

<http://www.cisjournal.org>

ERP System Solutions for Small and Medium Enterprises in Trans Nzoia County – Kenya

¹Michael Sanja Mutongwa, ²Kefa Rabah

¹ PhD In Business Information System (Candidate), School of Informatics and Innovative

Faculty of Information Systems, Jaramogi odinga oginga (jooust) university of science & technology (Kenya)

² Co-Editor, Dean, School of Informatics and Innovative, Faculty of Information Systems, Jaramogi odinga oginga (jooust) University of science & technology (Kenya)

¹sanja_michael@yahoo.com, ²krabah@gmail.com

ABSTRACT

An ERP is an integrated information system that enables full and efficient utilization of resources for its information needs. The rising demand of information system, the integration of ERP components, brings the perspective of profitability growth and cuts down running costs for SMEs. Objectives of this paper is to analyze the role of ERP in the SMEs implementation; establish a critical success factor of SMEs and to establish modalities to cut down costs in running. It's true that Security is a critical factor for ERP systems, putting in consideration that auditing the infrastructure has proved to be a challenge. ERP aims at integrating data, introducing cheap operation, easy monitoring processes from all areas of SMEs and unification for easy access and work flow. The Question is whether ERP is a critical success factor in Kenyan counties-specifically Trans Nzoia county and does it impact SMEs to cut down costs. This paper reports on research findings from a case study conducted in SMEs from Trans Nzoia County - Kenya. It also creates avenues in for further research

Keywords: *SME (Small and medium Enterprise), ERP (Enterprises Resource Planning), Micro, small and Medium Enterprises (MSMEs), IMS (Information Management System), ITs (Information technology).*

1. INTRODUCTION

SMEs represent the spinal code of most European Union countries economies. According to European Union, small enterprise is defined as an enterprise which employs fewer than 50 persons and whose annual turnover and/or annual balance sheet total does not exceed EURO 10 million. A micro enterprise is defined as an enterprise which employs fewer than 10 persons and whose annual turnover and/or annual balance sheet total does not exceed EURO 2 million (Kayanula et al., 2000).

In Kenya, “micro-enterprises” are those with 10 or fewer workers, “small enterprises” have from 10 to 50 workers, and “medium enterprises” have 51 to 100 workers (Grama and Fotache, 2007). SMEs play a major role in economic development in every country, including African countries. Studies indicate that in both advanced economies and developing countries SMEs contribute on average 60 percent of total formal employment in the manufacturing sector (Ayyagari et al, 2007). For African economies, the contribution of the SME sector to job opportunities is even more important. Taking into account the contribution of the informal sector, SMEs account for about three-quarters of total employment in manufacturing (Ayyagari et al, 2007).

ERP is defined as the technology that provides the unified business function to the organization by integrating the core processes. ERP now is experiencing the transformation that will make it highly integrated, more intelligent, more collaborative, web-enabled, and even wireless (Mtsweni & Bierman, 2008:2013). The ERP system has vulnerability and high confidentiality in which the security is critical for it to operate.

Objectives of this paper is to analyze the role of ERP in the SMEs implementation -establish ERP critical successful factors and the changes to make SMEs cut down costs. ERP is considered as a major factor to minimize Challenges encountered by SMEs in accessing information, the use of ICTs by SMEs in Kenya. The study Considered Trans Nzoia county in North Rift Region of Kenya as a Target, this research capitalizes on Kitale Town- Trans Nzoia county in Kenya as a Country.

1.1 Overview of ERP

The main advantage of ERP is that since it integrates several modules less time is spent on updating information, hence its cheap to run. Information is entered once and the system is automatically updated. This ensures faster decision making. Studies of Justras (2007:2010) and Marnewick and Labuschagne (2005:2012).

The significance of SMEs is attributable to its capacity of employment generation, low capital and technology requirement, use of traditional or inherited skill, use of local resources, mobilization of resources and exportability of products. The uptake of information technology tools such as the Internet, low cost telecommunications and social networking media has increased over the years for both small and big business operators (Abdul Ghaffar & Azim, 2010:12). When effectively installed and utilized, ERP systems serve to simplify business processes and give organizations a cost competitive edge by ensuring that the whole business value chain from raw materials inputs to final product is integrated. SMEs constitute a big portion of developing economies and this can be demonstrated by some of the incentives given to SMEs by governments including startup capital. In Kenya one source of funding for SMEs is the

<http://www.cisjournal.org>

Youth Enterprise Development Fund (YEDF)- website (<http://www.youthfund.go.ke>, 2009).

