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Content

APPLICABILITY OF ECONOMIC MODELS IN ESTIMATING TOURISM IMPACTS

Chia Kei Wei[1], Ahmad Shuib[*2], Sridar Ramachandran[3], Syamsul Herman[4]

[1]Institute of Tropical Forestry and Forest Products, Universiti Putra Malaysia, Malaysia

[2]Institute of Agricultural and Food Policy Studies, Universiti Putra Malaysia, Malaysia

[3,4]Faculty of Forestry, Universiti Putra Malaysia, Malaysia

*mad.shuib@gmail.com

Abstract

In many countries, tourism is perceived as a tool to generate income and employment to a country and local economy. Therefore, many researchers attempt to estimate the economic impacts of tourism through different kind of methods. Economic impact studies can be carried out using primary or secondary data. However, there is no universally accepted model to estimate the economic impact because different models give different results based on the interest of the researchers. The objective of this paper is to discuss the strengths, weaknesses, and the applicability of four commonly techniques used in estimating economic impacts of tourism: Input-output model, Social Accounting Matrix, Computable General Equilibrium, and Tourism Satellite Account. Subsequently, the justification of choosing an appropriate model in estimating the economic impacts of tourism is discussed.

Key words

Economic impact; Input-Output models; Social Accounting Matrix; Computable General Equilibrium; Tourism Satellite Account.

INTRODUCTION

The importance of travel and tourism has been recently acknowledged by G20 leaders as a driver of economic growth during the G20 Leaders' Declaration held in Los Cabos, Mexico (UNWTO, 2012). The positive impacts of tourism are usually quoted in term of employment opportunity, incomes, tax revenues, investment, improve standard of living (Durbarry, 2002; Fletcher, 1989; Hall and Lew, 2009;

Mayer et al, 2010; Ahmad, 1995; Wagner, 1997; Mohd et al, 2007). Spencer and Nsiah (2013) content that the benefits derived from economic development should be understood by local communities so that they will support tourism development. Local residents agreed that tourism bring more investment and local businesses (Liu and Var, 1986; Ahmad, 1995).

Economic benefits of tourism may not be as always positive as tourism may bring negative economic impacts. For example, the negative economic impacts include leakages (Kokkranikal et al, 2003; Mbaiwa, 2005), increase of prices (Weaver and Lawton, 2001; Tosun, 2002), increase of cost ling (Tatoglu et al, 2002), low paid jobs (Tosun, 2002). Sometimes, tourism does not bring much benefit to the local people (Mbaiwa, 2005). Hence, understand the economic impacts of tourism in a local economy are vital so that actions can be taken by tourism planners to help improving the tourism benefits. The aim of this paper is to discuss the strengths, weaknesses, and the applicability of four commonly techniques used in estimating economic impacts of tourism 1) Input-output model, 2) Social Accounting Matrix, 3) Computable General Equilibrium, and 4) Tourism Satellite Account. The details of each model is discussed in the following sections.

RELATED LITERATURE

The contribution of tourism can be estimated by applying economic model to trace the economic impact. The results of the impact studies allow stakeholders to identify the direct and indirect sectors within the study region. These results are vital for future development and policies formulation and implementation.

Measuring economic impacts of tourism

The economic impacts of tourism on an economy can be estimated via various approaches (Ahlert, 2008; Pratt, 2011). According to Stynes (1997), there are five reasons why economic impact study should be carried out:

1. To find out how much tourists spend;
2. To determine how tourism impacts local businesses' sales;
3. To find out how much income tourism generates for area households and businesses;
4. To measure the number of jobs supported by the tourism industry; and
5. To calculate the amount of tax revenue generated by tourism

Economic impact analysis can be conducted using different types of economic models, such as Money Generation Model; Economic Base Model; Input-Output (IO) model with economic multipliers, Social Accounting Matrix (SAM), Tourism Satellite Account (TSA); and Computable General Equilibrium Model (CGE). Although there are many techniques, input output models and multiplier are two popular techniques to quantify the tourism impacts (Mohd et al, 2008). Bonn and Harrington

(2008) compared three economic impact models to test their applicability in the field of tourism and hospitality. Although there are various methods in studying economic impact, the final choice is determined by a number of factors (Fletcher, 1989). The details of each model and the choice of selection will be discussed in the following sections.

Input output models

Wassily Leontief, a Nobel Prize Economic winner in 1973, developed input output model in the late 1930s. The newer model (dynamic model) was further modified in 1953 by him. Today, there are many economists attempt to develop or modify the models. Input-output (IO) model has been traditionally undertaken to estimate regional economic of tourism (Archer and Fletcher, 1996; Hanly, 2012; Heng and Low, 1990; Loomis, 1995; Saayman and Saayman, 2006; Wagner, 1997) and guides policy decisions (Gravino, 2012) by explaining how industry's product is distributed within a particular region or economy (Zhou et al, 1997) and predicting how the changes in that sector will affect other sectors (Reece, 2009). In Malaysia, IO analysis is popular among researchers to estimate the economic impact of some sectors (Bekhet, 2009; Bekhet and Abdullah, 2011; Ismail, 2007; Kamaruddin et al, 2008; Mazumder et al, 2009; Mazumder et al, 2011).

Often, IO models are popular to be used to estimate the income and employment generation through multiplier (Mazumder et al, 2009, 2011; Vanhove, 2005) and present the linkages among sector in the industry, personal income, and total employment. Mazumder et al (2009, 2011) carried out a study to examine the contribution of tourism to Malaysian economy using input output technique by deriving several multipliers (e.g. output, income, employment, value added, and import). On the other hand, Kamaruddin et al (2008) used input output analysis to examine the source of growth and key sectors in Malaysia. The economic impacts of several mega events have been conducted using IO analysis, such as 2002 FIFA World Cup (Lee and Taylor, 2005). Although there are arguments on the models, Robinson (2009, 2) pointed out that "if approached and applied correctly, IO models can be a very powerful and helpful tool for informing decisions - allowing planners to determine where dollars will have their highest economic and workforce impacts."

Generally speaking, the models are able to quantify the total economic effects (e.g. direct and secondary) that occur in the economy, describes the interrelationship tourism sector with other sectors and the size of tourism in the economy (Chhabra et al, 2003; Reece, 2009). Nevertheless, the models are famous among economists for its ability to provide accurate, detailed information. Loomis and Walsh (1997) found that the major strength of IO analysis is that it provides detailed information on

direct, indirect and induced effects of visitors' expenditure on all economic measures for different industries in the economy. Fletcher (1989) also asserted that the IO model is particularly valuable for the measurement of second and further round economic effects of tourism. IO analyses are transparent in term of the theoretical underpinning and easier to understand and used by policy makers (Jones et al, 2003). It can also be used to estimate multipliers (Jones et al, 2003).

Despite the many strengths cited by researchers, the models have several limitation that need to be highlighted (Archer, 1996; Dwyer et al, 2004; Zhou et al, 1997). Dwyer et al (2004) commented the limitations of IO are incomplete, ignores the key aspects of the economy and only consider the directly affected industry. As a result, it fails to evaluate fiscal policies (Partridge and Rickman, 2010) and the negative impacts on expenditure could not be or partially captured by IO models (Dwyer et al, 2006).

Social Accounting Matrix

Social Accounting Matrix (SAM) is popular among analysis (Akkemik, 2012) and has been extensively utilized to analyse a variety of issues, including energy (Akkemik, 2011; Hartono and Resosudarmo, 2008), fisheries (Seung and Waters, 2009), foreign direct investment (Harun et al, 2012) climate change (Pal et al, 2011), tourism (Akkemik, 2012; Li and Lian, 2010) and other issues. In Malaysia, SAM is usually utilized to understand the impact of foreign direct investment on income distribution (Harun et al, 2004) or examine the income inequality and poverty among ethnic groups across geographical areas (Jamal & Rahman, 2004). However, the application of SAM in studying economic impact of tourism is limited (Li and Lian, 2010) and typically used for economies with high unemployment (Oosterhaven and Fan, 2006).

SAM is constructed to disaggregate the interaction among institutions (e.g. purchasers), productive units (e.g. suppliers), and factors of production (e.g. labor). SAM is an extension of IO tables and being used for study the economic impacts of tourism (Akkemik, 2012; Jones, 2010). SAM extends the inter-sectorial links in IO tables by showing the links between production sectors and all institutions within the economy (Akkemik, 2012). In other words, the interrelationship between production structure, incomes distribution and household expenditures can be examined using SAM (Pal et al, 2011).

The strength of SAM compare to other models lies in its ability to detail the supply and demand and who benefit from increased visitor spending and indicates the secondary effects. On top of that, various types of multipliers can be derived from a SAM (Jones, 2010) to capture the direct, indirect, and induced impact on output (Pal et al, 2011).

Although there are many advantages of using SAM, it also experiences some limitations. First, SAM model is a demand-driven model and deals with a few

assumptions (Akkemik, 2012). Second, it is not a good tool to make practical policy recommendations (Akkemik, 2012). Third, it requires large number of data, especially input data. In addition, it requires household data, which is often costly and may be not available.

Computable General Equilibrium

Computable General Equilibrium (CGE) or generally known as applied general equilibrium models is "an economy-wide model that includes the feedback between demand, income and production structures and where all prices adjust until decisions made in production are consistent with decisions made in demand" (Rossouw and Saayman, 2011, 757). CGE can be carried out at various levels, from national down to town level. The theory underpinning CGE modelling is general equilibrium, which indicates that a set of equilibrium prices appears to show the markets has reached equilibrium (Markusen, 2002). It converts the general equilibrium economic theory into a mathematical formulation. CGE models are of interest mainly due to the strengths they offer in evaluating the impact of policy changes and the results provide a snapshot of the economy. On the other hand, various scenarios can be defined based on the before and after effects.

One of the earliest economic impact analyses of tourism using CGE models was carried out in the late 1980s (Frechtling and Smeral, 2010). CGE models were used to "estimate the economic impact of tourist expenditures using behavioural equations of the model which specify demand, supply, resource constraint, and price determination in a general environment" (Akkemik, 2012 p.792). In Malaysia, CGE analysis was used to examine the effectiveness of carbon tax (Jaafar et al, 2008), external price shocks (Al-Amin et al, 2008), environmental policies (Al-Aminet al, 2008) on Malaysian economy.

Several pieces of research have attempted to outline the strengths of utilizing CGE versus other models (Dwyer et al, 2005; Liu, 2006). CGE extends the SAM structure and merges the advantages of IO, SAM, econometric to establish an accurate policy analysis and allow prices to vary and resources to be reallocated between production sectors. In contrast to IO models, CGE allows issues involve for changes in relative prices and overcomes the drawbacks in IO models. CGE also allows complex interaction and specify how economic agents react to change in the economy. It incorporates feedback effect that other models do not and takes into account of feedback effects from other markets.

CGE modelling is not without its limitations (Dwyer et al, 2006). For example, there is no universal accepted and known standard CGE structure. Moreover, it does not present the actual changes in macroeconomic variables (GDP, employment) as a

result of policy change. Thus, the economic reality is debatable (Frechtling and Smeral, 2010). Although CGE models offer an internally consistent and detailed description of an economic system (Berrittella et al, 2006); it is questionable to present an internally consistent representation of regional economic structure than other models (e.g. IO and SAM) (Liu, 2006).

While CGE models are favour among researchers, these models are expensive and time consuming (Ritchie and Dickson, 2007). In addition, it is complex because it requires extensive updated input data.

Tourism Satellite Account

Tourism Satellite Account (TSA) is a popular method used to estimate economic impacts of tourism (Libreros et al, 2006). The TSA is deemed as the most appropriate method of measuring the size of the economic contribution of tourism to a country. TSA is demand-side concept as it deals with the expenditures by different parties for tourism goods and services. It is an extension of input output framework (Diakomihalis, 2007; Jones et al, 2003; Smeral, 2006) and is used to estimate the direct tourism consumption (Frechtling, 2010).

Many countries are developing TSA based on a number of manual (Libreros et al, 2006). The recent TSA manual title Tourism Satellite Account: Recommended Methodological Framework was published by the United Nations World Tourism Organization in 2008 (IRTS, 2008) to elaborate the concept and the data requirements for conducting TSA study. The second publication, International Recommendations for Tourism Statistics 2008 (International Recommendations, 2008) uses both monetary and non monetary indicators to measure the activities carried out by visitors. There are 10 tables outlined in TSA (Jones et al, 2009).

The advantages of adopting TSA were discussed by many researchers (Jones and Munday, 2007; Smeral, 2006). TSA measures the employment directly dependent level of value added upon tourism consumption within domestic industries and separates tourism activities from national accounts (Jones et al, 2009; Jones and Munday, 2007). TSA calculates the day visitors and tourists staying overnight. The expenditure by visitor or tourist is seen as adding value to tourism related activities compare to the expenditure by local communities (Smeral, 2006). It provides guidance for countries to update and develop tourism statistics system (IRTS, 2008). The measured activities in TSA can be compared on the same basis (Smeral, 2006).

However, it does not measure the indirect contribution of tourism and tourist demand (IRTS, 2008; Smeral, 2006) and fails to capture the price and qualities to estimate the sales volume and the value added. Thus, the GDP obtained may not accurate (Smeral, 2006). Also, the construction of the account is costly, methodologically complex, and requires national accounts expertise (Jones et al, 2003; Jones, 2010).

Model selection

As discussed in the previous sections, each model has its strengths and weaknesses but there is no universally accepted economic model used to estimate economic impact of tourism. The majority of the impact studies adjust the original model to meet the objective of the studies. Akkemik (2012) pointed out that "the selection of the appropriate modelling technique depends on the research question." For example, CGE models are useful to estimate the changes of supply and demand shock (Oosterhaven and Fan, 2006) while SAM is useful to estimate the significant of tourism sector. In contrast, IO models are considered as able to capture the direct, indirect, and induced impacts (Frechtling, 2011), however, the models need some assumptions to support the analysis.

While TSA shows extensive results, it needs detailed primary data which is very expensive. On top of that, Frechtling (2010) argued that TSA does not measure the indirect contribution of tourism. Like SAM, it requires detailed and expensive primary data. In addition, constructing a CGE model requires longer time compare to construct to other methods. In addition, the model requires large amount of input data and heavily dependent on assumptions (Frechtling, 2011). Nevertheless, Oosterhaven and Fan (2006) pointed out that SAM models are usually employed for economies with high unemployment. Therefore, there is no standard methodology or presentation of these models. Thus, the use of models are largely dependent on the objective and the need of the researcher or study.

CONCLUSIONS

In some of the countries, tourism is the backbone of economy because it brings positive impacts to the local economy by injecting new money and creating new employments. Therefore, tourism stakeholders are interested to understand the economic impacts of tourism so that new policies can be implemented to boost up the economy. Previous literatures indicate a need to assess the economic impacts on a region. Thus, there is a need to review the methods employed to estimate the economic impacts of tourism. This paper has reviewed four popular methods in estimating the economic impacts of tourism. In conclusion, there is no universally accepted model to estimate the economic impacts of tourism. The selection of model depends on the objective of a study and the interest of researcher.

ACKNOWLEDGMENT

REFERENCES

Ahmad, S. (1995). Tourism in Taman Negara-Its contribution as perceived by residents of Ulu Tembeling. Akademika, 47, 37-48.

Akkemik, K. A. (2011). Potential impacts of electricity price changes on price formation in the economy: a social accounting matrix price modelling analysis for Turkey. Energy Policy, 39(2), 854-864.

Akkemik, K. A. (2012). Assessing the importance of international tourism for the Turkish economy: A social accounting matrix analysis. Tourism Management, 33(4), 790-801.

Al-Amin, A. Q., Jaafar, A. H. and Siwar, C. (2008). A Computable General Equilibrium approach to trade and environmental modelling in the Malaysian economy. Http://mpra.ub.uni-muenchen.de/8772/1/MPRA_paper_8772.pdf. Accessed the 4 th of September, 2013, at 10:15

Al-Amin, A. Q., Siwar, C. and Hamid Jaafar, A. (2008). Impacts of external price shocks on Malaysian macro economy: An applied general equilibrium analysis. Economic analysis working papers, No. 2008, 10, 7(10).

Archer, B. and Fletcher, J. (1996). The economic impact of tourism in the Seychelles. Annals of Tourism Research, 23(1), 32-47.

Bekhet, H. A. (2009). Assessing economic connectedness degree of the Malaysian economy: Input-Output Model approach. International Journal of Economics and Finance, 1(2), 134-143.

Bekhet, H. A. (2011). Output, income and employment multipliers in Malaysian economy: Input-Output approach. International Business Research, 4(1), 208-223.

Berrittella, M., Bigano, A., Roson, R. and Tol, R. S. J. (2006). A general equilibrium analysis of climate change impacts on tourism. Tourism Management, 27(5), 913-924.

Chhabra, D., Sills, E. and Cubbage, F. W. (2003). The Significance of Festivals to Rural Economies: Estimating the Economic Impacts of Scottish Highland Games in North Carolina. Journal of Travel Research, 41(4), 421-427.

Diakomihalis, M. N. (2007). The impact of maritime tourism on the Greek economy via the tourism satellite account. Tourism and Hospitality Planning & Development, 4(3), 231-244.

Durbarry, R. (2002). The economic contribution of tourism in Mauritius. Annals of Tourism Research, 29(3), 862-865.

Dwyer, L., Forsyth, P. and Spurr, R. (2004). Evaluating tourism's economic effects: new and old approaches. Tourism Management, 25(3), 307-317.

Dwyer, L., Forsyth, P. and Spurr, R. (2006). Assessing the economic impacts of events: a computable general equilibrium approach. Journal of Travel Research, 45(1), 59-66.

Fletcher, J. E. (1989). Input-output analysis and tourism impact studies. Annals of Tourism Research, 16(4), 514-529.

Frechtling, D. C. (2011). Exploring the full economic impact of tourism for policy making - Extending the use of the Tourism Satellite Account through macroeconomic analysis tools: UNWTO.

Frechtling, D. and Smeral, E. (2010). Measuring and interpreting the economic impact of tourism: 20/20 hindsight and foresight. In Pearce, D.G and Butler, R.W (Eds.), TOURISM RESEARCH: A 20-20 VISION. Oxford, England: Goodfellow Publishing.

Gravino, D. (2012). Economic and policy implications of industry interdependence: An Input-output approach. International Journal of Economics and Finance, 4(6), 22-31.

Hall, M. C., and Lew, A. A. (2009). Understanding and Managing Tourism Impacts: An Integrated Approach: Taylor & Francis.

Hanly, P. A. (2012). Measuring the economic contribution of the international association conference market: An Irish case study. Tourism Management, 33(6), 1574-1582.

Hartonoa, D. and Resosudarmo, B. P. (2008). The economy-wide impact of controlling energy consumption in Indonesia: An analysis using a Social Accounting Matrix framework. Energy Policy, 36, 1404-1419.

Harun, M., Mat, S. H. C. and Jalil, A. Z. A. (2012). Impact of Foreign Direct Investment on Income Distribution in Malaysia: Social Accounting Matrix Framework. Global Review of Accounting and Finance, *3*(1), 32-42.

Heng, T. M. and Low, L. (1990). Economic impact of tourism in Singapore. Annals of Tourism Research, 17(2), 246-269.

Ismail, F. H. (2007). Structural change of the agricultural sector: Analysis based on input-output tables. Http://www.statistics.gov.my/portal/download_journals/files/2007/Volume2/Contents_agricultural_sector.pdf. Accessed the 4 th of August 4, 2013, at 18:05

Jaafar, A. H., Al-Amin, A. and Siwar, C. (2008). A CGE Analysis of the Economic Impact of Output-Specific Carbon Tax on the Malaysian Economy. Paper presented at the 3rd National Conference on Malaysia Economy, Port Dickson.

Jamal, J. A. and Rahman, I. A. (2004). Achieving social accounting matrix for Malaysia through distribution of income. Http://www.statistics.gov.my/portal/download_journals/files/2009/Volume1/content s_Achieving_Social_Accounting.pdf. Accessed the 3 rd of September, 2013, at 12:15

Jones, C. and Munday, M. (2007). Exploring the environmental consequences of tourism: a satellite account approach. Journal of Travel Research, 46(2), 164-172.

Jones, C., Munday, M. and Roberts, A. (2003). Regional Tourism Satellite Accounts: A useful policy tool? Urban Studies, 40(13), 2777-2794.

Jones, C., Munday, M. and Roberts, A. (2009). Top down or bottom up? Issues in the development of sub-national tourism satellite accounts. Current Issues in Tourism, 12(4), 301-313.

Kamaruddin, R., Rashid, Z. A. and Jusoff, K. (2008). An input-output analysis of sources of growth and key sectors in Malaysia. Modern Applied Science, 2(3), 94-109.

Kokkranikal, J., McLellan, R. and Baum, T. (2003). Island tourism and sustainability: A case study of the Lakshadweep Islands. Journal of Sustainable Tourism, 11(5), 426-447.

Lee, C. K. and Taylor, T. (2005). Critical reflections on the economic impact assessment of a mega-event: the case of 2002 FIFA World Cup. Tourism Management, 26(4), 595-603.

Li, J. and Lian, C. (2010). An empirical study on relative income determination of tourism industries with Social Accounting Matrix of Jiangsu Province, China in 2002. Tourism and Hospitality Research, 10(3), 219-233.

Libreros, M., Massieu, A. and Meis, S. (2006). Progress in tourism satellite account implementation and development. Journal of Travel Research, 45, 83-91.

Liu, C. (2006). A computable general equilibrium model of the southern region of Taiwan: the impact of the Tainan science-based industrial park. Applied Economics, 38(14), 1655-1661.

Liu, J. C. and Var, T. (1986). Resident attitudes toward tourism impacts in Hawaii. Annals of Tourism Research, 13(2), 193-214.

Loomis, J. B. (1995). Four models for determining environmental quality effects on recreational demand and regional economics. Ecological Economics, 12(1), 55-65.

Loomis, J. and Walsh, R. G. (1997). Recreation economic decisions: Comparing benefits and costs. (Second ed.). State College PA: Venture Publishing.

Markusen, J. (2002). General-equilibrium modeling using GAMS and MPS/GE: Some basics. Http://www.mpsge.org/tutorial.pdf. Accessed the 12 th of August, 2013, at 15:55

Mayer, M., Müller, M., Woltering, M., Arnegger, J. and Job, H. (2010). The economic impact of tourism in six German national parks. Landscape and Urban Planning, 97(2), 73-82.

Mazumder, M. N. H., Ahmed, E. M. and Al-Amin, A. Q. (2009). Does tourism contribute significantly to the Malaysian economy? Multiplier analysis using I-O technique. International Journal of Business and Management, 4(7), 146-159.

Mazumder, M. N. H., Ahmed, E. M. and Raquib, M. A. (2011). Estimating total contribution of tourism to Malaysian economy. International Journal of Business, Management and Social Sciences, 2(3), 29-34.

Mbaiwa, J. E. (2005). The socio-cultural impacts of tourism development in the Okavango Delta, Botswana. Journal of Tourism and Cultural Change, 2(3), 163-185.

Mohd Rusli, Y., Ahmad, S., Mohd Farid, M. and Alias, R. (2007). Local economic benefits of ecotourism development in Malaysia: The case of Redang Island Marine Park. International Journal of Economics and Management, 1(3), 365-386.

Mohd Rusli, Y., Alias, R. and Khairil Wahidin, A. (2008). Economic Valuation of Marine Parks Ecotourism Malaysia: The Case of Redang Island Marine Park: UPM Press.

Oosterhaven, J. and Fan, T. (2006). Impact of international tourism on the Chinese economy. International Journal of Tourism Research, 8(5), 347-354.

Pal, B., Pohit, S. and Roy, J. (2011). Impact of economic growth on climate change: An Environmentally Extended Social Accounting Matrix (ESAM) based approach for India. MPRA Paper No. 36540.

Partridge, M. D. and Rickman, D. S. (2008). Computable general equilibrium (CGE) modelling for regional economic development analysis. Regional Studies, 44(10), 1311-1328.

Reece, W. S. (2009). The Economics of Tourism: Prentice Hall.

Ritchie, B. W. and Dickson, T. J.(2007). ACT Attractions: Economic Impact and Visitation Patterns Study: Sustainable Tourism CRC.

Robison, M. H. (2009). Input Output Guidebook: A practical guide for regional economic impact analysis. Moscow: Economic Modeling Specialists Inc.

Rossouw, R. and Saayman, M. (2011). Assimilation of tourism satellite accounts and applied general equilibrium models to inform tourism policy analysis. Tourism Economics, 17(4), 753-783.

Saayman, M. and Saayman, A. (2006). Estimating the economic contribution of visitor spending in the Kruger National Park to the regional economy. Journal of Sustainable Tourism, 14(1), 67-81.

Seung, C. K. and Kraybill, D. S. (2001). The effects of infrastructure investment: a two-sector dynamic computable general equilibrium analysis for Ohio. International Regional Science Review, 24(2), 261-281.

Smeral, E. (2006). Tourism satellite accounts: a critical assessment. Journal of Travel Research, 45(1), 92-98.

Spencer, D. M. and Nsiah, C. (2013). The economic consequences of community support for tourism: A case study of a heritage fish hatchery. Tourism Management, 34, 221-230.

Tatoglu, E., Erdal, F., Ozgur, H. and Azakli, S. (2002). Resident attitudes toward tourism impacts: The case of Kusadasi in Turkey. International Journal of Hospitality & Tourism Administration, 3(3), 79-100.

Tosun, C. (2002). Host perceptions of impacts: A comparative tourism study. Annals of Tourism Research, 29(1), 231-253.

UNWTO. (2012). G20 recognizes Travel & Tourism as a driver of economic growth for the first time and commits to work on travel facilitation.Http://media.unwto.org/en/press-release/2012-06-20/g20-recognizes-travel-tourism-driver-economic-growth-first-time-and-commits. Accessed the 12 th of September, 2013, at 14:55

Vanhove, N. (2012). Economics of Tourism Destinations: Taylor & Francis.

Wagner, J. E. (1997). Estimating the economic impacts of tourism. Annals of Tourism Research, 24(3), 592-608.

Weaver, D. B. and Lawton, L. J. (2001). Resident perceptions in the urban-rural fringe. Annals of Tourism Research, 28(2), 439-458.

World Tourism Organization. (2008). 2008 International recommendations for tourism statistics. Madrid: World Tourism Organization. (herein referred to as ''IRTS 2008'')

Zhou, D., Yanagida, J. F., Chakravorty, U. and Leung, P. (1997). Estimating economic impacts from tourism. Annals of Tourism Research, 24(1), 76-89.

IS FINANCIAL THEORY SO DIFFERENT FROM STATISTICS AND THERMODYNAMICS: COMMENT

Amaresh Das[*]

College of Business, Southern University at New Orleans, New Orleans, USA

[*]adas2@cox.net

Abstract

The comment deals, very briefly with the difficult often unanswered question whether statistics might eventually provide a working model for financial behavior. The 'laws of nature' are based on local invariance principles which are independent of initial conditions like absolute time, and which cannot be said about financial markets. The dominant 'equilibrium principle' of the market is only a hope, not a reality: It lacks proper empirical underpinning.

Key words

Pair correlation function; Lognormal distribution; Exponential distribution; Central Limit Theorem.

