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CONTENTS

THE IMPACT OF THE ASIA-PACIFIC ECONOMIC COOPERATION MUTUAL RECOGNITION ARRANGEMENT FOR CONFORMITY ASSESSMENT OF TELECOMMUNICATIONS EQUIPMENT ON TRADE: EVIDENCE FROM TAIWAN

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ABSTRACT

We use Taiwanese trade data from 2009 to 2012 to examine the impacts of the Asia-Pacific Economic Cooperation Mutual Recognition Arrangement for Conformity Assessment of Telecommunications Equipment on trade. The results show that Asia-Pacific Economic Cooperation Mutual Recognition Arrangement for Conformity Assessment of Telecommunications Equipment can increase Taiwan's exports of cellular phones and laptop computers to other Asia-Pacific Economic Cooperation members. We also provide evidence that a mutual recognition agreement can reduce the non-tariff barriers caused by technological regulations and standards in some cases.

JEL: F14, F53, F15

KEYWORDS: APEC, Mutual Recognition Agreement, Trade, Gravity Equation

INTRODUCTION

Although the World Trade Organization (WTO) Doha round negotiation, begun in 2001, has yet to conclude, trade barriers caused by tariffs have been lowered due to several sets of negotiations before and after the establishment of the WTO; however, non-tariff barriers continue to impede the flow of goods between countries. The different types of non-tariff barriers are varied and complicated, and hence, it is difficult to reach a consensus to eliminate non-tariff barriers in negotiations. Quotas, a type of quantitative constraint, are one formerly popular form of non-tariff barrier, but more recently, technical standards have overtaken quotas to become the major cause of disputes over non-agriculture goods in the WTO (Santana and Jackson, 2012). Among the various WTO trade agreements, the Technical Barriers to Trade (TBT) and the Sanitary and Phytosanitary (SPS) agreements are conceptually similar. Seeking to protect the safety of human being and living things, these two agreements empower WTO members to set non-discriminatory regulations on the technical standards for goods (TBT) and animals, plants, and food (SBS). Clearly, different technical standards and SPS measures can create trade barriers among the WTO members by creating extra examination costs for exporters.

Harmonization and mutual recognition are two major methods used to alleviate the unnecessary trade barriers caused by technical standards and SPS measures, especially in European countries (Brenton, Sheehy, and Vancauteren, 2001). Harmonization means that trade partners coordinate to apply the same technical standards or SPS measures to products. Due to sovereignty concerns, most countries reserve the right to set the standards or measures to protect their citizens, although suggestions from international organizations such as the Codex Alimentarius Commission will be considered. In most cases, mutual recognition is more important to alleviate this type of non-tariff trade barrier. Indeed the mutual recognition agreements (MRAs) between the United States, European Commission, and other countries are studied in the literature, such as Amurgo-Pacheco(2006).

Under the arrangement of mutual recognition, the tests or certifications for export goods can be preceded in the exporters' countries, thus avoiding duplicate testing and shortening the time to market for new products. Further, the required technical standards and SPS measures will be more transparent. It is expected

that MRAs between trade partners can alleviate trade barriers and promote trade flows. This paper will examine this theoretical prediction by exploring Taiwanese trade data. The Asia-Pacific Economic Cooperation Mutual Recognition Arrangement for Conformity Assessment of Telecommunications Equipment (APEC Tel MRA) is the targeted MRA in this paper. APEC Tel MRA was endorsed in 1998 and commenced in 1999. The scope of the conformity assessments covered by APEC Tel MRA includes electromagnetic compatibility (EMC) and electrical safety. Many of Taiwan's major export goods, such as laptop computers and cellular phones, need to pass the conformity assessments covered by APEC Tel MRA before they can be exported to other APEC members, which is the reason we have chosen to analyze APEC Tel MRA in this paper.

APEC Tel MRA provides the members of APEC with a framework in which participation is voluntary. Currently, there are three sets of procedures for the implementation of APEC Tel MRA: Phase I Procedures, Phase II Procedures, and MRA for Equivalence of Technical Requirements for Telecommunications Equipment (MRA-ETR). MRA-ETR was endorsed in 2010, later than Phase I and Phase II. Descriptions of these three procedures can be found as follows. 1.) Phase I Procedures: mutual recognition of testing laboratories as Conformity Assessment Bodies and mutual acceptance of test reports. 2.) Phase II Procedures: mutual recognition of certification bodies as Conformity Assessment Bodies and mutual acceptance of equipment certifications. 3.) MRA-ETR: mutual recognition of equivalent standards or technical requirements.

Indeed, MRA-ETR adopts a method similar to harmonization to alleviate trade barriers caused by different standards between trade partners. To date, no APEC members have signed MRA-ETRs with each other; Taiwan has agreed to adopt Phase I procedures with Australia, Singapore, Hong Kong, United States, and Canada and to adopt Phase II procedures with Canada. Taiwan's trade volume was ranked 18th in the world in 2012. Excepting the European Union, its most important trade partners are all APEC members. APEC members include Australia, Brunei Darussalam, Canada, Chile, China, Hong Kong, Indonesia, Japan, Korea, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, the Philippines, Russia, Singapore, Taiwan, Thailand, the United States, and Vietnam. Furthermore, electronic products are Taiwan's most important export commodity. In 2012, the exports of electric commodities accounted for 27.70% of Taiwan's total exports. Hence, Taiwan is a good case study for exploring the impact of the APEC Tel MRA on trade. In this paper, we will examine Taiwanese trade data to see whether APEC Tel MRA can foster trade flows between Taiwan and other APEC members, and the paper is organized in the following way. A review of related literature is provided in the section of "Literature Review." The "Data and Methodology" describes the data and the econometric model used in this paper. The estimation results are presented in the next section. Finally the improvement which can be done in the future can be found in the section of "Concluding Comments."

LITERATURE REVIEW

In essence, APEC Tel MRA is a trade agreement, and it regulates the requirements for commodities imported from one signed member to another. While the direct economic benefit stemming from APEC Tel MRA is a lower fixed cost when a product enters new markets (Baller, 2007; Hogan and Hartson LLP, 2003), a benefit that is difficult to measure, it is still reasonable to expect that a trade agreement has a significant impact on trade flows. The impacts of trade agreements such as APEC Tel MRA and free trade agreements (FTAs) can be examined by using micro or macro data. Simply examining impacts with micro data, for example, the trade volume of a specific good before and after the validation of trade agreements, may lead to misleading or confusing conclusions. A drop in trade volume between trading partners after an FTA is signed does not necessarily indicate that the FTA has a negative impact; we aim to discover the actual factors contributing to the lower trade volume. Similarly, when trade volume rises after an FTA is signed, we cannot conclude that the FTA is cause without isolating the influence of other factors.

In the literature, many researchers directly study the impacts of trade agreements on trade flow between trade partners using a set of macro data. Most studies, however, focus on free trade agreements or regional trade agreements (RTAs) rather than MRAs. Indeed, very few studies, such as Chen and Mattoo(2008) and

Jang (2009), discuss the economic effects of MRAs using econometric models, a gap this paper seeks to fill. However, because MRAs, as mentioned above, are a type of trade agreement, there is no need to develop new econometric models or methods. Ever since Tinbergen (1962), gravity equations are widely used to study trade flows. After Anderson (1979) and Bergstrand (1985) provide the microfundation, gravity equations are not simply an econometric model. Further, inserting the dummy variables of FTAs or RTAs into the gravity equations to estimate the impact on trade volume has been the standard research method in related literature. For example, Frankel, Stein, and Wei (1995) use this method to study the impact of North American Free Trade Agreement, the Andean Pact, and Mercado Común del Sur (MERCOSUR) on trade flows among countries in the Americas. Zarzoz and Lehmann (2003) also study the trade flows between MERCOSUR and European Union by gravity equations. In addition to trade in commodities, Walsh (2006) and Kimura and Lee (2006) also use gravity equations to study trade in services.

DATA AND METHODOLOGY

APEC Tel MRA is a sectoral agreement, however, and does not cover as many goods as FTAs or RTAs. Further, APEC Tel MRA may be influential only when an importing country requires compulsory tests to be performed in the importing country. Because this paper focuses on the impact of APEC Tel MRA on Taiwan's exports to other APEC members, we modify the original gravity equation model as below:

$$\ln T_{it} = \beta_0 + \beta_1 \ln X_t + \beta_2 \ln M_{it} + \beta_3 \ln D_i + \beta_4 C_i + \beta_5 C_i \times MRA_i + \beta_6 other\ variables. \tag{1}$$

T_{it} is Taiwan's exports to Member i at Time t; X_t is Taiwan's total exports at Time t; M_{it} is Member i's total imports at Time t; D_i is the distance between Taiwan and Member i; C_i is a dummy variable and is equal to 1 when Member i requires that compulsory tests are performed in Member i; MRA_i is a dummy variable and is equal to 1 when Taiwan signs APEC Tel MRA with Member i; other variables include Member i's tariffs, the log of GDP, and the log of GDP *per capita*. There is one thing about the variable MRA_i to address. Although Taiwan has agreed to adopt Phase II procedures with Canada, Phase II procedures are applied in very few cases. Hence, we do not distinguish Canada from other countries that have agreed to adopt Phase II procedures with Taiwan.

Variables added to Equation (1) can capture the impacts of other factors that may cause fluctuations in trade flows and help to ensure that the impact of APEC Tel MRA is estimated correctly. Variable X_t can capture Taiwan's export competency at Time t; M_{it} represents Member i's market capacity for imported goods at Time t; the log of GDP and the log of GDP per capita can capture the effects of Member i's economics scale and income level. The real subject of interest in this paper, however, is the sign of β_5. When an importing country requires compulsory tests to be performed in that country, the testing cost is necessarily higher and testing is more time consuming. Hence, it is expected that the sign of β_4 will be negative, that is, the trade volume will become smaller when compulsory tests must be performed in the importing country. A positive β_5, however, shows that MRA can counter or dilute the negative impacts on trade flows. Although the data used here is both cross-importer and cross-time, we can neither add more dummy variables to the model nor estimate Equation (1) with the fixed effect model as Baier and Bergstrand (2007) and Egger (2000) suggest because there is only one exporter and the data does not cover a long enough time period. The data will be treated as pooled data and Equation (1) will be estimated by the ordinary least squares method. In this paper, we use 5 products to analyze the impacts of APEC Tel MRA on exports to other APEC members from Taiwan. The 5 products—Cellular Phone, Set-Top-Box, Navigation Instrument, Router, and Laptop Computer—are selected from Taiwan's top 100 exported goods in 2012 that are covered by APEC Tel MRA. Table 1 lists the products analyzed in this paper and their HS codes. Due to the lack of available data, we only analyze data from 2009 to 2012.

Table 1: The Selected Products in the Analysis and the HS Codes

6-digit HS Code	HS851712	HS852871	HS852691	HS851762	HS7130
Main Product	Cellular Phone	Set-Top-Box	Navigation Instrument	Router	Laptop Computer

This table lists the products analyzed in this paper and their HS codes.

RESULTS

The export volume of each product sent from Taiwan to other APEC members and the total exports were retrieved from the website of Taiwan's Bureau of Foreign Trade, Ministry of Economic Affairs. Other APEC members' total imports and the tariffs applied to each product are downloaded from the Trade Map, International Trade Map. The distances between Taiwan and other APEC members are provided by Mayer and Zignago (2011). APEC members' GDP and GDP *per capita* are retrieved from the database of the World Development Indicator, but Taiwan's data can only be found on the website of Taiwan's Directorate General of Budget, Accounting and Statistics. Finally, according to an interview with the Taiwan Accreditation Foundation, among APEC members, only Canada, China, Japan, Korea, and United States require compulsory product testing in the importing country.

We estimate Equation (1) one by one for each product selected. Table 2 shows the estimation results of Equation (1). The adjusted R-squares of most products (except one) are more than 0.6, with the highest value at 0.8860. Clearly, the selected explanatory variables can explain the variance of the trade flows quite well. The problem of omitted variables cannot be serious. If the coefficients are significantly different from zero, most of the signs are in line with the predictions. For example, when Taiwan's export competency (the total export volume) is higher, Taiwan exports more goods to other APEC members. The distance between Taiwan and other APEC members discourages imports from Taiwan. APEC members with higher incomes or a larger scale purchase more electronic products from Taiwan. In this paper we pay more attention to the coefficients of the variables compulsory and phacom because we are studying the impact of MRAs on trade. The variable phacom is the product of two variables, compulsory and MRA. It is found that the compulsory product testing requirement in the importing countries did have significant negative impacts on trade flows for some products, such as cellular phones and laptop computers. However, we also can see that the APEC Tel MRA alleviates the negative impacts for those two products. Further, the signs of the coefficients of the variable phacom are significantly positive only when the coefficient of the variable compulsory is significantly negative. In other words, APEC Tel MRA can reduce the non-tariff barriers caused by technical regulations or standards when compulsory tests are required to be performed in importing countries.

