ICT investment measure (**A**) which is in turn influenced by the SME characteristics(**C**).

These variables play an important role as a starting point for the automation of the proposed framework because of their established dependencies. The software tool resulting from the automation of the framework assists with ease of implementation of the framework. Current frameworks fail because they are largely theoretical and do not take cognizance of variable **C.** This automated tool would further assist SMEs with their ICT investments decisions

7.BENEFITS OF THE STUDY

SMEs are known for the vital role they play in any country's economy. SMEs contribute to the employment rate in their respective countries especially in the rural and semi-urban areas. They are also major contributor towards GDP. They are a good indicator of a healthy economy.

It is very important they have a good performance monitoring system to assist them in the evaluation of their ICT investment. Our effort is not towards 're-inventing the wheel' it is rather towards ensuring that SMEs are able to evaluate and measure business performance as a result of ICT investment. The benefits of our proposed performance measurement system are as follows:

a) The process is not resource intensive. Business invests only in critical areas where there is a need.
b) It allows the SME to learn from past mistakes
c) It minimizes the risk from an investment point of view
d) It allows for the discovery of new measures of ICT business value applicable to SMEs
e) It allows for the discovery of new measures of business performance applicable to SMEs
f) The iterative nature of this framework supports continuous improvement methodologies as a strategy for growth.
g) It ensures that only key and value adding ICT projects are undertaken
h) It ensures that the PMS implementation success rate is improved.

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APPENDIX A **TABLE I**

SUMMARY OF ICT MEASURES AFFECTING PERFORMANCE AND SME CHARACTERISTICS AND CRITICAL SUCCESS FACTORS

A	B	C	D	
ICT investment measures	**Performance Dimension**	**SME Characteristics**	**SME Critical Success Factors**	
ICT budget as a percentage of revenue	***Quality*** (product performance, dependability, waste, innovation, shipping errors, customer complaints)	Actual application of ICT as a percent of potential per ICT type Reliance on small number of customers Mean times between failures and to repair	***Customer Satisfaction*** (market share, image, integration with customers, innovation, delivery reliability Leadership and support from top management	Inform strate Tacit little a the fo proce
ICT equipment market value as a percentage of revenue	***Time*** (customer response time, on time deliveries, productivity, cycle time, process throughput time, delivery lead time)	Operating in limited markets Failures per 100 hours of operation	Providing effective and appropriate training for employees	Misco perfor measu
Percentage of ICT budget spend on ICT staff	***Flexibility***(Volume flexibility, delivery flexibility, product innovation, new product introduction, mix flexibility)	Correct data as a percent of total data available Flat and flexible structures Mean response time	Measuring results and performance	perso mana devolu resou terms and m financ
Percentage of ICT budget spend on ICT staff training	***Finance*** (e.g. sales, profit, return on investment, product cost reduction, overhead cost reduction, cash flow, efficiency)	Batch turnaround time High innovative potential; Number of secured data sets as a percent of total Time required to make	Conducting continuous improvement	
Number of personal computers and terminals as a percentage of total	***HR*** (productivity, resource utilization, employee skills, quality of worklife, labour efficiency, learning,	employees Reactive and firefighting mentality User-friendliness rate on a ratio scale	employee relationships) Adopting a quality assurance system (ISO 9000)	