STATISTICS AND THE DYNAMICS OF FINANCIAL MARKETS

The idea of Adam Smith's invisible hand is to assume that markets are described by stable equilibrium. Standard economic theory and standard finance theory have entirely different origins and show very little, if any, theoretical overlap. The former, with no empirical basis for its postulates, is based on the idea of equilibrium, whereas finance theory is motivated by, and deals from the start with, empirical data and modelling via non-equilibrium stochastic dynamics.[1]

By equilibrium, it is required that the total excess demand for an asset vanishes on the average; correspondingly, the average asset price is constant. One may then urn to statistics for a more widely applicable idea of equilibrium, the idea of

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[1]Experts teach standard finance theory as if it would merely a subset of abstract theory of stochastic processes. There lognormal pricing of assets combined with 'implied volatility' is taken as the standard model (McCauley, 2004). The 'implied volatility is not always required when using the lognormal distribution because empirical volatility can be deduced from the observed market distribution.

statistical equilibrium[2]. In this case, we see that the vanishing of excess demand on the average is a necessary but not sufficient condition for equilibrium. As Boltzman and Gibbs (Rasmussen et al, 2004) have shown, entropy measures disorder. Lower entropy means more order, higher entropy means less order. The idea is that disorder is more probable than order, so low entropy corresponds to less probable states. Statistical equilibrium is the notion of maximum disorder under a given set of constraints. Given any probability distribution, we can write down the formula for entropy of the disturbance. Therefore, a very general course-grained approach to the idea of stability in the theory of statistical process would be to study the entropy.

$$S(t) = - \int_{-\infty}^{\infty} f(x,t) \, In \, f(x,\,t) \, dx \tag{1}$$

Of the returns distribution (P, x) with density $f(x, t) = dP / dt$. If the entropy increases toward a constant limit, independent of time t, and remains there then the system will have reached statistical equilibrium, a state of maximum disorder.[3] In this case, one can see that the vanishing of excess demand on the average is a necessary but not sufficient condition for equilibrium. If entropy approaches a maximum, the equilibrium requires that f approaches a limiting distribution $f_0(x)$ that is time independent as t increases. Such a density is called an equilibrium density. If, on the other hand the entropy increases without bound, as in diffusion with no bounds on returns as in (1), then the stochastic process is unstable in the sense that there is no statistical equilibrium. Instead of using the entropy directly, we might as well discuss our course-grained idea of equilibrium and stability in terms of the probability distribution, which determines the entropy. The stability condition is that the moments of the distribution are bounded and become the time independent at large times (Samuelson, 1941). This is usually the same as requiring that f approaches at - independent limit f_0.

THE PAIR CORRELATION FUNCTION

$$R(\Delta t) = \sigma^2 \, e^{\,2\beta\Delta t} \tag{2}$$

arises from the Wax (1954) and McCauley (2004) process

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[2]As McCauley (2004) emphasizes, though, in his Machine Dreams, the advent of physicists working in large numbers in finance coincided with the reduction in physics funding after the collapse of the USSR. What Mirowski does not emphasize is that it also coincides with a time lag of roughly a decade, with the advent of the Black-Scholes theory of options pricing.

[3]One can say the same about children and their clothing: in the book Machine absence of effective rules of order, the clothing will be scattered all over the floor (higher entropy). Then the mother arrives and arranges everything nearly in the shelves, attaining lower entropy. 'Mama' is analogous to a macroscopic version of Maxwell's famous Demon (Mirowski, 1989).

$$d\,v \; = \; -\,\beta\,v\,dt \; + \; \sqrt{d\,(\,v,t\,)\,d\,B(t)} \tag{3}$$

with the diffusion coefficient given by $d = \beta(v^2)$ is constant. In statistical physics v is the velocity of a Brownian particle[4] and the equation (3) for this model describes the approach of an initially non-equilibrium velocity distributions to the Maxwell Ian one as time increases. The relaxation time for establishing equilibrium $r = 1/2\beta$ is the time required for correlations (3) to decay significantly for the entropy to reach a stable value.[5] That stability is not guaranteed by a restoring force alone can be shown by the example of a lognormal price model, where

$$dp \; = \; r\,pdt + \sigma\,p\,dB \tag{4}$$

If we restrict to the case where $r < 0$ then we have exactly the same restoring force (linear function) as in (4).

The absence of entropy representing a disorder in neoclassical equilibrium theory can be contrasted with thermodynamics in the following way; for assets in a market let us define efficiency as in Sells and Roberts (1980), and Somerfield (1964), as:

$$e = \min\left(\frac{D}{S} \quad \frac{S}{D}\right) \tag{5}$$

where S and D are net supply and net demand for some asset in that market that market. In neoclassical equilibrium the efficiency is 100%, $e=1$, whereas the second law of thermodynamics via the heat bath prevents 100% efficiency in any thermodynamic machine. That is, the neoclassical market equilibrium condition $e=1$ is not a thermodynamic efficiency unless we would be able to interpret it as the zero temperature result of an unknown thermodynamic theory (100% efficiency of a machine is thermodynamically possible only at zero absolute temperature). In stark contrast, the neoclassical economists assume, as McCauley (2004), an authority in the area of econophysics posits, the unphysical equivalent of a hypothetical economy made up of Maxwellian demonish like agents who can systematically cheat the second law perfectly (Kay, 2000).

The Gaussian and lognormal distribution (related by a coordinate transformation) form the basis for standard finance theory. The exponential distribution forms the

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[4]If we could model market data so simply with v representing the price p then the restoring force βp with $\beta > 0$ would provide us with a simple model of Adam Smith's stabilizing Invisible hand.

[5]The equilibrium solution of the lognormal Wax process, equation (3) expressed in returns $x = In^{p/p_0}$ can be written as $f(x) = C\,e^{-2\,r\,x/\sigma^2}$; The time dependent lognormal distribution, the Green function of the Wax equation (3) does not approach this limit as $t \rightarrow \infty$. Negative returns $r = -\,k < 0$ are equivalent to a Brownian particle in a quadratic potential $U(p) = k\,p^2\,/\,2$ but the p dependent diffusion coefficient delocalizes the particle. This appears non-intuitive, though.

basis for many of the empirical approaches in finance and economics.

Suppose that $x = In (p(t + \Delta t) p(t))$. If the probability density f is Gaussian in returns x then we have a lognormal distribution, with a prediction of a correspondingly small probability for 'large events' (large price differences over a time interval Δt). If however, the returns distribution is exponential, then we have fat tails in the variable $y = p(t + \Delta t)/p(t)$ with density $g(y) = f(x)dx/dy$ with scaling components. The exponential distribution plays a special role in the theory of financial data for small to moderate returns. In that case, we will find that all exponents depend on the time lag Δt. That is, the distribution that describes financial data is not a stationary one but depends on time. More generally, any price distribution that is asymptotically fat in the price $g(p) \approx p^{-\mu}$ is asymptotically exponential in returns, $f(x) \approx e^{-\mu x}$.

Fait tails mean that big price swings occur with appreciable probability. Big price swings mean that an appreciable fraction of agents in the market are trading in extreme prices. If you buy at the low and sell at the high end then you could make money but this amount to outguessing the market, a task that the Efficient Market Hypothesis (EMH) believers in finance declare to be systematically impossible. The most current statement of the EMH is that there are no patterns/ correlations in the market that can be exploited for profit (Fama and French, 2007). The difficulty in trying to beat the market is that all you do is to compare stock prices, and then you are primarily looking at the noise. The EMH is approximately correct in this respect. However, Warren Buffet does not look only at prices. The empirical market distribution of returns is observed to peak at the current expected return, calculated from initial investment time t but the current expected return is hard to extract accurately from empirical data and also presents us with a very lively moving target: it can change from time to time and can also exhibit big swings.

WHERE ARE WE HEADED?

We cannot use mathematics systematically to explain why America collapsed financially after following the advice of neo classical economists for deregulation and opening up its markets to external investment and control.[6] We cannot use the standard financial theory to explain mathematically why Enron and WCom and the others collapsed. Such extreme events are ruled out from the start by assuming equilibrium in the standard theory of financial markets and option prices based on expectations of small fluctuations. One cannot have both completely unregulated markets and stability at the same time; the two conditions are apparently incompatible. Equilibrium of financial markets is just impossible with a diffusion coefficient assumed constant (Eq. 2). In particular, even the central limit theorem

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[6]So far, in deregulated electricity and water markets there is no evidence that the lowering of consumer costs outweighs the risk of having firms play games trying to make big wins by trading options on those services. The negative effects on consumers in California and Buenos Aires do not argue in favor of deregulation of electricity and water.

cannot be used to derive a Gaussian without the assumption of local invariance principles. Because the local invariances form the theoretical basis for repeatable identical experiments whose results can be reproduced by different observers independently of where and at what time the observations are made.[7]

Adam Smith and his contemporaries believed without proof that there must be laws of economics that regulate supply and demand analogous to the way that the laws of mechanics govern the motion of a ball. Maybe Smith did not anticipate that an unregulated financial market can develop big price swings where supply and demand cannot come close to matching each other. The idea that 'the market knows best' is a neoclassical assumption based on the implicit belief that an invisible hand stabilizes the market and always swings it toward equilibrium. The only information provided by the market is about the value of an asset is its current market price and no other information is available. However, how can the market 'know best' if no other information is available? Or, even worse, if it consists mainly of noise as described by a Markov process?

Contrary to the early random walk literature, a number of studies have found evidence of positive autocorrelation in security returns over weekly and monthly time horizons; and second there is an indication of negative serial correlation in longer horizon returns over periods of several years.

Despite several researchers' claims of large arbitrage opportunities from exploiting

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[7]Start with the convolution of individual distributions

$$P(x) = \int \ldots \int dp_1(x_1) \ldots \quad \ldots \quad dp_n(x_n))$$

$$\delta(x - \sum x_k / \sqrt{n}) \tag{6}$$

subject to the constraint $\quad x = \dfrac{1}{\sqrt{n}} \sum_{i=1}^{n} x_k \tag{7}$

Using the Fourier transform representation of the delta function yields

$$\phi(k) = \prod_{i=1}^{N} \phi_i(k / \sqrt{n}) \tag{8}$$

Where ϕ_k is the characteristic function of p_k and provides a way to derive the Central Limit Theorem (CLT). To show the limitation of CLT, consider the asymmetric exponential density

$$f_1(x) = \theta(x)\alpha e^{-\alpha x} \tag{9}$$

Using (5) and (6) yields the density $\quad f(x, N) = \phi(x)\alpha \dfrac{x^{N-1} e^{-\alpha x}}{(N-1)} \tag{10}$

Clearly, this distribution is never Gaussian for either arbitrary or large values of x. Since the most probable and mean values approximate each other for large N, we see that CLT will asymptotically describe small fluctuations about the mean. However, the CLT does not describe the fluctuation of very small or very large values of x correctly for any value of N.

the autocorrelation in short-term returns, it is doubtful whether any abnormal returns remain after accounting for the trading spreads, commissions and other costs involved in pursuing this kind of short-term momentum strategy. Longer-term mispricing, however, could constitute a more serious violation of market efficiency.

The research on time series dependencies in returns, which has had the largest impact, at least with practitioners, is the study by DeBondt and Thaler (1985). They look at returns over longer horizons, finding that stocks that have underperformed the most over a three- to five-year period average the highest market-adjusted returns over the subsequent period, and vice versa. They explain this pattern of return reversal as an overreaction in the market in which stock prices diverge from fundamental value. Jegadeesh and Titman (1993) have observed a similar phenomenon, arguing that such price behavior is consistent with positive feedback trading. Whether these longer horizon patterns of mean reversion really exist is a matter of controversy, since sub period results suggest that the patterns observed by many, e.g., and Poterba and Summers (1989) are not all that robust over time. Time-varying expected returns could also explain these patterns, without requiring us to assume that prices deviate from fundamental value over extended intervals. Nevertheless, there is a growing literature that seeks explain observations such as these in terms of the sentiment of non-rational noise traders.[8]

The financial market is complex in that the empirical distribution is not fixed once and for all by any law of nature. Rather, it is also subject to change with agents' collective behavior, but the time scale of entire distribution to change in functional form can be much greater than the time scale for changes in the expected return. The only empirical method for estimating the expected returns is to assume that the future will be like the past, which ignores complexity altogether. Here clearly we are not referring to the ever-present diffusion that broadens a given distribution but about a sudden change, for example, as from Gaussian to exponential returns, or from exponential to some other distribution.

From our experience in nonlinear dynamics we know that our simple looking local equations of motion we can generate chaotic and even computationally complex solutions. Researchers applying microscopic simulations in economics and finance were interested in explaining the sudden drop in the US stock market. The interest was mainly in question of efficiency and stability of different forms of market organizations and regulation as well as the impact of introducing computer-assisted

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[8]General financial equilibrium problem is expected to be large-scale in practice, since one may wish to disaggregate sectors and instruments as finely as required. Hence, some recent work, for example, the one by Nagurney (2002) proposing a decomposition algorithm that resolves such large-scale problems into simpler sub problems is especially appealing. Towards this end, Nagurney (2002) proposed a variational inequality decomposition algorithm, based on the modified projection method, which not only can be solved using equilibration algorithms but can also be implemented on parallel architectures.

trading. Interestingly, the microstructure literature later moved on to other questions, namely, analysis of asymmetric information models to be tackled in a rigorous statistical manner. Of course, it was only a matter of time until financial models became so complicated that they could not be solved analytically anymore and had to be supported by numerical analysis.[9]

An important subsequent variation is financial modelling by Degranwe et al (1993) is the more elaborate dynamics that led to chaotic behavior of exchange rates. In particular, chaotic dynamics derived from the interaction of agents with different prediction functions for future price movements are the topic of a comprehensive research project on 'adaptive belief systems' starting with the work of Brock and Hommes (1997).

CONCLUSION

Can statistics enlighten us? If we stick to the method of statistics and avoid models that are totally divorced from empirical data (from reality), then the answer suggested by statistics indicate that we should be able to add better clarity to the field of finance. However, we do suggest that we should not wait for statistics to appear as a guide. There is so far no reliable theory or estimate of it because we have no approximately correct, empirically grounded theory of financial behavior but, because of the lack of socioeconomic laws of nature and because of the nonuniqueness in explaining statistical data, we have a far more difficult problem than in the natural sciences. We should try to replace the standard arguments about equilibrium or concepts like 'the elasticity of demand' that are substitutes for reality, with empirically based dynamic models with the hope that the models can be falsified.

REFERENCES

Brock, W. A. and Hommes, C. H. (1997). Models of Complexity in Economics and Finance, System Dynamics in Economics and Financial Models ed. Hey, C. H., John Wiley, New York, 3-44.

DeBondt, W. and Thaler, R. (1985). Does the Stock Market Overreact?, Journal of Finance, 40(3), 793-805.

Degranwe, P., Dewachter, H. and Embrechts, M. J. (1993). Exchange Rate Theory: Chaotic Models of Foreign Exchange Market, Blackwell, Oxford.

Fama, E. and French, K. (2007). Disagreement, Tastes, and Asset Prices, Journal of

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[9] Luckily, Bayesian learning methods allowed large classes of asymmetric information to be tackled in vigorous statistical models. Market microstructure theory' by O'Hara [8] provides only theoretical work and lacks any reference to microscopic simulations.

Financial Economics, 83(3), 667-689.

Jegadeesh, N. and Titman, S. (1993). Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency, Journal of Finance, 48, 65-69.

Kay, J. J. (2000). Application of the Second Law of Thermodynamics and Le Chatelier's Principle to the Developing Ecosystem. In Muller, F. Handbook of Ecosystem Theories and management Environmental & Ecological (Math) Modeling. CRC Press.

McCauley, J. L. (2004). Dynamics of Markets: Econophysics and Finance, Cambridge University Press.

Mirowski, P. (1989). Machine Dreams, Cambridge, Cambridge University Press.

Nagurney, A. (2002). Financial Equilibrium. Isenberg School of Management, University of Massachusetts, Amherst.

O'Hara, M. (1995). Market Microstructure Theory, Blackwell, Cambridge.

Poterba, J. M. and Summers, L. H. (1989). Mean Reversion in Stock Prices, Evidence and Implications NBER Working Paper, No 2343.

Rasmussen, C. E. and Williams, C. K. I. (2006). Gaussian Processes for Machine Learning. MIT Press, Cambridge.

Sells, R. L. and Weidner, R. T. (1980). Elementary Modern Physics, Boston: Allyn and Bacon.

Samuelson, P. (1941). The Stability of Equilibrium, Econometrica, 9(2), 97-120.

Somerfield, A. (1964). Translated from the first German edition by Otto Laporte and Peter A Moldaur Optics – Lecture on Theoretical Physics, IV, Academic Press.

Wax, N. (1954). Selected Papers on Noise and Stochastic Processes, New York: Dover.

VISITORS' SATISFACTION TOWARDS SERVICE AND FACILITIES IN KILIM KARST GEOFOREST PARK, LANGKAWI

Mohamad Safee Sapari[1], Ahmad Shuib[2*], Sridar Ramachandran[3],

Syamsul Herman Mohammad Afandi[4]

[1,3,4]Institute of Tropical Forestry and Forest Products, University Putra Malaysia, Serdang, Selangor, Malaysia

[2]Institute of Agricultural and Food Policy Studies, University Putra Malaysia, Serdang, Selangor, Malaysia

*mad.shuib@gmail.com

Abstract

Kilim Karst Geoforest Park (KKGP) is one of the three world heritage sites in Langkawi Island that recognized by UNESCO since 2007. It provides nature-based attraction for instance wildlife watching, karst landscape, mangrove river, and karst caves. Last a few years, visitors arrival in KKGP has increased dramatically from 78,145 to 273,450 between 2006 and 2012. This influx has spurred substantial increases in the demand for facilities and services. However, in terms of ecotourism destination, some visitors may not like the changes in the environment and the landscape of the park because of the development. The main objective of this study is to measure the level of visitors' satisfaction towards quality of services and facilities at KKGP. This study uses the ECOSERV dimension that has been adapted from SERVQUAL for accessing the quality of environment, services, and facilities provided in ecotourism site. In additional, the study uses the expectation-performance analysis that has been adapted from Importance Performance Analysis (IPA) to identify the attributes in services, facilities and environment that are need priority for improvement. The result of the study found the level of visitors' satisfaction towards quality of environment, services and facilities in the park is low. Of the 27 attributes, the study found 17 items indicates visitors are less satisfied and only 6 items really need for urgent action. The results also suggest that there are some opportunities for improving the services and facilities in KKGP especially for management, planner and service provider.

INTRODUCTION

Ecotourism sector in Malaysia has the potential due to its natural attractions and unique geographical landscape. According to Tourism Malaysia (2008), Malaysia is one of the 12 mega-biologically diverse countries in the world and large numbers of flora and fauna. As many as 15,000 species of flowering plants, 286 species of mammals, 150,000 species of invertebrates and 4,000 species of fishes. Ecotourism in Malaysia has become one of the growing industries and important investments for the growth of the economy. Malaysian government has invested a huge sum of money to develop the ecotourism sectors and one of the spot is Kilim Karst Geoforest Park (KKGP.) KKGP is one of the three Langkawi's Geoparks that is located in the northeast corner of Langkawi Island (FIG. 1). It is recognized as one of the three world heritage sites in Langkawi Island by United Nations Educational, Scientific, and Cultural Organization (UNESCO) since 2007.

MKGP- Machincang Cambrian Geoforest Park
KKGP- Kilim Karst Geoforst Park
DBMGP- Dayang Bunting Marble Geoforest Park
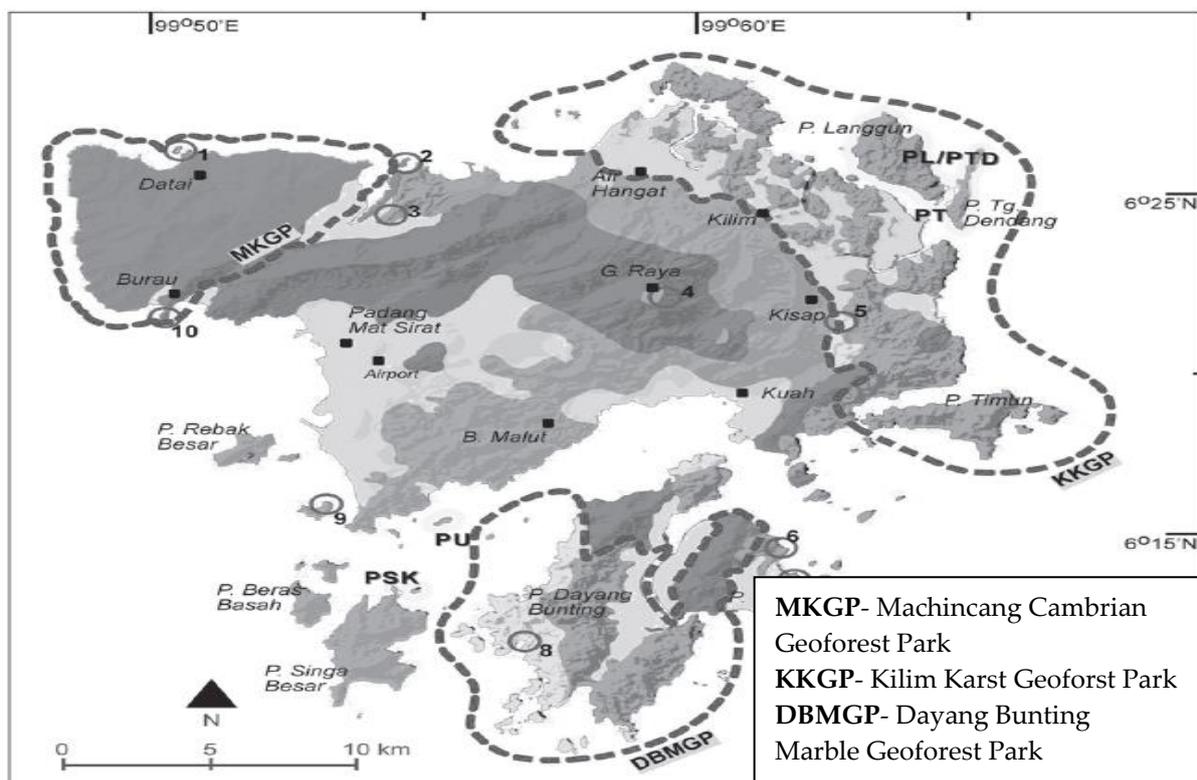
FIG 1. MAP OF LANGKAWI ISLAND
Source: Mohd Shafeea Leman (2010)

The main attraction in KKGP is the nature-based whereas the unique coastal tropical landscape or 'topography coast' which was formed about 490 million years ago. It also conserves the mangrove swamp forest where almost 40% of different mangrove species in the world can be found there. Others KKGP' attractions are the karst landscape, mangrove river, fish farm, karst cave, fish feeding, eagle watching, and the Bat Cave. Furthermore, many ecotourism activities can be done in KKGP for instance kayaking down to the mangrove river, camping, jungle tracking and so forth. As an ecotourism destination, KKGP meet the ecotourism criterion with

involvement of local community into tourism sector. The recognition of the KKGP as a geo-park provides a plenty of job opportunities to local community for instance the participating of fisherman into tourism industry as nature guides and boatman.

Every year, the numbers of visitors visiting the park are constantly increases. Therefore, the authority has taken an immediate action to develop infrastructure, attractions, facilities, businesses and services to satisfy the visitors. However, several issues have risen from the implementation of development in the park; for instance, declining the quality of the environment, congestion and interference to local communities. In addition, increasing the numbers of boat tour in the park has caused some degradation of habitat due to the unregulated speed of tour boats that can cause the erosion of riverbanks. The continuous increase of visitors per day has caused the boat tour to rushing and increase the speed of the boat to be punctual to servicing other passengers. Furthermore, visitors have to bear the negative impact of the development, such as increase in prices as more tourists come to the park. Thus, in term of ecotourism destination, some visitors may not like the changes in the environment and the landscape of KKGP because of the development. Therefore, the visitors' feedback and complained about the park should be given serious attention. Any feedback and complained from visitors indicated that whether are they satisfied or unsatisfied towards development that has been implemented especially in terms of services, facilities and environment. Hence, the satisfaction of visitors should be examined so that future planning and development can be undertaken properly. The objectives of this study are:

- To determine the socio-demographics of visitors at KKGP
- To measure the level of visitors' satisfaction towards the quality of environment, services and facilities provided in KKGP.
- To identify the attributes of environment, services and facilities that needs priority for improvement.

Related Literature

Visitor Satisfaction

Satisfaction is a most important issue in tourism business as it can determine successes and failures in a business organization. According to Yooshik and Muzaffer (2003) satisfaction plays an important role in the planning of marketable tourism products and services. It also influences choice of destination, consumption of products and services, and decision to return by visitors (Kozak and Rimmington, 2000). Moreover, Yu and Goulden (2006) suggest that understanding the tourists' satisfaction in a tourism destination is necessary for improving products and services provided and also to effectively promote the products and services to target

markets. There are many definitions of satisfaction. According to Oliver (1980); Churchill and Surprenant, (1982); Bearden et al, (1983); Oliver and DeSarbo (1988), satisfaction can be defined as a post-choice evaluative judgment concerning a specific purchase decision. Meanwhile, Fah and Kandasamy (2011) state that satisfaction can be determined by subjective (e.g. customer needs, emotions) and objective factors (e.g. products and service features). In addition, according to Zeithaml and Bitner (2000), satisfaction is defined as after-purchase evaluation and emotional recognition of the completed purchasing process.

One of the theories of satisfaction process is the expectancy disconfirmation theory (EDT). The EDT has been proposed by Oliver (1980) (FIG. 2) and it is widely used in business and tourism research. The EDT could be conceptualized in four stages. The first stage is the expectation of the product. In the expectation stage, each consumer has a different knowledge level about a product, which leads to a different estimation of the product performance. The second stage is perceived performance in which each consumer develops certain attributions on the product performance. The third stage is disconfirmation, where the perceived product performance is compared with their initial expectations. Disconfirmation happens when there are discrepancies between initial expectations and actual performance that lead to satisfaction or dissatisfaction among consumers. The final stage is satisfaction where the measurement of perceived product performance by individual consumers determines whether it is up to the expectation (Reising and Chandek, 2001 in Mohd. Ariffin et al, 2011).
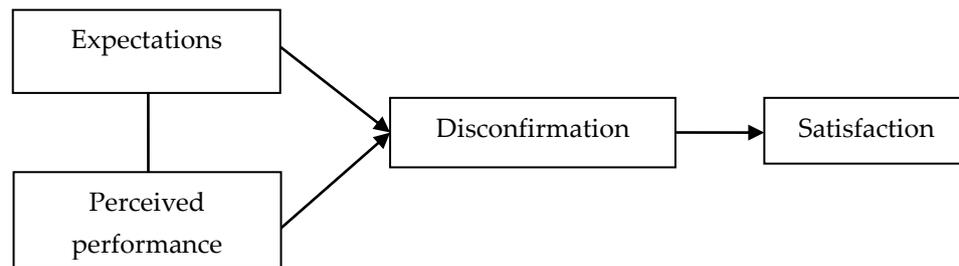
FIG. 2: THE EXPECTANCY DISCONFIRMATION THEORY
Sources: Oliver (1980)

MODEL FOR MEASURING SERVICE QUALITY

This study applies the gap analysis model to measure the level of satisfaction. The most popular research instrument to measure the service quality is the gap analysis model that has been proposed by Parasuraman et al (1985). Since the introduction of the gap analysis model, it has been widely utilized in industries as an effective tool for measuring the quality of service in the various contexts of services setting for instance: hospitality (Crompton and MacKay, 1988; Hamilton et al, 1991); health care service (Wisniewski and Wisniewski, 2005; Rohini and Mahadevappa, 2006),

banking (Wang Lo and Hui, 2003; Kaur et al, 2012), transportation (Bouman and van der Wiele, 1992), educational institute services (McDougall and Levesque, 1994), telecommunication service (van der Wal et al, 2002).

Since the theoretical basis of this study is expectation disconfirmation theory, the gap analysis model is most acceptable to measure visitors' satisfaction towards quality of service. The model proposes that the service quality is a function of the differences between expectation and perceived performance along the quality dimension. The gap of service quality score is calculated as service quality equals perceived performance minus expectation. Service quality can be defined as the difference between customer expectation of service and perceived performance. If the expectation is greater than performance, then perceived quality is less than satisfactory and hence customer dissatisfaction occurs. Based on this model, service quality is a function of perception and expectations and can be modeled as:

$$SQ = \sum_{j=1}^{k} (P_{ij} - E_{ij})$$

Where: SQ = overall service quality;

k = number of attributes / items.

P_{ij} = Performance perception of stimulus i with respect to attribute j.

E_{ij} = Service quality expectation for attribute j that is the relevant norm for stimulus i.

Eco-tourist Service Quality (ECOSERV)

In order to measure the quality of service, the study uses the eco-tourist service quality (ECOSERVE) dimension to identify the attributes of services, facilities, and environment in the ecotourism destination. Essentially, most of the attributes in the ECOSERVE dimensions are composed from SERVQUAL dimensions. However, some adjustment has been done so as to apply it into the ecotourism field by breaking up the tangible dimension into two (tangible and eco-tangible) sub dimensions and defining it as ECOSERV as proposed by Khan (2003). The dimensions of eco-tangible encompass the attributes of environment, (for instance, cleanliness of the river), facilities are appropriate to the environment, non-crowded park and so forth. Practically, the ECOSERV model can be used to determine the service quality of ecotourism destinations. Past researchers who have used the ECOSERV approach in ecotourism studies include Shuib et al, (2012) and Razali et al, (2012).