Table 2: The Estimation Results of the Modified Gravity Equation

Product	HS 851712	HS 852871	HS 852691	HS 851762	HS 847130
ln(imports)	-1.106*	0.108	0.005	0.628*	0.254
	(0.546)	(0.246)	(0.177)	(0.122)	(0.205)
ln(exports)	-0.724	-4.998	0.103	0.473	0.339*
	(0.911)	(4.113)	(2.128)	(0.277	(0.146)
ln(distance)	-3.752**	-2.339**	-1.113**	-0.776*	-1.110*
	(0.609)	(0.422)	(0.196	(0.124	(0.157
compulsory	-7.607**	-0.877	-1.100	0.502	-1.042
	(1.603)	(1.207)	(0.609)	(0.283)	(0.501
Phacom	7.097**	2.043	0.441	-0.597	3.058**
	(2.110)	(1.777)	(0.833)	(0.402)	(0.665)
ln(GDP *per capita*)	2.715**	0.874**	0.675*	0.117	0.817**
	(0.375)	(0.269)	(0.196)	(0.078)	(0.145)
ln(GDP)	2.664**	0.547	0.443*	-0.014	0.816**
	(0.374)	(0.292	(0206)	(0.080	(0.143)
constant	-21.642	67.190	-2.497	-5.201	-23.357**
	(17.017)	(55.402)	(21.229)	(3.923)	(3.417
$\bar{R}^2$	0.675	0.597	0.650	0.886	0.857

This table presents the estimation of Equation (1). The first figures in each cell are estimated coefficients for each product. The figures in the parenthesis are the standard errors. ∗ and ∗∗ represent the significance level at 5% and 1%, respectively.

It is noted that the sign of the variable ln(exports) is not stable. The coefficients in two equations are negative, although not significantly, and are thus in opposition to the prediction. Although we can add more dummy variables to control the effects of other factors, due to the limit of data availability it is not possible to add as many types of dummy variables in this paper as Cheng and Wall (1999) suggest. Because Taiwan's overall exports ln(exports) only vary in terms of years, we use yearly dummy variables to replace ln(exports) and re-estimate all equations to ensure the robustness of our estimation. Table 3 presents the estimation results after we replace ln(exports) with yearly dummy variables. Most coefficients of the yearly dummy variables are not significantly different from zero, with the exception of Year 2012 in the equation for HS847130. It seems that the yearly dummy variables have very little explanatory power over the trade flows. Indeed, the estimation results in Tables 2 and 3 are very similar. It is fair to say that our estimation results are robust.

Table 3: The Estimation Results of the Modified Gravity Equation with Yearly Dummy Variables

Product	HS 851712	HS 852871	HS 852691	HS 851762	HS 847130
Year 2010	-0.090	1.654	-0.523	-0.381	0.338
	(1.164)	(0.984)	(0.474)	(0.234)	(0.358)
Year 2011	-1.167	1.149	0.049	-0.197	-0.119
	(1.109)	(0.952)	(0.462)	(0.226)	(0.347)
Year 2012	-0.576	0.034	-0.254	-0.122	0.782*
	(1.086)	(0.940)	(0.457)	(0.223)	(0.342)
ln(imports)	-1.178*	0.096	0.004	0.626**	0.187
	(0.561)	(0.244)	(0.179)	(0.125)	(0.200)
ln(distance)	-3.772**	-2.383**	-1.109**	-0.775**	-1.128**
	(0.615)	(0.419)	(0.198)	(0.126)	(0.155)
compulsory	-7.498**	-1.244	-1.084	0.514	-1.164*
	(1.631)	(1.295)	(0.618)	(0.292)	(0.501)
phacom	7.075**	2.251	0.419	-0.393	3.123**
	(2.130)	(1.770)	(0.844)	(0.418)	(0.656)
ln(GDP *per capita*)	2.703**	0.963**	0.675**	0.115	0.823**
	(0.379)	(0.274)	(0.198)	(0.081)	(0.143)
ln(GDP)	2.640**	0.648*	0.444*	-0.016	0.830**
	(0.380)	(0.298)	(0.208)	(0.081)	(0.141)
constant	-30.021*	-4.449	-1.023	1.435	-20.606**
	(12.773)	(9.448)	(5.033)	(2.582)	(3.266)
$\bar{R}^2$	0.669	0.607	0.641	0.882	0.863

This table presents the estimation results after we replace ln(exports) with yearly dummy variables. The first figures in each cell are estimated coefficients for each product. The figures in the parenthesis are the standard errors. ∗ and ∗∗ represent the significance level at 5% and 1%, respectively.

The estimation results in Tables 2 and 3 provide evidence that Taiwan's exports of cellular phones and laptop computers benefit from APEC Tel MRA. Several issues are worth addressing here. First, among the 5 selected products and based on the data available, only cellular phones and laptop computers benefit from APEC Tel MRA. As mentioned, an MRA only can lower the fixed costs of introducing new models or products into markets. It is reasonable that MRA provide greater benefits to products with short life cycles, as is the case for cellular phones and laptop computers compared to other selected products. Our results are in line with the predictions. Second, precisely speaking, APEC Tel MRA especially benefits Taiwan's exports to the United States and Canada. Among APEC members that have signed APEC Tel MRA with Taiwan, only the United States and Canada require compulsory testing of imported goods to be completed in the importing country.

CONCLUDING COMMENTS

APEC Tel MRA was endorsed in 1998 and some APEC members adopted mutual APEC Tel MRA procedures in early 2000s. Since then, the progress of APEC Tel MRA has been sluggish. Instead, very few APEC members have adopted mutual APEC Tel MRA procedures in recent years. Lack of evidence that APEC Tel MRA is beneficial to trade between APEC members is one important reason for its slow progress. Very few studies in the literature address the impacts of MRAs on trade. This paper can fill the gap in the literature and show evidence that APEC Tel MRA is beneficial in some cases. We modify the gravity equation to estimate the impact of APEC Tel MRA on Taiwan's exports of cellular phones, set-top-boxes, navigation instruments, routers, and laptop computers. Using trade data from 2009 to 2012, we find that

APEC Tel MRA can benefit Taiwan's exports of cellular phones and laptop computers to other APEC members, possibly because in comparison with the other selected products, cellular phones and laptop computers have shorter life cycles. MRAs such as APEC Tel MRA can lower the fixed costs of introducing a new model or product into markets but cannot alter variable costs. MRA cannot harm the signatories' exports, but its benefits may not be explicitly revealed by a direct examination of trade data, especially for those products with a long life cycle. Hence, although we do not find evidence proving that APEC Tel MRA benefits the exports of set-top-boxes, navigation instruments, and routers, it is not appropriate to conclude that APEC Tel MRA has no or negative impacts   on those products. Micro data may help to justify the benefits brought by APEC Tel MRA to these sectors.

In addition to the exporting sectors, MRAs impact other sectors, especially testing laboratories. After MRAs are signed, the compulsory tests that originally had to be performed in importing countries can be performed in exporting countries, bringing testing laboratories more local business while also causing them to lose orders from foreign manufacturers. The net impacts of MRAs on testing laboratories are controversial and worthy of future exploration. In the future, there are at least two ways to provide more deliberate estimation. First, we may follow the suggestions in Linders and De Groot (2006) to correct the error caused by zero trade volume by sample selection model. Second, Magee (2003) suggests that preferential trade agreements should be treated as endogenous. Hence, we may need to examine the endogeneity of MRAs in the gravity equations.

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PERFORMANCE OF SOCIALLY RESPONSIBLE MUTUAL FUNDS

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ABSTRACT

This study examines the performance of socially responsible mutual funds from 1999 to 2009. To minimize the benchmark error, we apply propensity-score-matching method to identify a most comparable conventional fund for every socially responsible fund based on several key fund characteristics. We find that return of socially responsible mutual funds are lower than conventional funds before applying the propensity-score-matching method. However, comparing to the propensity-score-matched funds, socially responsible mutual funds have a superior return on both average and risk-adjust returns. Further analysis shows that the superior return of socially responsible funds over propensity-score-matched funds only exists in the funds satisfying social and governance screening criteria.

INTRODUCTION

The Social Investment Forum (SIF) defines Socially Responsible Investing (SRI) as "an investment process that considers the social and environmental consequences of investments, both positive and negative, within the context of rigorous financial analysis." In recent years, SRI has become a dynamic and quickly growing segment of the U.S. investment market. At the beginning of 2010, professionally managed SRI assets (including mutual funds, private and institutional ethically screened portfolios), reaches $3.07 trillion. It represents a rise of more than 380% from $639 billion in 1995. Due to the sheer size, SRI attracts the attention of governments, universities, foundations, public pension funds, as well as mainstream asset managers.

SRI is typically described as an investment in which social and personal values instead of financial considerations are the basis for investment decision making. However, in recent SRI movement, it has been suggested that SRI should be a "profit- seeking" approach that accommodates investors for their traditional financial goals as well. Socially responsible investors want to do well, not merely do good. This argument raises an important question: can SRI have a superior return while follow a restricted investment strategy? We try to answer this question in this paper by examining the performance of socially responsible mutual funds for a ten year period from 1999 to 2009. We first compare the performance of SRI funds to conventional mutual funds on average monthly return. We further compare the risk-adjusted monthly return using rolling regression approach. Our results indicate that SRI funds underperform conventional funds on both returns. To address the concern that the results could be driven by the benchmark selection, we use the propensity-score-matching method to identify a most similar conventional fund for every SRI fund. The propensity score is calculated as the probability of a Logit model based on several key fund characteristics.

After applying the matching method, we find that SRI funds outperform the matched conventional funds on both average and risk-adjusted monthly returns. Our results suggest SRI funds have a superior return than conventional funds with similar fund characteristics. Since SIF screens SRI funds based on four categories, we further test whether the superior return of SRI funds is screening criterion dependent. Our results indicate SRI funds outperform the matched conventional funds only in social and governance categories, but not in environmental and product categories.

This paper proceeds as follows. We conduct literature review and introduce research design in following section. We then describe the data and methodology and discuss the results. The final section concludes.

LITERATURE REVIEW AND RESEARCH DESIGN

Hamilton et al. (1993) propose three alternative hypotheses on the performance of SRI. First, they argue that the SRI should not have any significant impact on fund performance because social responsibility is not priced by the market. Second, SRI would underperform the conventional funds since it restricts an investor's choice set. According to traditional portfolio theory (e.g., Markowitz, 1959), an unconstrained optimization is always better than a constrained optimization. Third, SRI should outperform conventional funds because markets do not correctly price social responsibility. For instance, it could happen when managers and investors consistently underestimate SRI's benefits or overestimate its costs (Fombrun and Shanley, 1990; Brekke and Nyborg, 2005; Fisman, Heal, and Nair, 2006). Literature provides evidence on all three hypotheses. For example, many studies document a non-significant effect of SRI (Kurtz and Dibartolomeo, 1996; Guerard, 1997; Goldreyer and Diltz, 1999; Statman, 2000; Bauer, Koedijk, and Otten, 2005; Bello, 2005; Schroder, 2007; Statman and Glushkov, 2008), while Geczy, Stambaugh and Levin, 2005; Brammer, Brooks and Pavelin, 2006; Renneboog, Ter Horst, and Zhang, (2008) and Hong and Kacperczyk (2009) present an negative impact of SRI screens on funds return using mutual fund data. Moskowitz, 1972; Luck and Pilotte, 1993; Derwall, Koedijk, and Ter Horst (2005) and Kempf and Osthoff (2007) find certain SRI screens improve returns, although these results are based on short time period.

Clearly, there are many possible reasons to cause the reported conflicting results. In this study, we focus on one possible reason that is the selection of conventional benchmark fund when assessing the relative performance of SRI funds. Ideally, the impact of SRI can be identified if we have two identical funds except that one applies SRI screening in their portfolio and another one does not. Unfortunately, such funds do not exist. The purpose of our paper is to apply propensity-score-matching method to find the mostly similar conventional mutual fund for each SRI fund based on several important fund characteristics as matching variables. Propensity matching is one widely used method in many research areas, including social science, biology, medicine, and engineering, to construct appropriate control groups in non-experimental studies. Recently, it has become an increasingly important method in financial economic research (Drucker and Puri, 2005, Conniffe, Gash, and O'Connell, 2000, among others) because this method does not impose constraints on matching variables. We calculate the propensity score of each fund based on total monthly net asset value, fund flow, management fee, and return variance using a Logit model. Propensity score matching method allows us to identify a matched conventional fund for each SRI fund in each month for the time period 1999 to 2009. Another contribution of our study is that we cover a relatively long time period (from 1999 to 2009) compared to most of previous SRI studies. The long-run return suffers less reverse causality issues and is more directly related to investors' wealth.

SRI has become a wide-spread investment practice across broader universe of investment vehicles (such as mutual funds, ETF's, and other alternative investments). It is difficult to involve all the SRI portfolios in our study. This is because fund data (fund level characteristics) is not easy to obtain especially for those alternative investments (i.e. hedge funds, venture capitals, etc.). Due to our data availability, we restrict our sample to mutual funds that listed in the CRSP survivor-bias-free mutual fund database. Our main sample set includes 321 funds and $243.3 billion total asset under management (as of 2009). We study two returns, the average monthly return and average monthly risk-adjust return. To obtain the monthly risk-adjusted return, we use rolling regression to calculate monthly α in the Fama-French-Carhart four factor model. We compare the two returns between SRI funds and general conventional mutual funds (all mutual funds listed in CRSP dataset excluding SRI funds) and propensity-score-matched conventional funds to study the impact of SRI.