1.2 Challenges for SMEs

The policy identified number of constraints hampering the development of this sector and unfavorable legal and regulatory frameworks, underdeveloped infrastructure, poor business development service, limited access to finance, ineffective and poorly coordinated institutional support as the key drawbacks (Endalkachew, 2008).

Having acknowledged the importance of SME management capacity, there is no denying that access to finance is itself a critical issue, especially in Ghana, Kenya and Tanzania, and one that affects smaller firms disproportionately. The figure below shows Enterprise Survey data for firms identifying access to finance as a “major” constraint (though not necessarily the “biggest”). With the exception of South Africa, large percentages of firms in the study countries are constrained by a lack of access to finance. And in all four countries, there is a significant difference among small, medium sized and large firms.

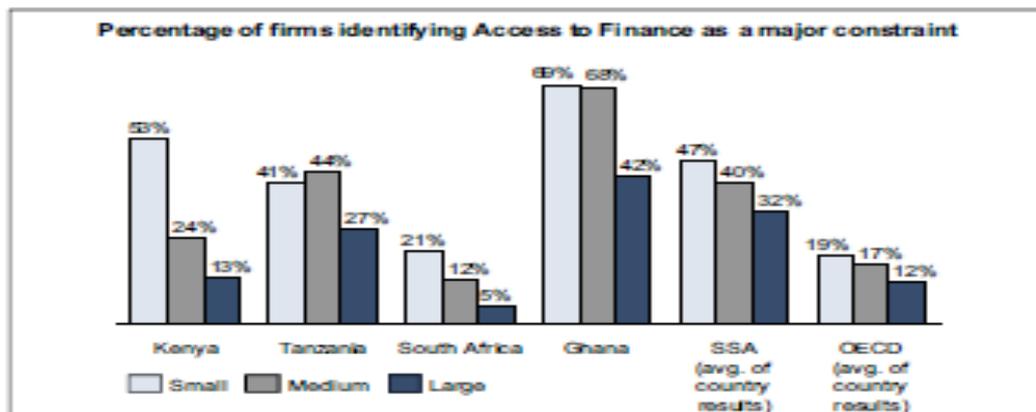


Fig 1: Small and medium-sized firms in the countries studied are much more likely to have problems with access to finance than larger firms

Source: 2005 - 2009 World Bank Group Enterprise Surveys.

The affordability of some proprietary ERP for SME tools is a problem for SMEs hence the need for alternative approaches to ERP which are less expensive. Most manufacturing companies have had to implement ERP systems to remain competitive (Yen & Sheu, 2008).

ERP system also lacks adequate planning information, ineffective project steering systems, piled-up work, up-to-date load information, changes in delivery times made by customers, and availability of material resources. Research reveals that SMEs lack knowledge hence such was perceived problematic, (Koh and Simpson 2005, Abdul Ghaffar & Azim, 2010: 2012). Such highlighted problems with scarce knowledge especially in SMEs.

In South Africa SMEs growth has been supported by big organizations since these enterprises are considered the backbone of the economy. However the failure by emerging SMEs to adopt and fully utilize such as ERP systems has been an inhibitor for growth. A study on ERP modification (Celar, Mudnic & Gotovac, 2010) after installations showed that a lot of resources are required for this action hence the need for correct pre-installation planning.

Furthermore, very little research has been conducted on ERP utilization in Africa, but most studies have been carried out in Europe (Equey & Fragniere 2007:

2008), Asia (Upadhyay & Dan 2009), Australia (Zhou, Xing & Nagalingam 2010). These studies have not focused on the uptake or lack of uptake of Open source ERP by small and medium businesses. This study therefore seeks to provide a contribution to both academia and industry, on open source ERP user perceptions from within a South African SME context.

1.3 SMEs Are Core Core Business Sectors

Globally, trends indicating that banks are beginning to view SMEs as a profitable segment. For example, a recent survey of 91 banks in 45 developed and developing countries found that over 80% of these banks perceived the SME sector to be a large market with good prospects (Beck et al., 2008).

With Banking sector Extending Lending facilities to SMEs. Trans Nzoia county stand high chances to succeed in performance and amplification of expenditure reduction. By the of information technology tools such as the Internet, low cost telecommunications and social networking media has increased over the years for both small and big business

<http://www.cisjournal.org>

operators (Abdul Ghaffar & Azim, 2010, Rabah(2012) such has cut down cut down the running costs on SMEs.