Expectation-Performance Analysis

The expectation-performance analysis (EPA) is a simple and useful technique to identify the attributes of services and facilities that are most in need of improvement and to avoid wastage of resources. It has been adapted from perception-performance analysis by Johnston and Heineke (1998) and the importance performance analysis (IPA) by Martilla and James (1977). The grid from the expectation-performance analysis would provide the service managers with valuable information for both satisfaction measurement and efficient allocation of resources. Therefore, the results from this EPA can help managers of KKGP to identify areas of strategic focus improving and developing services and facilities. The expectation-performance grid is represented in a 2x2 grid, in which each quadrant can be summarized into a specific suggestion for the management. Interpretation of the expectation-performance grid is illustrated by quadrants whereby:

- Quadrant I (excellent area) means excellent performance on high expectation features, implying opportunities to gain or maintain the competitive advantage;
- Quadrant II (urgent action area) means poor performance on extreme expectation dimensions indicating high priority for immediate action;
- Quadrant III (care free area) means low expectation and low performance, suggesting that it may not be necessary to focus additional effort on these attributes; and
- Quadrant IV (surplus area) means its low expectation on high performance implying that resources would be better off to be employed elsewhere.

METHODOLOGY AND RESEARCH DESIGN

Questionnaire Design and Data Collection

The questionnaire is divided into three sections. The first section obtains information of visitors' socio-demographic. The second and third sections are designed to capture the information on visitor expectations and perceived performances towards quality of services, facilities, and environment by using 27 statements in the ECOSERV dimensions. To determine the level of visitor' satisfaction, respondents are requested to give a score for each question by using a five-point Likert-scale, ranging from 1 to 5, respectively denoting "very disagree", "disagree", "neutral", "agree" and "very agree". The field surveys are conducted in March 2013. A total of 410 structured questionnaires have been handed out to respondents at the Kilim's jetty who visited the park. The respondents were selected by convenient sampling. The questionnaire is designed in two languages: the English version and Malay version (Bahasa Malaysia). This is done because the target respondents consists of both local and international visitors. In order to capture detail information, the

translation of the questionnaire into Bahasa Malaysia has been carefully done so that the terms and meaning remain the same.

DATA ANALYSIS

Descriptive Statistical Analysis

The descriptive statistical analysis describes the respondents' socio-demographic characteristics (gender, age, income, level of education, occupation and nationality). It is a command analysis in the quantitative research.

Reliability Test

Before proceeding with the analysis, a reliability test (Cronbach's Alpha) for each attribute is conducted to test the reliability and internal consistency of all items and dimensions used. This study has included all of the 27 items of the statement from the questionnaire to conduct the reliability test on the two sections, which are expectation and perceived performance.

Expectation-Performance Analysis Grid

In order to accomplish the expectation-performance grid, the Microsoft Excel spreadsheet is used to plot the expectation and performance scores. The average means for expectation and perceived performance for all attributes of services and facilities are calculated in which the median values for perceived performance is located on the X-axis while the mean for expectation located on Y-axis and it is represented in a 2x2 grid.

Result and Discussion

Socio-demographic Profile of Visitors

Identification of socio-demographic profile of visitors is very useful for marketing purposes in order to serve the visitors better. Specifically, understanding the socio demographic profiles of visitors simplify the marketing planning, especially in terms of market segmentation. As Petrick (2004) claims, the patterns of behavior of tourists enable marketers to create informal channels of relationships thus, ensuring future sources of income. The informal channels of relationships will help in identifying the repetitive patterns of behaviors that attract the visitors to a specific destination. By understandings the visitor profiles and characteristics it would help in creating niche market in the sector. Therefore, information on the visitors' profile is one of the key elements to market the products in the tourism industry.

Of the 410 questionnaires distributed only 400 are useable. Unusable questionnaires included missing and ambiguous answers given by the respondents. Therefore, the data from 400 respondents are used in the analysis in this study. The socio-

demographics of visitors are shown in Table 1. The results show that the majority of the respondents (52.2%) are females. In terms of age, the study has found that the highest percentages of visitors are between 21-30 years (36%). The majority of visitors (74.9%) to the park are counted in the middle age group of between 21 and 50 years of age and only about 7% of visitors are more than 51 years old. This result shows that the visitors to KKGP are mainly young adults. This information helps the management and service providers in designing activities and providing facilities suitable for young adult visitors. Generally, participation in outdoor activities relates inversely with age. It means that the level of participation in outdoor activities especially in adventure or energetic activities decreases with age. As the visitors are mainly middle-aged group, adventure or energetic activities for instance trekking, rock climbing, and water rafting, could be provided. However, it should also consider the reflexive activities that are preferred by older visitors; they prefer activities such as relaxing, wildlife watching and enjoying the scenery. Thus, park management should provide the appropriate facilities by considering requirements of different age groups.

The personal gross monthly income is measured in Ringgit Malaysia. From the 400 respondents, about 55.8% of the samples however, do not report income. This is because the question about income is very personal and the majority of respondents prefer not to answer this question. Thus, only 177 respondents have answered the question on income in which from these total, most respondents (33.9%) are having a monthly personal income of more than RM 5,000. The result has also found that the majority (59.9%) of the respondents have a medium income level (between RM 1,000 to 4,999). While, only 6.2% of the respondent's gross monthly income is less than RM 900. In general, as income increases, the purchasing power becomes higher which enables individuals to participate in more recreational activities; also people may shift their choice to better destinations. Thus, having such this information helps the management of park to identify the ability of visitors to pay for recreational fees that could be used for maintenance and conservation purpose.

In terms of education level, a total of 67.5% of the respondents have attended higher education (first degree or higher degree). Categorization of the higher degree refers to the graduate degrees such as PhD and masters while the first degree refers to the undergraduate and diploma. This means that most of the respondents have a university level educational background. There are two possible explanations for this result. Firstly, the visitors in KKGP are well educated. Secondly, during the survey, many groups from academic institutions are visiting the park. Additionally, the majority of the respondents consist of friends who have a similar level of age and level of education. Meanwhile, 28.5% and 1.2% of respondents have secondary and primary education respectively. The rest of 2.8% of respondents have no formal education.

With regards to the visitors' occupation, the largest group (29.5%) is dominated by students followed by private sector employees (27.2%) and public sector employees (21.3%). The finding indicates that the KKGP is a good source of educational information on the environment and natural sources. During the survey, also many organized groups from the government sector and private companies are visiting KKGP. However, the results also show that the majority of visitors (63.5%) to KKGP consist of people that have stable incomes implying that visitors in KKGP have a good purchasing power. Therefore, the management and service providers should take this opportunity to encourage members of local community to be involved in businesses in KKGP to generate income as visitors to KKGP have the ability to pay.

TABLE 1. VISITORS PROFILE IN KKGP (N=400)

Characteristic		Frequency	Percentage (%)
Gender	Male	191	47.8
	Female	209	52.2
Age	18 - 20	63	15.8
	21 – 30	144	36.0
	31 – 40	85	21.1
	41-50	71	17.8
	51-60	27	6.8
	61 or above	10	2.5
Income	RM999 or less	11	2.8
	RM1000 -RM 1999	25	6.2
	RM2000 - RM2999	32	8.0
	RM3000 – RM3999	32	8.0
	RM4000 – RM4999	17	4.2
	RM5000 or above	60	15.0
	Not answer	223	55.8
Education levels	No formal education	11	2.8
	Primary school	5	1.2
	Secondary school	114	28.5
	First degree	241	60.2
	Higher degree	29	7.3
Occupation	Government servant	85	21.3
	Self employed	60	15
	Private employed	109	27.2
	Unemployed	18	4.5
	Student	118	29.5
	Retired	10	2.5
Nationality	Malaysia	252	63
	Asia	78	19.5
	America	12	3
	Europe	33	8.3
	Africa	16	4
	Australasia	9	2.2

Lastly, the result indicates the percentage of respondents according to their nationality; Malaysian visitors form about 63% while the remaining are non-Malaysian visitors. It is common knowledge that KKGP is a popular destination among Malaysians since the Langkawi Island offers many types of tourism attractions from shopping to adventure and historical attractions. Coincidently, the survey is done during the Malaysia's public and school holidays. Hence, it is not surprising that the majority of visitors in the park are Malaysians. The non-Malaysian visitors are mainly from Asia, America, Europe, Africa and Australasia, with Asia chalking up the highest number of visitors (19.5% compared to the other continents). One possible explanation is that there are many tourism promotions and offers made to Asian countries by the Malaysian Ministry of Tourism. Meanwhile, the lowest percentage of visitors are from Australasia (2.2%), followed by America (3%) and Africa (4%). Thus, the tourism Malaysia should consider promoting Malaysia as a tourism destination to the American and African markets.

Data Reliability

The results of Cronbach's alpha value (Table 2) for expectation dimensions are 0.923. It means that 92% (0.924) of the variability by combining 27 items of the statement are considered true score variance, in other words, they are reliable. Meanwhile, the Cronbach's alpha for standardized item (0.923) shows not much different because all of 27 items are using the same scale of measurement which using the Likert-scale measurement (interval scale item). In addition, the Cronbach's alpha coefficient estimate for the instrument and subscale was acceptable and reached the target reliability of at least 0.7 (Garson, 2012; Lewicki and Hill, 2006).

TABLE 2. RELIABILITY TEST FOR EXPECTATION AND PERCEIVED PERFORMANCE OF VISITORS

Reliability of expectation			Reliability of perceived performance		
CA	CA (Stand. items)	No. of items	CA	CA (Stand. items)	No. of items
0.924	0.923	27	0.719	0.734	27

Evaluation of the Quality of Environment, Services and Facilities

In this study, satisfaction is measured by the mean difference in the score (mean score for perceived performance minus the mean score for expectation). The gap value indicates the level of satisfaction, where a positive gap value indicates satisfaction and the negative gap value indicates dissatisfaction. Table 3 shows the results of means of visitors' expectation and perceived performance for each of the 27 items. Table 3 also shows the negative value (-0.17) as perceived performance (3.60) minus expectation (3.77). Thus, this result indicates that visitors are not satisfied with the services and facilities provided in KKGP. However, in terms of the level of satisfaction, visitors are still satisfied but the level of satisfaction is low

because the mean value for both expectation and perceived performance exceed than 3. Based on the Likert-scale in the questionnaire, the "3" point scale represent as "neutral" meanwhile "1" and "2" point represent as "very poor" and "poor" respectively. Two more scores are "4" for "good" and "5" for "very good".

TABLE 3. MEAN FOR EXPECTATION AND PERCEIVED PERFORMANCE OF VISITORS

Dimensions	Mean Expectation	Mean Performance	Gap
1. Cleanliness of river	3.73	3.89	+0.16
2. Attractiveness of mangrove swamps	3.69	3.85	+0.16
3. Equipment that minimizes degradation	3.43	3.08	-0.35
4. Facilities are appropriate to the environment	3.66	3.23	-0.43
5. Facilities that are environmentally safe	3.63	3.33	+0.03
6. Variety of wildlife	3.41	3.16	-0.25
7. Minimal disturbance to wildlife	3.69	3.39	-0.30
8. Non-crowded park	3.86	3.25	-0.61
9. Nature-based activities	3.91	3.38	-0.53
10. Staff have the knowledge to answer questions	3.41	3.24	-0.71
11. Staff and boatmen are consistently courteous	3.95	4.15	+0.20
12. Staff provided the necessary information	4.28	4.37	+0.09
13. Feel safe in their transaction	3.92	3.59	-0.33
14. Safety condition at the point of attractions	3.59	3.36	-0.23
15. The condition of Kilim jetty	3.72	3.98	+0.26
16. Staffs are able communicate	3.87	3.65	-0.22
17. The service is worth money paid for	3.85	3.28	-0.57
18. Staff provided services at the promised time	3.54	3.89	**+0.35**
19. Staff provided accurate and correct information	3.66	3.35	-0.31
20. Staffs and boatmen are helpful	4.26	4.50	+0.24
21. Staff understand the specific needs	3.92	4.14	+0.22
22. Comfortableness of the facilities	4.21	4.35	+0.14
23. Condition of prayer room	3.45	3.15	-0.30
24. Condition of food court	3.71	3.37	-0.34
25. Cleanliness of the toilet	3.89	3.52	-0.37
26. Adequate parking spaces	3.91	3.05	**-0.86**
27. Adequate signage's around the site	3.85	3.72	-0.13
Overall mean	3.77	3.60	-0.17

Based on Table 3, the biggest gap (-0.86) is related to the adequacy of the parking space. Most of visitors are less satisfied with the adequacy of parking space hence, they had to park far away from the jetty point. Another important finding is that the visitors also are less satisfied with the statement "staff and boatmen have the knowledge to answer questions", with a gap value of -0.71. In the other hand, most of visitors are satisfied with item 18 (staff provided services at the promised time)

with the gap value of +0.35 and followed by item 15 (the condition of Kilim jetty) with a positive gap value of +0.26. One of the services that are provided in KKGP is a mangrove tour boat service. Normally, visitors do not need to wait for the mangrove tour boat because there are many boats available in KKGP. Nowadays, the total numbers of boats operating in the park are more than 70. Since 2012, approximately 82 boats are available operated by 29 tour operators, and each boat could load 12 passengers. Thus, with the big number of the boats and the capability of carrying capacity of the boat, visitors are no need to wait for mangrove tour boat at the park.

Theoretically, the attributes that show the negative gap value would require improvement. However, it may not be necessary to improve all attributes that show negative gaps because that could lead to waste the resources (effort, money and time) if the improvement works do not take into account the importance of the attributes from the visitors' perspective. Thus, in order to address the strategy of improvement, the expectation-performance grid will have to be analyzed to prioritize tasks to optimize the utilization of the limited resources.

Expectation-Performance Analysis (EPA): Priorities for Action

The next objective of this study is to identify which attributes ought to be prioritized for action based on the expectation-performance grid analysis. In order to accomplish the expectation-performance grid, the Microsoft Excel spreadsheet is conducted to plot the expectation and performance score. The average mean scores for expectation and perceived performance for the 27 attributes of services and facilities are shown in Figure 3 in which the median values for perceived performance are located on the X-axis (3.60) while the means for expectation are located on Y-axis (3.77).
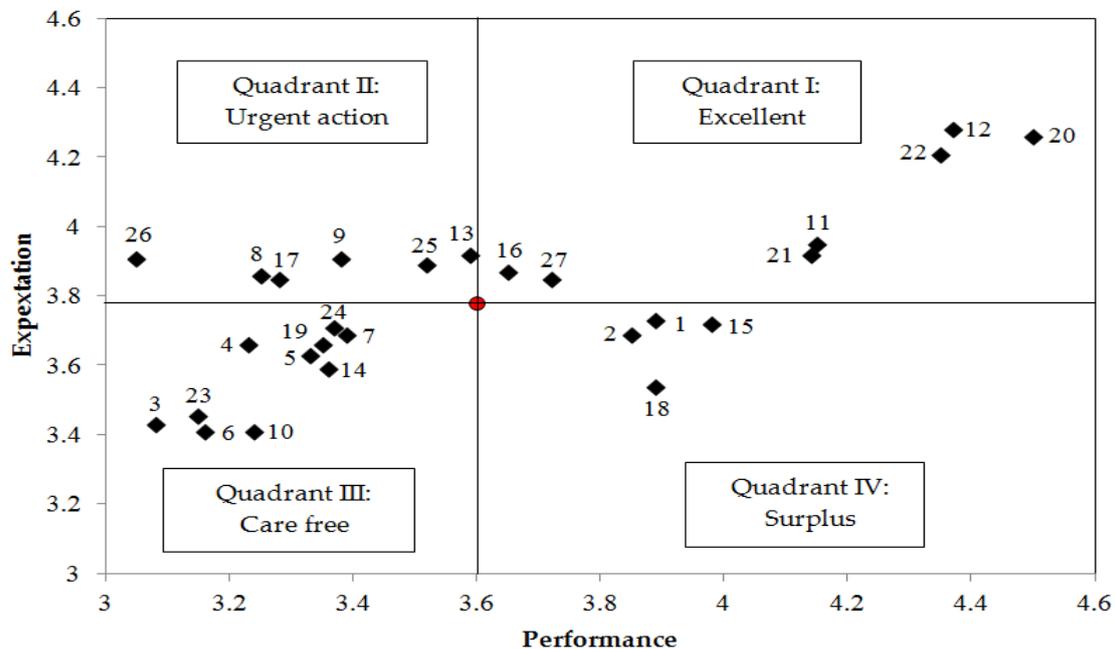

FIG 3. THE GRID OF EXPECTATION-PERFORMANCE ANALYSIS

As shown in Figure3, there are 27 attributes for environment, services, and facilities scattered into different quadrants. The result of EPA for overall service and facilities in KKGP have found that there are 7 items that fall into Quadrant I, 6 items into Quadrant II, 10 items into Quadrant III and 4 items into Quadrant IV.

Quadrant I (excellent area)

Among the 27 attributes relating to environment, services, and facilities, seven are identified to fall into the quadrant I (excellent area). The attributes that fall into this quadrant are considered to have high expectation on excellent performance representing a possible competitive advantage. As can be seen, the most excellent indicator of service provided in KKGP is 'staff and boatmen are helpful' (Item 20), followed by 'staff provided the necessary information' (Item 12), and 'comfortableness of the facilities' (Item 22). The result indicates the items that fell into this quadrant are mainly related to the attitude of staff in KKGP. Thus, the results of this analysis shows that the staff in KKGP performs their duties with an excellent attitude towards visitors, for example, the willingness to help, consistently courteous, understanding the specific needs of the visitors and so forth. The park management or service provides have to maintain the performance for all of these attributes to kept visitors satisfy.

Quadrant II (urgent action)

The results from the EPA grid indicate that six items fall into quadrant II (urgent action). The 6 items are: 8 (non-crowded park); 9 (nature-based activities); 13 (feel safe in their transaction); 17 (the service is worth money spent); 25 (cleanliness of the toilet); and 26 (adequate parking spaces). All of these attributes are indicating high priority for intervention and improvement. However in detail, the most critical attribute that needs to be given serious consideration is item 27 (adequacy of parking spaces) with the high expectation (3.91) but very low performance (only 3.05). This result indicates that the parking spaces for visitors are not adequate especially during the peak season because most of the visitors prefer going to the park using their own cars. It is also obvious that there is insufficient public transportation system to KKGP. Therefore, to increase the performance for this attribute it is necessary to provide more public transport to visitors like buses, shuttle vans, and taxis. Have more public transportation, the number of vehicles in the park could be reduced and the parking spaces could cater for the lesser number of private vehicles.

Another attribute that need to be focused for improvement is nature-based activities (item no 9) with the high score for expectation (3.91) but low performance (3.38). This indicates that most of visitors expect that the packaged boat tour to offer a variety of activities. However, during the boat tour trip, visitors have spent most of

the time just sitting in the boat with no other activities to do. Visitors are taken to visit two places, the fish cage and the Bat Cave. Visitors who have come to KKGP will spread by word of mouth the excitement or boredom on the boat trip. Therefore, the park management should consider about having the activities that can be provided for visitors in KKGP for instance jungle tracking, climbing for visitors who love the adventure activities; nature conservation activities for instance mangrove re-plantation and mangrove swamps cleaning for those who love the nature or conservationist.

Meanwhile, in term of safety many of visitors complained that safety during their visitation was not guaranteed at all. As shows in Quadrant II, item 13 (feel safe in their transaction) indicates having the highest score for expectation (3.92) but low performance (3.59). One possible explanation for the gap is that most visitors to KKGP come with family members including young children. Unfortunately, there is no life jacket provided for kids; most parents who bring their kids along have made complaints of this lack of safety precautions.

Other service that should be paid attention is the price of services with the high mean score for expectation (3.85) but lower performance score (3.28). Base on the statement in the questionnaire, most of visitors infer that the money that they have spent for services especially for boat tour is not worth it with the services provided. The rate of boat service charged is RM250 for an hour tour package, RM350 for two hours, and RM450 for three hours and RM500 for five hours. The study has found that most of respondents (37.8%) spend about two hours for boat tour service in KKGP and almost 22.8% of respondents spend about one hour and the rest of 12.5% and 15.8% are three and four hours respectively. Based upon the result of this study, several recommendations can be made to increase the performance for this attribute. The boat rental for more than two hours could adding the value for tour services, for instance, the 2 hour or above of boat tour package should include service of tourist guides, food and drink. In addition, non-crowded park also indicated the high expectation score (3.86) and low performance (3.25). One possible explanation is that the research is conducted during the peak season, which falls during the school holidays and the Langkawi International Maritime and Aerospace Exhibition (LIMA). Therefore, many visitors, especially local visitors, come to Langkawi Island and to KKGP. These results make it obvious that there is a need for KKGP's management to concentrate on improving the areas with the most number of complains.

Quadrant III (care free area)

Another important finding in the EPA is in the quadrant III (care free area), where there are low expectation as well as low performance features suggesting that it may not be necessary to focus additional effort on these attributes. There are 10 items

falling into this quadrant as shown in Quadrant III. The analysis shows that there are five elements related to the environmental aspects that are included into this quadrant. It indicates that nowadays, the visitors are more aware about the environment and nature. Even though this quadrant means there is no necessity to undertake improvement efforts, the park management should pay as much attention to ensure environment is properly cared because the core business of the park is based on its natural surroundings. Hence, the 'environmental need' aspect should be continuously guarded and given more attention for future utilization. For instance, visitors are not too happy with the equipment used in KKGP (Item 3) and variety of wildlife (Item 6); it is noticeable that the equipment (boat) used are quite old and there is degradation of the environment, for example, erosion of river bank, water pollution, and the roaring sound of the engine of the boats may have caused disturbance to the wildlife. Therefore, by decreasing the speed of the boats, it would minimize erosion of river bank. Using the electric boats also could minimize the oil spill in the river, air pollution, and it also minimize disturbs to wildlife because more quiet.

Quadrant IV (surplus area)

Meanwhile, there are four items included into the quadrant IV (surplus area), which are cleanliness of the river, attractiveness of the mangrove swamps, condition of the jetty and staff providing service on time. Here, visitors have obtained good performance with all of four items, continuous efforts in delivering these facilities and services satisfactorily will encourage visitors to revisit and promote the park further. The existing condition can be handy since the management does need to use resources for the attributes located in this area since visitors are contented with them. Therefore, the park planners should consider allocating resources (i.e., money, time and effort) especially in the 'urgent action' quadrant to yield a high return. As can be seen in Quadrant IV, the attributes that fall into this quadrant cover the elements of service, facilities, and environment. The condition of Kilim jetty, cleanliness of the river, attractiveness of the mangrove swamps and staff provide service on time as indicated by 'high performance on low expectation'. The result suggests that allocating resources on these attributes are enough.

CONTRIBUTIONS OF THE STUDY

The study has come out with the method of determining visitor satisfaction in ecotourism destination. The study is based on the theory of satisfaction namely, expectancy disconfirmation theory. Based on this study, the theory of satisfaction is proved acceptable to determine visitor satisfaction at an ecotourism site. According to this theory, measuring the satisfaction level should include the expectation of the

visitors and their perceived performance for the attributes of services and products. By looking at the gap value between perceived performance and expectation, the satisfaction of the visitors could be determined. In addition, the theory is also applied to the other business sectors.

The study uses the ECOSERV model to determine the attributes of services, facilities, and environment that should be measuring in a nature-based or ecotourism destination. The dimensions in the ECOSERV model are more appropriate because the satisfaction of visitors towards the attributes in the nature-based destination could be identified. In addition, the study uses the EPA to identify the attributes at the ecotourism destination that should be prioritized for improvement. The EPA allows the management to prioritize directions to make strategic marketing decisions as well as management plans without wasting the resources (i.e., money, time and effort).

CONCLUSION

The results provided greater insight into the key dimensions, which suggest overall that good service quality does bring about visitor satisfaction. The quality of a park is an importance aspect for site managers especially for LADA and Kilim Village Community Cooperative. In the study, the site quality aspect measured in terms of visitors' satisfaction towards quality of environment, services, and facilities provided in the park. The Gap analysis shows the negative value, which implies visitors not satisfied. However, in terms of the level of satisfaction, visitors are still satisfied but the level of satisfaction is low. In addition, base upon the result of the expectation-performance analysis, there is six attributes that encompasses the services, facilities and environment element are need to immediate action for improvement in order to satisfy the visitors because all of these attributes are very importance from their perspective. The quality of environment, services and facilities at the ecotourism destination is important from visitors' perspective and further, the resources at the park could be sustainably used and manage and at the same time give benefit to the local communities.

ACKNOWLEDGMENT

REFERENCES

Bearden, W. O. and Teel, J. E. (1983). Selected Determinants of Consumer Satisfaction and Complaint Reports. Journal of Marketing Research, 20(1), 21-28.

Bouman, M. and van der Wiele, T. (1992). Measuring service quality in the car service industry: Building and testing an instrument. International Journal of Service

Industry Management, 3(4), 4-16.

Buttle, F. (1996). SERVQUAL: Review, critique, research agenda. European Journal of Marketing, 30(1), 8-32.

Churchill, G. Jr. and Surprenant, C. (1982). An investigation into the determinants of customer satisfaction. Journal of Marketing Research, 19, 491-504.

Crompton, J. and MacKay, K. J. (1988). A conceptual model of consumer evaluation of recreation service quality. Leisure Studies, 7, 41-49.

David, G. (2012). Testing Statistical Assumptions. USA, North Carolina State University, School of Public and International Affairs.

Fah, L. K. and Kandasamy, S. (2011). An investigation of service quality and customer satisfaction among hotels in langkawi. Paper presented at the International Conference on Management. Hydro Hotel, Penang Malaysia: 13-14 June 2011.

Hamilton, J. A., Crompton, J. and More, T. A. (1991). Identifying dimensions of service quality in a park context. Journal of Environmental Management, 32, 211-220.

Hill, T. and Lewicki, P. (2006). Statistics Methods and Applications. Tulsa: StatSoft.

Johnston, R. and Heineke, J. (1998). Exploring the relationship between perception and performance: Priorities for action. The Service Industries Journal, 18(1), 101-112

Kaur, M., Sharma, N. and Kapoor, S. (2012). Customer satisfaction in banking industry: A gap analysis approach. Asia-Pacific Journal of Management Research and Innovation, 8(4), 399-406.

Khan, M. (2003). ECOSERV: Ecotourist's quality expectation. Annals of tourism Research, 30(1), 109-124.

Kozak, M. and Rimmington, M. (2000). Tourist satisfaction with Mallorca, Spain, as an off-season holiday destination. Journal of Travel Research, 38(3), 260-269.

Martilla, J. A. and James, J.C. (1977). Importance–performance analysis. Journal of Marketing, 41(1), 13–17.

McDougall, G. and Levesque, T. (1994). A revised view of service quality dimensions: An empirical investigation. Journal of Professional Services Marketing, 11(1), 189-209.

Mohd, S. L. (2010). Pemuliharran Geowarisan di Langkawi Geopark, Malaysia. Bangi: LESTARI UKM, Universiti Kebangsaan Malaysia, 80, 19-30.

Mohd Ariffin, A. A., Maghzi, A. and Aziz, A. N. (2011). Understanding hotel hospitality and differences between local and foreign guests. International Review of Business Research Papers, 7(1), 340-349.

Oliver, R. L. (1980). A cognitive model for the antecedents and consequences of satisfaction. Journal of Marketing Research, 17, 460-469.

Oliver, R. L. and De Sarbo, W. S. (1988). Response determinants in satisfaction judgments. Journal of Consumer Research, 14, 495-507.

Parasuraman, A., Berry, L. L. and Zeithmal, V. A. (1985). A conceptual model of service quality and its implications for future research. Journal of Marketing, 49, 41-50.

Petrick, J. F. (2004). The roles of quality, value, and satisfaction in predicting cruise passengers' behavioral intentions. Journal of Travel Research, 42, 397-407.

Razali, M. K. and Khalifah, Z. (2012). Tourists' perception of service quality at Nature Park: A Case Study of Kuala Selangor Nature Park, Malaysia. Lap Lambert Academic Publishing.