In comparison of average monthly return, our results indicate that SRI funds underperform conventional mutual funds. The average monthly return of general conventional mutual funds over holding period is 0.40%, while it is 0.27% for SRI funds. The average monthly return of propensity-score-matched conventional funds (0.38%) is also higher than SRI funds (0.28%). In comparison of risk-adjusted returns, however, we find that SRI funds outperform conventional funds. SRI funds have monthly α of -0.08%, while general conventional funds' α is -0.35%. The superior risk-adjusted return of SRI funds also present after using propensity-score-matching method. We find α of SRI funds (-0.06%) is higher than matched conventional funds (-0.17%). These results suggest that the superior return of conventional funds on average monthly return are associated with some well-known risk factors and can be explained away by these factors. On the other hand, the superior return of SRI funds on risk-adjusted returns are not correlated with risk factors. It suggests that the SRI has a positive impact on mutual funds return.

We also find the monthly fund flow of general conventional funds is higher than SRI funds (0.34 vs. 0.17). General conventional funds have a lower average monthly total net asset under management than SRI funds (408.81 million vs. 515.00 million). General conventional funds have a lower management fee (0.83%) than SRI funds (1.61%). They have similar variance of past six month returns. We do not find any significant difference between SRI funds and the propensity-score-matched conventional fund except for the management fee. These results are expected since we are matching conventional funds with SRI funds on these four fund characteristics. The results provide supporting evidence that our propensity-score-matching method indeed finds comparable conventional funds for the SRI funds.

To further explore the impact of SRI, we study if SRI return is dependent on its screening criterion. SIF classify a fund as a SRI based on four categories, namely, social, environmental, governance and products. We conduct the comparison analyses between SRI funds and matched conventional funds on each screening category. The results show that SRI funds have a higher risk-adjusted return than matched conventional funds in social and governance category. Risk-adjusted returns on other two categories do not show any significant difference. The average monthly return of matched conventional funds on environmental, products, and governance category are all significantly higher than SRI funds, while there is no significant difference between SRI and conventional funds on social category.

DATA AND METHODOLOGY

We obtain SRI fund data from Social Investment Forum (SIF). SIF applies both positive and negative screens to classify an investment portfolio as a qualified SRI fund. In particular, SRI screens a fund based on four major categories on social, environmental, governance and products. Social criteria include diversity and equal employment opportunity, human rights, and labor relations. Environmental criteria include climate/clean technology, pollutions/toxics, and environment. Governance criteria include board issues and executive pays. Products criteria include animal testing, defense/weapons, gambling, and tobacco. Detailed screening criteria in each category can be found at SIF website (http://charts.ussif.org/mfpc/). SIF publishes the list of SRI funds from 1999 to 2010. However, the number of funds in 2010 is only 156, which is significant less than previous year. The number of funds is also different from other publications of SIF. Therefore, we do not include 2010 data in our study.

In this study, we focus on mutual funds due to the data availability. To obtain the detailed fund level characteristics and performance data, we merge SRI funds with CRSP Survivor-Bias-Free US mutual fund database. Therefore, our sample set only includes US SRI mutual funds listed in CRSP database. The summary statistics of our sample are reported in Table 1 and Table 2. As shown in Table 1, as in 2009, there are 321 mutual funds and 74 fund families (managed by the same financial institution). The mean and median age of these SRI mutual funds are 11.15 and 11 years old. The total assets under management are 243.3 billion dollars.

Table 1. Summary Statistics of SRI Funds in 2009

No. Funds	No. Families	Mean Age	Median age	TNA (Bil)
321	74	11.15	11	243.3

This table shows the summary statistics of SRI funds in 2009

Table 2 reports the time trend of number of funds and total asset managed for SRI mutual funds from 1999 to 2009. As shown in this table, we observe that the number of funds and total net asset under management are increasing over time. It clearly reflects the increasing popularity of SRI in mutual fund industry. We also find that there are two setbacks from 2003 to 2004 and 2004 to 2005.

Table 2. Time Trend of Number of SRI Funds and Total Net Asset Under Management from 1999 to 2009

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
# of company	152	151	187	220	267	234	209	228	273	314	321
Total Net Asset (Bil)	49.6	44.1	101.0	136.7	164.4	127.5	92.3	96.7	133.0	192.7	243.3

This table shows the time trend of SRI funds.

To study the impact of SRI on funds' long run return, we compare return of SRI mutual funds with general conventional funds and with propensity-score-matched conventional funds over long term time period. General conventional funds refer to all the mutual funds listed in CRSP dataset excluding SRI funds. We apply the propensity-score-matching method to identify a benchmark fund for each SRI fund in every month. This econometric method employs fewer restrictions and it is considered to be superior (Drucker and Puri (2005)). Other studies, including Rosenbaum and Rubin (1983), and Conniffe, Gash, and O'Connell (2000), also have suggested this matching approach is more accurate. We first calculate each firm's propensity score, which is the probability that a mutual fund with given characteristics is a SRI fund using a Logit model. For each SRI fund, a matching conventional fund is identified as the fund with the closest propensity score to the SRI fund. The characteristics (matching variables) used in Logit model are: total net asset, fund flow, management fee, and return volatility. The total net asset (monthly) and management fee are retrieved from CRSP mutual fund dataset. Fund flow over month t-1 to t is defined as (Sirri and Tufano, 1998):

$$Fund\ Flow = [TNA_t - (1 + r_t)TNA_{t-1}]/TNA_{t-1} \qquad (1)$$

where TNA_t is total net asset at time t, and r_t is the return from month t-1 to month t. The return volatility is calculated as the standard deviation of monthly return of past six months. We calculate two returns. The first one is the average of monthly return from 1999 to 2009, which can be readily retrieved from CRSP dataset. The second one is the risk-adjusted return. Following the popular approach in many mutual fund performance evaluation studies, we employ Carhart's (1997) four-factor model to estimate the multi-factor α, which captures a fund's risk-adjusted return. The model can be expressed as:

$$R_{it} - R_{ft} = \alpha_i + \beta_{mt,i}(R_{mt} - R_{ft}) + \beta_{smb,i}smb_t + \beta_{hml,i}hml_t + \beta_{prly,i}mom_t + \varepsilon_{it} \qquad (2)$$

where smbt, hmlt, and momt denote the risk factors associated with size, book-to-market, and momentum, respectively. We obtain these risk factors from Prof. French's website (mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html). To calculate the monthly risk-adjusted return, we conduct rolling regression using past 12 month returns to find α of current month.

It is possible that our results are driven by a certain SRI screen criterion. In other words, different screening categories may have different impact on SRI funds return. To study the possible different impacts of different screening categories, we apply the comparison analysis between SRI funds and propensity-score-matched funds on each category separately.

SIF surveys a fund on all these criteria. If a fund seeks positive investment/avoids poor performance/excludes investment in a criterion, SRI classifies it as a SRI fund. Because a fund usually adopts many criteira at the same time, the funds in each category are highly overlapped. In order to increase the distinguishing power, we apply a more restrict standard in this study. We require a firm must adopt at least 50% of criteria in a category to be classified as a SRI fund in this category. Using this standard, we are able to obtain 121 funds as SRI funds in environmental category, 126 in social category, 100 in governance category, and 141 in product category. We use propensity-score matching-method to identify the matched conventional fund for each SRI fund in every month. We then compare average monthly return and risk-adjusted return between SRI and matched conventional funds in each category using the paired t test.

RESULTS AND DISCUSSION

Table 3 presents mean values and differences with corresponding t values on various measures for general conventional funds and SRI funds. We use Welch's t test to compare the difference between conventional and SRI funds. The main reason of choosing Welch's t test over Student's t test is because general conventional funds and SRI funds have possibly unequal variances. In addition, the sample size of conventional fund (in thousands each year) is hugely different from the sample size of SRI funds (in hundreds each year).

Table 3: The Comparison between General Conventional Funds and SRI Funds on Various Measures

Variable	Conventional	SRI	Difference (t value)
Alpha (%)	-0.35	-0.08	-0.43(-17.25)***
Mret (%)	0.40	0.27	0.13(2.14)**
Mtna (mil)	408.81	515.00	-106.19(-2.67)***
Fundflow	0.34	0.17	0.17(3.59)***
Stdmret (%)	3.49	4.05	-0.56(-0.58)
mgmt_fee (%)	0.83	1.61	-0.74(-6.58)***

*This table shows the comparison between general conventional funds and SRI funds on various measures. Alpha presents α from Fama-French-Carhart Model. Mret is the average monthly return. Mtna is monthly total net asset. Fundflow is the fund flow. Stdmret is the standard deviation of past six month returns. Mgmt_fee is average monthly management fee. Conventional stands for the general conventional funds (i.e. all mutual funds listed in CRSP excluding SRI funds). t value is from Welch's t test. *, **, and *** indicate 10%, 5%, and 1% significant level, respectively.*

As Table 3 shows, conventional funds are found to outperform SRI funds in average monthly return. The average monthly return of conventional funds is 0.40%, while average monthly return of SRI fund is only 0.27%. The difference is 0.13% per month and it is significant at 5%. However, the risk-adjusted return presents an opposite result. The results show that risk-adjusted return of conventional funds is lower than SRI funds and the difference (-0.43%) is significant at 1% level.

Table 3 also presents some interesting findings on other fund level measures. First, the average monthly fund flow of conventional funds is twice of SRI funds, which indicates there is more capital flow into conventional funds than SRI funds. In other words, conventional funds attract more investment than SRI funds in general. Second, we find that on average conventional funds manage less money than SRI funds (408.81 mil vs. 515.00 mil). Third, the volatility of conventional and SRI funds is similar (3.49% for

conventional and 4.05% for SRI). Fourth, SRI has a higher management fee (1.61%) than conventional funds (0.83%).

After analyzing the average monthly return of SRI funds with general conventional mutual funds, we apply propensity-score-matching method to avoid the problem of comparing funds with significant different fundamentals. Table 4 presents the results of various comparisons between a SRI fund and its matching conventional fund.

Table 4: The Comparison between Propensity-Score-Matched Conventional Funds and SRI Funds on Various Measures

Variable	Matched	SRI	Difference (t value)
Alpha (%)	-0.17	-0.06	-0.11(-2.08)**
Mret (%)	0.38	0.28	0.10(2.93)***
Mtna (mil)	489.56	537.21	-47.65(-1.04)
Fundflow	0.16	0.15	0.01(1.21)
Stdmret (%)	3.52	4.05	-0.53(-0.91)
Mgmt_fee (%)	0.94	1.53	-0.49 (-1.88)*

*This table shows the comparison between propensity-score-matched conventional funds and SRI funds on various measures. Alpha presents α from Fama-French-Carhart Model. Mret is the average monthly return. Avg6mret is the average return of past 6 month. Mtna is monthly total net asset. Fundflow is the fund flow. Stdmret is the standard deviation of past six month returns. Mgmt_fee is average monthly management fee. Matched stands for the propensity-score-matched conventional funds. t value is from a paired t test. *, **, and *** indicate 10%, 5%, and 1% significant level, respectively.*

Our propensity-score-matching method is able to identify a matched conventional fund for over 95% SRI funds through every month in 1999 to 2009. Therefore, the results of SRI funds in Table 3 are very close to the results in Table 4, but they are not identical due to the sample size difference. In Table 4, we observe that average alpha for matched conventional funds -0.17% and -0.06% for SRI funds. The difference -0.11% is significant at 5%. This result is consistent with the comparison to general conventional funds as shown in Table 3. The average monthly return over the time period of SRI funds is 0.28%, while the average for matched conventional funds is 0.38%. The difference of 0.10% is significant at 1% level. It suggests that conventional funds with similar firm characteristics have a higher average monthly return than SRI funds. This finding is also consistent with the results in Table 3.

We also report the comparisons between other firm characteristics. The monthly total net asset, fund flow, and standard deviation of past six month returns are quiet close between SRI and matched funds. However, the management fee of SRI is still higher than matched conventional funds by 0.49% at 10% significant level. These results are expected because the propensity-matching-method is match SRI and conventional funds on these categories. The results provide evidence that our propensity matching method indeed identifies the similar conventional funds. It assures our results are robust.

As mentioned in the introduction, different SRI screening criteria may have different impacts on SRI funds returns. To address this concern, we conduct the comparison analyses for each screening category. Table 5 reports the results of abnormal return and average monthly return for both SRI and propensity-score-matched conventional funds for social, environmental, products, and governance category.

Risk-adjusted return (α), average monthly return (Mret), the difference and associated t value (paired t test) are presented in Table 5. For risk-adjusted returns, we find that SRI funds outperform matched conventional funds by 0.09% in social category and it is significant at 1% level. The risk-adjusted returns (α) are similar between SRI and matched conventional funds in environmental and products category. The SRI funds also outperform matched conventional funds in governance category by 0.05% at 10% significant level (close

to 5%). In the comparison of average monthly return, matched conventional funds outperform SRI funds with on three screening criteria, namely, products (by 0.18% at 1% level), governance (0.05% at 10% level), and environmental (by 0.18% at 1% level).