2. LITERATURE REVIEW

In Malaysian government, Investment technology with “corporate-wide integration, corporate restructuring and technological innovation policies” among public and private sectors. During the 1997 economic crisis (Ministry Of Finance, 2009, January 2013), ICT growth is achieving higher in Malaysia in order to greater economic growth. And IT infrastructures in SMEs upgraded and adopt Information Technology.

SMEs in Malaysia collaborated in approximately all sorts of Industries, considering that they have diversion in their range and significance (Idrus & Shahawai, 2009). A study which was done by Bank Negara Malaysia reported that the present number of SMEs in Malaysia is 349,617 (Bank Negara Malaysia, 2009). 99.2 % of SMEs in Malaysia from the total establishments which numbers 518,996 are in the three main economic sectors: manufacturing, services and agriculture, Ministry Of Finance (2009, January 2013).

In India SMEs are one of the most vibrant and sensitive sectors in Indian economy,(Indian Annual Report, 2010:11, Rajib Lahiri, 2011,Bhavani, T.A. 2011, Indian Annual Report, 2011). With limitation in resources such as certain number of customers, marketing in wide range of markets, finance, management and manpower, SMEs operation face to smooth and flexible structure (Kale et al., 2010). Studying the performance ways in SMEs might boost better results while making decision to execute system. Efficient benefits of ERP system have encouraged SMEs to drag attention towards system adoption by offering services to alleviate cost from vendors.

2.1 Types of ERP

2.1.1 Apache Open for Business

Apache OFBiz (The Apache Open for Business Project) is an open source enterprise automation software project licensed under the Apache License Version 2.0. By open source enterprise automation we mean: Open Source ERP (Enterprise Resource Planning), Open Source CRM (Customer Relationship Management), Open Source E-Business / E-Commerce, Open Source SCM (Supply Chain Management), Open Source MRP (Manufacturing Resources Planning), Open Source CMMS/EAM (Maintenance Management System/Enterprise Asset Management), Open Source POS (Point Of Sale), (Rabah, 2007 Rabah, 2012).

2.1.2 Tryton

Tryton is a three-tier high-level general purpose application platform under the license GPL-3 written in Python and using Postgre SQL as database engine. It is the core base of a complete business solution providing modularity. In general a business process is a partially ordered set of linked activities that create value by transforming an input into a more valuable output. Both

input and output can be art effects and/or information and the transformation can be performed by human actors, machines, or both (Ciuksys & Caplinskas, 2007).

2.1.3 Blue ERP

Blue ERP is a double entry accounting application for SMEs. Written in PHP, it is delivered through a LAMP environment to provide web access to your accounts. Its goal is to provide a flexible and user friendly interface that can work out of the box and be modified to suit specific needs easily. Blue ERP is an open source project by its licence and by its philosophy (Ciuksys & Caplinskas, 2007).Other Open Source ERP includes: Dolibarr, TryTon. Open Rules (2008)

2.2 Implementation of ERP

ERP provides two major benefits that do not exist in non-integrated departmental systems: (1) unified enterprise view of the business that encompasses all functions and departments; and (2) where all business transactions are entered, recorded, processed, monitored, and reported. This unified view increases the requirement for and the extent of interdepartmental cooperation and coordination (Mtsweni & Bierman, 2008).ERP facilitate real-time sharing information among employees. To respond to customers’ orders, quality improvement, augmenting product delivery plus service, enhancing inventory control and also truncating time in production cycle are proven ways of this system (Jaiswal, 2007, Rabah (2006, 2012).

There are several ways of business rule enforcement and implementation into the final software system proposed : to implement into relational database constraints (Zimbrao et al., 2003), triggers (Valatkaite & Vasilecas, 2002; Sosunovas & Vasilecas, 2004) or executable code in applications using resolution of separately stored data and facts representing entered value instead of validation code (Tang et al., 2005; Vasilecas & Smaizys, 2008). The adoption of an ERP system, as an ample, integrated software solution of client-server type, accomplishes the management and distribution of information in all functional units, regardless of their location. ERP runs on a universal software platform, using a centralized data warehouse that is transacting information, on request, with many software applications.