Rohini, R. and Mahadevappa, B. (2006). Service quality in Bangalore hospitals: An empirical study. Journal of Services Research, 6(1), 59-84.

Shuib, A., Yaakub, F. and Said, A. (2012). Visitors' satisfaction of services provided in Bako National Park, Sarawak. Paper presented at the 5th International Colloquium on Tourism and Leisure, Bangkok, Thailand: 9-12 July 2012.

Tourism Malaysia. (2008). Media Info: Ecotourism in Malaysia. Communications and Publicity Division, Tourism Malaysia. http://corporate.tourism.gov.my/ Accessed the 13th of November 2013, at 15:30.

Van der Wal, R. W. E., Pampallis, A. and Bond, C. (2002). Service quality in a cellular telecommunications company: A South African experience. Managing Service Quality, 12(5), 233-236.

Wang, Y., Lo, H. and Hui, Y.V. (2003). The antecedents of service quality and product quality and their influences on bank reputation: Evidence from the banking industry in China. Managing Service Quality, 13(1), 72-83.

Wisniewski, M. and Wisniewski, H. (2005). Measuring service quality in a hospital colposcopy clinic. Int. J. Health Care Qual. 18(2/3), 217-229.

Yooshik, Y. A. and Muzaffer, U. B. (2003). An examination of the effects of motivation and satisfaction on destination loyalty: a structural model. Tourism Management, 26, 45–56.

Yu, L. and Goulden, M. (2006). A comparative analysis of international tourists' satisfaction in Mongolia. Tourism Management, 27(6), 1331-1342.

Zeithaml, V. A. and Bitner, M. J. (2000). Services Marketing: Integrating Customer Focus across the Firm (Eds). Boston: McGraw-Hill.

SUPPORTING ELECTROENERGETIC CORPORATE "CEZ SHPERNDARJE" BY DEVELOPING NEW-CONNECTIONS APPLICATION

Anni Dasho[1*], Indrit Baholli[2], Genci Sharko[3]

[1]SHSA (ex CEZ ALBANIA), Albania

[2]Faculty of Economy, European University of Tirana, Albania

[3]Electrical Engineering Faculty, Polytechnic University of Tirana, Albania

[*]anni.dasho@shsa.al

Abstract

CEZ Shperndarje the biggest corporate (monopoly on the energetic sector in Albania) was under the difficulties on managing online/on-time/without overlapping of processes the whole workflow for generating new contracts/per new connection/new clients and deliver on time the contract and build up the service to the client. At this phase the ICT Department came to suggestion supporting the company with a new development called "New Connection Application" involving since the beginning the dedicated group of Departments: Customer Care/Engineering/Meter Management/Billing till the contract delivery to the clients (automatically generated from the system) after finalization of the physical connection to the clients and update to the Billing System the whole set of mandatory data. This was one of the big challenges of the company to undertake. The next challenge for CEZ Shperndarja after the famous E-Bill platform generating invoices in web platform for all portfolio clients, was to inform all clients applying for a new connection to see their status online in our web page. For all clients was designed a new interface of finding online status of their application on the system based on the registration credentials. This would facilitate them on getting on time the new contract, having the real connection of electricity at their home or businesses, knowing the status of their application online. The development was done in the platform of Apache/MySQl/PHP (AMP). The whole platform was working on the intranet (local application of new connection) and internet environment (actual status of new connection applications).

Key words

Web Applications; Billing System, new connection status.

INTRODUCTION

Development and usage of Web applications are popular due to the ubiquity of the browser as a client, on the Intranet and Internet Platforms. The ability to update and maintain web applications without distributing and installing software on potentially thousands of client computers is a key reason for their popularity.

This paper presents the need of designing the "New Connection Application" for CEZ Shperndarja main Divisions (Sales and Distribution) to support on time correctly and informing online all Albanian Citizens for their new contracts or updated ones during the new/updated connection applying process.

FIG 1. NEW CONNECTIONS APPLICATION-MAIN FORM

CUSTOMER CARE SPECIALISTS ENTERING DATA OF CLIENTS APPLICATIONS

The idea of developing such an application was to offer to all "CEZ Shperndarja" main departments part of managing the new connection process in order to simplify and reduce the time consuming for generating new contracts, correct and fulfill all data-cleaning process in Billing System for having the most accurate data for all customer contracts with "CEZ Shperndarja" company (www.cez.cz, www.cez.al). The most important parts of this application were the analyses, design, implementation, testing and training phases until the completion and Go-Live process.

In the meantime, to support our clients we developed on-line status of New Connection Application where clients can manage and see the status of their application till receiving their official contract online from the system.
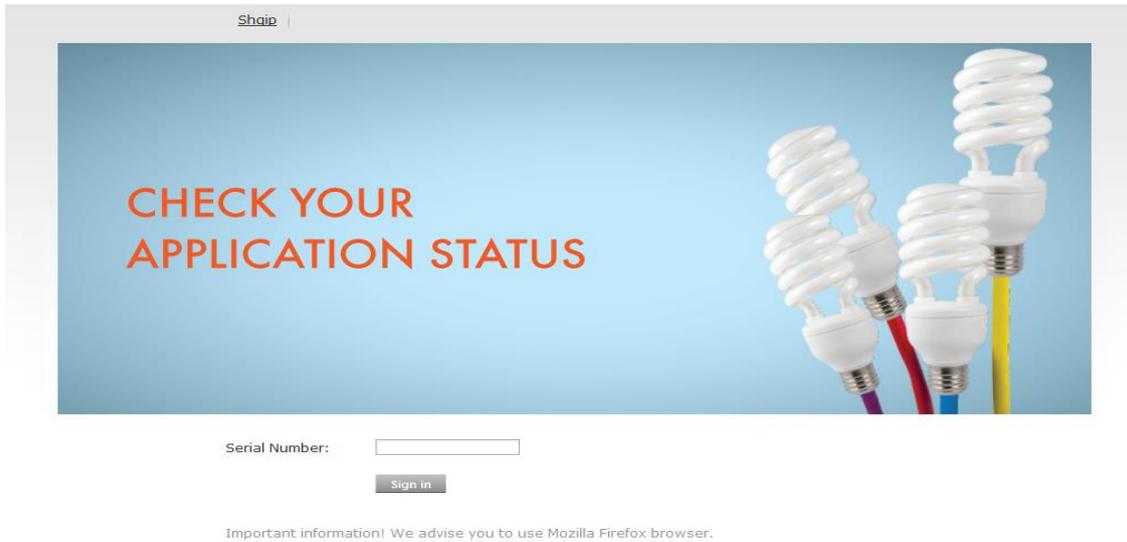
FIG 2. CHECK CLIENTS APPLICATION STATUS ON-LINE AT THE OFFICE PAGE OF CEZ ALBANIA
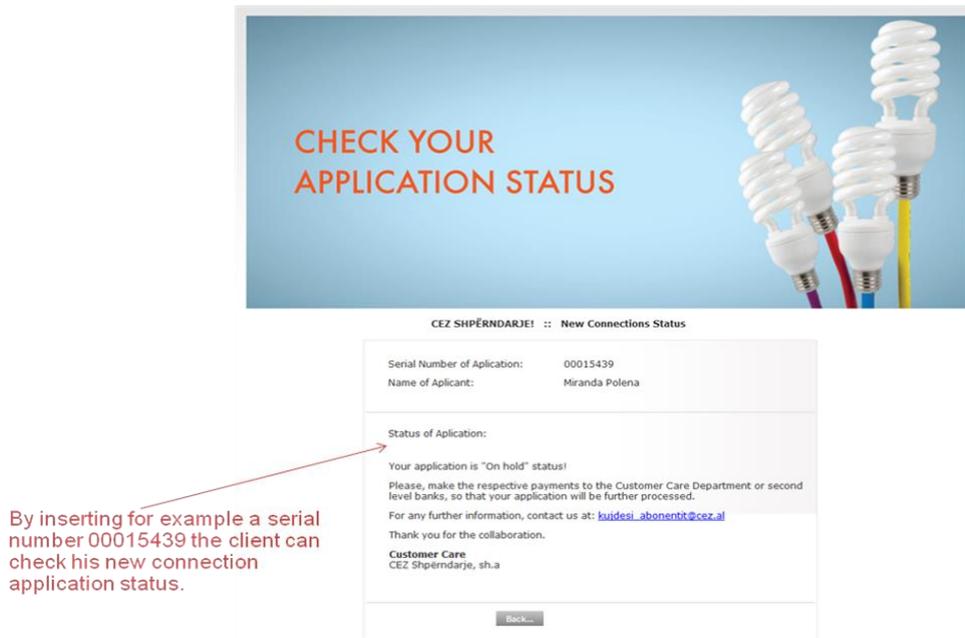
FIG 3. AN OVERVIEW OF THE STATUS OF ONE OF THE CLIENTS APPLYING FOR NEW CONNECTION THROUGH NEW CONNECTION APPLICATION AT CEZ SHPERNDARJA CUSTOMER CARE OFFICES

Why "New Connection Application" was the first question?

The Corporate "CEZ Shperndarje" answer was immediately, support/help all our clients(old and new ones) applying for new connection applications in the most fast, correct, and secured platform spending even less time staying in line for hours to our customer care centres. In the meantime for all clients through this application was given the possibility to see their application status online in our web site till the

finalization process with the contract and physical line at their business/home/institutions etc. All clients need to declare the basic data to be registered on the "New Connection Application"/Customer Care primary form, by the customer care specialist and then we generate and give to the clients the credentials generated from our system as unique ones to follow up the whole process.

Project Methodology

(Analyses, Implementation, Testing and Go Live)

The main and most difficult task was performing a very good Analyses Phase and producing after a Blueprint Document understanding the whole workflow process beginning with the main apply from the clients on the Customer Care Offices and finalizing at the Customer Care Offices with the delivery of the contract to the clients (the whole process finalized and delivered to the client).

After several meetings and interviews with the Customer Care, Billing, Asset Management, Meter Management, IT highest manager's level and IT analyses development and maintenance team the requirements specification document was created for developing the New Connection Application and Data-Cleaning form. Review of existing documentation helped us on understanding all workflow and working processed for each department and even cross working part for different department. The whole database platform already existing in Billing System, were a good reference when working for the final requirements specification document for both E-New Connection Application and the Data Cleaning form.

Project Methodology used

First phase had the following sub-phases:

> Analysis and Definitions

> Implementation (Active development)

> Backup Policy Design and implemented daily and weekly

> One-day delay with Billing System data, system synchronisation done.

Second phase had the following sub-phases:

> Final preparation (Migration, Integration tests, Documentation, user training)

> Go Live in 2 phases

> First Phase testing with internal users of the company

> Second phase go live

In general, all CEZ Shperndarja internal users (Customer Care specialist/supervisors, Asset Management staff, Meter Management Staff, Billing Staff and IT staff) using

the E-New Connection Application system from the Intranet and all other clients accessing from Internet their status of the application founded the importance of such application and how useful was for all of them the use in facility and simplicity in their work. The success or the failure of a software system depends mostly on its utilization. If the E-New Connection Application does not help and facilitate user's work, or if it is too complicated and time-consuming for them, they will never use it and that is why the correct definition of functional requirements is essential.

Software Design, Data and Software Model

After the analyses phase and agreement for the further steps the software design is the most important phase of the project and it is usually the most crucial one or the success of a the E-New Connection Application system. It consists in developing a database and software model, which will interact with the database for storing, modifying and retrieving data.

The first step in this phase was modeling the real world system in a well structured database (used the same structure as Billing DB but a normalized one). This model is represented by the entity-relationship diagram as shown in Figure 4.

During the designing and normalizing the E-New Connection Application Database, we have done the proper analyses of the real world system and model it in a database. A well-designed database takes time and effort to conceive, build and refine, this was done for E-New Connection Application Database keeping in mind all problematic platform the Billing Database was phasing during the time. The main and primary DB, which replicates daily with the E-New Connection Application Database is the Billing System Database; the back-up of both systems is done daily and weekly.

An effective data model completely and accurately represents the data requirements of the end users. The model used for E-New Connection Application eliminates redundant data, it is independent of any hardware and software constraints, and can be adapted to changing requirements with a minimum of effort (Williams and Lane, 2002; Ullman, 2003).

Figure 4 are shows the most important entities of the model and their relationships, where this core model was achieved after consulting several times the requirements specification document in order to assure the best modeling of the real world system. The further step was designing the software model and it was already agreed to use Object-Oriented Modeling as one of the most used techniques based on the advantages it offers (Kay 2003/2010; Zendulka, 2001; Lewis and Loftus, 2008).

IMPLEMENTATION AND SECURITY INFRASTRUCTURE

The next step is the implementation of the software for interacting with the database and most importantly offering a user friendly interface to do so. E-New Connection Application, platform everyday make a copy of the previous day registered regularly on Billing System on a day routine, meaning the E-New Connection Application platform is one day in delay with the main DB of Billing System from which gets the data and fulfil the others tasks for generating the invoices platform for the clients registered and requiring their data. (Riordan, 2005; Lane and Williams, 2004).

The communication between the database and the software includes:

- Storing data/information into the database;

- Modifying data/information already stored in the database;

- Retrieving and consulting data/information

Each user of the application should fill identification requirements in order to login in its personalized interface and use the application and its features.

Security infrastructure is essentially required to protect the systems (servers and personal computers), software, applications and the data that are being used in the E-New Connection Application, where new contracts and data cleaning forms are made available in to be accessed, printed or fulfilling data. Security infrastructures enhance the security of a System/Application/data and are intended to counter security attacks. The gateway (the starting and ending point for inbound and outbound traffic) of systems is protected with security devices. The standard security devices used are the firewall, intrusion detection system (IDS), intrusion prevention system (IPS), the antivirus software and monitoring systems.

Security for this application is ensured by protecting its network domain where service is running, its system domain on which the service is hosted and the service/application itself. Each security device is configured with proper access controls. Internet bandwidth is needed to access web-based E-New Connection Application platform. The amount of internet bandwidth required is directly proportional to the number of users, who access the online status of the application on the E-New Connection Application, service(s) and is one of the parameters to access a service easily with no time delay.

Billing

	ID
	shenime_billing
	Uploading to billing system
FK1,U2,U1	CC_ref
	user
	Nr_contract
	zone
	reading_index
	code_contract
	llojisubjektit
	printuar
	data_print
	last_modified

CC

PK	**ID**
	Emri i subjektit
	Atesia
	NIPT
	Nr Identifikimi
	Rruga
	Qyteti/Fshati
	Sporteli
	Lagja
	Numri i telefonit
	EmriP
	Numri i telefonitP
	FaksP
	E-mailP
	Emri/numri i pronësisëT
	RrugaT
	Qyteti/FshatiT
	leje ndertimi
	Lloji i Furnizimit
	Lloji i biznesit
	Saldatrice/Furre inductive(kVA)
	Burrim paralel alternativ
	Motorët më të mëdhenj (in kW)
	Furnizim nje apo tre fazor
	Deklarimi
	serial
	datapunon
	emripunon
	mbiemripunon
	Fuqia maksimaleinstal
	Fuqia maksimalekerk
	time_stamp
	Status
	dataklient
	emriklient
	mbiemriklient
	shenime_billing
	debitor
	timestamp
	user
	code_contract
	Nr IdentifikimiP
	AdresaP
	llojisubjektit
	Email
	kodi_institucional
	institucioni_varesise
	poz_perfaqesuesit
	data
	ditelindja
	kodi_fiskal
	ndertesa
	hyrja
	apartamenti
	fshati
	kodi_postar
	rrethi
	bashkia
	komuna
	edituar
	statusivjeter
	aplikantin
	QytetiP
	FshatiP
	Numri i telefonito
	qarku
	komunao
	leje ndertimi2
	leje ndertimi3
	tensioni
	burimi
	fmaxp
	tensioninom
	fmaxa
	fmaxr

AM

	ID
	Nr
	Dataraportpune
	Emertimi Kabines Elektrike
	Miratuar nga Cez data
	Miratuar nga Cez prot
	Akt Marreveshja data
	Akt Marreveshja prot
	perfundim punimesh data
	perfundim punimesh prot
	Akt - Kontrolli i kabines data
	Akt - Kontrolli i kabines prot
	Mandati i arketimit data
	Mandati i arketimit no
	Preventivi data
	Preventivi no
	PIKA E LIDHJES
	Kliente Familjare sasi
	Kliente Familjare kw
	Ambjente te perbashketa sasi
	Ambjente te perbashketa kw
	Dyqane sasi
	Dyqane kw
	Zyra kw
	Zyra sasi
	Garazhde sasi
	Garazhde kw
	Matesa 1 Fazore25A
	Matesa 3 Fazore16A
	Matesa 3 Fazore20A
	Matesa 3 Fazore32A
	Matesa 3 Fazore40A
	Matesa 3 Fazore50A
	Matesa 3 Fazore63A
	Matesa 3 Fazore80A
	Lloji i kabllit
	Sasia e kabllit
	Vendosja e matesit
	Matesa 3 Fazore 100
	Matesa 3 Fazore150
	Matesa 3 Fazore 200
	Matesa 3 Fazore 300
	Matesa 3 Fazore 400
	Matesa 3 Fazore600
	Matesa 3 Fazore800
	Matesa 3 Fazore1000
	Matesa 3 Fazore1200
	Matesa 3 Fazore1500
	Matesa 3 Fazore2000
	Shenime
	Specialist
	Nstacioni
	Fideri
	Fuqia e Instaluar
	Tensioni i lidhjes ne rrjet
	Kabina elektrike
	Fuqia e kerkuar
	Transformatoret e rrymes
	Automati i tensionit te ulet
	Network Provisioningemri
	Network Provisioningdata
FK1,U2,U1	CC_ref
	Faza
	Preparation of the project
	Approval of the NC
	Payment Load Fee
	Typical Problem
	Additional Note
	Person in charge
	Datacc
	timestamp
	user
	objekti
	fuqi_pergj
	boks_komp
	boks_pakomp
	abon8
	abon12
	abon16
	abon21
	abon8p
	abon12p
	abon16p
	abon21p
	Matesa 1 Fazore16A
	Matesa 1 Fazore32A
	Matesa 3 Fazore25A
	Kliente Private sasi
	Kliente Private kw
	Boks 3 Fazore25
	Boks 3 Fazore32
	Boks 3 Fazore40
	Boks 3 Fazore50
	Boks 3 Fazore63
	Boks 3 Fazore80
	Boks 1 Fazore25
	Boks 1 Fazore32
	shenime_amt
	Transformatoret e rrymes800/1A
	abonentim

Metering

	ID
	Tipi i matesit te energjise
	Numri i matesit
	Nr of Aplication
	Rregjistrimi fillestar
	Rryma nominale e matesit
	Installation of the metering system
	Vula e makinerise
	Vula e transfte rrymes
	Vula e percjellsave
	Vula e morseterise
	Vula e boksit individual
	Vula te tjera
	Specialist Metering1
	Specialist Metering2
	SHENIME
	Metering Departmentemri
	Metering Departmentdata
	Datametering1
	Datametering2
FK1,U2,U1	CC_ref
	myavis
	Abonenti
	Numri Raportit te Punes
	Tensioni Nominal
	Vula e transfte rrymesia
	Vula e transfte rrymesib
	Vula e percjellsavea
	Vula e percjellsaveb
	Vula e percjellsavec
	Vula e percjellsaven
	Vula e transfte rrymesic
	timestamp
	user
	Energji aktiveT2
	Energji reaktive
	Tipi i matesit te energjised
	Numri i matesitd
	Rregjistrimi fillestard
	Rryma nominale e matesitd
	Vula e makinerised
	Vula e morseterised
	Vula e transfte rrymesiad
	Vula e transfte rrymesibd
	Vula e transfte rrymesicd
	Vula e boksit individuald
	Vula e percjellsavead
	Vula e percjellsavebd
	Vula e percjellsavecd
	Vula e percjellsavend
	Vula te tjerad
	Energji aktiveT2d
	Energji reaktived
	CCS_Vula_morseterise
	CCS_Vula_morseterised
	Metering Pritje
	Metering Pritje Histori
	zona
	lexuesi

USysUsers1

|	
	UserName
	UserType
	Password
	Qyteti
	Name
	TeDrejta
	Formular
	myavis

FIG 4. ENTITY-RELATIONSHIP DIAGRAM OF THE E-NEW CONNECTION APPLICATION PLATFORM

CONCLUSION

With the initiative of the ICT Department(CEZ Albania) and full support of Sales Division (Customer Care, and Billing Departments) and Distribution Division(Asset Management, and Meter Management Departments) of CEZ Shperndarja it was established a working team for the analyses, design and implementation of E-New Connection Application system. The goal of this project was to develop E-New Connection Application platform helping all around Albania CEZ Shperndarja customers for their new connections applications and online updating with Billing System and maintaining daily the Data-Cleaning form per each application arrived. Encouraging community acceptance and adoption of Web applications calls for initiatives to make such applications more broadly useful to users in their daily activities. To this end, we claim that a path-based incremental development approach, in which users are involved in evaluating each increment, is a good approach for appropriate technology Web applications.

REFERENCES

Greenspan, J., Wall, D. and Bulger, B. (2004). MySQL/PHP Database Applications, Wiley.

Kay, A. (2003).The Meaning of Object-Oriented Programming. Retrieved 11 February 2010.

Lane, D. and Williams, H. E. (2004). Web Database Applications with PHP and MySQL. O'Reilly.

Lea, C. and Buzzard, M. (2003). PHP MySQL Website Programming, Jessey White-Cinis & Dilip Thomas Wrox Press Inc.

Riordan, R. M. (2005). Designing Effective Database Systems. Addison Wesley.

Ullman, L. (2003). PHP and MySQL for Dynamic Web Sites: Visual QuickPro Guide, Peachpit Press.

Williams, H. E. and Lane, D. (2002). Web Database Applications with PHP&MySQL, O'Reilly & Associates.

Wilfred, A., Gupta, M. and Bhatnagar, K. (2002). PHP Professional Projects.

Zendulka, J. (2001) Object-Relational Modeling in UML. Retrieved 2008, from http://citeseer.ist.psu.edu/rd/.

DEMAND MODEL OF INTERNATIONAL VISITORS TO THE KILIM KARST GEOFOREST PARK, LANGKAWI: APPLICATION OF ITCM MODEL

Nitanan Koshy Matthew[1], Ahmad Shuib[2]*, Sridar Ramachandran[3], Syamsul Herman[3]

[1]Institute of Tropical Forestry and Forest Products, University Putra Malaysia, Selangor, Malaysia

[2]Institute of Agricultural and Food Policy Studies, University Putra Malaysia, Selangor, Malaysia

[3]Faculty of Forestry, University Putra Malaysia, Malaysia, Selangor, Malaysia

*mad.shuib@gmail.com

Abstract

Kilim Karst Geoforest Park in Langkawi offers rural tourism attractions to the visitors. The rural tourism demand model of international visitors to the site can be developed using the non-market valuation techniques. One of the common techniques is using the revealed preference technique, which is the Travel Cost Model (TCM). There have been various modifications made to the basic TCM developed by Clawson 1959. Modification of the basic TCM takes into account other factors that may shift the demand of visitors. The individual travel cost model (ITCM) has been employed in the research. Thus, the main objective of this article is to develop the rural tourism demand model for the park using the individual travel cost model (ITCM). In addition, the basic TCM model is estimated to determine the consumer surplus value of the international visitors to the park. Structured questionnaire and face-to-face data collection method are employed to obtain the primary data from 330 international visitors using the convenient sampling technique. Poisson regression analysis has been conducted to estimate the basic TCM model. The finding for ITCM shows that the consumer surplus value per trip for the Langkawi model €6993 is greater than for the Kilim models (€1437 and €633) for the Poisson regression analysis.

Keywords

Consumer surplus; Demand; Modification; Rural tourism; Travel cost model.

INTRODUCTION

A geoforest park is a special conservation area within a Permanent Forest Reserve (PFR), it has supreme geological and biological resources, is geared towards a sustainable tourism practice, it promotes multidisciplinary research and enriches community awareness about the natural integration of various forest resources (Shaharuddin and Mohd Shafee, 2004). Global Geopark Network (GGN) defines 'geopark' as a national protected area containing a number of geological heritage sites of particular importance, rarity, or aesthetic appeal. These Earth Heritage sites are part of an integrated concept of protection, education, and sustainable development. On 1st June 2007, Langkawi Island has been gazetted by the United Nations Educational and Scientific Organization (UNECSO) Global Network of National Geoparks as one of the first geoparks in Southeast Asia (Othman and Rosli, 2011). The Langkawi geopark is a rare island geopark comprising 99 islands, possessing one of the most spectacular tropical island karst landscapes in the Southeastern Asian region. It has been officially endorsed by the Chief Minister of Kedah on May 31, 2006 with the objective of fostering sustainable development of its natural resources. This is manifested through sustainable ecotourism and geoheritage conservation. LADA provides the administrative backing and finance, while Universiti Kebangsaan Malaysia (UKM) provides academic input towards the realization of the Langkawi geopark. On the other hand, the geoheritage conservation is carried out under the jurisdiction of the Forestry Department. Kilim Karst Karst Geoforest Park is one of the three geoparks in Langkawi Island.

Kilim Karst Geoforest Park, Langkawi
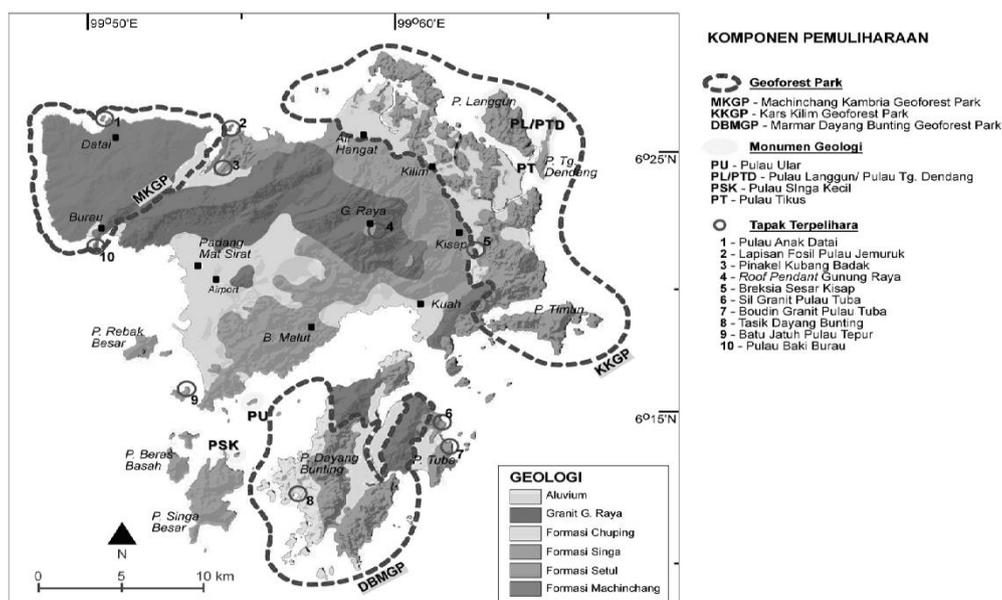
FIG. 1 LOCATION MAP OF THE KILIM KARST GEOFOREST PARK (Source: Mohd Shafeea, 2010)

Kilim Karst Geoforest Park (KKGP) is located in the north of Langkawi Island and is surrounded by protected mangrove swamps with an area of approximately 100 km^2. It has been developed by the oldest limestone in the country, namely the Setul Formation. The KKGP features breathtaking landscapes of nearly vertical karstic hills with pinnacles of various shapes and sizes (Shaharuddin et al, 2004). Perhaps among the main factors contributing to the formation of such beautiful karstic landscape are its generally thin beds and flat to gently dipping altitudes with many high angle vertical faults and fractures as well as its exposure to the open sea (Shaharuddin et al, 2004). It comprises several elongated hills and islands with narrow valleys in-between. The valleys are home to one of the best-kept and unique limestone mangrove forests in the world. Many caves with beautiful features could be found within the park, for example the Gua Kelawar, Gua Buaya, Gua Landak, and Gua Cerita. In addition, a small fresh water valley has developed in Pulau Langgun.