Table 5: The Comparison between Propensity-Score-Matched Conventional Funds and SRI Funds on Fund Returns for Different Screening Criteria

		Social	Environmental	Products	Governance
Alpha	SRI	-0.07	-0.05	-0.06	-0.13
	Conventional	-0.16	-0.12	-0.14	-0.18
	Difference (t value)	0.09*** (2.78)	0.07 (1.44)	-0.08 (-1.01)	0.05* (1.94)
Mret	SRI	0.34	0.20	0.35	0.25
	Conventional	0.37	0.38	0.51	0.30
	Difference (t value)	-0.03 (-0.56)	-0.18*** (-3.05)	-0.16** (-2.13)	-0.05* (-1.78)

*This table shows the comparison between propensity-score-matched conventional funds and SRI funds on fund returns for different screening criteria. Alpha presents α from Fama-French-Carhart Model. Mret is the average monthly return. Matched stands for the propensity-score-matched conventional funds. t value is from a paired t test. *, **, and *** indicate 10%, 5%, and 1% significant level, respectively.*

CONCLUDING COMMENTS

This paper studies the impact of social responsible investing on mutual fund performance. In this study, we apply propensity-score-matching method to identify the most comparable conventional fund to each SRI fund based on several important fund level characteristics. This method is able to minimize the errors due to comparison among firms with significantly different fund fundamentals. Our study produces mixed results. First, we find evidences to support the hypotheses that SRI funds would underperform conventional funds. Our results show that SRI funds have a lower average monthly return compared to either general conventional funds or propensity-score-matched conventional funds. Second, the risk-adjusted return of SRI funds is found to outperform general conventional funds and propensity matched conventional funds.

We further analyze the impact of different screening criteria on SRI funds return. We find that the superior performance of conventional funds on average monthly return is found in the funds screened using criteria in environmental, products, and governance category, while the superior risk-adjusted return of SRI funds is found in the funds with social and governance screening category.

Overall, our results suggest that the impact of SRI on fund returns depends how the return is measured. The results suggest that the superior performance of conventional funds can be largely explained by these well-known risk factors. After adjusted for these risk factors, SRI funds show a superior return performance. We also find that the impact of SRI on fund returns is dependent on screening criteria. This paper contributes to the literature by examining the effect of socially responsible investing on fund returns in a long time period (1999 to 2009) using the more elaborated multi-factor model. In addition, we apply the popular propensity-score-matching method to ensure our study more robust. Our results would provide valuable information for market participants and researchers who are interested in socially responsible investments. We would suggest the further directions on this topic to explore other types of SRI investments and include more controls, such as transaction cost, etc., for a more comprehensive study when data are available.

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16

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PERFORMANCE OF FINANCIAL HOLDING COMPANIES IN TAIWAN: AN APPLICATION OF NETWORK DATA ENVELOPMENT ANALYSIS

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ABSTRACT

In this paper, we adopt the network data envelopment analysis model in lieu of the multi-stage data envelopment analysis model to evaluate the operational efficiency of financial holding companies and their subsidiaries; the advantage of the network data envelopment analysis model is that it fully captures the synergies of cross selling undertaken by subsidiaries. In this study, conducted in 2012, we find synergistic effects associated with the merger of four financial holding companies, Hua Nan, Cathay, Shin Kong and First, with operational efficiency significantly better than that of other financial holding companies. We also find that banking and securities companies of financial holding companies have superior operational efficiency to investment trust companies and insurance companies. This paper suggests that investment trust companies, insurance companies and securities companies within financial holding companies should decrease their use of relevant inputs to improve efficiency.

INTRODUCTION

The "Financial Institutions Merger Act" was enacted in Taiwan on December 13, 2000. Subsequently, on June 28, 2001, referring to the American "Glass-Steagall Act (GLS)", the "Financial Holding Company Act" was passed, allowing for the establishment of Financial Holding Companies (FHCs). This act approved cross-sector business within the financial industry, with the goal of improved business integration and increased customer satisfaction through one-stop shopping that achieves economies of scope and synergy. In addition, through a distribution system based on network connections, low cost and multiple products can be enjoyed, facilitating the gradual development of large financial institutions in Taiwan (as "the big ones get bigger") and increasing the global competitiveness of the Taiwanese financial industry. FHCs have enabled increased integration of such industries as banking, insurance, and securities firms, in addition to other financial industries, through mergers and acquisitions (M&A), expanding the scale of these businesses and improving their competitiveness. Moreover, when there is external competition, FHC subsidiaries provide an advantage by satisfying customers' diverse demands through cross selling, thereby boosting the firm's overall effectiveness. In recent years, Taiwan's FHCs, led by banking, securities, and life insurance companies, have engaged in both vertical and horizontal diversification in Taiwan's financial market (Zhao & Luo, 2002). From 2001 to 2013, 16 FHCs have been established: Hua Nan, Fubon, Cathay, China Development, SinoPac, China Trust, First, E. Sun, Fuh Hwa, Mega, Taishin, Shin Kong, JihSun, Waterland, Taiwan Financial and Taiwan Cooperative.

Mergers of FHCs, however, are not easy. Integration following a merger first requires integration of organizational culture and new value creation. Previous studies investigating the operational efficiency of the financial industry have widely employed data envelopment analysis (DEA). In particular, many scholars have applied two-stage DEA to Taiwan's FHCs in studying the effects of industry diversification on profitability and efficiency (Lo & Lu, 2006; Sheu, Lo & Lin (2006). Chao, Yu and Chen (2010), however,

argue that two-stage DEA is not appropriate and instead adopt a multi-activity data envelopment analysis (MDEA) to measure the performance of FHCs. In the above-cited literature, the conventional CCR or BCC model of DEA is utilized to obtain efficiency values for different firms. As such values turn out to be 1 for many decision making units (DMUs), such analyses provide no basis for further differentiation. Yen, Yang, Lin, and Lee (2012) use the super SBM efficiency model to resolve this problem and, employing a two-stage DEA, provide management information during production. Nevertheless, the multi-stage super SBM efficiency model cannot show the synergies of FHCs generated by resource complementarity and supported by banking, securities, life, property and casualty insurance, and investment advisory subsidiaries working together through cross selling. This deficiency of the above-cited literature motivates the present study, which investigates the synergies generated within FHCs and evaluates the overall business performance of FHCs.

We thus employ a network DEA to investigate the business performance of FHCs in Taiwan. The purpose of the study is to examine whether the operational efficiency FHCs improves after an M&A or decreases, due to the diversification of the business or the enlargement of the organization. Next, we examine the cross-selling efficiency of Taiwan's FHCs, evaluating and comparing that of each individual FHC and making suggestions for future efficiency improvements. The paper is organized as follows. Chapter 2 provides a literature review. Chapter 3 presents our research design. Chapter 4 analyzes our empirical findings. Finally, Chapter 5 concludes and offers suggestions.

LITERATURE REVIEW

Studies of the factors behind performance often measure performance from a financial viewpoint, using accounting-based and market-based performance measures. Accounting-based measures emphasize such financial metrics as return on assets (ROA), return on equity (ROE) and return on investment (ROI) to assess a company's past performance (Murphy & Zimmerman, 1993; Denis & Denis, 1995). One disadvantage of this method is that it utilizes calculations based on previous accounting information and is thus subject to a time error in estimating current performance. Another disadvantage is that accounting information is subject to the administering authority and is not objective. Market-based measurements, however, offer timely reflections of the entire market's expectations of a company's future profits as well as the market's judgment of a company's overall value. Nevertheless, these measurements are susceptible to non-company factors, such as price interference. Hence, both methods have merits and demerits. To address these difficulties, some scholars have integrated numerous indexes (including accounting-based and market-based) (Gomez-Mejia, Tosi, Hinkin, 1987). Berger, Hunter, and Timme (1993) observe that the DEA model is a performance measurement index that can handle multiple inputs and outputs, maintain unit invariance and resist the influence of subjective factors on weighting, thus providing an excellent composite index of efficiency.

As the traditional one-stage DEA does not fully reflect management information during production, Seiford and Zhu (1999) first use the two-stage DEA to analyze the profitability and marketability of 55 American banks. Taiwan's financial holding companies have not been long established, and there is little analysis of the operational efficiency of financial holding companies using two-stage DEA. Lo and Lu (2006), using a two-stage DEA, focus on 14 of Taiwan's FHCs in 2003. In the first stage, they use as inputs employees, assets and shareholders' equity and as outputs revenue and profit. In the second stage, marketability is measured, with the outputs of the first stage becoming the inputs (i.e., revenue, profit); the outputs of the second stage are then market value, share price and earnings per share. The research shows that larger FHCs have better operational efficiency than smaller ones. In addition, FHCs based on life insurance show stronger business performance than those based on banks and securities firms. Sheu et al. (2006) adopt the conventional two-stage DEA analysis, finding that FHCs with low diversification have superior profit efficiency to those with high diversification, while financial holding companies with related diversification have greater profit efficiency than those with unrelated diversification. The traditional DEA model was

adopted in most of the above studies. However, when several DMUs have an efficiency value of 1, sequencing is impossible. According to Chao et al. (2010), FHCs are characterized by different production activities, and thus it is improper to use the traditional DEA. Instead, they utilize MDEA to measure the performance of a multidivisional structure within FHCs. However, not all FHCs simultaneously include banks, securities firms, insurance companies, investment trusts and investment advisory subsidiaries, and few FHCs conform to the definition set forth by Chao et al.

Lin, Yen and Yang (2012) use a one-stage DEA to analyze the operational efficiency of all FHCs together with the co-plot method to present the dynamic relationships among FHC variables over time; they classify the leading and lagging groups on a two-dimensional graph. Yen et al. (2012) use the super SBM efficiency model to address the issue of multiple DMUs having an efficiency of 1, using a two-stage DEA that can incorporate management information during production, and observe dynamic changes of FHCs, using a two-dimensional co-plot graph. Yang and Lee (2013) use the three-stage Malmquist index to determine efficiencies in marketing, operations and profit of Taiwanese FHCs and use co-plot analysis to illustrate the strategic group development of Taiwan's FHCs in a two-dimensional graph. Ho and Lin (2012) divide the production activities of Taiwan's FHCs into four categories - marketing efficiency, operational efficiency, profit efficiency and market efficiency - using a four-stage DEA.

The models used in the analysis include tradditional DEA, Andersen and Petersen, and slack-based measures, together with a slack-based measure of super-efficiency. Because too many models were used, no conclusions could be drawn from the empirical results. The above literature was unable to show any network efficiencies that may have resulted from cross-selling among banks, securities firms, life insurance companies, property and casualty insurance companies, and investment advisory subsidiaries of FHCs. In the traditional one-stage DEA model or multi-stage DEA model, the black box hides the processes by which inputs are distributed to the production of various outputs and thus constrains the analyst's ability to measure efficiency. Through use of a network DEA model, this paper makes the black box visible, so that the performance of the entire organization and of all production activities within the organization can be evaluated (Färe & Grosskopf, 2000).

METHODOLOGY

The overall operational performance of FHCs is found to relate significantly to that of several of their subsidiaries. We find that FHCs have four principal subsidiaries: investment trusts, life insurance companies, securities firms and banks. Each subsidiary uses its resources to produce outputs. At the same time, there is a tie-up activity or intermediate product; the essential tie-up activity in all subsidiaries is cross selling. In the conventional DEA model, each activity involves only one input or output; thus, the conventional model cannot handle tie-up activities or intermediate products. The network DEA model, unlike the traditional DEA model, allows for an evaluation of cross-sectional efficiency within an organization; through the network DEA model, a comprehensive measure of efficiency can thus be obtained. The network DEA framework associated with FHCs is shown in Figure 1.

In Taiwan, there are 16 FHCs, shown as Table 1. To capture network efficiencies achieved through cross selling among subsidiaries of FHCs, we selected for our sample companies that simultaneously own an investment trust company, a life insurance company, a securities firm and a bank. The 12 FHCs were excluded. The sampled firms include Hua Nan (HN), Fubon (FB), Cathay (CA), Chinatrust (CT), Shin Kong (SK), Mega (MG), First (FI) and Taiwan Cooperative (CO), and the study was conducted in 2012. Data were gathered from the databases of the Taiwan Economic Journal (TEJ), the Securities Investment Trust & Consulting Association of the R.O.C., the Taiwan Stock Exchange Corporation and the public websites of each FHC.
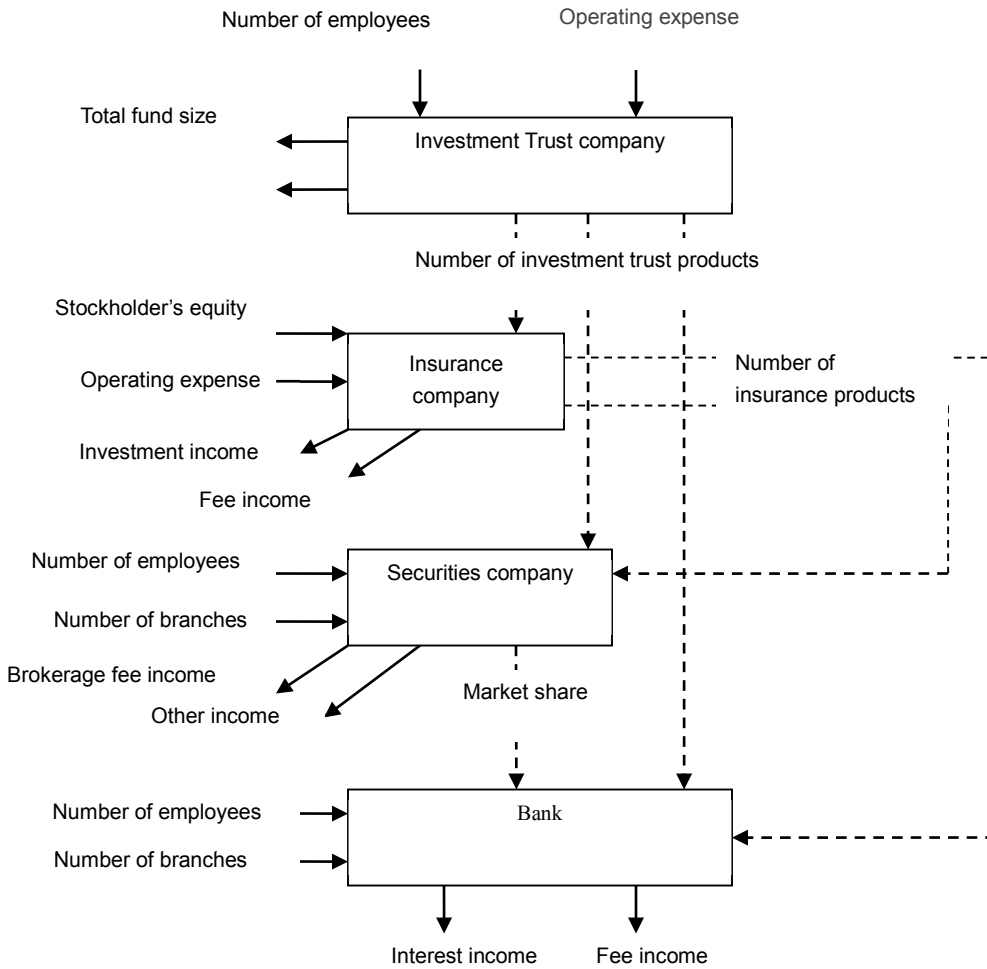
Figure 1: Network DEA Framework

Figure 1 shows FHCs have four principal subsidiaries: investment trusts, life insurance companies, securities firms and banks. Each subsidiary uses its resources to produce outputs.