The success of ERP implementation in companies encouraged managers to hire this system. Various expected benefits plot for companies in Tran’s nzoia on this system plus vast commercial view to enclose success outcomes. The success in implementation is measurable regards to evaluate benefits in accelerated business practices, and decision making elevating. (Abdul Ghaffar & Azim, 2010: 2012)

In continuing of success factors of ERP implementation studies has highlighted that top management Perception and support, business process reengineering (BPR), user involvement, effective project management, education and training of staff, and vendor support are certain roles to possess higher places through ranking (Ngai et al., 2008 , Rabah 2012)

<http://www.cisjournal.org>

Integration of the existing information systems in the SMEs brings a number of advantages, mainly related to long-term cost reductions, the increase of operational efficiency, the fast return of ERP investments and the possibility of fast extension towards the online business environment. This is a typical scenario of business logic representation using ECA (Event–Condition–Action) rules and their further implementation in the executable code, e.g., by triggers (Avdejenkov et al., 2008).

In south East Asia, Malaysia could make eye-catching progress of its economy by expanding on investment technology with “corporate-wide integration, corporate restructuring and technological innovation policies” among public and private sectors. This is encouraged by Malaysian government during the 1997 economic crisis (Ministry Of Finance, 2009). The ERP vendors offer ERP systems in lower cost and customizable to mid market leded competition in customer service globally. SMEs tendency is to adopt ERP system for possessing return of investment by strategic investment planning, Rabah (2012). Hence Trans Nzoia can use same approach to excel.

In South Africa ERP systems are widely used to extract and process data from different functional areas across the enterprise (Gore, 2008). The ERP tools help to show the visibility of information across the enterprise and enable seamless access to information. The use of information technology and systems has improved business operations. The uptake of information technology tools such as the Internet, low cost telecommunications, and social networking media has increased over the years for both small and big business operators (Abdul Ghaffar & Azim, 2010, Abdul Ghaffar & Azim 2012). When effectively installed and utilized, ERP systems serve to simplify business processes and give organizations a cost competitive edge by ensuring that the whole business value chain from raw materials inputs to final product is integrated. When fully utilized the ERP systems can yield a number of benefits and improvements such as enabling faster and more accurate information transactions in Kenya and especially in Trans Nzoia County.

The Kenya government estimates that the SMEs sector has been growing at the rate of 11 per cent per year and, accordingly, this number had risen to 2.2 million by 2004 (Kenya, Central Bank of, 2008). Recent research in African countries indicates that the use of ICTs is growing exponentially, problems of access and exclusion notwithstanding (Kiplang'at, et al., 2005; Wafula-Kwake and Ocholla, 2007) and that the Internet empowers the leading edge of micro businesses to make the most of their individuality and enterprise. It offers access to markets and to a supply of the lowest cost business necessities that was previously unthinkable.

Security is critical for ERP systems and auditing the infrastructure is a challenge (Hughes & Beer, 2007). This is because ERP is used in several sectors. There is a need when installing ERP to develop a security policy and a model for ERP systems. Security problems exist in every level of an ERP system.. A better way to provide security may be to place a firewall server between the user and the ERP system. Most open source and proprietary systems offer this function. For SME businesses, priority is security of database systems. According to Kimwele, Waweru and Kimani (2010).

2.3 Policies to Improve SMEs Operations

This set of Government policies should primarily be targeted towards removing regulatory barriers and minimizing state induced costs, to be successful. Such policies should also be aimed at providing common services for SMEs and encouraging clusters to reap the benefits of external economies. In addition, measures should be explored as to how finance for SMEs could be facilitated to enable them to invest in more efficient forms of production.

ERP is an integrated information system that enables the full and efficient utilization of resources for its information needs. When fully utilized the ERP systems in Trans Nzoia county automatically yields a number of benefits and improvements such as enabling faster and more accurate information transactions, Increasing productivity and reduced logistics costs. Singla (2008) identified the following tangible benefits of ERP implementation: Reduced inventory, reduced labour costs, productivity improvement, improved procurement method and technology cost reduction hence research alludes to profit improvement on-time delivery and maintenance reduction.