Some of the attractions available at the park are the greenish mangrove swamps, Kilim River, narrow valleys, limestone caves of the tunnel variety, wildlife, etc. The wildlife in the park comprises the belly sea eagles, brahminy kite eagles, brown winged kingfisher, monkeys, monitor lizards, swimming macaque, etc. Next, in the fish cage, there are fish, eels, crabs, mantis prawn, stingrays, and sea bass. On the other hand, the physical facilities available at the park are boats, the Kilim jetty, a *Surau* and small restaurants.

TABLE 1. TOTAL VISITOR ARRIVALS TO THE KKGP FROM (2006 – 2012)

Year	2006	2007	2008	2009	2010	2011	2012
Visitors	42,375	78,145	167,142	115,660	117, 931	321, 325	273, 450

Source: Langkawi Development Authority Offical Website (2012)

Table 1 shows an increase in the total number of visitors arriving from 42,375 in 2006 to 273,450 in 2012. Nonetheless, the accuracy of the data shown in the table is questionable because the visitors arrival data was only properly recorded beginning from 2011 (S. Siti, personnal communication, March 29, 2012). In 2011, out of 321,325 visitors to the park, 168,528 were international visitors whereas 152,797 were local visitors. Next, in 2012, out of 273,450 visitors to the park 126,982 were international visitors whereas 146,468 were local visitors.

Suryani et al (2012) pointed out that economic valuation is an attempt to assign quantitative values to the goods and services provided by the environmental resources, which has no market price, with the economic value, expressed in the form of willingness to pay for the services. The need to assign value to the environmental resources, which are non-market goods, stems from its public good

characteristics. Therefore, the consumption price by consumers could not be determined through the interaction between demand and supply in the market. Consequently, the values of the resources remain ambiguous. In relation to that, Gurluk and Rehber (2008) claimed that the failure to determine the value of the resources existing at a particular site had lead to an underestimation of the true value of the resources or it had been considered to have zero value. This in turn, may prompt the decision makers to use the site for other development activities that may result in the damage of the site, (Poor and Smith, 2004).

METHODS/APPROACHES

There are several methods developed to measure the economic value of non-marketed environmental goods like national parks, geoforest parks, beach, islands etc. They are direct and indirect methods. Indirect method is a tool to reveal the value that consumers assign to non- marketed goods through a revealed preference technique (Ortacesme et al, 2002). On the other hand, direct method is a tool to determine the value that consumers assign to non- marketed goods by directly asking the willingness to pay through a survey (Ortacesme et al, 2002).

TABLE 2. TYPES OF ENVIRONMENTAL VALUATION TECHNIQUES

Revealed Preferences (RP)	Stated Preferences (SP)
Travel Cost Method (TCM)	Contingent Valuation Method (CVM)
Hedonic Pricing Method (HPM)	Choice Modeling (CM)
Market prices	
Adverting Behavior	
Random utility model	

Source: Adapted from Nijkamp et al (2008)

Referring to Table 2, among the popular methods employed using RP technique are the hedonic pricing, travel cost and market pricing methods (Nde, 2011). On the other hand, choice modeling and contingent valuation are among the common methods employed by researchers for SP technique. However, Contingent Valuation Method (CVM) and the Travel Cost Method (TCM) are the two frequently used methods to determine the value of the resources at a particular site to consumers. Despite the approaches being different, their purpose is still the same, which is to derive the demand curve for outdoor recreational resources. Thus, the consumer surplus gained by the consumers could be measured (Ahmad, 2011). Individual Travel Cost Model (ITCM) and Zonal Travel Cost Model (ZTCM) are two types of travel cost models. For the ITCM the dependent variable is the number of trips per season or per year made by an individual to a particular recreation site. On the other hand, for ZTCM the dependent variable is the number of trips to a particular site by the population of a particular zone or region.

Basic TCM

The TCM method was initially suggested by Harold Hotelling (1949) in 1930s as a potential instrument to determine the value of non-market goods (Ortacesme et al, 2002). The importance of knowing the value of non-market goods stemmed as a response to the US National Park Service's intention to determine the economic value of national parks by employing economic principles (Ward and Beal, 2000). Hotelling suggested that the travel cost incurred by an individual to a recreational location could be used as an implicit price to enjoy the site. Therefore, the travel cost is highly influenced by the distance travelled. The longer the distance to a site the more the travel cost and lesser the frequency of visits to the site.

Douglas and Taylor (1999) indicate that the basic travel cost model assumes that opportunity cost of visiting a particular site is an increasing function of the travel distance. This indicates that the consumer needs to forgo more money to travel further. Hence, the utilities that are generated by the visits to the site are a function of an array of discretionary expenditures. This indicates that the satisfaction they gain through the recreation is reflected by their expenditure to the particular site. Enyew (2003) points out that the basic TCM assumptions are as follows.

- The total round trip travel cost, which comprises the amount of money and time spent for travelling to a site, is proxy estimator of WTP to visit the site

- Visitors to a site react similarly to the changes in entrance fees as similar to the changes in the travel cost

- The trip to a particular site is assumed to be the sole intention. Therefore, all travel costs are incurred solely to visit the site.

- Populations where these visitors come from have similar characteristics and preferences

- The total benefits gained from visiting a site are equal to the travel cost incurred by the marginal user.

- The consumer surplus of the marginal user is zero

Following is the basic TCM model

Where:

$VisCap_{ij} = \beta_0 + \beta_1 RITC_{ij} + \varepsilon$

$Viscap_{ij}$ = Total visits per capita from the main cities of each country

$\beta_1 RITC_{ij}$ = Total round trip travel cost of individual i to tourism site j

ε = Random error

METHODOLOGY

The development of basic TCM started from Clawson (1959) and Knetsch (1963). After a short period of time, both of them combined to develop the basic TCM, (Clawson and Knetsch, 1966). The functions of ZTCM suggested by Clawson were as follow.

V_a = f (POP$_a$, Cost$_a$, Y$_a$, Alt$_a$)

Cost$_a$ = g (Dist$_a$, TT$_a$, ET$_a$)

Whereby V_a = number of visits from origin a, POP$_a$ = number of population in origin a, Cost$_a$, which is the travel cost incurred from a zone to a particular site Y$_a$ = Income levels and Alt$_a$ = alternative sites. Travel cost from origin to the site was measured as the function of Dist$_a$ = Distance from origin a to the site, TT$_a$ = Travel time cost to the site and ET$_a$ = entrance fee

ITCM

According to Ward and Beal (2000) ITCM were developed by Brown and Nawas (1973) and Gum and Martin (1974). One of the first to employ the method was Garrod and Willis (1999) in the study of valuing the benefits of environmentally sensitive areas. In the ITCM, travel costs are determined as follows.

$$TC_{ij} = (DC_{ij}, Time\ C_{ij}, F_i) \qquad i = 1\text{-}n, j = 1 - m$$

TC_{ij} is the travel cost incurred by an individual for an origin i to a particular site j. Next, the DC_{ij} is the distance cost, Time C_{ij}, is the travel time cost which depends on the length of time required to a a particular site and the value of an individual's time, and the F_i is the entrance fee charged at a particular site. The travel costs is employed in a trip generating function (TGF) to predict the number of visits made by an individual to a particular site. Besides the travel cost, the socio- economic variables namely the income, education, age level were included.

The demand function is as follows

$$V_{ij} = f (TC_{ij}, SOC_{ij})$$

The dependent variable, V_{ij} is the number of visitors in a group to the Kilim Karst Geoforest Park. The independent variables are the TC_{ij} (travel cost) and the SOC_{ij} (socio demographic variables).

ITCM model

$V = \beta_0 + \beta_1 RITC_{ij} + \beta_2 TTimeC_{ij} + \beta_3\ AltsiteC_{ik} + \beta_4 OSC + \beta_5 OSTime + \beta_6 MS + \beta_7 WTP + \beta_8 Age + \beta_9 Edu + \beta_{10} GM + \varepsilon$

(1)

 Where:

I	=	Origin (Main cities of the respondents)
j	=	Langkawi island
k	=	Alternative site
V	=	Number of visitors in a group to the Kilim Karst Geoforest Park
$RITC_{ij}$	=	Total round trip travel cost of individual from i to site j
$TTimeC_{ij}$	=	Cost of travelling time of individual i to site j
$AltsiteC_{ik}$	=	The total round trip cost per individual i to alternative site k
OSC	=	On-site cost of the individuals in the Kilim Karst Geoforest Park
OSTime	=	Number of hours spent in the park
MS	=	Quality of the Kilim Karst Geoforest Park as measured by mean satisfaction
WTP	=	Willingness to pay by the individuals for an entrance fee at the Kilim Karst Geoforest Park, Langkawi
Age	=	Age of individuals
Edu	=	Education level of individuals
GM	=	Gross monthly income of individuals
$\beta_0 - \beta_{10}$	=	Coefficients to be estimated
ε	=	Random error

Elucidation of the variables

Generally, the majority of past studies employed the number of trips made by the visitors in a year for ITCM. In the present study the number of visitors in a group to the park is used as the dependent variable for ITCM with an assumption that each visitor in the group makes only one trip. The groups are composed of individuals, spouse, fiancé, family, friends, institutions, and organizations.

Travel cost is used as the proxy of price due to the absence of markets. Travel cost incurred by the visitors comprises both the monetary and time cost. Generally, the monetary cost comprises the distance cost, accommodation cost, and cost for food and drinks. On the other hand, the time cost can be determined by verifying the cost of travelling time from the visitor's home to the respective holiday destinations. Travel time is an opportunity cost because during the time taken to travel the visitors can do something else, for instance working, resting at home, visiting their relatives, etc. As in most of the past literatures on TCM, the present study adopts the

loss in hourly wages of the visitors as the opportunity cost for travel time. However, in the present study, the travel cost is defined as inclusive of the distance cost, food, and drinks only. The time cost is not included when determining the travel cost because the variable is included as one of the independent variables in the demand model as done by (Syamsul Herman, 2010).

Thus, the effect of time cost would still be taken into account. The distance cost is determined by accumulating all the transportation costs incurred by the respondent from his home to Langkawi Island, for example, the airfare, train fare, car rental, taxi fare, etc. However, the cost incurred by the respondent from his home to the first departure point of his holiday trip is determined by the information given in the questionnaire. Later, the travel cost was multiplied by 2 to obtain the round trip cost. Next for the food and drinks, an assumption that the airfare is inclusive of food and drinks are made to standardize the measure of food and drinks.

Although the objective of this study is to estimate the consumer surplus value of the international visitors to the KKGP, doing so using the TCM is problematic because for the visitors, KKGP is only one of the many attractions visited in Langkawi Island. Consequently, the decision has been made to apportion the travel cost to Langkawi Island to the park. Consistently, in the present study, three types of travel cost, which constitutes of the travel cost to Langkawi, travel cost to Kilim based on satisfaction and travel cost to Kilim based on hours in the park has been employed. Firstly, total round trip travel costs of the Langkawi Island has been determined by adjusting the total round trip travel cost from home to Langkawi (including the travel cost incurred to other sites until Langkawi for the MDT visitors only) that has been adapted from Fleming and Cook (2007) as follows:

(Round trip travel cost from home until Langkawi) x (Number of days in Langkawi/ Total days from home until the end of the trip in Langkawi)

Next, the specific travel cost to Kilim is calculated by multiplying the adjusted travel cost for both the MDT visitors and visitors for whom Langkawi is the only destination as adapted from Fleming and Cook (2007):

i.   The time spent in the park as a proportion to overall recreational hours spent at or will be spending in Langkawi by assuming that the time available for recreation in a day is 8 hours, consistent with the assumption made by Tiantian (2009)

ii. The satisfaction from visiting KKGP as a proportion of the total satisfaction obtained from visiting Langkawi Island (as reported by the respondents)

The formulas are as follows:

(Adjusted round trip travel cost from home until Langkawi) x (the time spent in the park as a proportion to overall recreational hours spent at or will be spending in Langkawi)

(Adjusted round trip travel cost from home until Langkawi) x (The satisfaction from visiting KKGP as a proportion of the total satisfaction obtained from visiting Langkawi Island)

The assumption made in the first approach is that the benefits obtained by the visitors are proportional to the expenditure and time allocated for visiting the site (Beardsley, 1971). Thus, the increase in the length of stay or time spent at a particular site will stimulate the opportunity to obtain more value and consequently determine the benefit obtained by the visitors. Some of the limitations of the approach are factors such as weather conditions, fixed trip itineraries and lack of prior information regarding the site's true attraction may influence the time spent at the site and the value attached to the site (Clough and Meister, 1991).

For the second approach based on the satisfaction attained an assumption is that decisions made to travel to a particular site are based on the visitors hope to obtain positive utilities (Nillesen et al, 2005). Next, the assumption is that visitors are able to rank the sites they visited based on their preferences or the weightage they allocate for the sites.

Next, the travel time taken by respondents throughout the journey starting from their home to Langkawi Island has been determined using the following steps:

Step 1: The travel time taken by the respondents from their home to the first departure point of their holiday trip is ascertained by the information given in the questionnaire.

Step 2: The travel time taken for the flight is ascertained using websites such as www.expedia.com and www.qatarairways.com based on the lowest fare booked one month prior to departure. Train, bus, and ferry travelers, the travel time is determined using the respective websites and the travel time incurred using the taxi in Malaysia is determined using Google Maps.

Step 3: The transit time is excluded in order to standardize the travel time for all of the respondents.

Step 4: The round trip travel time is obtained by multiplying the overall travel time taken by the respondents by 2 to obtain the round trip travel time. Consistent with the travel cost, the similar adjustment is used to adjust the travel time to Langkawi for MDT visitors as shown below:

(Round trip travel time from home until Langkawi) x (Number of days in Langkawi/ Total days from home until the end of the trip in Langkawi)

The travel time attributable to Kilim is determined by multiplying the travel time adjusted to similar technique used for travel cost. The travel time is later converted into a monetary value by applying the opportunity cost of travel time measured in terms of the loss in wages during the travelling period. In this study, the opportunity cost of time is assumed to be 1/3 of the hourly wage followed by the suggestion from Cesario (1976). The travel time cost is determined using the following formula:

(33.33% X visitors wage per working hour) x (Round trip travel time)

Hourly income is determined by dividing the monthly income of the respondents with the total hours worked in a month. Total working hours are assumed to be 8 hours per day based on the Malaysian standard of working hours. Similarly, Nde (2011) applied the same number of working hours in his study. It is assumed that the respondents work for 30 days in November, which is the month when data collection is conducted. Therefore, the total working hours for that month is 240 hours. This assumption is made because in some countries, including Malaysia, Saturdays, and Sundays is a public holiday. In this case, we could assume that the respondents are on paid leave. Similarly, the self-employed visitors are assumed to work 8 hours in a day is made to standardize the time cost measurement. In order to obtain the hourly income, the total monthly income is divided by the total number of working hours (240). Next, the hourly income is multiplied by the total round trip travel time that is standardized in hours.

The WTP for an entrance fee to the KKGP has been asked in part C of the questionnaire. There are many elicitation techniques available to identify the WTP namely, bidding game, open-ended, payment card and dichotomous choice, (Mohd Rusli et al, 2008). Nevertheless, the bidding game technique has been employed. Under this technique, the respondents were assigned bids from the range of predetermined bids. The amount of bids starts from RM 25 to RM 60 for every 50 respondents. This is because during the pretest with 30 visitors to the park, the majority of them stated the WTP between the earlier ranges. Later, the bid values were converted to the Euro currency to standardize the currency measure for all the respondents who originate from various countries of the world. The currency is chosen because the biggest proportions of the respondents to the park originated from the European countries (43.7%). Next, the on-site time and on-site cost for the respondents have been determined based on the mangrove tour packages offered by the Kilim Cooperative.

The round trip travel cost to the alternative site was determined using the holiday itinerary of the visitors from their respective homes to the alternative site that they would visit in Malaysia as indicated by them. The alternatives sites are Pulau

Pangkor, Pulau Tioman, Pulau Perhentian and Pulau Redang. For the MDT visitors similar adjustments to obtain the travel cost attributable to Langkawi for MDT visitors were made as follows:

(Round trip travel cost from home to the alternative site) x (Number of days in Langkawi/ Total days from home until the end of the trip in Langkawi)

For the socio demographic variables, the age and education level of the respondents were measured in years. Further, for income the individual gross monthly income was asked. The onsite time and cost incurred by the respondents have been determined based on the mangrove tour package offered by the Kilim Cooperative. The package composes 1 hour (RM 250), 2 hours (RM 350), 3 hours (RM 450), and 4 hours (RM 500) respectively. The satisfaction level of the respondents in relation to the resources available at the KKGP as a measure of the quality of the site variable is determined using the Likert Scale. The five-point Likert scale used to determine the level of satisfaction of the respondents is classified as follows: 1 = Very dissatisfied, 2 = not really satisfied, 3 = neither satisfied nor dissatisfied, 4 = Satisfied, 5 = Very Satisfied. Later, the mean satisfaction is used for the regression analysis.

SAMPLING AND DESIGN

Structured questionnaire and face-to-face data elicitation technique are employed at the park and the Langkawi International Airport for about two weeks in November 2012 to obtain the primary data for the research. Even though, 330 respondents are selected through the convenience sampling based on the nearest and conveniently available, only 300 samples are used for further analysis due to inadequate or irrelevant information retrieved from the respondents. Average time incurred for the survey is about 10-15 minutes. The instrument of study (the questionnaire) is designed only in English. The reason being that the English language is an internationally recognized language and an appropriate medium to divulge a higher response rate from the respondents. A Poisson regression analysis is conducted to run the ITCM model using the Limited Dependent Variable (LIMDEP) software version 4.

RESULTS AND FINDINGS

The need to modify the basic TCM is shown in the findings of the analysis for basic TCM using the ITCM. The basic Clawson model was estimated using the Ordinary Least Square Regression (OLS) and the SPSS version 21 software to determine the relationship between total visits per capita and the total round trip travel cost and the fitness of the model. The results are shown in Table 4.

TABLE 4.BASIC TCM ESTIMATION FOR ITCM

	Travel cost (Langkawi) (model)	TC Satisfaction (model)	TC Hour (model)
Constant	1.395	1.433	1.395
Coefficient	-.143E-03 (-4.049)	-.696E-03 (-4.994)	-.158E-02 (-4.000)
Standard error	.354E-04	.139E-03	.389E-03
P- value	.001**	.000**	.001**
Log Likelihood Function	-867.347	-861.989	-867.347
Pseudo R²	.077	.120	.090

Note:** Significant at 95% level of confidence

* In brackets are the t-statistics value

The failure to incorporate those variables had resulted in a low model fit as shown in

Table 4. The Pseudo (R^2) the measure of fit for a model is 8% using the travel cost Langkawi model, and 12% and 9% using both the satisfaction and hours models. As an example, the model fit (R^2) for the travel cost variable in the hour's model (9%), implies that only 9% of the variations in the number of visits to the site is due to the travel cost (*RITC*) incurred by the visitors. This necessitates the need to modify the basic TCM model through the incorporation of other variables that may shift the demand of visitors to a particular site.

Consumer Surplus

The consumer surplus value for ITCM can be estimated using the formula below, adapted from (Parsons, 2003).

$$\textbf{Langkawi CS} = R* \frac{\omega/-\beta tc_r}{\omega} = \frac{R}{-\beta tc_r} = \frac{N_r\ International}{-\beta tc_r\ International} = \frac{126{,}982}{-0.000123} = €887\ million$$

$$\textbf{Kilim (Sat) CS} = R* \frac{\omega/-\beta tc_r}{\omega} = \frac{R}{-\beta tc_r} = \frac{N_r\ International}{-\beta tc_r\ International} = \frac{126{,}982}{-0.000440} = €182\ million$$

$$\textbf{Kilim (Hour) CS} = R* \frac{\omega/-\beta tc_r}{\omega} = \frac{R}{-\beta tc_r} = \frac{N_r\ International}{-\beta tc_r\ International} = \frac{126{,}982}{-0.000896} = €80\ million$$

Whereby:

R   =   Total number of trips made by the visitors during a period of
                          time

βtc_r =   coefficients of the travel cost to the site r

ω =   Parameter vector

Nonetheless, R (the number of trips) is assumed as the actual number of visits to the park in 2012 similar to Tang (2009). Therefore, the R = 126,982, which is the total number of international visitors to the park in 2012. The average CS value per trip can be determined by taking the inverse of β (Nde, 2009).

$$CS \text{ per person/ trip/year} = -1/b$$

TABLE 5.CONSUMER SURPLUS VALUE ESTIMATION FOR ITCM

	Travel cost (Langkawi)	Travel cost Satisfaction (Kilim)	Travel cost hours (Kilim)
Total CS	€ 887 million	€ 182 million	€ 80 million
CS per trip	€ 6,993	€ 1,437	€ 633

The result shows that the consumer surplus value for the travel cost Langkawi model (€887 million) is larger than the Kilim models (€182, €80 million). This is consistent as the Kilim Karst Geoforest Park is only one of the many attractions in Pulau Langkawi. In this, the benefit gained by the visitors in Kilim Karst Geoforest Park, shown in monetary terms should be only a proportion of the total benefit accrued to Langkawi island.

CONCLUSIONS

This article has developed the demand model specifically for international visitors to the KKGP. The basic TCM model resulted in low model fit. This prompts the necessity to modify the basic TCM model with other variables besides the travel cost variable such as onsite cost, onsite time, cost to alternative site, quality of site, WTP and socio demographic variables constituting of the age, gender, education level, and gross monthly income of the visitors. The importance to incorporate those variables arises, as they are demand shifters. Therefore, the failure to incorporate them would lead towards the underestimation or overestimation of the consumer surplus or benefit gained by the visitors to the park. More specifically, the shift of the demand curve to the left will result in an overestimation of the CS whereas; the shift to the right will result in an overestimation of the consumer surplus value. The comparison of consumer surplus value from the estimation using the travel cost to Langkawi and travel cost to KKGP based on satisfaction attained and number of

hour's models showed that the CS value for the Langkawi model is larger than for the Kilim models. The findings is consistent with the expectation made in the study that the CS value attributable for Langkawi would be larger than for Kilim because KKGP is only one of the many attractions in Langkawi island. Also, the finding is consistent with the basic TCM assumption that the total benefit from the use of the site proportional to the total travel cost incurred by the visitors.

ACKNOWLEDGMENT

REFERENCES

Ahmad, S. (2011). Value of outdoor recreation. Paper presented in Faculty of Economics and Business. Universiti Malaysia Sarawak: March 2011. Http://www.feb.unimas.my/images/feb/ wps1102.pdf. Accessed the 12 th of January 2012, 13:35.

Brown, W. G. and Nawas, F. (1973). Impact of Aggregation on the Estimation of Outdoor Recreation Demand Functions. Agricultural Economics, 50, 246-249.

Clawson, M. and Knetsch, J. L. (1966). Economics of Outdoor Recreation. Baltimore: John Hopkins Press.

Clough, P. W. J. and Meister, A. D. (1991). Allowing for multiple-site visitors in travel cost analysis. Environmental Management, 32, 115-125.

Douglas, A. A. J. and Taylor, J .G. (1999). A new model for the travel cost method: a total expenses approach. Environmental Modelling and Software, 14, 81-92.

Enyew, S. (2003). Valuation of the benefits of outdoor recreation using the Travel Cost Method: The case of Wabi-Shebelle Langano Recreation Siti, (Unpublished MSc thesis). University of Addis Ababa, Ethiopia.

Fleming, C. M. and Cook, A. (2008). The recreational value of Lake McKenzie, Fraser Island: An application of the travel cost method. Tourism Management, 29, 1197-1205.

Garrod, G. D. and Willis, K. G. (1999). Methodological issues in valuing the benefits of environmentally sensitive areas. Journal of Rural Studies, 15(1), 111-117.

Global Geoparks Network; What is a Geopark. Http://unesdoc.unesco.org. Acessed the 13 rd of December 2012, at 12:55.

Gum, R. L. and Martin, W. E. (1974). Problems and solutions in estimating the demand for and value of rural outdoor recreation. American Journal of Agricultural Economics, 56, 558-566.

Gurluk, S. and Rehbar, E. (2008). A travel cost study to estimate the recreational value for a bird refuge at Lake Manya's Turkey. Journal of Environmental Management, 88, 1350-1360.

Langkawi Development Authority Official Website. (2012). Background of Langkawi Development Authority. Http://www.lada.gov.my/v2/maklumat korporat/profil/latar-belakang-lada. Acessed the 15 th of February 2012, at 15:25.

Mohd Shafeea, L. (2010). Geoheritage conservation in Langkawi Geopark, Malaysia. Akademika, 80, 19-30.

Nde, T. P. (2011). Non – market valuation of beach recreation using the travel cost method (TCM) in the context of the developing world. An application to visitors of the Ngoe Beach in Kribi, Cameroon, (Unpublished MSc thesis). University of Swedish Agricultural Sciences, Sweeden.

Nijkamp, P., Vindigni, G. and Nunes, P. (2008). Economic valuation of biodiversity: A comparative study. Ecological Economics, 67, 217-231.

Nillesen, E., Weseller, J. and Cook, A. (2005). Estimating the recreational use value for hiking in Bellenden Ker National Park, Australia. Journal of Environmental Management, 36(2), 311-316.

Ortacesme, V., Ozkan, B. and Karuguzel, O. (2002). An estimation of recreational value of Kursunlu Waterfall Nature Park by the individual travel cost method. Turkey Journal of Agriculture Forestry, 26, 57-62.

Othman, P. and Rosli, M. M. (2011). The impact of tourism on small business performance: Empirical evidence from Malaysian Islands. International Journal of Business and Social Science, 2(1), 1-11.

Parsons, G. R. (2003). The travel cost model. In Champ, Patricia, A.; Boyle, Kevin, J., and Brown, Thomas, C. (Eds.): A Primer on Nonmarket Valuation, Kluwer Acedemic Publishers.

Poor, P. J. and Smith, J. M. (2004). Travel cost analysis of a cultural heritage site: The case of historic ST. Mar's city of Maryland. Journal of Cultural Economics, 28, 217-229.

Shaharuddin, M. I., Komoo, I., and Mohd Shafee, L. (2004). Geo-forest Park: An Innovative Approach towards Geological Heritage Conservation within Permanent Reserved Forest of Malaysia. Dalam Warisan Geologi Malaysia. Kerangka Teori dan Penilaian Geowarisan. (Eds.). 243-250: Bangi LESTARI UKM.

Suryani, M. S., Sanusi, N.A. and Kamil, N. F. N. M. (2012). Recreation demand and economic value of Redang Island. Paper presented at the 2nd Congress of the East Asian Association of Environmental and Resources Economics, Bandung, Indonesia.

Syamsul Herman, H. M. A. (2010). Valuing recreational benefits of Perlis State Park, Malaysia using travel cost method, (Unpublished PhD Thesis). Universiti Putra Malaysia, Selangor.

Tang, T. (2009). An application of travel cost method to Yuelu Mountain Park in Changsha, China, (Unpublished MSc thesis). University of Helsinki, Finland.

Ward, F. A. and Beal, D. (2000). Valuing nature with Travel Cost Models. Massachussetts: Edward Elgar.

THE ROLE OF ICT IN TOURISM INDUSTRY

Anand Bethapudi*

National Institute of Tourism & Hospitality Management, Telecom Nagar, Gachibowli, Hyderabad, A.P., India

*nithm.anand@gmail.com

Abstract

The Information Communications Technologies (ICT) plays a major role in tourism, travel and hospitality industry. The Integration of ICT in the tourism industry is an essential for success of tourism enterprise. ICT facilitates an individual to access the tourism products information from anywhere any time. Tourism enterprises can also reach the targeted customers across the globe in a single click on the keypad after emergence of mobile computers, web technologies etc. The purposive sample of 112 managers of tourism, travel and hospitality enterprises in India were surveyed through a questionnaire with the Managing Directors, Directors, General Managers, Team Leaders and Senior Managers. The present study explores the business development, revenue generation, minimization of cost and reaching the customers. The paper explains the gaps between tourism business and ICT influence and suggests measures to fill the gaps in tourism enterprises. The strategic goal is to integrate ICT with tourism that will enable more accessibility, visibility of information, availability of variety of products and satisfaction.

Key words

Tourism; ICT; Integration; e-Tourism.