Selection and Definition of Variables

We define an FHC as an intermediary institution that offers financial services, i.e., as an intermediator that transfers financial resources rather than a producer of goods and services (Isik & Hassan, 2002; Bonin, Hasan & Wachtel, 2005). Inputs and outputs are identified based on a literature review, while intermediate outputs are identified based on expert interviews. All the experts interviewed believe that the cross-selling performance of subsidiaries of financial holding companies can be regarded as a synergy index for the industry. As inputs of an investment trust, the study uses the number of employees and operating expenses; as outputs, it uses fund size and the number of fund beneficiaries (Yen & Yang, 2013). Funds issued by the investment trust company are sold via subsidiaries of an FHC; thus, the number of fund products is the intermediate product, cross sold by the investment trust company, the life insurance company, the securities company and the bank.

For a life insurance company, stockholder's equity and operating expenses are the inputs; investment income and premium income are the outputs (Wang, Peng, & Chang, 2006; Lu, Wang & Lee, 2011). As a distribution channel, aside from the insurance company itself, its products are sold through two channels:

securities companies and banks; therefore, the number of insurance products is the intermediate product cross sold by the life insurance company, the securities company and the bank. The number of employees and the number of branches are the inputs for securities companies, while the brokerage fee revenue and other operating revenue are the outputs (Lee & Wang, 2007; Liao, 2012). As a client opens an account in a securities company and finances one's stock trading, increasing the interest income of the bank, market share is the intermediate product between securities companies and banks.

Table 1:   Members of FHCS

FHC	Members	Established
Hua Nan	Hua Nan Bank, Hua Nan Securities, Hua Nan Assets Management, Hua Nan Venture Capital, South China Insurance, Hua Nan Investment Trust, Hua Nan Management and Consulting	2001/11/28
Fubon	Taipei Fubon Bank, Fubon Life Insurance, Fubon Insurance, Fubon Securities, Fubon Securities Investment Services, Fubon Marketing, Fubon Financial Holding Venture Capital, Fubon Venture Capital Management, Fubon Bank (Hong Kong), Fubon Asset management, Luck Color Technology	2001/12/19
China Development	China Development Industrial Bank, Grand Cathay Securities, KGI Securities	2001/12/28
Cathay	Cathay Life Insurance, Cathay United Bank, Cathay Century Insurance, Cathay Securities, Cathay Pacific Venture Capital, Cathay Securities Investment Trust	2001/11/27
Chinatrust	CTBC Bank, CTBC life, CTBC Insurance Brokers, CTBC Securities, CTBC Capital, CTBC AMC, CTBC Security, Taiwan Lottery, CTBC Investment	2002/05/17
SinoPac	Bank SinoPac, SinoPac Securities, SinoPac Leasing, SinoPac Capital Management, SinoPac Venture Capital, SinoPac Secturities Investment Trust, SinoPac Information Services	2001/11/28
E.Sun	E.Sun Bank, E.Sun Securities, E.Sun Venture Capital, E.Sun Insurance Brokers	2002/01/28
Yuanta	Yuanta Bank, Yuanta Securities, Yuanta Securities Finance, Yuanta Investment Consulting, Yuanta Futures, Yuanta Venture Capital, Yuanta Asset Management, Yuanta Financial Consulting	2002/02/04
Taishin	Taishin Bank, Taishin Securities, Taishin Investment Consulting, Taishin Investment Trust, Taishin Venture Capital, Taishin Marketing Consultant, Taishin Asset Management, Chang Hwa Bank, Taishin Securities Investment Trust	2001/12/31
Shin Kong	Shin Kong Bank, Shin Kong Life Insurance, Shin Kong Investment Trust, Shin Kong Insurance Brokers, Shin Kong Venture Capital, Masterlink Securities Corporation	2002/02/19
Mega	Mega Bank, Chung Kuo Insurance, Mega Securities, Mega International Investment Trust, Mega Asset Management, Mega Bills	2001/12/31
First	First Bank, First P&C Insurance Agency, First-Aviva Life Insurance, First Securities, First Venture Capital, First Financial AMC, First Securities Investment Trust, First Consulting	2001/12/31
Jih Sun	Jih Sun Securities, Jih Sun Bank, Jih Sun Futures, Jih Sun Securities Investment Consulting, Jih Sun International Property Insurance Agency, Jih Sun Life Insurance Agency, Jih Sun Technology Management Consulting, Jih Sun Cresvale Financing, Jih Sun Financial Services, Jih Sun International Investment Holdings	2001/12/31
Waterland	Waterland Securities, International Bills, Waterland Venture Capital, Waterland Securities Investment Consulting, Waterland Futures, Paradigm Asset Management	2002/03/26
Taiwan	Bank of Taiwan, Bank Taiwan Life Insurance, Bank Taiwan Securities, Bank Taiwan Insurance Brokers	2007/12/06
Taiwan Cooperative	Taiwan Cooperative bank, Co-operative Asset Management Corp, Taiwan Cooperative Securities, Taiwan Cooperative Bills Finance Corporation, BNP Paribas TCB Life, BNP Paribas TCB Asset Management.	2011/12/01

Table 1 shows the subsidiaries of each FHC and the date of establishment. Hua Nan (HN), Fubon (FB), Cathay (CA), Chinatrust (CT), Shin Kong (SK), Mega (MG), First (FI) and Taiwan Cooperative (CO) simultaneously own an investment trust company, a life insurance company, a securities firm and a bank. Source: arranged in the study from website of each FHCs

The number of employees and the number of branches are the inputs for banks, while interest income and fee income are the outputs (Chen, Chiu & Huang, 2010). The above definitions of inputs and outputs are listed in Table 2.

Network DEA Model

Färe, Grosskopf and Whittaker (2005) argue that a production process is a network constructed out of many subordinate production technologies; such a network is not included in the conventional DEA model. Thus, in the present paper, we propose a network DEA model. The production process is divided into parts, using several sub-production technologies as sub-DMUs; the CCR and BCC models or the non-increasing returns to scale (NIRS) model without weight constraints are adopted to obtain the most suitable solution. The

weighted slack-based measures network DEA, suggested by Tone and Tsutsui (2007), comprehensively tests the performance relationships between divisions of an organization as the basis for network DEA model analysis.

Table 2: Definition of Variables

DMU	Input/Output	Variable	Description	Unit	Source
Investment trust company	Input	Number of employees	Total number of employees hired in a year	person	TEJ
		Operating expense	Expenses by division of the enterprise, including marketing, management and R&D in a defined period of time	million	TEJ
	Output	Fund size	Total assets of fund issued and managed by investment trust company	million	Securities Investment Trust & Consulting Association of The R.O.C.
		Number of fund beneficiaries	Total beneficiaries of fund issued and managed by investment trust company	person	Securities Investment Trust & Consulting Association of The R.O.C.
Life insurance company	Input	Stockholder's equity	Total assets – liabilities	million	TEJ
		Operating expense	Expenses by division of the enterprise, including marketing, management and R&D in a defined period of time	million	TEJ
	Output	Investment income	Economic benefit gained from investment by the life insurance company	million	TEJ
		Fee income	Income received by the life insurance company from the sale of insurance	million	TEJ
Securities company	Input	Number of employees	Total number of employees hired in a year	person	TEJ
		Number of branches	Total number of branches throughout the country	company	Taiwan Stock Exchange Corporation
	Output	Brokerage fee income	Revenue of brokers commissioned to trade and process short sales and securities lending as well as to trade OTC as an agent	million	TEJ
		Other income	Revenue other than brokerage fee income	million	TEJ
Bank	Input	Number of employees	Total number of employees hired in a year	bank	TEJ
		Number of branches	Total number of branches throughout the country	bank	Bank website
	Output	Interest income	Interest income, including deposit interest, loan interest, debenture interest, interest arrears and so on, gained by bank from lending funds to others	million	TEJ
		Fee income	Fee charged for the sale of financial products	million	TEJ
Intermediate production		Number of fund products	Total number of fund products issued and managed by the investment trust company	production	Securities Investment Trust & Consulting Association of the R.O.C.
		Number of insurance products	Total number of insurance products sold by the life insurance company	production	Company website
		Market share	The ratio of the operating revenue of securities company to the overall operating revenue of the industry	%	Taiwan Stock Exchange Corporation

The Table 2 shows the definitions of inputs, outputs and intermediate production.

The study employs the weighted slack-based measures network DEA in a vertically integrated model proposed by Tone and Tsutsui (2009). Suppose there are K associated companies in an FHC $_{(k=1,...,K)}$, with n decision making units (DMUs) (j=1,…,n). mk and rk represent, respectively, the inputs and outputs of the K companies. The correlation between company k and company h is indicated by (k,h), and L denotes the set of connections. Thus, $\{X_j^k \in R_+^{m_k}\}_{(j=1,...,n; k=1,...,K)}$ indicates the inputs of company k to DMU$_j$; $\{Y_j^K \in R_+^{\gamma_k}\}_{(j=1,...,n; k=1,...,K)}$ indicates the outputs of company k to DMU$_j$; $\{Z_j^{(k,h)} \in R_+^{t_{(k,h)}}\}_{(j=1,...,n; (k,h) \in 1,...,K)}$ indicates the correlation between company k and company h. t(k,h) indicates the number of terms connecting companies k and h. Accordingly, the set $\{(X^k,Y^k,Z^{(k,h)})\}$ is defined as follows:

$$X^k \geq \sum_{j=1}^{n} X_j^k \lambda_j^k \quad \text{\scriptsize (j=1,...,n; k=1,...,K),}$$

$$Y^k \leq \sum_{j=1}^{n} Y_j^k \lambda_j^k \quad \text{\scriptsize (j=1,...,n; k=1,...,K),}$$

$$Z^{(k,h)} = \sum_{j=1}^{n} Z_j^{(k,h)} \lambda_j^k \quad (\forall(k,h)) \quad \text{, input of company k} \tag{1}$$

$$Z^{(k,h)} = \sum_{j=1}^{n} Z_j^{(k,h)} \lambda_j^h \quad (\forall(k,h)) \quad \text{, output of company h}$$

$$\sum_{j=1}^{n} \lambda_j^k = 1_{(\forall k)} \ , \ \lambda_j^k \geq 0_{(\forall j,k)}$$

in which $\lambda^k \in R_+^n$ is the relative vector of company k $_{(k=1,...,K)}$. It should be noted, from the above equation, that the production process is characterized by variable returns to scale (VRS). However, when the final constant $\sum_{j=1}^{n} \lambda_j^k = 1_{(\forall k)}$ is deleted, constant returns to scale (CRS) are obtained. Accordingly, DMU $_{(O=1,...,n)}$ is established and shown in equations (2):

$$X_o^k = X^k \lambda^k + S^{k-} \quad \text{\scriptsize (k=1,...,K)} \ ,$$

$$Y_o^k = Y^k \lambda^k - S^{k+} \quad \text{\scriptsize (k=1,...,K)} \ ,$$

$$\sum \lambda^k = 1 \quad \text{\scriptsize (k=1,...,K)} \ , \tag{2}$$

$$\lambda^k \geq 0, S^{k-} \geq 0, S^{k+} \geq 0, (\forall k),$$

$$X^k = (X_1^k, \cdots, X_n^k) \in R^{m_k \times n},$$

$$Y^k = (Y_1^k, \cdots, Y_n^k) \in R^{\gamma_k \times n},$$

$$S^{k-}(S^{K+}) \text{ is the open vector of inputs (outputs)}$$

Considering a decrease in the input cost as an increase in economic efficiency, the network DEA model in this paper is established as an input-oriented constant returns to scale model.