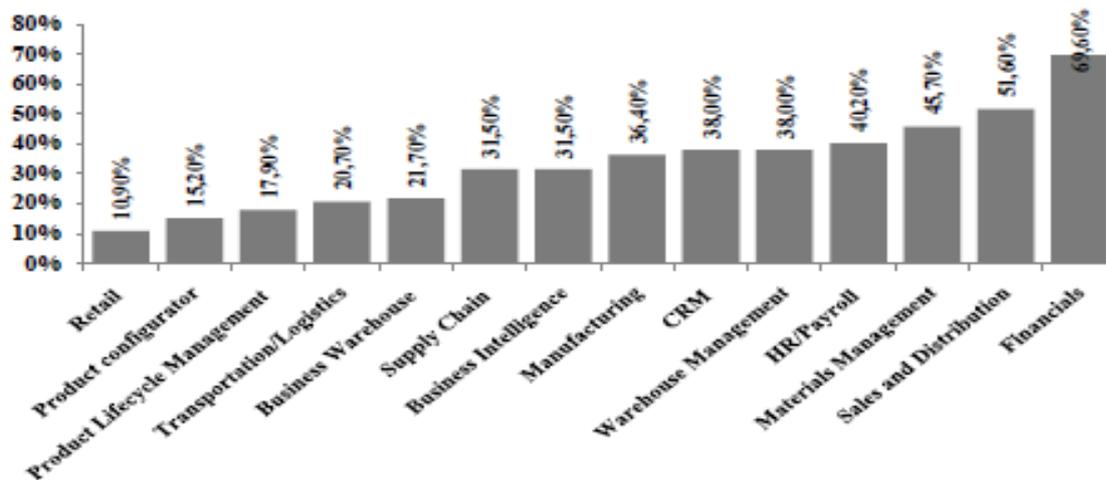
SMEs acknowledge the benefits of using technology and communications systems in order to compete effectively. The benefits involved in ERP software include cost savings through cutting down on labour, improved efficiency by eliminating error rates, reduced fraud, information integration and improved business competition (and governance) (Koh & Simpson, 2005:629).

2.4 ERP Cuts Running Costs for SMEs

The benefits involved in ERP software include cost savings through cutting down on labour, improved efficiency by eliminating error rates, reduced fraud, information integration and improved business competition (Koh & Simpson, 2005). A post implementation study (Tommaso, 2009) identified simplification of internal business processes as one of the benefits of ERP implementation. The adoption of this system conveyed other benefits including support to exhibit higher efficiency by means of reducing inventory costs, improving profitability, (Zhu et al., 2010).

Figure 2

<http://www.cisjournal.org>



(source: <http://panorama-consulting.com/resource-center/2011-erp-report/>)

Fig 2

Most of the world's largest organizations have already adopted an ERP system and, so, have a growing number of small and mid-sized organizations around the world (Léger et al., 2011). The effective use of ERP systems by many organizations to integrate their business processes suggests that a demonstration of ERP application software can be a good experience for students to gain an understanding of key business processes and the practice of cross-functional integration. In this respect, using ERP software might provide a missing link that could be used as an integrating mechanism in business college curricula (Hawking, Bassett, & Foster, 2002; Johnson, Lorents, Morgan, & Ozmun, 2004). Furthermore, with a proper implementation, it can serve as an effective vehicle to facilitate changes from functional perspectives to business process-oriented perspectives not only in a traditional classroom but also in an e-learning course (Hawking & McCarthy, 2004).

3. RESEARCH METHODOLOGY

3.1 Overview

This study has provided evidence of a major Information Communication technology, specifically ERP setup in Kenyan SMEs, and may lead to them experiencing great technological improvement as a result of implementing basic and necessary countermeasures. However, only questionnaires and interviews are suitable for the data required, as the opinions of a large and diverse group of people are needed. Questionnaires provide a more structured way of gathering and recording data.

The research entailed a survey of SMEs in Kenya, where primary data was collected by means of a questionnaire. Most of the questions were adopted from previous studies but modified to capture data relevant to the current SMEs study. These were measured on a five-point like scale whereby 1 represented "strongly agree" and 5 "strongly disagree". A preliminary version of the questionnaire was discussed with scholars and managers.

Some questions were reworded and the original structure of the questionnaire was amended.

This research is based on collected data which is then analyzed and organized to unveil some trends or patterns regarding ERP implementation in Kenyan SMEs. We believe that to be able to address ERP issues effectively in SMEs, it is important to properly understand how ERP is currently being practiced in Kenyan SMEs. SMEs targeted in the survey included those in the consulting, recruitment, vehicles, cleaning, legal, estate agent, medical, equipment leasing/rental, equipment repairs, and any others so long as the organization. A case study conducted by the Aberdeen Group (Jutras, 2006: 2010) showed that an effective ERP for SME implementation resulted in a 22% reduction in operating costs, a 20% reduction in administrative costs, a 17% reduction in inventory costs, a 19% improvement in on-time delivery and a 17% in schedule compliance in the manufacturing sector. It is clear therefore that ERP are cost effective in the long run.