INTRODUCTION

Information communication technologies (ICTs) have been transforming tourism globally. The ICT driven re-engineering has gradually generated a new paradigm-shift, altering the industry structure and developing a whole range of opportunities and threats. ICTs empower consumers to identify, customize and purchase tourism products and support the globalization of the industry by providing tools for developing, managing and distributing offerings worldwide. Increasingly ICTs play a critical role for the competitiveness of tourism organizations and destinations. ICTs are becoming a key determinant of organizational competitiveness. The enhancements in ICTs' capabilities, in combination with the decrease of the size of

equipment and ICTs' costs, improved the reliability, compatibility and inter-connectivity of numerous terminals and applications. ICTs provide a powerful tool that can bring advantages in promoting and strengthening the tourism industry's strategy and operations.

Scenario of Global Tourism Industry

Compared to other sectors of the global economy, the tourism industry is one of the fastest growing, accounting for more than one third of the total global services trade. International tourist arrivals have grown by 4.3% between 1995 and 2008. In recent years, air transport has increased more than surface transport and the expansion of low-cost air travel has greatly altered the industry in many regions. Figure 1 provides statistics to demonstrate the visitor objectives characterizing inbound tourism in 2011.
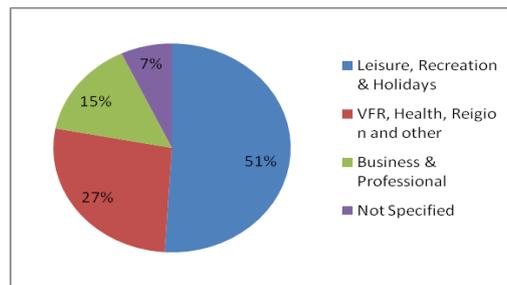
FIG. 1 INBOUND TOURISM BY PURPOSE OF VISIT, 2011

Source: UNWTO Report (2008)

Trends in Tourism Industry

Demand for international tourism maintained momentum in 2011. International tourist arrivals grew by 4.6% to reach 983 million worldwide, up from 940 million in 2010. Europe, which accounts for over half of all international tourist arrivals worldwide, was the fastest-growing region, both in relative terms (+6% tied with Asia and the Pacific) and absolute terms 929 million more visitors). The Middle East (-8%) and North Africa (-9%) were the only (sub)regions to record a decline in arrivals, due to the Arab spring and political transitions in the region. International tourism receipts for 2011 are estimated at US\$ 1,030 billion worldwide, up from US\$ 928 billion in 2010 (+3.9% in real terms), setting new records in most destinations despite economic challenges in many source markets.

According to monthly and quarterly data for 2012 included in the UNWTO World Tourism Barometer, international tourist arrivals worldwide grew at a rate of 5% in the first four months of 2012, consolidating the growth trend that started in 2010. Forecasts prepared by UNWTO in January 2012 point to growth of 3% to 4% in international tourist arrivals for the full year 2012.

Over the past six decades, tourism has experienced continued expansion and

diversification, becoming one of the largest and fastest- growing economic sectors in the world. Many new destinations have emerged, challenging the traditional ones of Europe and North America. Despite occasional shocks, international tourist arrivals have shown virtually uninterrupted growth – from 277 million in 1980 to 528 million in 1995, and 983 million 2011. According to Tourism Towards 2030, UNWTO's recently updated, long term outlook and assessment of future tourism trends, the number of tourist arrivals worldwide is expected to increase by 3.3% a year on average from 2010 to 2030. This represents some 43 million more international tourist arrivals every year reaching a total of 1.8 million arrivals by 2030.

The Role of ICT in Tourism

Effective and high-speed ICT infrastructure and software applications in the tourism and hospitality industry are crucial for tourism development. ICTs allow customer - management relations and supply chain management to be combined into a single source that facilitates a variety of operations - product selection, ordering, fulfillment, tracking, payment and reporting to be performed with one easy-to use tool. ICTs ultimately cut costs by enabling the provider to be in direct contact with the consumer and also impact employment through the need for required maintenance of ICT equipment. Management within tourism companies use ICTs to undertake a range of tasks that enhance the efficiency of employees in the workplace, notably online reservations.

The development of ICTs has also led to changes in demand and supply. A higher demand for flexible, individualized options and quality of information has personalized leisure and tourism behavior, a consequence of increased ICT use. Through new technology and social and economic ratings (e.g., social media platforms like Facebook, Twitter, blogs) customers have the ability to share information and research ratings on destination, quality of service in hotels and restaurants and environmental and social conditions. Number of hotels (e.g., Marriot Hotels and Resorts, Ritz Carlton Hotels, Hyatt Hotels and Resorts) have strengthened their brand image and communicate directly with their customers by posting links to a press release or promoting new package through Twitter.

E-Tourism - Demand and Technology-driven Revolution

The Internet revolutionizes flexibility in both consumer choice and service delivery processes. Customers have become much more sophisticated and discerning. This is because they have experienced high levels of service and because the standard of living has grown considerably. As a result, tourists have become more demanding, requesting high-quality products and value for their money and, perhaps more

importantly, value for time. This reflects people's shortage of time. Having been exposed to several tourism products and destinations, experienced, sophisticated; demanding travelers rely heavily on electronic media to obtain information about destinations, as well as to be able to communicate their needs and wishes to suppliers rapidly.
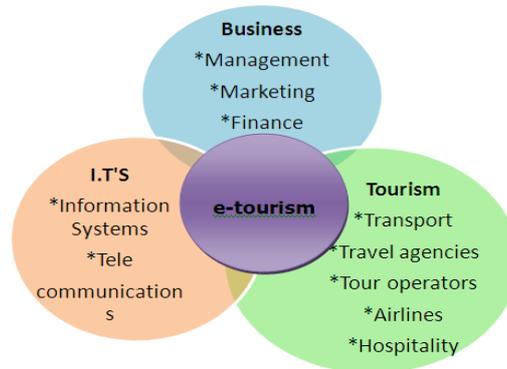
FIG. 2 E-TOURISM, IT FOR STRATEGIC TOURISM MANAGEMENT

Source: Buhalis, D. (2003: 77)

E-Tourism Impacts on Marketing Mix

ICTs provide unique opportunities for innovative organizations to redesign tourism products to address individual needs and to satisfy consumer wants. ICTs have also become part of the core product, especially for business travelers who now expect certain facilities to be available during their trip. The internet and the World Wide Web have revolutionized the promotion and communication functions of tourism. ICTs can reduce commission costs. Expedia, eBookers, to emerge and gain a significant market share, propelling a reintermediation in the distribution channel.

E-Airlines

In 1962, American Airlines introduced its SABRE Computerized Reservations Systems (CRS) to in the place of manual reservations on display boards where passengers were listed and travel agencies had to locate the best routes and fares for their customers in a manual and then telephone for availability, reservation and confirmation before issuing a ticket manually.

The lodging industry is the most under-automated segment of the international travel industry. Property Management Systems (PMSs) were introduced to facilitate the front office, sales, planning and operation functions. This was achieved by administering a database with all reservations, rates, occupancy and cancellations, thus managing the hotel inventory. Hospitality organizations increasingly use computerized systems to improve their inventory management, communicate with their interaction with consumers and reduce some of their operational costs.

E-Hospitality

ICTs have penetrated hospitality management at a fast pace, integrating the hotel operations, reshaping the marketing function, improving total efficiency, providing tools for marketing research and partnership building, and enhancing customer services, while also providing strategic opportunities. In addition, consumers increasingly expect ICT facilities in their rooms; internet access via the television set and data ports have become standard for higher hotel categories. The Internet has improved the hotel representation and reservation processes dramatically. Bookings through the web is particularly convenient for customers who frequent the hotel as that provides an efficient and effective communication mechanism. The greater the capacity, number of departments, transactions, arrivals, departures and reservations, the greater the need for technologies to facilitate the processes. Further integration between PMSs and Hotel CRSs can improve efficiency, facilitate control, reduce personnel and minimize the response time to both customers and management requests.

E-Tour Operators

Tour operators need constantly to interact with all their partners, including accommodation and transportation principals, ICTs are also critical for the distribution of tour operators' packages. The introduction of the Internet, Intranets and Extranets as strategic tools has as strategic tool has a number of benefits for tour operators. The co-ordination and exchange of timely information is important because it allows tour operators to co-ordinate activities, to resolve potential problems and to ensure that customer requirements are communicated to all principals delivering the tourism product. Strategically, ICTs play a critical role for tour operators. For example, Kuoni allows consumers to alter their tourism package online and to build their own itinerary by making it possible to extend the trip, change accommodation, meal plans and add value – added services such as car rentals, scuba-driving lessons.

However, it is quite evident that tour operators will need to shift their focus from the information provision and the reservation mechanism to a strategic role of adding value to the product and the process. Tour operators will therefore need to re-assess their core values and identify specific market segments that they can satisfy in the future.

E-Travel agencies

ICTs have introduced major improvements in the internal organization of travel agencies. By integrating their back-office (e.g., accounting, commission monitoring,

and personnel) and front Office (customers' history, itinerary development, ticketing and communication with suppliers) functions, travel agencies have achieved significant synergies, efficiencies and cost savings. As transactions made in branch offices can automatically be reported back to the head office, tighter financial control can be achieved.

In addition, transactions provide invaluable marketing research data, which can almost instantly report market movements and aid tactical decisions. At the individual level, CRM systems support agencies in tracking the activity of their efficiency, control and competitiveness. Storing information in data warehouse can also help them to develop proactive marketing tools in order to target individual customers with specialized products, thereby increasing the value added services offered to each customer, and to defend themselves against disintermediation. Hence, agencies need to utilize updated ICT on par with the suppliers and customers usage.

E-Destinations

Destination management System (DMS) have been used to integrate the entire tourism supply at the destination. Their contribution to strategic management and marketing is demonstrated by their ability to integrate all stakeholders at destinations and to reach global market.DMS offering innovative information and sometimes facilitating reservations. Destination Integrated Computerized Information Reservation Management Systems (DICIRMS) address entire range of needs and services required by both tourism enterprise and consumers for specific destinations. DICRIMS provide the infostructure for communications and business processes between all stake holders, including consumers, principals, distributors and destination marketing organizations.

NEED FOR THE STUDY

The tourism industry in India is in growth stage and has a high potentiality to grow and equipped with the number of tourist destinations to attract domestic and international tourists. After emergence of low cost aircraft services, India has more growth potential. However, the satisfaction level of the tourist is not high in terms of ICT in India. The UNWTO has ranked tourism industry in India at 61st position as a matter of competitiveness. The number of inbound tourists reached one billion in 2012. Therefore, Indian tourism has strengthen to prepare to attract maximum number of domestic and international tourists. In this study, the ICT plays a vital role in promoting, integrating and building brand loyalty in Indian tourism. Government, entrepreneurs, management and employees in tourism and hospitality industry are the major contributors for the development of tourism. Hence, there is a need to study the ICT role and its implementation to increase the profitability of Indian tourism industry.

OBJECTIVES

i)   To identify the role of ICT in tourism industry;

ii)   To find the gaps in level of usage of ICT in tourism industry in India;

iii)   To analyse the opinion of industry top executives towards ICTs in tourism in India; and

iv)   To suggest measures to improve the profitability by implementing ICTs in Tourism.

Sample and procedures

To achieve the objectives of the study, the research has been focused on scenario of international tourism trends and role of ICTs in the tourism by referring UNWTO, OECD, ILO reports, as well as globally reputed standard textbooks and journals.

To identify the gaps in the levels of usage of ICTs in tourism and to analyze the opinion of the managers and to suggest the measures, a five point scale questionnaire has been prepared by understanding the industry literature, observing, understanding and consulting industry experts and professors. 112 professionals responded across India and the responses have been recorded online and offline using a questionniare. The responses are being represented in the form of horizontal bar diagrams and pie charts (Figure 3).

Organization Type		
Tourism Organization	41	37%
Air-lines/Travel Agency /Tour Operator	17	15%
Hospitality /Hotel	37	33%

FIG. 3 SECTOR vs RESPONDENTS

Among 112 respondents, 41% are from tourism organizations, 15% of the respondents are from the Airlines, travel and tour operations, and 37% are from hospitality industry. The average experience of the respondents is 8.4 years in the industry, ranging from 1-35 years. The respondents are located in different parts of the country. The primary data is collected during the months of October-November, 2012.

Scope of the research

The research study has been conducted in tourism organizations, travel agents, hotels, restaurants, resorts, professionals in tourism, travel and hospitality industry

across the India.

Limitation of the Study

- The respondents are from the industrial employees only;

- The respondents are from India only; and

- The study is conducted in two months only.

Gaps in ICTs in tourism, travel & hospitality industry

i)   Most Indian tourism, travel and hospitality websites are not mobile ready;

ii)   Top level managements are not aware of updated;

iii)   ICTs employees are not trained in usage of ICT;

iv)   Many of the enterprises are operating with the traditional tools;

v)   Majority of enterprises are not integrated with the updated ICTs;

vi)   Most of enterprises are not utilizing social media for business development purpose;

vii)   The internet connectivity is not available everywhere across the country.

Data Representation and Interpretation

Furthermore, the interpretations for each statement responded from the sample are additionally addressed.
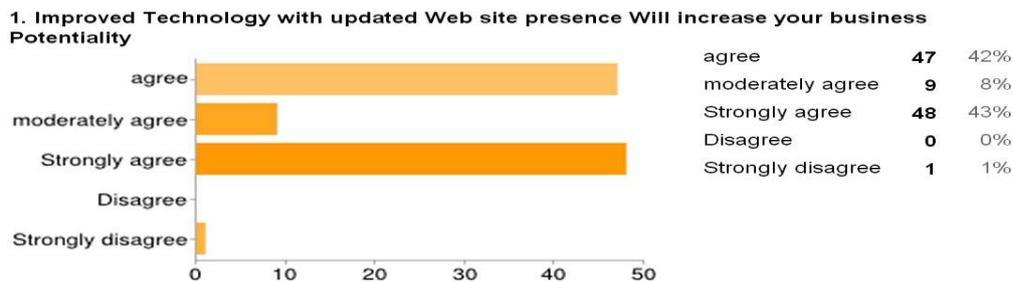
FIG. 4 UPDATED WEBSITES WITH IMPROVED TECHNOLOGY

Interpretation regarding Figure 4: 93% of the respondents agree that the updated website has vital role in improvement the business potentiality. Only 1% of the respondents disagree with this statement.

FIG. 5 SOCIAL MEDIA IN MARKETING

Interpretation regarding Figure 5: 90% of the respondents agree that social media is an effective in promotion online and marketing tool for enterprises. Only 5% of the respondents disagree.
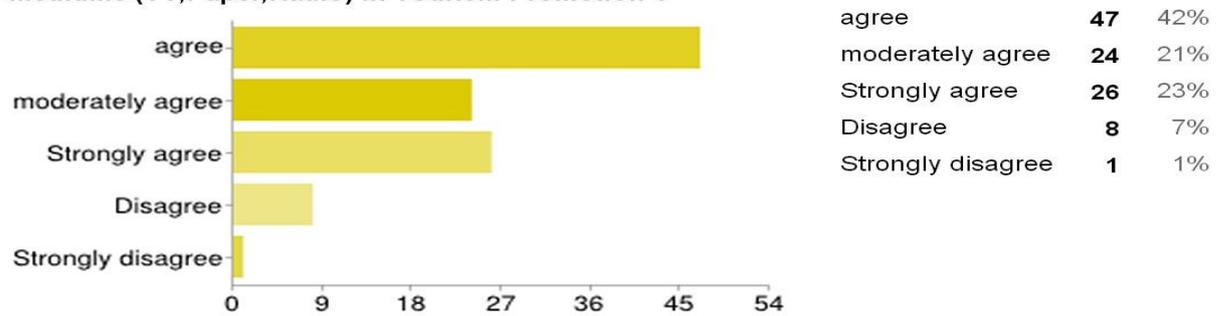
FIG. 6 INTERNET MEDIUM VS.MASS MEDIUM

Interpretation regarding Figure 6: 86% of respondents agree that Internet has equal role with the TV, newspapers and radio. Only 9% of the respondents disagree.

FIG. 7 SEARCH ENGINE OPTIONS FOR TOURISM PRODUCTS

Interpretation regarding Figure 7: 88% of the respondents agree that the Google pages play significant role in promoting. 7% of the respondents disagree with this

statement.
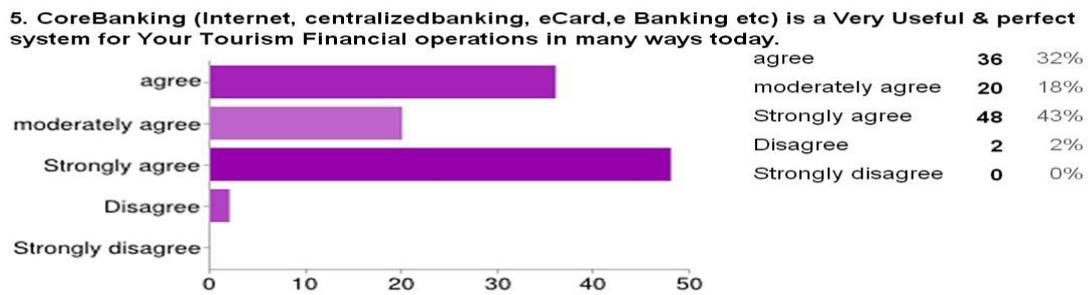
FIG. 8 CORE BANKING AS A TOURISM FINANCIAL OPERATIONS

Interpretation regarding Figure 8: 93% of the respondents agree that the core banking has more role to play in tourism financial transactions. Only 2% of respondents disagree on this statement.
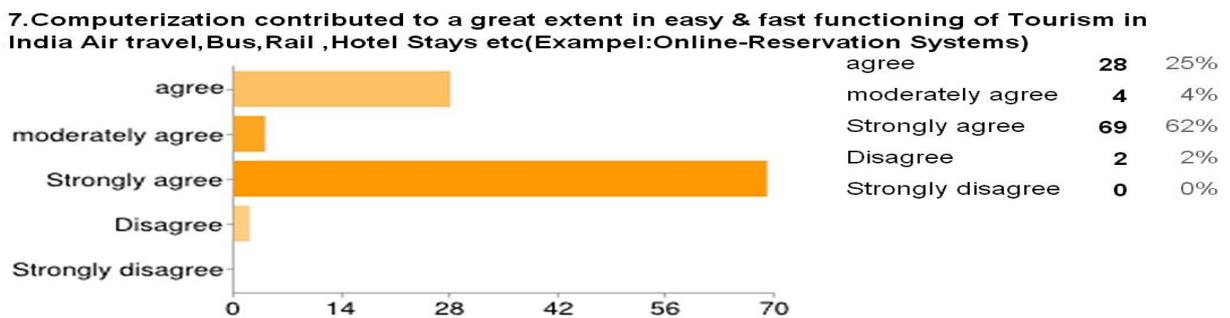
FIG. 9 ICT AND ON-LINE RESERVATION

Interpretation regarding Figure 9: 91% of the respondents agree that online reservation system is essential to sell the products and services. 2% of the respondents disagree with this statement.
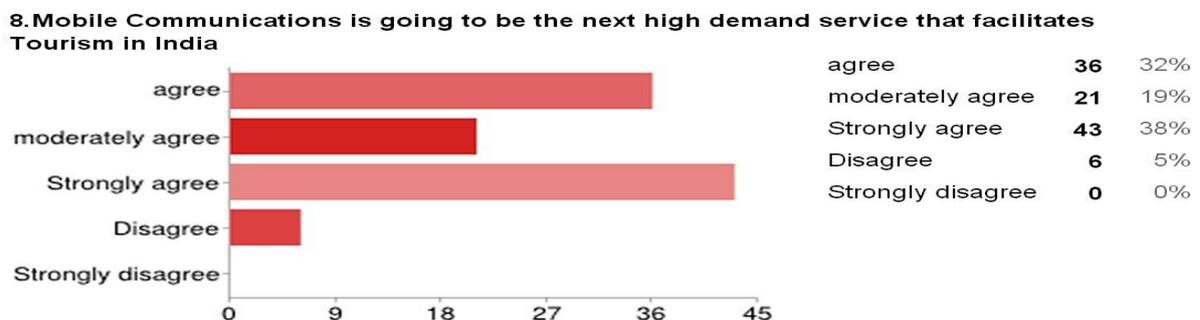
FIG. 10 MOBILE COMMUNICATION IN TOURISM

Interpretation regarding Figure 10: 89% of the responds agree that the role of mobile commerce is very high in tourism industry. Only 6% of the respondents disagree.

9.Do you think it is effective as a model through ICT is in Indian Tourism "A single tourism firms' websites on which suppliers such as airlines, car rentals or hotel chains" distribute their products directly to the customer

agree	35	31%
moderately agree	16	14%
Strongly agree	32	29%
Disagree	11	10%
Strongly disagree	1	1%
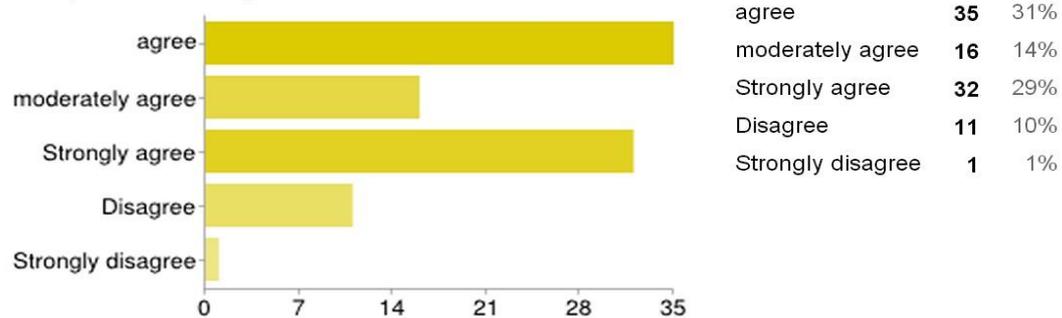
FIG. 11 WEBSITE AS A DIRECT PRODUCT DISTRIBUTION

Interpretation regarding Figure 11: 74% of the respondents agree that the websites may reduce the tourism intermediaries. Yet, 12% of the respondents disagree the statement, which is somehow significant.

10.Are you aware about "Virtual Tour" programs in Tourism Sites

Yes	79	71%
No	24	21%
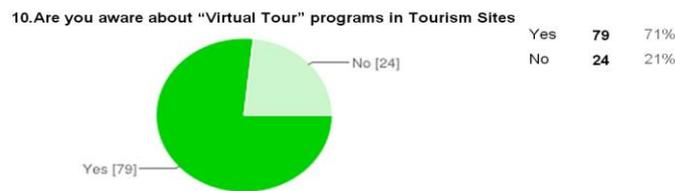
FIG. 12 AWARENESS OF VIRTUAL TOUR

Interpretation regarding Figure 12: 71% of the respondents agree that they are aware of the virtual tour and 24% of the respondents have opposite opinion.

11.(If yes) Virtual Tours contributes to considerable click-visits on Our Tourism site & it is a strong Online marketing pull factor to tourists.

agree	36	32%
moderately agree	23	21%
strongly agree	26	23%
disagree	1	1%
strongly disagree	0	0%
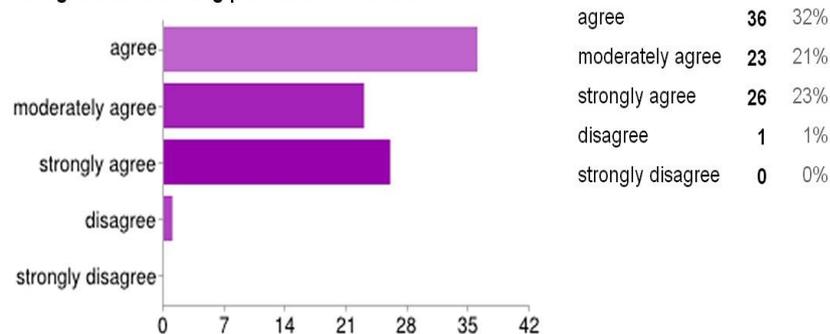
FIG. 13 VIRTUAL TOUR AS A PULL FACTOR

Interpretation regarding Figure 13: 76% of the respondents agree that the Virtual tour acts as a online marketing pull factor and 1% disagree the statement.

12.Do you feel your core "Target Group tourists"will readilyaccept & absorb ICTtrends, thatwould reduce cash transactions and which will lead to reduced costs? (onAdaptiveness of ICT by current tourist of different domestic segments in India)

agree	43	38%
moderately agree	38	34%
strongly agree	16	14%
disagree	3	3%
strongly disagree	0	0%
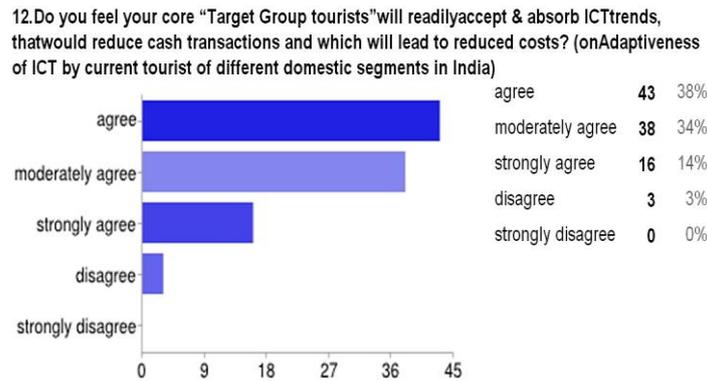
FIG. 14 MATIVENESS OF ICT IN TOURISM

Interpretation on Figure 14: 86% of the respondents agree that they will readily accept the ICTs trends to reduce costs and 3% of the respondents did not support this statement.

ANALYSIS

From the analyses, we may conclude that the ICT plays a major role in the development of Tourism and therefore is an inevitable part of tourism industry's expansion. Most of the hotels & tourism organizations need to be upgraded with the latest ICT trends. Travelling is one of the important things in tourism so on-line reservations, particularly for accommodation, plays an important role. More awareness must be done on process of information and training is needed in India for ICT at various levels of tourism, travel and hospitality enterprises. So, tourism education in India should focus on ICT trends. India should work on penetration of ICT into the masses, which are essential for its success. One may note that this is the most efficient way to do business in tourism industry. In this line, tourism organizations should provide more services to customers which is easily access to everyone in their places. The Government of India possesses huge amount of responsibility in streamlining the usage of ICT amongst stake holders (B to B) and clientele (B to C). The Tourism websites should be upgraded and updated continuously. There is a need of more facilities for B2C as well as B2B for mode of payment through mobile phones for their bookings.

Suggested Strategies

The Enterprises websites should be upgraded and updated with the latest technologies to increase the business potentiality. The governments and enterprises should encourage and train the industry in terms of utilizing the social media. The governments should see that the high speed Internet availability and affordability to reach common man and prices of the computer systems should go down further. The awareness for the stakeholders towards Google search should be provided. Enterprises should integrate all departments through ICT. High-speed internet facilities should be provided by the government and power failures should be

avoided. The government should encourage the development of mobile commerce (e.g., promotion, payments etc.,) and should be integrated within tourism industry.

CONCLUSION

It is essential that the current information and communications technologies should be updated, upgraded and seamless integration both internally and externally should be done to improve the tourism business operations. The integration of ICT in tourism would benefit both, service providers and customers bringing together other stakeholders as well, on a common platform. The selection of right information communications technology tool is crucial to match the customer requirements with service dimensions. The proliferation of technology throughout tourism distribution channels and professionals use the new tools in order to retrieve information, identify suitable products and perform reservations. ICTs integration provides a powerful tool that brings advantage in promoting and strengthening tourism industry.

Acknowledgements

REFERENCES

Buhalis, D. and Costa, C. (2006). Tourism Management Dynamics, Elsevier Burlington publishers.

Cooper, C., Fletcher, J., Fyall, A., Gilbert, D. and Wanhill, S. (2005). Tourism Principles and practices, Third Edition, Pearson Education.

ILO. (2010). Developments and challenges in the hospitality and tourism sector, Report by International Labour office, Geneva.

Pender, L. and Sharpley, R. (2005). The management of tourism, Sage publications, New Delhi.

OECD. (2010). Tourism trends in the OECD area and beyond, in Tourism Trends and policies.

UNWTO. (2009). Tourism Highlights, Madrid.

UNWTO. (2010). World Tourism Barometer, Madrid, June.