Expert Interviews and AHP Results

Saaty (1980) developed the Analytic Hierarchy Process (AHP), a method of analyzing complex decisions involving multiple goals and criteria. This method sorts complicated and unstructured issues into component parts, which are ranked, while opinions from experts, scholars and all levels participating in decision making are gathered to simplify the complex system into a precise factor level system. In addition, pair-wise comparisons between factors are made at each level, using a nominal scale, to establish a pairwise comparison matrix and thus obtain the eigenvector of the matrix, which is taken as the priority vector of the level, indicating its priority among all factors.

The relative weights for investment trust companies, insurance companies, securities companies and banks, shown in Table 3, are based on appraisals by experts, who are senior, practiced executives at the management level. An AHP evaluation, using the software Expert Choice, is conducted to obtain the weights for the subsidiaries of financial holding companies. The calculated weights are 0.098 for investment trusts, 0.247 for insurance companies, 0.190 for securities firms and 0.465 for banks.

RESULTS AND DISCUSSIONS

An input-oriented constant returns to scale model, such as the Network-DEA of DEA-Solver Pro 7.1, is used to determine the overall efficiency of FHCs together with their efficiency rankings indicated in Table 4. The returns to scale of the investment trust companies, insurance companies, securities companies and

Table 3:   Expert Group

Expert	Service Unit	Number of Brokers Served	Experience In Financial Industry (Years)
Mr. A	Auditor General of a financial broker	2	10
Mr. F	Vice President of a life insurance broker under financial holding	4	5
Ms. J	Wealth Manager of a bank under FHCs	1	10
Mr. C	Senior professional of an investment trust company	1	5
Ms. W	Senior banker of a bank	1	9

Table 3 shows the background of experts.

banks are shown in Tables 5, 6, 7 and 8, respectively. As shown in Table 4, the overall average efficiency of FHCs is 0.960, while that of investment trust companies is 0.867, that of insurance companies is 0.917, that of securities companies is 0.966 and that of banks is 1. Thus, banks are the most efficient subsidiaries of FHCs, while investment trust companies are the least. Among FHCs, it is found that Hua Nan, Cathay, Shin Kong and First have an efficiency value of 1, indicating that these FHCs are relatively efficient in their overall operations. In addition, it is clear that Fubon and Chinatrust should improve the operational efficiency of their investment trust companies; Mega should improve the operational efficiency of its insurance company; and Taiwan Cooperative should improve the operational efficiencies of its investment trusts, insurance companies and securities firms.

Table 4: Overall Efficiency of the FHCS and Their Efficiency Ranking

DMU	Overall		Investment Trust		Life Insurance		Securities		Bank	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
HN	1	1	1	1	1	1	1	1	1	1
FB	0.984	5	0.835	6	1	1	1	1	1	1
CA	1	1	1	1	1	1	1	1	1	1
CT	0.957	6	0.557	7	1	1	1	1	1	1
SK	1	1	1	1	1	1	1	1	1	1
MG	0.922	7	1	1	0.684	7	1	1	1	1
FI	1	1	1	1	1	1	1	1	1	1
CO	0.818	8	0.540	8	0.651	8	0.731	8	1	1
Average	0.960		0.867		0.917		0.966		1	
Max	1		1		1		1		1	
Min	0.818		0.540		0.651		0.731		1	
St Dev	0.064		0.205		0.154		0.095		0	

Table 4 shows efficiency score of FHCs, investment trust companies, insurance companies, securities companies and banks.
Note: Hua Nan (HN), Fubon (FB), Cathay (CA), Chinatrust (CT), Shin Kong (SK), Mega (MG), First (FI), Taiwan Cooperative (CO)

As shown in Table 5, the average overall efficiency of investment trust companies is 0.867, lower than that of financial holding companies as a whole, at 0.960. An analysis of investment trust companies reveals that those of Hua Nan, Cathay, Shin Kong, Mega and First have an efficiency value of 1, indicating that these investment trust companies are relatively efficient in their operations. Fubon, Chinatrust and Taiwan Cooperative are all characterized by decreasing returns to scale and hence should decrease their relevant inputs to increase efficiency. Specifically, Fubon Investment Trust should reduce its employees by 4.29% and its operating expenses by 28.65%; Chinatrust's investment trust company should reduce its employees by 49.02% and its operating expenses by 39.57%; and Taiwan Cooperative investment trust company should reduce it employees by 29.41% and its operating expenses by 62.36%.

It is evident in Table 6 that the overall efficiency of insurance companies averages 0.917, less than that of FHCs, at 0.960. The insurance companies of Hua Nan, Fubon, Cathay, Chinatrust, Shin Kong and First all show an efficiency value of 1, indicating that these insurance companies are relatively efficient in their operations. Mega and Taiwan Cooperative are characterized by decreasing returns to scale and thus should decrease their relevant inputs to improve efficiency. Specifically, Chung Kuo Insurance should reduce its stockholder's equity by 51.18% and its operating expenses by 12.05%; and Taiwan Cooperative's insurance company should reduce its stockholder's equity by 50.17% and its operating expenses by 19.56%.

Table 5: Returns to Scale for Investment Trust Companies within FHCS

DMU	Overall	Divisional	(I) Employee		(I) Operating expense		(O) Fund size		(O) Beneficiary	
	Score	Score	Data	Change (%)	Data	Change (%)	Data	Change (%)	Data	Change (%)
HN	1	1	78	0	194,373	0	36,362,344,147	0	11,989	0
FB	0.984	0.835	162	-4.29	512,720	-28.65	65,127,484,347	24.86	49,225	0
CA	1	1	230	0	800,902	0	88,994,897,957	0	119,440	0
CT	0.957	0.557	72	-49.02	151,373	-39.57	2,135,137,799	701.43	4,174	35.17
SK	1	1	104	0	185,360	0	24,028,435,147	0	29,057	0
MG	0.922	1	88	0	213,817	0	74,856,881,444	0	25,331	0
FI	1	1	153	0	358,341	0	81,399,437,126	0	51,837	0
CO	0.818	0.540	39	-29.41	183,575	-62.63	6,042,966,612	112.38	31	13549.72
Ave.	0.960	0.867	115.8	-10.34	325,058	-16.356	47,368,448,072	104.834	36,386	1698.111
Max	1	1	230	0	800,902	0	88,994,897,957	701.43	119,440	13549.72
Min	0.818	0.5340	39	-49.02	151,373	-62.63	2,135,137,799	0	31	0
St Dev	0.064	0.205	61.78	18.6356	227,378	24.4041	34,603,065,900	244.169	38,604	4788.789

Table 5 shosw the efficiency score of investment trust companies within FHCs Note: Hua Nan (HN), Fubon (FB), Cathay (CA), Chinatrust (CT), Shin Kong (SK), Mega (MG), First (FI), Taiwan Cooperative (CO)

Table 7 shows that the overall efficiency of securities companies averages 0.966, above that of the average of FHCs as a whole. The securities companies of Hua Nan, Fubon, Cathay, Chinatrust, Shin Kong, Mega and First show an efficiency value of 1, indicating that these securities companies are relatively efficient in their operations.

Table 6: Returns to Scale for Insurance Companies within FHCS

Dmu	Overall	Divisional	(I) Stockholder's Equity		(I) Operating Expense		(O) Investment Income		(O) Fee Income	
	Score	Score	Data	Change (%)	Data	Change (%)	Data	Change (%)	Data	Change (%)
HN	1	1	3,135,691	0	1,061,918	0	69,277	0	4,219,464	0
FB	0.984	1	165,649,065	0	13,157,079	0	32,330,974	0	392,295,243	0
CA	1	1	135,273,284	0	16,134,194	0	40,020,777	0	443,353,808	0
CT	0.957	1	15,516,158	0	1,240,318	0	1,557,411	0	40,864,740	0
SK	1	1	51,002,553	0	12,851,151	0	23,757,540	0	161,265,382	0
MG	0.922	0.684	4,895,188	-51.18	900,640	-12.05	75,872	3.86	3,428,047	0
FI	1	1	1,181,294	0	364,400	0	112,132	0	2,459,741	0
CO	0.818	0.651	5,922,597	-50.17	414,092	-19.56	427,644	25.71	8,454,908	0
Ave.	0.960	0.917	47,821,979	-12.6688	5,765,474	-3.9512	12,293,953	3.6962	132,042,667	0
Max	1	1	165,649,065	0	16,134,194	0	40,020,777	25.71	443,353,808	0
Min	0.818	0.651	1,181,294	-51.18	364,400	-19.56	69,277	0	2,459,741	0
St Dev	0.064	0.154	65,851,804	23.4595	6,932,624	7.5866	16,923,679	8.9969	184,684,895	0

Table 6 shows the efficiency score of insurance companies within FHCs. Note: Hua Nan (HN), Fubon (FB), Cathay (CA), Chinatrust (CT), Shin Kong (SK), Mega (MG), First (FI), Taiwan Cooperative (CO)

The only securities company showing decreasing returns to scale is Taiwan Cooperative Securities, which should thus decrease the relevant inputs to increase efficiency. Specifically, it should reduce its branches by 49.42% and its operating expenses by 4.45%. According to Table 8, the overall efficiency of banks averages 1, higher than that of FHCs as a whole (0.960). All banks show an efficiency value of 1, indicating that they are relatively efficient in their operations.

CONCLUSION

Prior literature has sought to analyze the efficiency of FHCs through two methods: multi-stage DEA, used to evaluate the overall performance of financial holding companies (Lo & Lu, 2006; Sheu et al., 2006; Yen et al., 2012; Ho & Lin, 2012); and multi-activity data envelopment analysis, used to measure the performance of FHCs individually (Chao et al, 2012). However, these tools cannot show synergies within FHCs generated by resource complementarity and by support from banking, securities, life insurance, property and casualty insurance, and investment advisory subsidiaries together with cross selling. In

addition, the DEA model has a black box that obscures how inputs are distributed to the production of various outputs. Ignoring interior production processes constrains the analyst's ability to measure efficiency. Unlike the traditional DEA model, the network DEA allows for an evaluation of cross-sectional efficiency within an organization; a comprehensive measure of efficiency can thus be obtained. Moreover, through use of a network DEA model, this paper illuminates the DEA's black box, enabling an evaluation of the performance of all subsidiaries within FHCs (Färe & Grosskopf, 2000). According to our results, Hua Nan, Cathay, Shin Kong and First are highly efficient (achieving an efficiency score of 1), indicating strong synergies among these firms following their merger. It is evident that banks and securities companies are more efficient in their operations than investment trust companies and insurance companies. In addition to measuring the overall efficiency of financial holding companies and their subsidiaries, the present study suggests that investment trust companies, insurance companies, and securities companies should decrease their relevant inputs to increase efficiency.

Table 7: Returns to Scale for Securities Companies within FHCS

Dmu	Overall	Divisional	(I) Branch		(I) Employee		(O) Brokerage Fee Income		(O) Other Income	
	Score	Score	Data	Change (%)	Data	Change (%)	Data	Change (%)	Data	Change (%)
HN	1	1	55	0	1,538	0	1,231,360	0	559,709	0
FB	0.984	1	61	0	2,211	0	2,433,417	0	900,387	0
CA	1	1	10	0	460	0	312,123	0	112,033	0
CT	0.957	1	9	0	349	0	199,469	0	84,438	0
SK	1	1	50	0	1,932	0	1,576,717	0	1,054,124	0
MG	0.922	1	46	0	1,522	0	1,180,719	0	821,218	0
FI	1	1	27	0	949	0	712,198	0	302,407	0
CO	0.818	0.731	12	-49.42	243	-4.45	187,108	15.19	79,892	1.18
Ave.	0.960	0.966	33.75	-6.1775	1,151	-0.5562	979,139	1.8988	489,276	0.1475
Max	1	1	61	0	2,211	0	2,433,417	15.19	1,054,124	1.18
Min	0.818	0.731	9	-49.42	243	-4.45	187,108	0	79,892	0
St Dev	0.064	0.095	21.7239	17.4726	757	1.5733	786,279	5.3705	398,557	0.4172

Table 7 shows the efficiency score of securities companies within FHCs. Note: Hua Nan (HN), Fubon (FB), Cathay (CA), Chinatrust (CT), Shin Kong (SK), Mega (MG), First (FI), Taiwan Cooperative (CO)

Table 8: Returns to Scale for Banks within FHCS

Dmu	Overall	Divisional	(I) Bank Branch		(I) Employee		(O)Fee Income		(O) Interest Income	
	Score	Score	Data	Change (%)	Data	Change (%)	Data	Change (%)	Data	Change (%)
HN	1	1	187	0	7,054	0	4,097,139	0	29,517,269	0
FB	0.984	1	99	0	6,631	0	7,371,771	0	23,866,767	0
CA	1	1	167	0	6,782	0	6,089,556	0	25,126,708	0
CT	0.957	1	117	0	9,824	0	17,566,381	0	31,948,652	0
SK	1	1	106	0	3,470	0	1,867,900	0	11,791,143	0
MG	0.922	1	108	0	5,308	0	6,618,410	0	36,258,347	0
FI	1	1	192	0	7,185	0	4,586,386	0	31,207,682	0
CO	0.818	1	321	0	8,533	0	3,426,050	0	45,667,799	0
Ave.	0.960	1	162.125	0	6,848	0	6,452,949	0	29,423,046	0
Max	1	1	321	0	9,824	0	17,566,381	0	45,667,799	0
Min	0.818	1	99	0	3,470	0	1,867,900	0	11,791,143	0
St Dev	0.064	0	74.5241	0	1,916	0	4,836,332	0	9,859,010	0

Table 8 shows the efficiency score of banks within FHCs. Note: Hua Nan (HN), Fubon (FB), Cathay (CA), Chinatrust (CT), Shin Kong (SK), Mega (MG), First (FI), Taiwan Cooperative (CO)

Limitations of the Study and Future Study

As not all FHCs have subsidiaries that include investment trusts, insurance companies, securities firms and banks, this study focuses on only eight FHCs: Hua Nan, Fubon, Cathay, Chinatrust, Shin Kong, Mega, First and Taiwan Cooperative. To obtain a more precise analysis of the entire financial holding industry, data from all FHCs should be investigated. In addition, according to the Network DEA model used in this study, the efficiency of many FHCs is very high, achieving a score of 1, which makes sequencing impossible. More precise and thorough analysis, without the above limitations, is left to future studies.