It is clear therefore that ERP are cost effective in the long run. The ERP however have a number of weaknesses. The huge budgets employed in ERP projects imply that very few SMEs can afford to install the same. Other problems with ERP implementations occur after the entire implementation process. When users have found their way and understand the system, the tendency is to test the limitations of the system. This could have the effect of disrupting internal controls. It is therefore important that a plan is put in place to deal with post implementation errors (Upadhyay & Dan, 2008:2009).

A case study by (Tommaso, 2005:7:9) identified simplification of internal business processes as one of the benefits of ERP implementation. Due to these factors, many SMEs consider it critical to get access to Information which gives them the capacity to sustain their business operations. One of the vertical markets expected to raise demand for ERP systems is the manufacturing industry (Jutras, 2010:2:3).

<http://www.cisjournal.org>

ERP tools have been deployed in a number of settings and an evaluation of their impact has been done. A number of variables are measured in the impact analysis and these are considered. Another area to focus on is the ingredients that enable a successful implementation of ERP to be made. These ingredients are known as critical success factors (Upadhyay & Dan, 2009:8). Critical success factors (CSF) are widely used in the Information systems arena to guide the best way to implement systems. CSFs (Critical Success Factors) can be understood as the few key areas where things must go right for the implementation to be successful. Past studies have identified a variety of CSFs for ERP implementation, among which context related factors consistently appear.

4. CONCLUSION

The benefits and impacts provided by ERP systems need a rigorous evaluation. Most existing evaluation studies of ERPs focus on technical issues or implementation processes, these do not provide an explanation about ERPs effects, or if ERPs work well or poorly with a specific user in a particular setting. This research paper points to some of the factors that may influence the cost of running SMEs being cut down. Thus, evaluating the most critical factors that potentially determine the impacts from these systems is highly desirable in order to explain the actual benefits that could be achieved through these systems by SMEs since they could affect educational outcomes and delivery. The development of Small Medium Enterprises (SMEs) is seen as an important means of alleviating unemployment. As empirical research attempts to measure business perceptions, some limitations or biases are unavoidable. Consequently, as is always the case in empirical research, results should be interpreted with some caution. Future research should, be conducted for them. Further research to construct a multiple regression model will be a next step, in order that managers

REFERENCES

- [1] Abels, S., N Brehm, A. Hahn, And J. M. Gómez, "Change Management Issues in Federated ERP systems" An Approach for Identifying Requirements and Possible Solutions. *International Journal of Information Systems and Change Management (Ijiscm)*, 1, 2006, Pp. 318-335.
- [2] Abdul Ghaffar H. & Azim, A.M.R. 2010. Significant Factors Influencing Erp In Large Organization, Evidence From Egypt, *European Mediterranean & Middle Eastern Conference On Information Systems*, April 12-13 2010.8-16
- [3] Agachi, P., Nica, P., Moraru, C., Mihaila, A., What Is New In Ranking The Universities In Romania. *Ranking The Universities From The Scientific Research Contribution Perspective*, 3rd Meeting Of The International Ranking Expert Group - Proceedings, October 28-31, 2007 Shanghai Jiao Tong University, Shanghai, China, P. 254, 2007.
- [4] Al-Abed, S.A (2003): Electronic Banking, Available At Http://Www.Bankersonline.Com/Technology/Gurus_Tech081803d.Html
- [5] Ayyagari, M., T. Beck, And A. Demirgüç-Kunt, 2007. "Small and Medium Enterprises across the Globe", *Small Business Economics* 29, 415-434
- [6] Andreica, Alina, Agachi, Serban, Design And Implementation Of An Integrated Software System For Managing Research Activities In Universities, 7th Roedunet International Conference - Networking For Research And Education, Ut Press, Editor: Emil Cebuc, P. 90-95, 2008.
- [7] Alvarez- Suescun, E. 2007. Testing Resource-Based Propositions About Is Sourcing Decision. *Industrial Management & Data Systems*, 107(6): 762-779.
- [8] Amr Research. 2008. The Steady Stream of Erp Investments. [Web:] <Http://Www.Amrresearch.Com> Date of Accesses: 12 May 2010, 13-28
- [9] Apostolos, S., Philippos K.C., Damantios, K. & Panoshatzaras, S. 2002: Integrating Mobile Agent Infrastructures in Operational Erp Systems, *Data Engineering Laboratory, Department Of Informatics, Aristotle University of Thessaloniki*: Pages 3-4
- [10] Avgerou, C. 2008. Information Systems in Developing Countries: A Critical Research View. *Journal of Information Technology* 23:137
- [11] Bernroider, E. & Tang, N. 2010. A Preliminary Study of the Diffusion of Erp Systems in Austrian and British Smes, *Institute of Information Processing and Management, Vienna University of Economics and Business Administration*, 28 December 2010:19-20
- [12] Bhatti, T.R. 2005. Critical Success Factors for the Implementation of Enterprise Resource Planning: Empirical Validation, *Second International Conference on Innovation in Information Technology*. Abu Dhabi: Zayed University.:56-80
- [13] Carraro, G. & Chong, F. 2006. Software as a Service (Saas): An Enterprise Perspective *Microsoft Corporation*, October 2006 Celar, S., Mudnic, E. & Gotovac, S. 2010. Interrelation between Erp
- [14] Deb, S., Mohammed, H.A.T. & Kierstead, J. 2008. Sme Erp System Sourcing Strategies: A Case Study. *Industrial Management & Data Systems*, 108(4):11-22.
- [15] Dhurup, M. 2008. A Research Based Assignment Guide for Students. *Research Booklet for Faculty of Management Sciences*. Vanderbijlpark: Vaal University Of Technology.