FIGURE 2: FURTHER GUIDELINES FOR IMPLEMENTATION

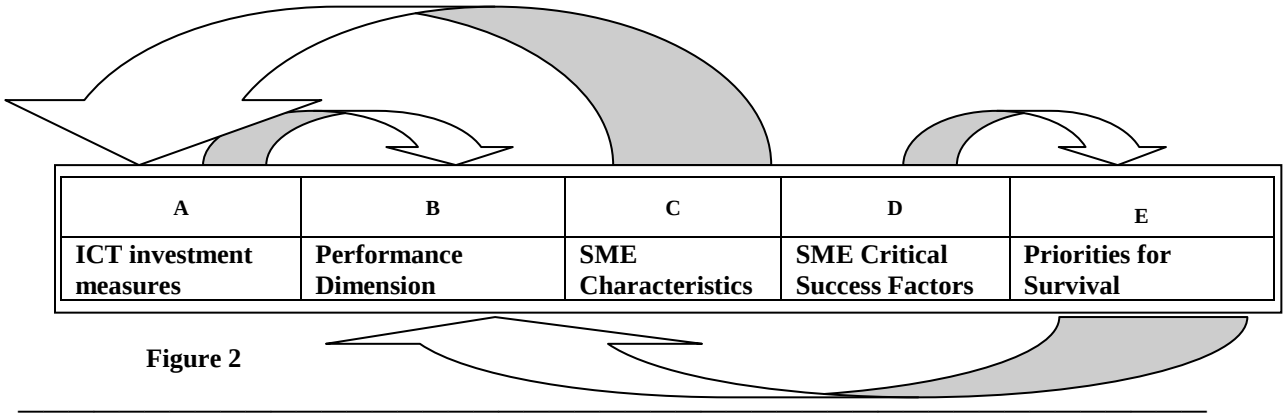

Figure 2

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v29 n1982

APPENDIX B
PROPOSED FRAMEWORK

FIGURE 1

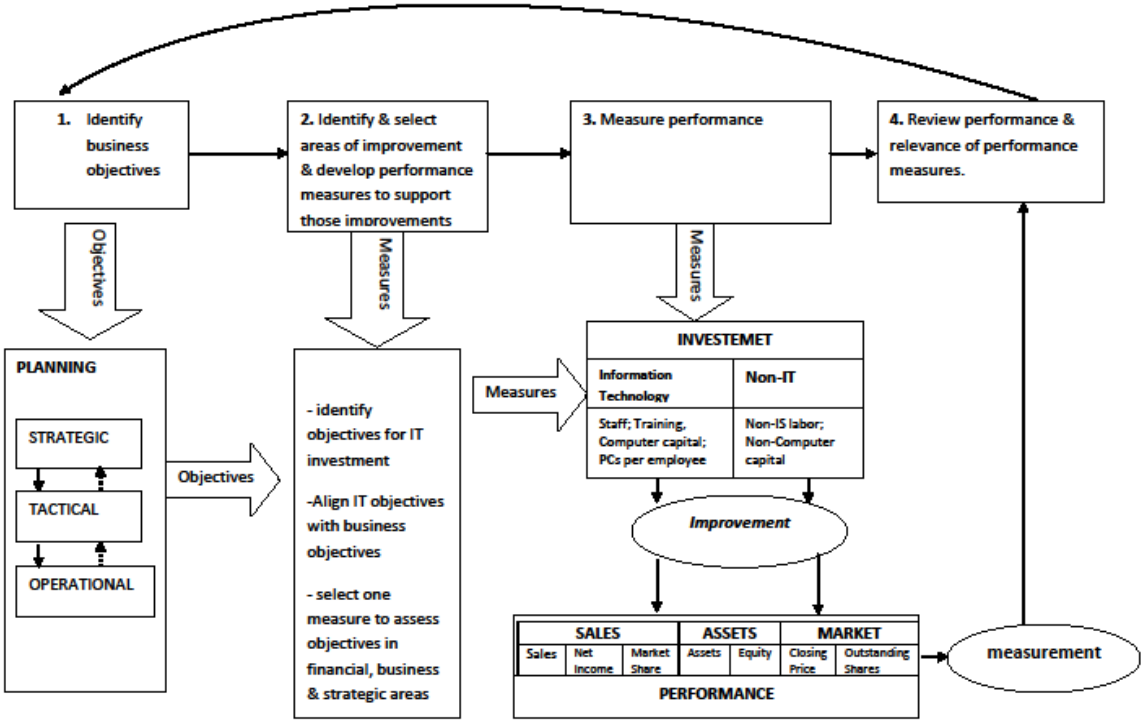

Figure 1. Proposed Framework