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A COMPARISON OF THE FINANCIAL CHARACTERISTICS OF HONG KONG AND SINGAPORE MANUFACTURING FIRMS

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ABSTRACT

In this paper, we compare the financial characteristics of Hong Kong and Singapore manufacturing firms with the MANOVA (Multivariate Analysis of Variance) technique. Our findings indicate that the liquidity, accounts receivable turnover, inventory turnover, total assets turnover, and equity ratios of manufacturing firms in Hong Kong and Singapore are not significantly different. However, the profitability ratios and annual sales growth rates of Hong Kong manufacturing firms are significantly higher than those of Singapore manufacturing firms. Manufacturing firms in Hong Kong also appear to have higher fixed assets turnover rates compared with their counterparts in Singapore. Our findings in this study provide valuable insights for financial managers and for investors who invest in Hong Kong and Singapore.

INTRODUCTION

Singapore and Hong Kong are highly successful free market economies. They are attractive to investors because of their location, government friendly policies towards business, a well-educated and trained workforce, and excellent infrastructure including major port facilities and top-ranked international airports. In 2012, The World Bank ranked Singapore "#1" and Hong Kong "#2" as far as "ease of doing business" worldwide.

Hong Kong is the third largest financial center of the world, offering investors a laissez faire business environment, a low tax rate, and transparency about government decision making policy. Their government is now considering a more structured approach for attracting investors, as its rival, Singapore seems to have perfected.

Building a globally competitive economy has been integral to Singapore's success. The government of Singapore has been proactive, invested resources, and deliberately intervened to create the economy they enjoy today. Singapore's is developing policy, the "Third Industrialization Revolution" to maintain and grow their global competitive advantage.

A comparison of the financial characteristics of manufacturing firms in Hong Kong and Singapore would be of interest to financial managers and to global investors who invest in these stock markets. The objective of this study is to make such a comparison with the multivariate analysis of variance (MANOVA) technique by using financial ratios.

Our paper is organized as follows: The next section reviews the previous literature. The following section explains our data and methodology. We present our empirical findings in the Results section. Our concluding comments are presented in the last section.

LITERATURE REVIEW

Detailed statistics about Hong Kong and Singapore economies can be found in www.cia.gov/worldfactbook. The accounting systems in Hong Kong and Singapore have been strongly influenced by Western Anglo-Saxon accounting, which is oriented toward the decision needs of market participants, is less conservative and more transparent, and emphasizes the fair presentation of financial information and full disclosure (Nobes, 1983).

Under today's trend towards the harmonization of accounting standards, both Hong Kong and Singapore have made a public commitment in support of moving towards a single set of high quality global accounting standards, and towards International Financial Reporting Standards (IFRSs) as that single set of high quality global accounting standards. Detailed information about Hong Kong and Singapore accounting systems can be found in Nobes (1983) and Doupnik and Perera (2009). Detailed information about the application of the International Financial Reporting Standards (IFRSs) in Hong Kong and Singapore can be found in IFRS Foundation (June 2013) and in Deloitte (www.iasplus.com).

Comparing the financial characteristics of different groups of firms has long been a popular methodology in finance. Multiple Discriminant Analysis (MDA) and Multivariate Analysis of Variance (MANOVA) are the two multivariate techniques that are most commonly used in previous studies to compare the financial characteristics of different groups of firms. Detailed information about the MDA and MANOVA techniques can be found in Marascuilo and Levin (1983) and Johnson and Wichern (2007).

In his pioneering study, Altman (1968) uses the MDA technique to compare the financial ratios of bankrupt and health firms to predict bankruptcy. In several subsequent studies, Beaver (1968), Deakin (1972), Edmister (1972), Moyer (1977), and Dambolena and Khoury (1980) also develop econometric models that predict bankruptcy by comparing the financial characteristics of bankrupt and non-bankrupt firms.

Stevens (1973), Belkaoui (1978), and Rege (1984) use the MDA technique to predict corporate takeovers by identifying the differences between the financial characteristics of firms that have been corporate takeover targets and those that have not been corporate takeover targets.

The MANOVA technique has been used in several studies to compare the financial characteristics of different groups of firms. Meric at al. (1991) identify the financial characteristics of banks that have been targets in interstate bank acquisitions by comparing them with banks that have not been targets in interstate bank acquisitions. Hutchinson at al. (1988) and Meric and Meric (1992) identify the financial characteristics of firms which achieve stock market quotation by comparing them with firms that do not have stock market quotation. Meric at al. (2000) compare the financial characteristics of Japanese *keiretsu*-affiliated and independent firms to identify the financial characteristics of *keiretsu*-affiliated firms.

A number of studies compare the financial characteristics of firms in different countries. Kester (1986) and Wald (1999) compare the capital and ownership structures of firms in different countries and they find significant differences. Meric and Meric (1989 and 1994) compare the financial characteristics of U.S. and Japanese manufacturing firms and they find significant differences. Meric et al. (2003) find significant differences between the financial characteristics of U.S. and Canadian manufacturing firms. Meric et al. (2002) find significant differences between the financial characteristics of U.S., E.U., and Japanese manufacturing firms.

METHODOLOGY AND DATA

In this study, we use the MANOVA technique to compare the financial characteristics of Hong Kong and Singapore manufacturing firms. Financial ratios are generally used in empirical studies to compare the financial characteristics of different groups of firms. The financial ratio data used in this study were obtained from the 'Research Insight/Global Vintage' database from the year-end financial statements of the firms for the year 2012.

Manufacturing industries with SIC codes between 2000-3999 are included in the study. Our research sample consists of 177 Hong Kong and 252 Singapore manufacturing firms with no missing financial data in the database. We use the financial ratios presented in Table 1 in our comparisons.

Table 1: Financial Ratios Used in the Study as Measures of Firm- Financial Characteristics

Financial Ratio Name	Financial Ratio Definition
Liquidity	
Current Ratio (CR)	Current Assets / Current Liabilities
Quick Ratio (QR	(Current Assets - Inventories) / Current Liabilities
Asset Management (Turnover) Ratios	
Accounts Receivable Turnover (ART)	Sales / Accounts Receivable
Inventory Turnover (INT)	Sales / Inventory
Fixed Assets Turnover (FAT)	Sales / Net Fixed Assets
Total Assets Turnover (TAT)	Sales / Total Assets
Financial Leverage	
Equity Ratio (EQR)	Common Equity/Total Liabilities
Profitability	
Net Profit Margin (NPM)	Net Income / Sales
Return on Assets (ROA)	Net Income / Total Assets
Return on Equity (ROE)	Net Income / Common Equity
Growth	
Annual Sales Growth Rate (ASGR)	Average for the Last Three Years

Financial ratios are used in the study to compare the financial characteristics of Hong Kong and Singapore manufacturing firms. This table explains how the financial ratios used in the study are computed.

RESULTS

Our MANOVA test results are presented in Table 2. The multivariate F value statistic in the table indicates that the overall financial characteristics of Hong Kong and Singapore manufacturing firms are significantly different at the 1-percent level. The univariate F value statistics in the table indicate that the financial characteristics of Hong Kong and Singapore manufacturing firms are not significantly different in terms of liquidity, accounts receivable turnover, inventory turnover, total assets turnover, and financial leverage.

The univariate F value statistics in Table 2 show that the profitability and sales growth characteristics of Hong Kong and Singapore manufacturing firms are significantly different. The most significant difference is in terms of sales growth. The average annual sales growth rate is significantly higher in Hong Kong manufacturing firms (16.38%) than in Singapore manufacturing firms (5.09%). Net profit margin, return on assets, and return on equity ratios are all significantly higher in Hong Kong manufacturing firms than in Singapore manufacturing firms. The univariate F value statistics for the profitability ratios indicate that the difference between the two groups of firms is most significant in terms of return on equity. Hong Kong manufacturing firms appear to provide a significantly higher return on equity to their stockholders compared with their counterparts in Singapore.

The average fixed assets turnover ratio also appears to be higher in Hong Kong manufacturing firm

compared with Singapore manufacturing firms. However, the difference is significant only at the 10-percent level. Hong Kong manufacturing firms appear to generate more sales per unit of investment in fixed assets compared with Singapore manufacturing firms.

Table 2: MANOVA Statistics

Financial Ratios	Means and Standard Deviations†		Univariate Statistics	
	Hong Kong	**Singapore**	**F Value**	**P Value**
Liquidity				
Current Ratio (CR)	2.72	2.60	0.24	0.63
	(2.66)	(2.54)		
Quick Ratio (QR)	2.08	1.99	0.16	0.69
	(2.47)	(2.22)		
Asset Management (Turnover) Ratios				
Accounts Receivable Turnover (ART)	6.38	5.75	1.49	0.22
	(5.36)	(5.22)		
Inventory Turnover (INT)	7.11	8.18	1.71	0.19
	(7.91)	(8.58)		
Fixed Assets Turnover (FAT)	8.78	6.59	3.45*	0.06
	(15.34)	(9.04)		
Total Assets Turnover (TAT)	0.89	0.94	0.78	0.38
	(0.54)	(0.48)		
Financial Leverage				
Equity Ratio (EQR)	2.50	2.66	0.26	0.61
	(2.94)	(3.35)		
Profitability				
Net Profit Margin (NPM)	7.32%	4.26%	4.62**	0.03
	(13.79%)	(14.96%)		
Return on Assets (ROA)	7.24%	4.68%	13.72***	0.00
	(6.76%)	(7.28%)		
Return on Equity (ROE)	14.31%	7.75%	20.36***	0.00
	(14.74%)	(14.86%)		
Growth				
Annual Sales Growth Rate (ASGR)	16.38%	5.09%	41.20***	0.00
	(21.00%)	(16.43%)		
		Multivariate Statistics:	**6.79***	**0.00**

*The Multivariate Analysis of Variance (MANOVA) technique is used in the study to compare the financial characteristics of Hong Kong and Singapore manufacturing firms. This table presents the mean ratios of Hong Kong and Singapore manufacturing firms, the standard deviations of the ratios, and the multivariate and univariate MANOVA test statistics. † The figures in parentheses are the standard deviations. ***, **, * indicate that the difference is significant at the 1-percent, 5-percent, and 10-percent levels, respectively.*

CONCLUDING COMMENTS

In this paper, we compare the financial characteristics of Hong Kong and Singapore manufacturing firms with the MANOVA (Multivariate Analysis of Variance) technique. We use eleven financial ratios in the comparisons as measures of liquidity, asset management, indebtedness, profitability, and growth characteristics of firms. The data of the study were obtained from the 'Research Insight/Global Vintage' database from the 2012 year-end financial statements of the firms. Our research sample includes 177 Hong Kong and 252 Singapore manufacturing firms with SIC codes between 2000-3999 with no missing financial data in the database.

Our multivariate test statistics indicate that the overall financial characteristics of Hong Kong and Singapore manufacturing firms are significantly different at the 1-percent level. Our univariate test statistics show that the liquidity, accounts receivable turnover, inventory turnover, total assets turnover, and financial leverage ratios of Hong Kong and Singapore firms are not significantly different.

The univariate test statistics reveal that the profitability ratios and sales growth rates are significantly higher in Hong Kong manufacturing firms than in Singapore manufacturing firms. The most significant difference is in terms of the sales growth rate. The annual average sales growth rate is 16.38% in Hong Kong manufacturing firms versus only 5.09% in Singapore manufacturing firms. Among the profitability ratios, the most significant difference is in terms of return on equity. Hong Kong manufacturing firms provide a higher return on equity to their stockholders compared with Singapore manufacturing firms (14.31% versus 7.75%). Fixed assets turnover rate also appears to be higher in Hong Kong manufacturing firms (8.78%) than in Singapore manufacturing firms (6.59%). However, the difference is significant only at the 10-percent level. A summary of our major findings in the study is presented in Table 3.