<http://www.cisjournal.org>

- [16] Equey, C. & Fragniere, E. 2007. Elements of Perception Regarding the Implementation of Erp Systems in Swiss Smes. Working Paper Systems, Vol. Information Systems Analysis And Specification, 47-54.
- [17] European Commission (2005) Putting Smes First–Europe Is Good For Smes, Smes Are Good For Europe. Luxembourg: Publications Office Ec. [Web:] <http://www.aberdeen.com/research/> Date Of Access: 12 August 2011.
- [18] Finger, G. 2007. An Investigation into the Implementation of Enterprise. [Web:] <http://www.docstoc.com/docs/19585644> Date of Access: 10 June 2011.
- [19] Hamerman P. D. (2008). Forecast: Global Erp Market 2008 To 2012 [Online] .Available From http://www.forre.com/plications_2008_battle_goes_vertical/q/44001/t/2 .Accessed December 20, 2010.
- [20] Huin, S. F., 2004. Managing Deployment Of Erp Systems In Smes Using Multi-Agents, International Journal Of Project Management, Vol. 22, Pp. 511-517. Ghauri, P. & Gronhaug, K. 2002. Research Methods In Business: A Practical Guide. 2nd Ed. London: Prentice Hall.
- [21] Gore, A. 2008. Exploring The Competitive Advantage Through Erp Systems. From Implementation To Applications In Agile Networks. Oulu: University Of Oulu.
- [22] Hertzog, T. 2006. A Study Of Open Source Erp Systems. [Web:] <http://www.mendeley.com/research/open-source-erp-for-smes/> Date Of Access: 3 May 2010.
- [23] Hughes, J.R. & Beer, R. 2007: A Security Checklist For Erp Implementation. [Web:] <http://www.educause.edu/educause+Quarterly/Equvolum302007/educausequarterlymagazinevolum/162298> Date Of Access: 10 June 2011.
- [24] Khaled, A.Z., Al-Salti, H. & Eldabi, T. 2008. Critical Success Factors In Erp Implementation: A Review. European And Mediterranean Conference On Information
- [25] Kusters, R.J., Heemstra, J., & Jonker, A. (2007). Determining The Costs Of Erp Implementation, Proceedings Of The 9th International Conference On Enterprise Information Systems, Vol. Database And Information Systems Integration, 102-110.
- [26] Netjes, M., Limam Mansar, S., Reijers, H.A., & Aalst, W.M.P. Van Der (2007). An Evolutionary Approach For Business Process Design: Towards An Intelligent System, Proceedings Of The 9th International Conference On Enterprise Information Systems, Vol. Information Systems Analysis And Specification, 47-54.
- [27] Jutras, C. 2010. Erp in Sme. Aberdeen: The Aberdeen Group. [Web:] <http://www.aberdeen.com/research/> Date Of Access: 12 August 2011.
- [28] Khan, S. 2007. Adoption Issues Of Internet Banking In Pakistan Firms. Msc Thesis. Lulea: Lulea University of Technology. Kholadi, S., Thlabela, X., Roodt, H., Paterson, M. & Weir-Smith, J. 2006.
- [29] Kimwele, M., Waweru, M. & Kimani, S. 2010. Adoption Of Information Technology Security Policies: Case Study Of Kenyan Small And Medium Enterprises (Smes). Journal Of Theoretical And Applied Information Technology, 18(2):1-11. Also Available From: <http://www.jatit.org/volumes/research-papers/vol18no2/vol18no2.pdf>
- [30] Koh, S.C. & Simpson, M.L. 2005. Change And Uncertainty In Sme Manufacturing Environments Using Erp. Journal Of Manufacturing Technology Management, 16(6):629-653.
- [31] Maile, M., Duffy, N. & Van Rensburg, A.C.J. 2008. Enterprise Resource Planning Solution Selection Criteria In Medium Sized South African Companies. South African Journal Of Industrial Engineering, 19(1):17-30.
- [32] Majed, A.M. 2002. Electronic Commerce: A Comparative Study Of Organizational Experiences.. Benchmarking: An International Journal, 9(2):182-189.
- [33] Michael C., Miller, A. & Roberts, R.P. Source: Business Technology Office. Six Ways Web 2.0 Work. [Web:] **Error! Hyperlink Reference Not Valid.** Date Of Access: 2 March 2011.
- [34] Mohamed, A. 2006. Erp Systems Under-Utilised And Unexplained. [Web:] Available <http://www.computerweekly.com/articles/2006/01/13/213636/erp-systems-underutilised-and-unexplored.htm> Date Of Access: 17 May 2011.
- [35] Moolman, L. 2011. A Characterization Of Open Source Software Adoption Decisions In South Africa Organizations. Mba Thesis. Stellenbosch: University Of Stellenbosch.
- [36] Naik, S. 2005. Open Source Erp For Smes. [Web:] <http://ezinearticles.com/?open-source-erp-for-smes&id=108701> Date Of Access: 19 July 2011.
- [37] Raymond, L. And Uwizeyemungu, S., 2007. A Profile Of Erp Adoption In Manufacturing Smes.