UNWTO. (2012). Tourism Highlights 2012, Madrid.

COMPARING BUSINESS REGULATIONS AND FOREIGN DIRECT INVESTMENT ON ECONOMIC GROWTH OF G77 AND OECD COUNTRIES

Saeed Khodabakhshzadeh[1], Shahrzad Motevassel[2], Saeed Khastavan[3], Kamran Mahmodpour[4], Mojtaba Shahiki Tash[5]

[123]Department of Economics and Accounting, Islamic Azad University Central Tehran Branch, Iran

[4]University of Sistan and Baluchesta, Iran

[5]Department of Economics and Accounting, Islamic Azad University South Tehran Branch, Iran

*khodabakhsh.said@gmail.com

Abstract

One of the prerequisites for economic growth is capital. One way of financing is absorbing Foreign Direct Investment. Attracting foreign direct investment needs safe business environment, because it makes possible the return on investment and investment performance. For establishing a safe environment, we require proper Laws for business. In this study, the relationship between foreign direct investment, regulation of business and economic growth are examined in the years 2004 to 2010.This study is done using panel data model. Statistical sample used in this study, including 19 selected countries among G77 countries and 15 selected countries from OECD countries. The results show that the amount of foreign direct investment in the G77 countries with two-lag period has positive and significant impact on economic growth. In addition, the rule of law, with one period of delay has a positive and significant impact on economic growth. In OECD countries, the results indicate that foreign direct investment without delay has a positive and significant impact on economic growth, and the rule of law without delay has a positive and significant impact on economic growth.

Keywords

Foreign Direct Investments; Rule of law; Business environment; Economic growth; Panel Data.

INTRODUCTION

In the late 90s, the importance of "business environment" as the link between micro- and macro-economic sectors was introduced in the economics literature. Obviously, reforming the business regulations and improving these indicators in the global arena, not just is a positive step to strengthen the participation of the private sector in the economy, but also promote and facilitate Technology Entrance into the country. While the business environment does not improve, firm performance and the overall growth of the private sector are not possible. Some consequences of inappropriate business environment are Reduction of enterprise's competitiveness and the expansion of the unofficial sector. Expansion of the unofficial sector of the economy for the government means the decline in tax revenues, for the unofficial economic actors mean being deprived of official financing, for official firms mean being in an unhealthy competition to unofficial actors. Simplification of business regulations, especially for small and medium enterprises (SMEs) is to the extent important that countries like South Korea, China, Malaysia, and Russia for improving their economic conditions, have put reforming of these rules in their plans.

The main objective of this paper is to investigate the effect of business regulations on economic growth and the effects of foreign direct investment (FDI) on economic growth in 19 selected G77countries including Algeria, Argentina, Bangladesh, Colombia, Dominican, Egypt, India, Indonesia, Iran, Morocco, Pakistan, Peru, Saudi Arabia, Thailand, Tunisia, Uruguay, Venezuela, Vietnam, Singapore, also 15 selected OECD countries include Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Japan, Norway, Spain, Sweden, Switzerland, United Kingdom, America. In this regard, a comparison between the impact of FDI on economic growth and business regulations in the two countries will be executed. The reason for choosing these two kind countries is comparing the impact of FDI on economic growth and business regulations in developed and developing countries. Another factor in this group of countries is the homogeneity in the rankings on the business environment and having the same extent of rule of law. So that, according to leading economists Association in 2010, the G77 countries' rank in the business environment is between 3.96 and 5.42, and OECD countries' rank in the business environments 7.5 to 8.55.

Therefore, in this article we will try to answer this question. How do the rule of law and FDI will affect economic growth? Accordingly, the following hypotheses are considered for this article:

- Does the rule of law in selected countries of G77 have a positive and significant effect on economic growth?

- Does the amount of foreign direct investment and strict regulation of business in the selected G77 countries have a profound effect on economic growth?

- Does the rule of law in selected OECD countries have a significant positive impact on economic growth?

- Does the FDI and the amount of strict business regulation have a positive and significant effect on economic growth in selected OECD countries?

A comparison between the effect of foreign direct investment and strict regulation of business in the OECD and G77 countries. To this end, we have tried to explore the question and hypothesis of the research with Panel Data Method.

THEORETICAL FOUNDATIONS

In classical economics and simple interpretations, economic growth is the increase in the production of a country in a particular year compared to its level in the base year. Michael Todaro knows economic growth a sustained process that the production capacity of the economy grows over time and increases the level of national income. However, there is a more precise concept of Kuznets economic growth: a long-term increase in production capacity in order to offer more diverse economic goods to the people (Branson, 1982).

To increase economic growth and development, requirements should be prepared. We can define the required circumstances for increasing production and expand the business. In other words, business environment is one of effective variables on firms that are out of the firm's control and power, but it is very effective on the result of their efforts.

Capital accumulation is also one of the basic needs of the growth process, which can be financed from internal or external sources. Foreign funding is a supplementary for the domestic savings. One of the best ways for foreign financing is Foreign Direct Investment (FDI).The benefits of FDI are attracting investment, new technology, new knowledge, improve management capacity, increasing employment, improving the balance of payments and increasing the competitive strength. According to studies, foreign investment is the function of many factors such as the rate of return on capital, openness of the economy, infrastructure, economic growth, domestic investment, natural resources, human capital, inflation, exchange rates, external debt, financial situation of the government and the market size.

One of the most important issues on foreign direct investments regulation and the rule of law in countries, which are being invested. Regulations can relatively be a barrier to entry for investors in the production sector, which could be an obstacle in the way of domestic investors and foreign investors (the most severe). For example, if foreign ownership of domestic assets is prohibited, there will not be an incentive to invest left any more.

Making consistent rules and reducing cumber some rules for entering and exiting into the business will increase the number of foreign investors into the host economy and make positive effects on economic growth. Basically, foreign firms that will start up under foreign direct investment in the host economy, benefit relatively from more advanced technology and modern management methods and so on in comparison with domestic firms in production process andbyincreasingtheshareofforeignfirmsinthehosteconomyandtheinteractionbetween domestic and foreign firms have positive effects on labour skills, market structure, and wage levels which ultimately leads to improved productivity in the host country and its economic growth (Valinia, 2011, 44-45).

The costs of rules are in two shapes of money and time. Financial expenses, which are expenses of the investment process or the operation of the investment, should be paid to factors other than production such as expenses that must be paid for the registration of such company or expenses that the law compel you pay more than production direct factors' costs, such costs shall be paid in accordance with the law, the right to work and housing.... Time costs, the costs that investor due to loss of time as dictated.

Some of the negative effects of high levels of these rules can be outlined in a business environment:

- Informal sector of the economy is going to be larger and the black market will grow because of the escape of law costs or escape from the tortuous provisions' steps; and

- Reduction of investment in the economy and consequently high unemployment rate and economic growth.

REVIEW THE TREND OF RESEARCH VARIABLES

To better illustrate the effects of variables of the rule of law and foreign direct investment on economic growth, we Review the trend of ruling of the G77 countries during the years 2000 to 2010.

Considering Figure 1 it can be seen that the trend of rule of law in G77 and OECD countries is a very softly trend. Because it requires time to change the rule of law. Another striking point in this diagram can be the kind of rule of law in these countries. In OECD countries, the rule of law is a positive one, So that these countries have a high ranking in the business environment, while the rule of law in G77 countries is negative. In other words, the type of governance and required institutions for these countries is negative.
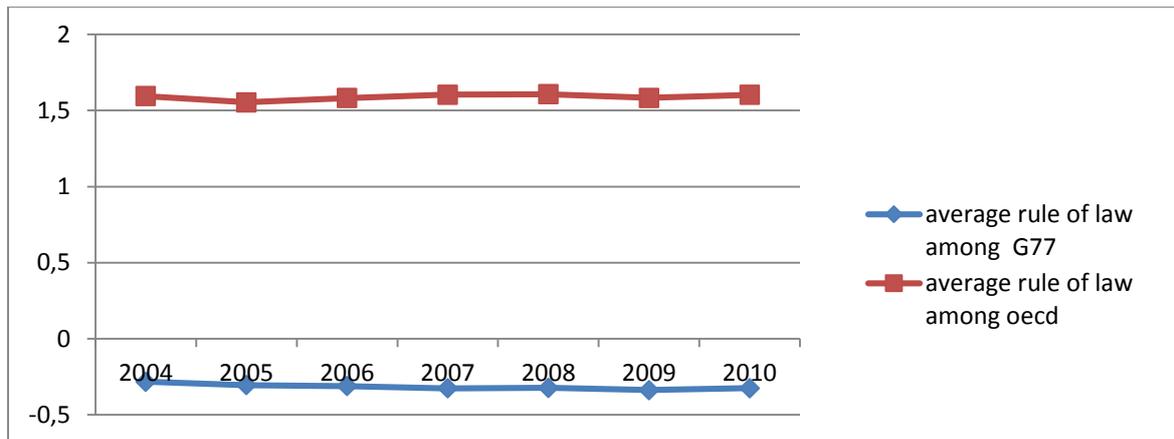
FIG. 1 COMPARISON OF RULE OF LAW AMONG G77 AND OECD COUNTRIES

As can be seen in Figure 2 the trend of amount of foreign direct investment in the G77 countries is rising with a soft slope and in OECD countries has SIN state. That is, it has declining steep during the years 2000 to 2003, during the years 2003 to 2007 is quite ascending with a steep, during the years 2007 to 2009 is quite steep descending and in the years 2009 to 2010 is approximately constant. However, about the causes of sinusoidal of foreign direct investment in OECD countries we can refer events occurred in the world economy. As follows, those in 2001 due to the collapse of the twin towers in America and the world economy have been influenced by this incident; levels of foreign direct investment took declining trend. During the years 2007 and 2009, a crisis swept the global economic and this time, banks were on the brink of financial ruin; but in the years 2009 with injecting money into the banks has been prevented the economic crisis to some extent and foreign direct investment took a mild trend.
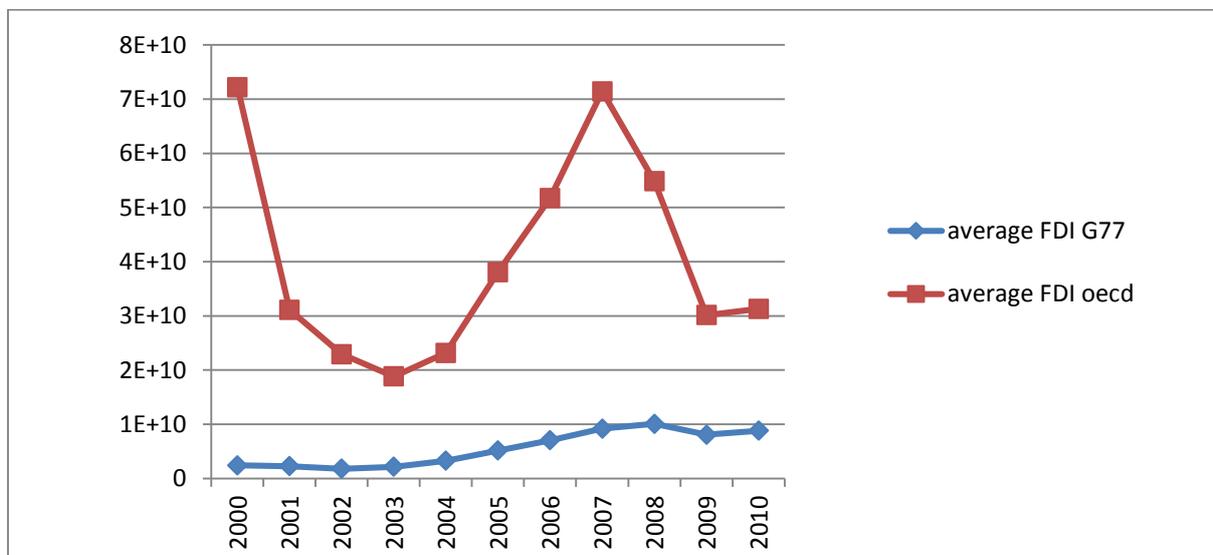
FIG. 2 COMPARISON OF FDI TREND IN OECD AND G77 COUNTRIES

Another interesting aspect of this chart can be the very low levels of foreign direct investment in the economy of the G77 countries. One of the reasons could be lack of

the necessary economic stability and uncertainty or In other words the lack of necessary institutions for investment and return on investment.

As can be seen in Figure 3, the rate of economic growth in G77 countries is higher than the rate of economic growth in OECD countries. One of the main reasons for this difference is the available empty production capacity in G77 countries due to their incomplete development. Of other points can be seen in the diagram, they are fluctuations. Most of changes are within 2007-2009. Its major reason is the global economic crisis as well as currency fluctuations in Europe (EURO) during these years. GDP growth rate in G77 countries over the years 2002-2005 have also been reduced. One of the main causes is the fall of the twin towers in America and followed by an economic crisis caused by falling stock worth and reduced investments in Europe because of the economic crisis.
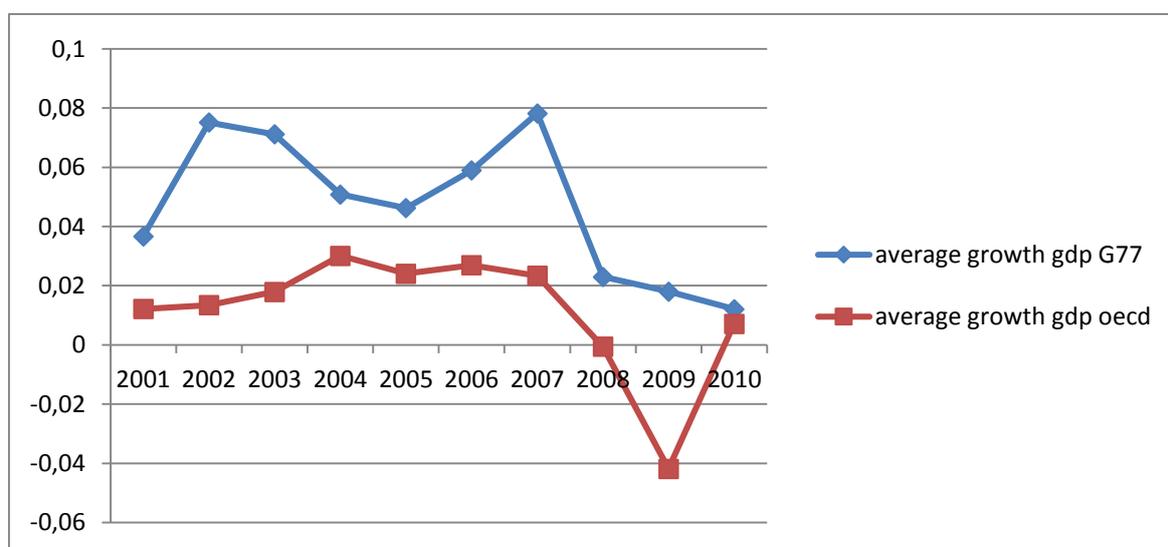
FIG.3 COMPARISON OF GDP GROWTH TREND

Research history

Valinia (2011) has studied the effects of ease of entry and exit to the business on the total˘ factors productivity, case studies of selected developing countries. In this study using a panel data model, he has reached this result that there is a significant relationship among the starting a business stages index, start time of a business, the cost of starting a business, minimum capital required to start a business, the rate of business closures taking index, closing time business index, business closure costs, the degree of openness and the business and total˘ factors productivity. The article also stated that the ease of entry and exit to business through foreign investment is an effective factor on productivity.

In an article, Bengoa and Sanchez Robles (2002) studied the interaction between economic freedom, FDI and economic growth for a sample of 18 Latin American

countries over years 1970-1999. The results obtained in this paper is that economic freedom in the host country has a positive impact in attracting foreign direct investment and foreign investment has a positive impact on economic growth. However, adequate human capital, economic stability and open market effectively benefit more in the long-term interests of foreign direct investment.

An article by Loayza et al, (2005) can be pointed. The study entitled "The effect of regulation on economic growth and the informal sector", finally come to the conclusion that excessive regulation of the labour market and production will reduce economic growth and stimulate Informal sector. Busse and Groizard in their studies done in two times (2005, 2008) come to this result that too much regulations in countries with strict laws, will limit the economic growth due foreign direct investment. This study showed that the results using different econometric models are varied. The model on this study was taken from their selected model.

SPECIFICATION OF THE MODEL OF ECONOMIC GROWTH FUNCTION

Economic growth conditions in selected countries suggest that many factors are effective in economic growth. Some of these items are foreign direct investment, physical capital, employment, rule of law and the amount of regulations in business environment. Thus, it was necessary to carry out an empirical study about effective factors in economic growth in G77 and OECD countries. At this paper we used the Busse and Groizard's model for estimating economic growth function in selected countries.

$$\log GDP_{it} = c + \beta_1 DB_{it} + \beta_2 \log EMP_{it} + \beta_3 \log CAP_{it} + \beta_4 RUL_{it} + \beta_5 \log FDI_{it} + U_{it} \text{ (1-1)}$$

Which:

$GDP_{it} =$ Economic growth in country i and time of t

Whereas: C is intercept; DB_{it} is the i country's business environment rank in time of t; β_1 is GDP changes per changes in country's business environment rank; EMP_{it} employment in country i in time t; β_2 is employment elasticity; CAP_{it} is physical capital; β_3 is physical capital elasticity; RUL_{it} is the rule of law index in country i and time of t; β_4 is changes of GDP per changes in rule of law index; FDI_{it} is foreign direct investment in country i in time of t, β_5 is elasticity of FDI; U_{it} is disturbance sentence in country i in time of t. According past researches and carried out studies, these are expected that $\beta_1 < 0$, $\beta_2 > 0$, $\beta_3 > 0$, $\beta_4 > 0$, $\beta_5 > 0$

First test (The width origin test)

$H_0 : \alpha_1 = \alpha_2 = \alpha_3 = ... = \alpha_i$
$H_1 : \alpha_i \neq \alpha_j$

One may note that in this study, we use panel data or combinational data and for

this F test is used. Zero hypothesis states there is no difference between estimated coefficients for every panel and for accumulation estimated coefficient; that is there is not needed to use panel data model. In other words pool model is preferred to fixed effects model. After F test, calculated F statistic is compared with critical statistic F. If calculated statistic F is more than critical number, zero hypotheses will not be accepted and it is necessary that the model estimated using panel data methods. Thus, pool model is preferred to fixed effects model.

The critical statistic F for the countries of G77 at the 95% level is 1.87 and it is above critical value, thus the null hypothesis based on having equal width from the countries of the G77 will not be accepted and it is necessary to estimate the model with panel data method; also for OECD countries.

TABLE1. RESULT OF F TEST FOR DETERMINING PANEL OR COMBINATIONAL DATA

Model	Degree of freedom- Numerator	Degree of freedom- denominator	F-Statistic (prob)	critical statistic F 90%
Economic growth in OECD countries	14	25	25/14 0.000	3/79
Economic growth in G77 countries	18	71	33/93 0.000	1.87

Second test, choosing from RE and FE

After be assure of using panel data method, the main question is that the model should be estimated with fixed effects or accidental effects? For this we use Hausman Test which is presented in 1980. This statistic has a Chi-square Distribution with degree of freedoms equals to independent variables. Zero hypothesis of Hausman Test is the equality of coefficients of explaining variables in fixed and accidental state. We have:

$H_0 : \hat{\beta} = \beta$

$H_1 : \hat{\beta} \neq \beta$

Zero hypothesis of Hausman Test says model has an accidental effects. Statistic of this test is Chi-square Distribution. If calculated χ^2 statistic is more that critical amount, zero hypotheses base on estimating the model with accidental effects will not be accepted.

TABLE2. RESULT OF F TESTS FOR DETERMINING FIXED OR ACCIDENTAL EFFECTS

Model	Degree of freedom-Numerator	Degree of freedom-denominator	F-Statistic (prob)	critical statistic F 95%
Economic growth in OECD countries	14	71	33/93 0/000	1/87
Economic growth in G77 countries	18	25	25/14 0/000	3/79

The critical statistic F for OECD countries at the level of 95% is 3.79 and calculated statistic F is above critical value, so the null hypothesis based on having equal width from the countries of the OECD will not be accepted and it is necessary to estimate the model with panel data method; also for G77 countries.

Estimating economic growth model for G77 countries

Finally, it is the estimated model in the period 2004-2010 for G77 countries:

$$\log GDP_{it} = 9/4 - 0/00014 DB_{it} + 1/01 \log EMP_{it} + 0/21 \log CAP_{it} + 0/0024 RUL_{it-1} + 0/0076 \log FDI_{it-2}$$

(9/7)   (-1/69)   (16)   (6/6)   (4/65)   (3/89)

$$R^2 = 0/99$$
$$\overline{R}^2 = 0/99 \quad F = 3411 \quad D - W = 1/17$$

Interpretation of data

The Sign of all estimated coefficients are consistent with the theory. The Adjusted coefficient of determination ($\overline{R}^2$) is also 0.99 that is showing that explanatory power of the model is appropriate. The amount of $\overline{R}^2$ suggests that independent variables those are the rank of every country in business environment, employment, physical capital, rule of law and foreign direct investment totally explain 0.99% of changes of dependent variable, means economic growth rate.

T-Statistic shows that coefficient of every selected variable including the rank of every country in business environment, employment, physical capital, rule of law and foreign direct investment is acceptable. The Probability of t-statistic in above equation suggests that all coefficients are meaningful at the 0.95% level.

F-Statistic is saying that the coefficients of all selected independent variables are either effective in dependent variable or not. As it is can be seen the estimated statistic is F=3411. Thus, it can be said that all estimated coefficients of independent variables generally are effective in economic growth. The coefficient of variable C (intercept) is showing the effective factors which are not considered as independent

variables but there are in error term with the form of fixed effects. Its estimated number is totally 9.4 (its effect on every country is below the Fixed Effects), it means that the amount of other factors which are not been considered and their effects are in fixed effects is 9.4.

Interpretation of Coefficients

If the model is Log-Log, coefficients are elasticity (sensitivity). In other words, coefficients are showing the percentage changes of dependent variables per one percent change in independent variable. But if the model is simple and without Log, coefficients are shown as unit, it means for every one unit change in independent variable, dependent variable also change one unit and if the model is half-Log, changes only is shown as effect.

Every country's rank in business environment (DB)

Given that our function on this paper for independent variable of the rank of every country in business environment is without Log, and in other hands the dependent variable is with Log, so we can just see its effects on economic growth variable. Since the estimated variable is -0.00014 and it is a negative number, it suggests that the rank of every country in business environment has an adverse effect. In other words the higher the rank, economic growth is lower.

Employment (EMP)

As our function in this study for independent variable of employment is with Log and also the dependent variable of the model is with Log, so the coefficient of this independent variable suggests Elasticity (Sensitivity), in other words if employment increases one percent, economic growth intensifies 1.01%, that it is in accordance with the theory.

Physical capital (CAP)

Because our function in this research for independent variable of physical capital is with Log, and the dependent variable of the model is with Log, so the coefficient of this independent variable shows the elasticity (sensitivity), in other words if physical capital increases one percent, economic growth will increase 0.21% that it is consistent with the theory.

Rule of law (RUL)

Given that our function in this study for independent variable of rule of law is without Log, and in other hands dependent variable is with Log, so we can just say that how the effect of this variable in economic growth is. As regards, the estimated coefficient is 0.0024 and this is a positive number, so the rule of law has a positive

effect in economic growth. Estimated coefficient is in accordance with the theory. The reason for one period lag of calculating this variable and it is positive, is known in kind of rule of institutions in these countries, because for accepting rules in these countries, they need time. In other words for executing any rule in these countries, the required time is one year. Because the governing institutions are so weak both in terms of law enforcement and in terms of governing corruption led to circumvent the law of these countries.

Foreign Direct Investment (FDI)

Because our function in this research for independent variable of foreign direct investment is with Log, and also the dependent variable of the model is with Log, so the coefficient of this independent variable shows the elasticity (sensitivity), in other words if foreign direct investment increases one percent in year of t, economic growth will increase 0.0073% with a two-year lag. Its reason can be the lack of appropriate labour in these countries after entering foreign direct investment. In other words for affecting foreign direct investment in economic growth it needs time, that is two years until labour can be trained and according to capital gain skill. The effect of this variable is in accordance with past studies.

In comparison of the effects of independent variables in economic growth, is shown rule of law, employment, physical capital and foreign direct investment have a positive and meaningful effect in economic growth, but the rank of every country in business environment has a reverse and meaningful effect in economic growth. Also in comparison between coefficient of employment and foreign direct investment, employment has much more effect in economic growth than foreign direct investment. It emphasizes on the level of employment in these countries. The reason is that if foreign direct investment enters into a country but does not make an effect in employment, that foreign direct investment is not useful for that country, or has a little effect. Thus, when the foreign direct investment can be useful, that firstly can create jobs and secondly create skill and proficiency. In addition, the people of these countries should have required knowledge and skills, otherwise it cannot affect in economic growth.

However, in comparison between elasticity of physical capital and employment, employment has 4.8 times more effects in economic growth than physical capital. It itself shows that the problem of lack of economic growth is not capital, rather is the lack of skilful people in these kind countries. In comparison between coefficients of physical capital and foreign direct investment, first of all physical capital is more than foreign direct investment, it can be because of shortage of required backgrounds for foreign direct investment in these kind of countries. Secondly, physical capital affects in the same year but foreign direct investment affects with a two-year delay. In addition, whatever rules of the business market grows, the

difficulty of entering a business gets more, so fewer people enter the space and GDP gets low.

In general, we may say that the poor rule of law in G77 countries caused that firstly the amount physical capital in these countries was low. Secondly caused the foreign direct investment due to the existing uncertainty was low and it answers after two years. Thirdly, caused employment in these countries was very low, and also caused the rank of these countries in business environment was so bad. Thus, promotion of economic growth in G77 countries is very low.

Estimating economic growth model for OECD countries

Finally, it is the estimated model in the period 2004-2010 for OECD countries:

$$\log GDP_{it} = 20/29 - 0/00028 DB_{it} + 0/00086 \log EMP_{it} + 0/24 \log CAP_{it} + 0/0019 RUL_{it} + 0/0004 @\, pch(FDI_{it})$$

$$\quad (34) \quad (-0/76) \quad\quad\quad (-8/6) \quad\quad\quad\quad (11/51) \quad\quad\quad (26/19) \quad\quad\quad (1/9)$$

$$R^2 = 0/99$$
$$\overline{R}^2 = 0/99 \quad\quad F = 105716 \; D-W = 2/9$$

Interpretation of data

The Sign of all estimated coefficients are consistent with the theory. The Adjusted coefficient of determination ($\overline{R}^2$) is also 0.99 that is showing that explanatory power of the model is appropriate.

The amount of $\overline{R}^2$ suggests that independent variables those are the rank of every country in business environment, employment, physical capital, rule of law and foreign direct investment totally explain 0.99 percentage of changes of dependent variable, means economic growth rate.

T-Statistic shows that all coefficients except the rank of business environment are meaningful at the 0.95% level. As it is can be seen the estimated statistic is F=105704. Thus, it can be said that all estimated coefficients of independent variables generally are effective in economic growth.

The coefficient of variable C (intercept) is showing the effective factors which are not considered as independent variables but there are in error term with the form of fixed effects. Its estimated number is totally 20.29 (its effect on every country is below the Fixed Effects), it means that the amount of other factors which are not been considered and their effects are in fixed effects is 20.29.

Interpretation of Coefficients

Every country's rank in business environment (DB)

Given that, our function on this paper for independent variable of the rank of every country in business environment is without Log, and in other hands, the dependent variable is with Log, so we can just see its effects on economic growth variable. Since the estimated variable is -0.00028 and it is a negative number, it suggests that the rank of every country in business environment of OECD countries has an adverse effect in economic growth. However, because t-statistic is more than 0.1, it shows the rank in business environment in OECD countries is ineffective. The reason can be said in this way that because of right rule of law are those countries relatively in ranks among 1 to 10 and relocation in these ten ranks is not affective in their economic growth. The sign of estimated coefficient is in accordance with the theory. In addition, the first hypotheses is ejected in these countries.

Employment (EMP)

As our function in this study for independent variable of employment is with Log and also the dependent variable of the model is with Log, so the coefficient of this independent variable suggests Elasticity (Sensitivity), in other words if employment increases one percent, economic growth increases 0.00086%, that it is in accordance with the theory.

Physical capital (CAP)

Because our function in this research for independent variable of physical capital is with Log, and the dependent variable of the model is with Log, so the coefficient of this independent variable shows the elasticity (sensitivity), in other words if physical capital increases one percent, economic growth will increase 0.24% that it is consistent with the theory.

Rule of law (RUL)

Given that our function in this study for independent variable of rule of law is without Log, and in other hands dependent variable is with Log, so we can just say that how the effect of this variable in economic growth is. As regards, the estimated coefficient is 0.0019 and this is a positive number, so the rule of law has a positive effect in economic growth.

Foreign Direct Investment (FDI)

Because our function in this research for independent variable of foreign direct investment is as @pch that is a kind of Log, and the dependent variable of the model is with Log, so the coefficient of this independent variable shows the elasticity (sensitivity), in other words if foreign direct investment increases one percent, economic growth will increase 0.0004%. In comparison of the effects of independent

variables in economic growth, is shown rule of law, employment, physical capital and foreign direct investment have a positive and meaningful effect in economic growth, but the rank of every country in business environment has a reverse and meaningless effect in economic growth. Also in comparison between elasticity of physical capital and employment in OECD countries, elasticity of physical capital has 279 times more effects in economic growth than employment. It itself shows that employment capacity is full and the sensitivity is for physical capital.

RESULTS

Given the estimated models the results are:

- The effect of increasing the rule of law in economic growth in G77 countries is 1.26 times more than OECD countries; and

- The effect of increasing foreign direct investment in economic growth in G77 countries is 18.25 times more than OECD countries.

The effect of rule of law in OECD countries caused firstly promotion of physical capital in these countries was high, secondly by reducing misalignments, assurance will intense and assurance of return of investment gets high and return of foreign direct investment increases in these countries. Also right rule of law caused entering people to business environment was simple and employment was high. Thus, promotion of economic growth in OECD countries is high; however in G77 countries because of bad rule of law with decrease ensure of return on foreign direct investment, decreasing domestic physical capital and decreasing growth of employment. So economic growth in these countries is very low and vacant capacity for production is more, and changes in regulations better response.

REFERENCES

Abrishami, H. (2008). Basic Econometrics, Publication of the University of Tehran.

Amini, A., and Valinia, A. (2011). Study of effects ease of entry and exit into the business of Total Factor Productivity: A Case Study of selected developing countries, Thesis of Master, Islamic Azad University, Central Tehran Branch.

Asgrafzadeh, H. R. and Mehregan, N. (2008). Panel Data Econometrics, Cooperative Research Institute of the University of Tehran.

Branson, W. H. (2011). The Theory and politics of Macroeconomics, Translated by Abbas Shakeri, Ney publications, 6thpress.

Busse, M. and Juseluisgroizard. (2005). FDI, Regulation and Growth , An Empirical Analysis.

Busse, M. and Juseluisgroizard. (2008). FDI, Regulation and Growth , An Empirical Analysis.

Hosseinzadeh, B. and Mohamadhossein (2003), Affecting factors in the security of enterprises in Iran, Two seasonal journal of Economic Researches, 2, 109-156.

Loayza, N. V., Oviedo, A. M. and Servén, L. (2005). The Impact Of Regulation On Growth And Informality: Cross-Country Evidence, World Bank's Latin America.

Morrisset, P. (2000). Foreign Direct Investment to Africa: Policies also matter, Trans-national Corporation, 9(2), 107-125.

Motevassel, S. (2011). Entrepreneurship obstructions at economy in Iran and favourite country's, Thesis of Master, Islamic Azad University, Central Tehran Branch.

Motevassel, S. (2012). Investigation into effects of ownership rights efficiency and tax on entrepreneurship in selected countries and Iran, Journal of tax research,163-187.

Razmi, A., Seyedmohamadjavad and Shahraki, S. (2009). The effect of economic freedom in economic growth with a institutional approach, Journal of knowledge and development, 28.

Sameti, M., Shahnazi, R. and Dehghani, Z. (2005). The effect of economic freedom on economic corruption, Journal of economic researches, 28, 87-105.

IMPROVING ENTERPRISE EFFICIENCY USING IT COLLABORATION SYSTEMS

Goran Markovski[1], Natasa Koceska[2], Saso Koceski[2]

[1]Government of the Republic of Macedonia, Sector for Information technology

[2]Faculty of Computer Science, University "Goce Delcev" - Stip, Stip, Macedonia

*natasa.koceska@ugd.edu.mk

Abstract

Technology and globalization have created an environment in which teams communicate and collaborate, across time, geography, and organizations. Team members possess knowledge and must communicate and collaborate to accomplish tasks. Communication and collaboration lead to better results, reducing organizational costs, and preventing and solving conflict between participants.

Enterprise collaboration systems (ECS) are basically an information systems that enhance communication, coordination and collaboration among the members of teams and workgroups. They help people in an organization to work together more effectively to achieve organizational goals.

This paper analyze the effects of implemented collaborative system, based on Microsoft SharePoint, in context of increasing productivity in organization, reducing organizational costs, and improving coordination and collaboration among team members.

Keywords

Collaboration systems, information systems, communication, virtual team.

INTRODUCTION

Nowadays, modern technologies enable work to be carried out over computer networks and reduce the need for people to be collocated. Individuals, organized in

virtual teams, need to communicate and collaborate with each other to achieve determined goals. Different authors define virtual teams differently. Lipnack and Stamps (2000) defines virtual teams by stating that "A virtual team is a group of people who work interdependently with a shared purpose across space, time, and organization boundaries using technology". From the perspective of Leenders et al. (2003) virtual teams are groups of individuals collaborating in the execution of a specific project while geographically and often temporally distributed, possibly anywhere within (and beyond) their parent organization. Ebrahim et al. (2009) define virtual teams as "small temporary groups of geographically, organizationally and/or time dispersed knowledge workers who coordinate their work, mainly with electronic information and communication technologies to carry out one or more organization tasks". One of the most widely accepted definition is from Powell et al. (2004) who define virtual teams as "groups of geographically, organizationally and/or time dispersed workers brought together by information technologies to accomplish one or more organization tasks".

No matter which definition is used, remains the fact that virtual teams rely on sophisticated technologies to communicate. Team members can use synchronous communication tools such as electronic chat sessions, teleconferencing and video conferencing or asynchronous communication such as e-mail, fax and message boards (Gibson, C.B., & Cohen, S.G. (2003). These tools and products sometimes are incompatible, using different technology and platforms, each with its own database, directory and administration console. This strategy creates an IT environment that is chaotic, costly and counterproductive: data is difficult to locate; miscommunication between people happen frequently, and user productivity suffers. IT staffs also have problems concerning monitoring and controlling the collaboration tools.

New collaboration technologies can help organizations to solve these problems, and share information and expertise in ways that previously have not been possible. Enterprise collaboration systems (ECS) are cross-functional informational systems that enhance communication, coordination and collaboration among the members of teams and workgroups to achieve common objective. ECS provide tools that help every individual in an organization to manage the documents, to share information and knowledge with each other, and to work together cooperatively on joint projects and assignments. These information systems helps people to work more efficiently (] Joseph Katie, 2013).

There are several enterprise collaboration systems available these days on the market. Microsoft SharePoint is one such system, which was used in our study. This system was used for building collaborative web site with implemented functionalities for: document management, tasks management, electronic system notification and some other functionalities that will increase efficiency and effectiveness in carrying out the required tasks in organization.

The objective of this paper is to analyze the effects of implemented system in context of increasing productivity in organization, reducing organizational costs, and improving coordination and collaboration among the individuals, which is the base of successful fulfilment of tasks.

Enterprise collaboration systems

Today's collaborative environments are burdened by an excess of independent moving parts. A typical organization could easily have several platforms for collaboration applications, including file sharing applications, email, instant messaging, videoconferencing and wikis—making it that much harder for IT staff to manage information and to monitor and control the collaboration tools.

In contrast, a collaborative solution such as Microsoft SharePoint provides a comprehensive set of collaborative and communication services on a single platform, with centralized management infrastructure, thus facilitate the work of IT staff.

Microsoft SharePoint is a collaboration platform that makes the communication process of an organization more effective. It enables collaboration on managing documents, sharing information, setting up websites and publishing reports. The following set of tools is included to support collaboration (SharePoint, Web page, December 2013):

- *Sites* provides a single infrastructure for all the business websites that allows sharing documents or managing projects.

- *Composites* offers tools and components for creating no-code business solutions.

- *Insights* helps team members' access information in databases, reports, and business applications.

- *Communities* delivers collaboration tools to easily sharing ideas and work.

- *Content* represents SharePoint's content management system with features such as document types, retention polices, and automatic content sorting.

- *Search* helps people find information and contacts.

Microsoft SharePoint was used in our study, as a tool for reducing administration burden of IT staff, while providing a better way of information and knowledge sharing between individuals in organization. The implemented practical solution, is based on the concept of cooperation among individuals working in a virtual team, emphasizing the advantages of working in teams. It is a web based solution that

includes implementation of system management tasks, automated document management system, system for electronic notification, event scheduling and other required functionalities. The aim of this solution is to encourage cooperation in obtaining better productivity of team, while increasing the productivity of each individuals in the team.

SYSTEM ARCHITECTURE

The architecture of the system is based on Office SharePoint Server 2007. It supports two types of configurations: single-server and server farm. Both of them support creation of multiple web sites for various purposes. In order to satisfy the basic enterprise requirement, to optimize the resources and to speed up the development time, initially single server configuration was chosen. Therefore, the whole system was deployed on a single physical server. The architecture of the developed system is presented in Figure 1.
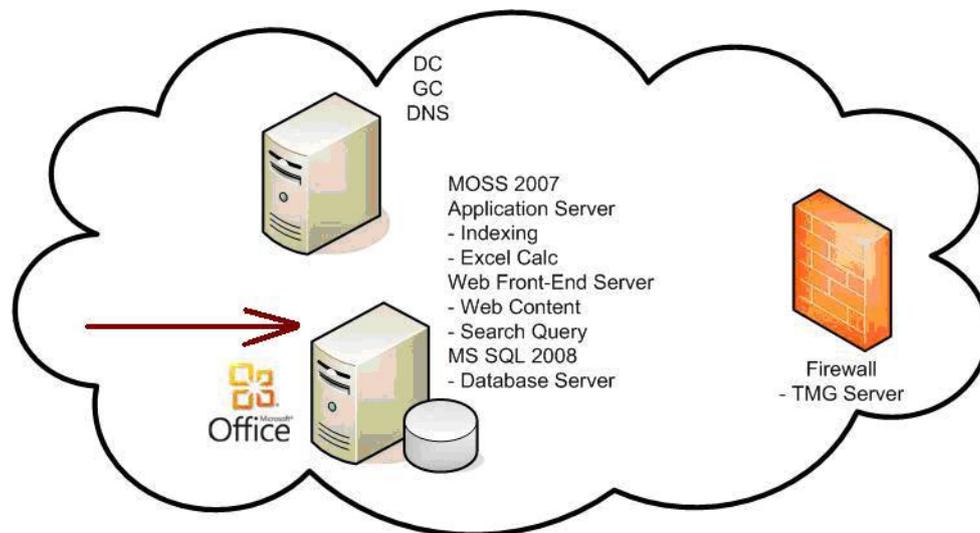
FIG. 1 SYSTEM ARCHITECTURE BASED ON A SINGLE SERVER CONFIGURATION

The server had the following hardware characteristics: 3.0 GHz processor and 8 GB RAM (because the same platform was also used as a development environment). The following software components were also installed: Windows Server 2003 platform, Microsoft SQL Server 2008 R2 Standard Edition, Microsoft.NET Framework 3.5 SP1, Internet Information Services 6.0, Windows Workflow Foundation Runtime Components.

Graphical representation of the system's logical infrastructure is depicted in Figure 2.
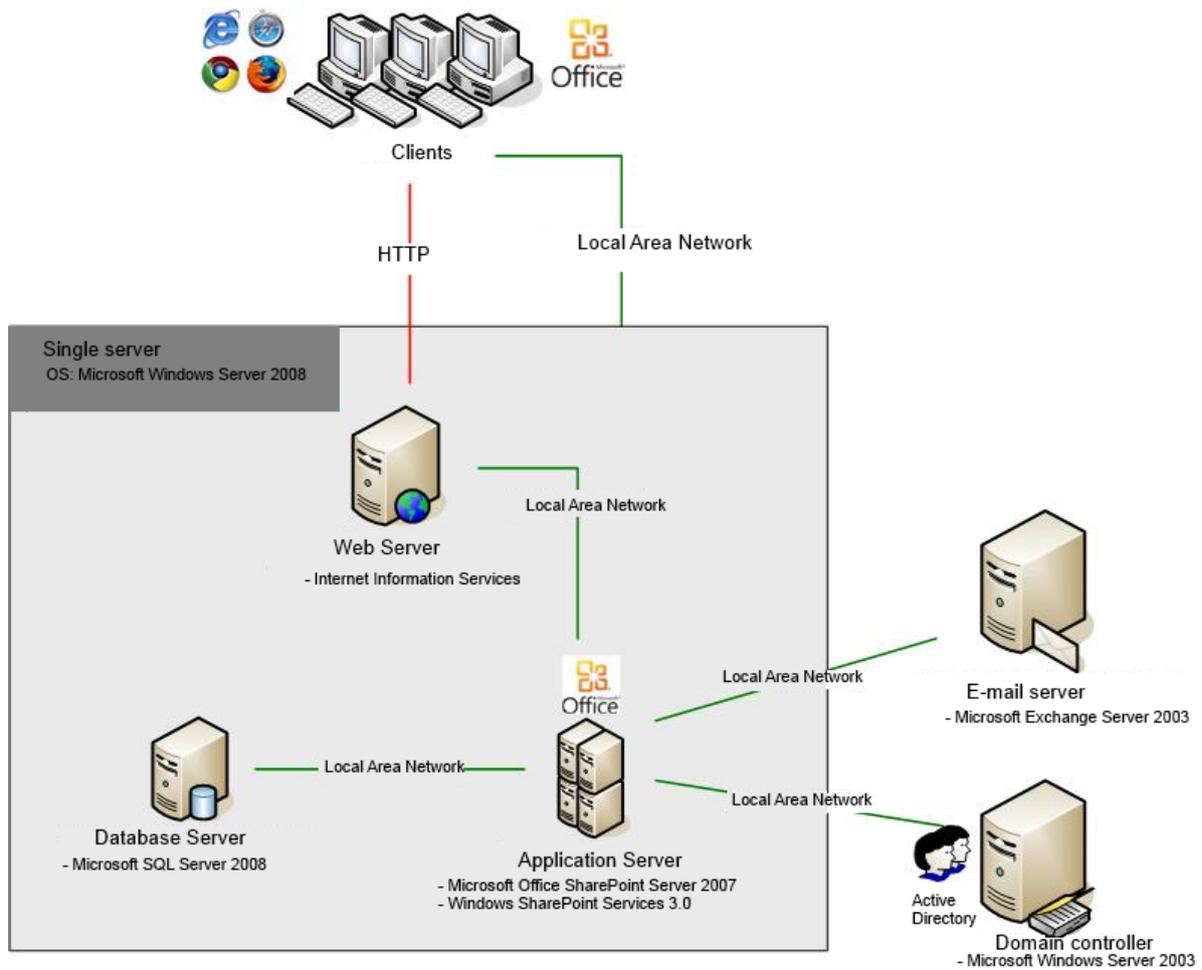
FIG. 2 LOGICAL INFRASTRUTURE OF THE SYSTEM

The system is designed so, it has built-in security, and only authorized users have access to appropriate parts of it. To enable data integrity and to support system reliability several roles are defined: site owners, managers, administrators, contributors and approvers. To support logical workflows and hierarchical organization of the enterprise the following user groups are defined at system level: administrators, managers (heads of departments and their assistants) employees in the IT department on the one hand and other employees in the enterprise on the other hand as well as external users. All employees in the IT department are granted Contributors user role that allows them to create, update, delete and view content. The managers and team leaders are granted an Approvers role in order to be able to approve and edit documents, pages and lists. Administrators have unlimited permission. Class diagram that presents system users is shown in Figure 3.
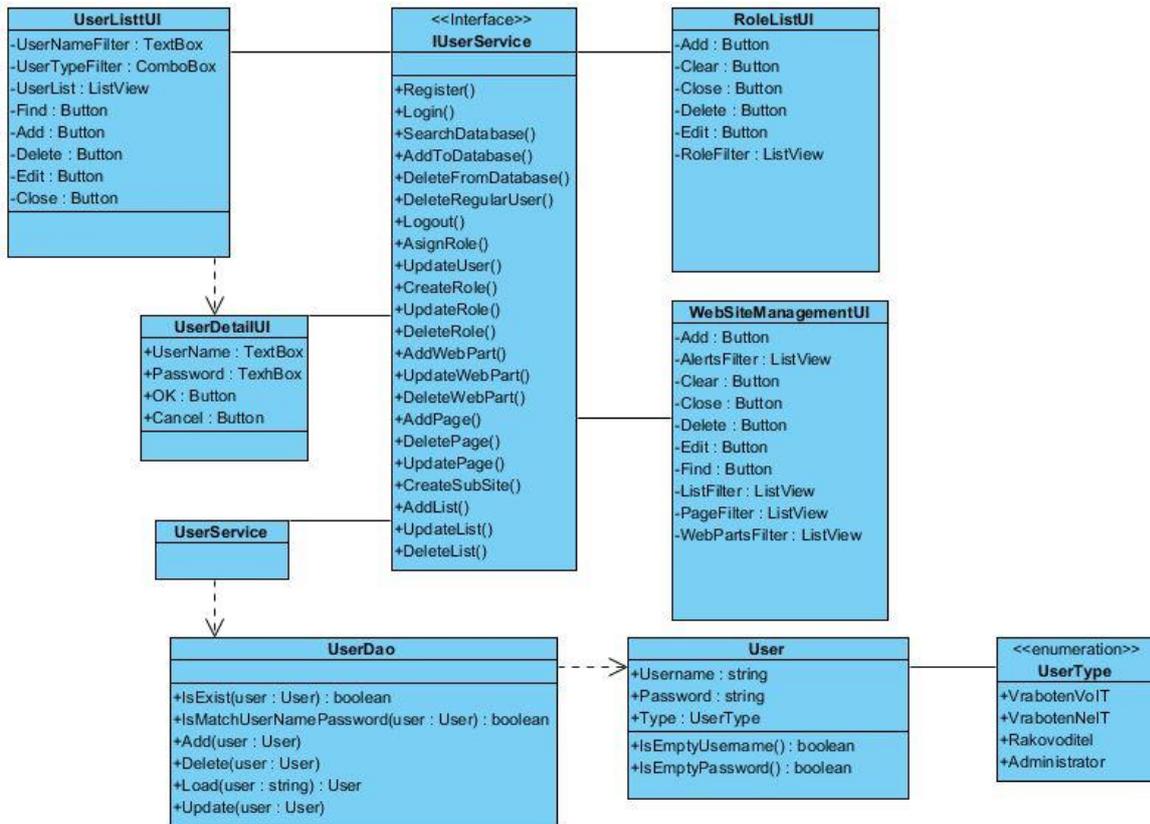
FIG. 3 CLASS DIAGRAM PRESENTING SYSTEM USERS

The infrastructure is set up in such a way that allows to be easily extended and providing fast and secure communication between users. It also enables easily information sharing and interaction among team members.

Evaluation of implemented system

After the system implementation and the training period for the employees, the evaluation phase started. Conducted evaluation was based on two methodological approaches, including: web-survey of employees and classical survey (interview) with employees.

The surveys show that the system together with the implemented functionalities have positive impact on coordination and collaboration between employees, as well as on accuracy and timeliness of information. The following graphs show these results.
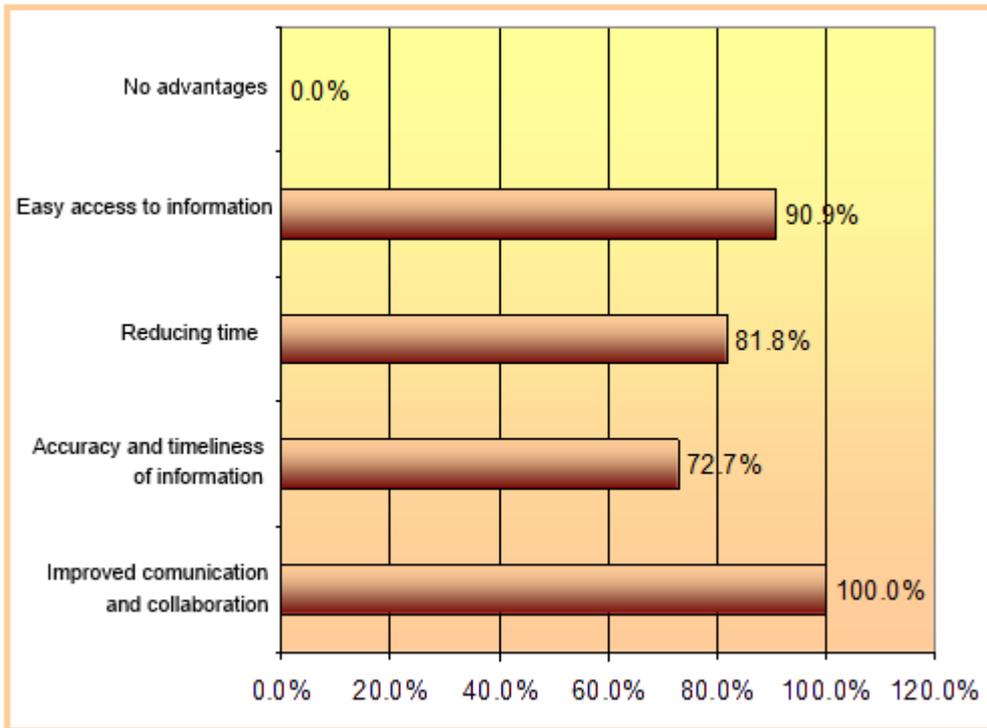
FIG. 4 INFLUENCE OF USING IMPLEMENTED ECS TO DAILY WORKING ACTIVITIES
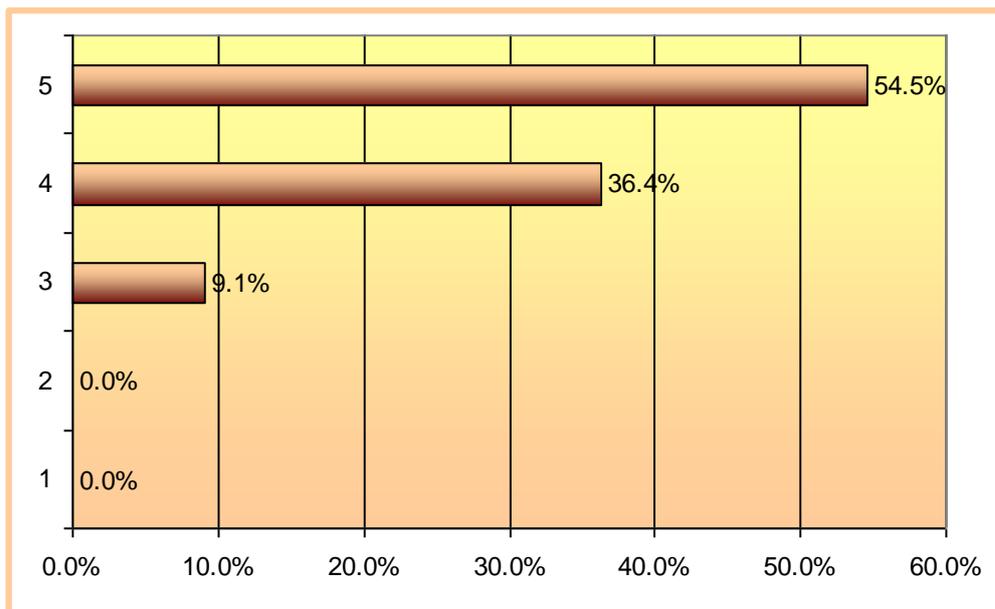
FIG. 5. QUALITY OF IMPLEMENTED FUNCTIONALITIES ON A SCALE FROM 1 TO 5

The implemented system and its functionalities have influence on working time of IT staff in organization, reducing the time for managing documents and monitor and

control information sharing. The following graph shows these results.
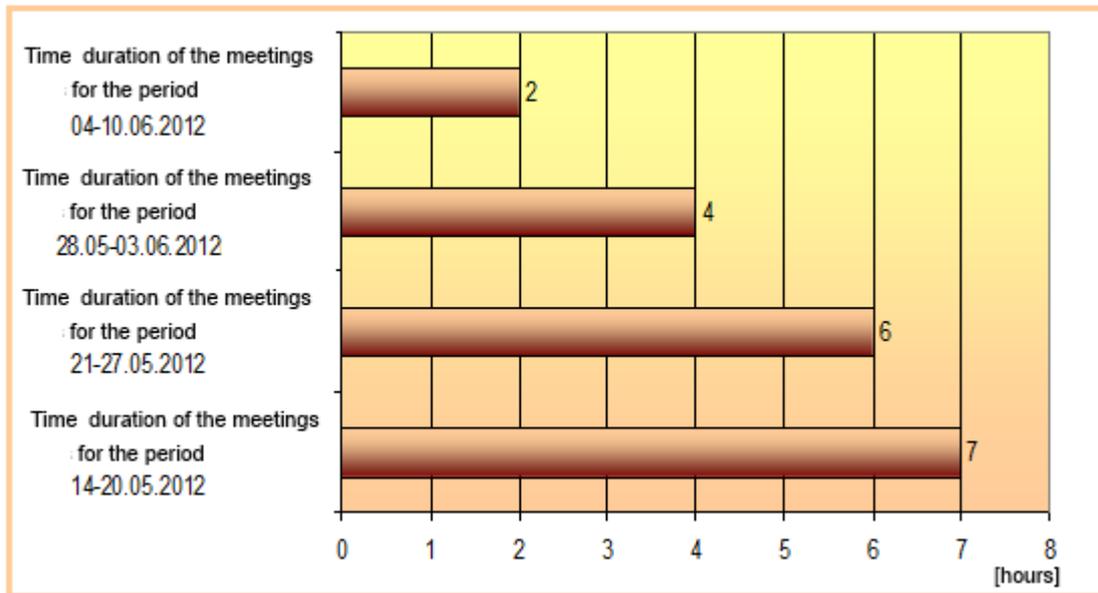
FIG. 6. INFLUENCE OF THE ECS TO TIME DURATION OF THE MEETINGS

Conclusion

Information and communication technology has brought significant changes in organizations and produced important benefits, for the organization and for the people working in it. The oral and written system of communication that has been followed by organizations for ages is fast being replaced by computers.

Enterprise collaboration systems are information systems that enables people in an organization to work together more effectively to achieve organizational goals. In our study Microsoft Sharepoint as a collaboration system was used. It has many features and capabilities that make the communication process of an organization more effective.

The implemented system was experimentally evaluated. The results of this experimental evaluation show its influence on the optimization of internal processes, on increasing the efficiency of the team as well as the perception of the employees about its usefulness.

REFERENCES

Lipnack, J., & Stamps, J. (2000) Virtual Team: People Working Across Boundaries with Technology. 2nd ed. Canada: John Wiley & Sons.

Leenders, R.T.A.J., van Engelen, J.M.L., & Kratzer, J. (2003), Virtuality, communication, and new product team creativity: a social network perspective. Journal of Engineering and Technology Management, 20: p. 69–92.

Ale Ebrahim N., Ahmed S. & Taha Z. (2009), "Virtual Teams: a Literature Review", Australian Journal of Bas ic and Applied Sciences, 3(3): 2653-2669.

Powell, A., G. Pic c oli and B. Ives (2004), "Virtual teams: a review of current literature and directions for future research", The Data base for Advances in Information Sys tems , 35: 6-36.

Gibson, C.B., & Cohen, S.G. (2003), "Virtual Teams That Work, Creating Conditions for Virtual Team Effectiveness", San Francisco, CA: Jossey-Bass.

Joseph Katie (2013), "Value of information systems in Organizations-Case Study", GRIN Verlag.

SharePoint (Web page) http://office.microsoft.com/en-us/sharepoint/   (last access December 2013).