<http://www.cisjournal.org>

- Journal Of Enterprise Information Management, Vol. 20, No.4, Pp. 487-502.
- Kenya', International Review Of Information Ethics, Vol. 7 (09/2007).
- [38] Subrahmanya, Bala (2011), "Small-Scale Industry Development For Export Promotion: India's Experience Under Liberalization" In " Micro And Small Enterprises In India: Era Of Reforms: Keshab Da(Ed) Pp. 46-66.
- [39] Upadhyay, P. & Dan, P.K. 2009. Erps in Indian Sme's: A Post Implementation Study Of The Underlying Critical Success Factors. International Journal of Management Innovation System, 1(2):1-10. 73
- [40] Tommaso, F. 2009. Factors Influencing Erp Outcomes in Smes: A Post-Introduction Assessment. Journal of Enterprise Information Management, 22(1/2):81-98.
- [41] Travel Industry Association Of America (2009), Economic Review Of Travel In America, 2008 Edition, New York: Us Travel Association.
- [42] Wafula-Kwake, A. K. And Ocholla, D. N. (2007), 'the Feasibility Of Ict Diffusion Amongst African Rural Women: A Case Study Of South Africa And
- [43] Welling, L., Thomson, L , Dezvoltarea Aplicațiilor Web Cu Php Și Mysql, Ed. Teora, 2005 Ward J., Daniel E. And Peppard J. "Building Bettersmall Medium Enterprise For It Investments", Mis Quarterly Executive, Vol.7, No.1,Pp. 1- 15, 2008.
- [44] Wirfs-Brock, R.J. 2008. Designing Then and Now. Ieee Software, 25(6), 29-31. Worthen, B. 2002. Nestlé's Erp Odyssey: Nestle Usa's Costly And Protracted Struggle With Its Sap Project Is A Cautionary Tale For Any Company Internet On An Enterprise-Wide Implementation. Cio, 15(15):1-5.
- [45] Zhu, Y., Li,Y., Wang, W.,& Chen,J. (2010), "What Leads To Post-Implementation Success Of Erp? An Empirical Study Of The Chinese Retail Industry", International Journal Of Information Management, 30(3), 265–276. Systems. 30-31 July 2008, Dubai.
- [46] Zhou, N., Xing, K. & Nagalingham, S. 2010. An Agent-Based Cross-Enterprise Resource Planning For Small And Medium Enterprises International Journal For Computer Science, 37(3):1-7.