Table 3: Summary of Major Findings

Financial Ratios	Hong Kong vs. Singapore
Fixed Assets Turnover	Singapore firms have significantly more investment in fixed assets per dollar of sales compared with Hong Kong firms. This adversely affects asset profitability in Singapore firms compared with Hong Kong firms.
Net Profit Margin	Net profit margin is significantly higher in Hong Kong firms than in Singapore firms. Since firms cannot have higher product prices in competitive markets, this result implies that the cost of production is significantly lower in Hong Kong firms than in Singapore firms.
Return on Assets	Return on assets is significantly higher in Hong Kong firms than in Singapore firms. Since their total assets turnover rates are not significantly different, this is the result of Hong Kong firms having a significantly higher net profit margin compared with Singapore firms.
Return on Equity	Return on equity is significantly higher in Hong Kong firms than in Singapore firms. Since their leverage ratios are not significantly different, this is the result of Hong Kong firms having a significantly higher return on assets compared with Singapore firms.
Sales Growth Rate	Hong Kong firms have a significantly higher annual sales growth rate compared with Singapore firms. This implies that Hong Kong firms have greater growth opportunities compared with Singapore Firms.

This table summarizes the major findings of the study.

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IMPACT OF BANK CREDIT ON THE REAL SECTOR: EVIDENCE FROM NIGERIA

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ABSTRACT

The paper examines the impact of bank credit to output growth in the manufacturing and agricultural sub sectors of the economy over the period 1980-2010. Using the error correction modeling techniques, the results show that bank credit has significant impact on manufacturing output growth both in the short run and long run but not in the agricultural sub sector. Inflation and exchange rate depreciation have negative effects on manufacturing output growth in both short run and long run. To boost output growth in the real sector, more bank credit should be made available to the real sector especially the manufacturing sector. Also, inflation should be kept low while the value of the domestic currency should be strengthened.

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KEYWORDS: Bank Credit, Real Sector

INTRODUCTION

Over the years in Nigeria, the volume of credit into the economy has continued to increase. The volume of credit to the private sector increased from mere N6,234.23 million in 1980 to N29.21 billion in 2010. Credit to private sector as a percentage of Gross Domestic Product (GDP) increased from 12.56 in 1980 to 18.59 percentage point in 1993. The figure increased to 37.78 in 2010. This credit behavior in general terms to any economy, is expected to assist in leveraging economic agents, augment their vulnerability to economic shocks and ultimately enhance economic growth. However, over the years, the economic growth has remained very low except for the last four years when marginal increases were recorded. This puzzle has raised concern as to the impact of bank credit on economic growth in Nigeria. Indeed, study by Bayoumi and Melander (2008) for US macro-financial linkages showed that a 2.5% reduction in overall credit caused a reduction in the level of GDP by around 1.5 percent. In the same way, King and Levine (1993) study for 80 countries found that bank credit affected economic growth through improvement of investment productivity (better allocation of capital) and through higher investment level. Several other studies that support this claim include De Gregorio and Guidotti (1995), Levine (2002) and Boyreau-Debray (2003).

However, the main feature of most existing studies is that they tend to focus on aggregate economic growth without looking at the components. Unfortunately, aggregate growth may veil fundamental issues in the growth process. This is particularly relevant in the case of Nigeria where oil constitutes a major share of aggregate economic growth. However, oil is an enclave sector with very little value added. Therefore, attempt at looking at the impact of bank credit on aggregate will not give complete picture of the situation. There is the need to focus on the real sector namely agriculture and manufacturing sub sectors. The real sector comprising agriculture and manufacturing constitute the soul of any the economy; hence whatever happens in the real sector will have a serious repercussionary effect on the entire economy. This explains the rationale for the study. Specifically, the study examines the effects of bank credit on the growth of the real sector namely agricultural and manufacturing sub sectors.

The rest of the paper is organized as follows: section 2 reviews the related literature. Section 3 discusses the methodology. Estimation and discussion of results are provided in section4 and section 5 concludes the study.

LITERATURE REVIEW

In this section, we present a brief summary of existing literature on the effect of bank credit and economic growth. The general idea that economic growth is related to financial development dates back at least to Schumpeter (1911). He contended that financial institutions could spur innovation and growth by identifying and funding productive investments. In the same way, Gurley and Shaw (1967), Goldsmith (1969); Mckinnon (1973) and Shaw (1973) have argued that financial development could foster economic growth by raising saving, improving allocative efficiency of loanable funds, and promoting capital accumulation. The specific role of bank credit to private sector in promoting growth has been noted in the literature. It is argued that financial instruments such as credit provided by banking sector and the liabilities of the system in the economy are correlated with gross domestic product, savings, and openness trade (Leitão, 2012). Similarly, Ngai (2005), Josephine (2009) and Plamen and Khamis (2009) argued that bank credit could help in the provision of funds for productive investment. This is particularly important in developing countries where capital markets are not fully developed.

Asides, they contended that bank credit availability could positively affect consumption and investment demand and thus aggregate output and employment. Empirically, a number of studies have shown that bank credit has positive effect on economic growth. The study by Eatzaz and Malik (2009) for 35 developing countries analyzed the role of financial sector development on economic growth. The study using GMM approach reported that domestic credit to the private sector led to increased per workers output and thus increased economic growth in the long run. Their finding was consistent with the findings of Levine (2004), and Franklin Qura (2004). Dey and Flaherty (2005) using two-stage regression model examined the impact of bank credit and stock market liquidity on GDP growth. The results showed among other things that bank credit had significant effect on GDP growth for a number of countries. The study by Leitão (2010) European Union Countries and BRIC (Brazil, Russian, India and China) over the period 1980-2006 showed that domestic credit positively impacted economic growth. As in Levine et al (2000) and Beck et al. (2000), the paper adopted a dynamic panel data.

The study by Murty et al. (2012) examined the impact of bank credit on economic growth in Ethiopia over the period 1971 – 2011. The results from Johansen multivariate cointegration showed that bank credit to private sector positively impacted economic growth through its role in efficient allocation of resources and domestic capital accumulation. Other interesting works in this area that found positive relationship between credit and firms growth were Beck et al. (2008) and Carpenter and Peterson (2002).

With respect to Nigeria, study by Onuorah (2013) for the period 1980-2012 examined the impact of bank credit on economic growth. The results from cointegration VAR and Causality showed that various measures of bank credit namely total production bank credit and total general commerce bank credit had significant positive effect on economic growth in Nigeria over the study period. In the same way, study by Aliero et al. (2013) over the period 1974-2010 examined the impact of bank credit on economic growth. The result from Autoregressive distributed lag bound approach showed that private sector had significant positive effect on economic growth in Nigeria. In contrast, few studies have documented negative, little or no effect of credit on economic growth. These studies include Hassan et al. (2011), Levine (1997) and Levine et al (2000). In the same way, the study by Mushin and Eric (2000) showed that the effect runs from economic growth to financial development and not otherwise.

METHODOLOGY AND DATA

In the context of a neoclassical growth model, we use the following empirical specification to examine the effect of bank credit on the performance of the real sector of the economy:

$$GDP_{it} = \propto_0 + \propto_1 TC_{it} + \propto_2 INT_t + \propto_3 GFF_t + \propto_4 INF_t + \propto_5 EXR_t + \mu_t \qquad (1)$$

where i (i = 1, 2) denotes two subsectors namely agriculture and manufacturing. GDP is the growth rate of real Gross domestic product of each sub sector, TC is the total credit to each subsector. INT is the lending rate; EXR is the exchange rate; GFF is the gross fixed capital formation; INF is the rate of inflation; u_t is the disturbance term and t is the subscript of time. Turning to the econometric techniques, we adopted the Engle and Granger (1987) approach. They suggest a two-step approach. First, the existence of a cointegrating relationship among the variables under consideration is determined based on standard cointegration techniques. In a situation where the variables are stationary, a stable long-run relationship can be estimated using standard ordinary least square (OLS) techniques. Second, the information in error term of the long-run relationship is used to create a dynamic error correction model. As noted by Engle and Granger (1987), the error correction model produces consistent results even when the right-hand side variables are not completely exogenous.

Data Measurement, Description and Sources

The study utilized annual Nigerian observations on growth rate of real agricultural GDP (GDPA), growth rate of manufacturing GDP (GDPM), total credit to the agricultural sector (TCA), total credit to the manufacturing sector (TCM), interest rate (INT) measured as lending rate, gross fixed capital formation (GFF), inflation rate (INF) and exchange rate (EXR) measured as unit of domestic currency per dollar. All the data were sourced from the Central Bank of Nigeria Statistical Bulletin 2011. To generate the real GDP series, we deflated the nominal series by consumer price index. The data spanned the period 1980-2010. The descriptive statistics of the data series are as shown in Table 1. Table 1 shows that all the series display a high level of consistency as their mean and median values are perpetually within the maximum and minimum values of the series. The statistics in Table 1 shows that the series except exchange rate and lending rate are leptokurtic (peaked) relative to normal as the kurtosis value exceeds 3. Finally, the probability that the Jacque-Bera statistic exceeds (in absolute value) the observed value is generally low for all the series suggesting the rejection of the hypothesis of normal distribution at 5 per cent level of significance.

Table 1: The Descriptive Statistics of the Variables

	TCA	GDPM	EXR	GFF	INF	INT	GDPA	TCM
MEAN	36,990	24,423	54.319	48,136	29.437	17.476	211,425	190,374
MEDIAN	29,348	14,591	21.886	40,121	14.03	18.29	96,220	71744.3
MAXIMUM	149,579	286,494	150.3	13,321	160	29.8	2,801,292	992,386
MINIMUM	462.2	3,486	0.546	6,332	4.67	7.5	6,502	1,957
STD.DEV	42,379	48,928	58.133	27,460	34.298	5.439	486,704	275,676
SKEWNESS	1.352	5.1958	0.509	1.1472	2.249	-0.0023	5.090	1.790
KURTOSIS	4.096	28.354	1.435	4.465	8.306	2.788	27.621	5.341
JARQUE-BERA	11.0004***	969.776***	4.502	9.571***	62.505***	0.058	916.9***	23.639***
PROBABILITY	0.000	0.000	0.105	0.0084	0.000	0.971	0.000	0.000007
SUM	1,146,676	757,128	1,683.9	1,492,225	912.54	541.77	6,554,175	5,901,585
SUM SQ DEV	53,900+	71,800+	101,382	22,600+	35,290	887.75	7,110,000+	2,280,000+
OBSERVATION	31	31	31	31	31	31	31	31

Table 1 shows the results from the descriptive statistics and the Jarque-Bera normality test. The asterisk denotes significance at 1%. This is established by the p-values under the Jarque-Bera values. + indicates in millions

EMPIRICAL RESULTS

Unit Root Test

Our first aim is to investigate the unit root properties of the data series. To obtain the integrational properties of the data series, we apply the Augmented Dickey Fuller (ADF) and Philips-Perron (PP) tests. The results for both ADF and PP show that log levels of all the variables (gross fixed capital formation, inflation, manufacturing GDP, exchange rate credit and lending rate) were not stationary. However, when we subject the first difference of these variables to the ADF and PP tests, all the variables became stationary i.e. $I(1)$. For space consideration, the empirical results are not presented here.

Cointegration

Our next aim is to investigate whether or not growth of real GDP in the sector, gross fixed capital formation, lending rate, inflation and exchange rate share common long run relationship(s). To achieve this, we follow the procedure of Engle and Granger (1987) by estimating the long run model, and test the residual for unit root. The estimated long-run relationship(s) for manufacturing and agriculture are reported as equations 1 and 2 respectively in Table 2.

Table 2: Results for Long Run Model

	(1)	(2)
Variable	Coefficient	Coefficient
Constant	6.579	4.550
	(-3.042)***	(1.330)
TCM	1.597	-
	(6.899)***	
TCA	-	0.396
		(1.396)
GFF	0.075	0.266
	(0.675)	(1.361)
INF	-1.317	0.1333
	(-6.235)***	(1.076)
EXR	-0.269	0.024
	(-1.521)	(0.088)
INT	1.059	0.012
	(3.535)***	(0.024)
Adjusted R^2	0.777	0.597
SE	0.308	0.594
F-statistic	9.894 (0.0000)	9.894 (0.0000)

Table 2 shows the results of the log-run estimates based on equations $GDP_{it} = \alpha_0 + \alpha_1 TC_{it} + \alpha_2 INT + \alpha_3 GFF + \alpha_4 INF + \alpha_5 EXR_{it} + ut$ specified for each of agricultural and manufacturing subsectors. The values in parenthesis are the t-values. ***, ** and * denote significance at 1%, 5% and 10% respectively

From the long run estimations, we test for the unit root of the residuals to ascertain the long run relationship. The computed ADF test statistics for the residuals of long run model for manufacturing and agriculture subsectors are -6.472 and -3.722 while the critical value are -3.670 and 2.964 at 1% and 5% respectively. The results show that the error terms are stationary. The estimated long run model for manufacturing sub sector performed reasonably well. The adjusted R^2 is high and the F statistic is significant. The result shows that credit to the manufacturing subsector has significant positive impact on manufacturing growth. Likewise, the coefficient of lending rate is positive. Inflation and exchange rates are negatively related to manufacturing growth and are significant at 1% and 10% respectively. A 1 % increase in exchange rate (depreciation) will lead to a 0.27% reduction in manufacturing output.The estimated long run model for agriculture did not perform well. The adjusted R^2 is 0.60. Credit to the agricultural sub sector and gross fixed capital formation both have positive effect on agricultural growth but only significant at 20%. All other variables are not significant.

Dynamic Model

The dynamics version of the long-run relationships estimated and reported as equations 1 and 2 in Table 2 be specified as error correction models as equations 2 and 3 for manufacturing and agriculture respectively;

$$\Delta GDP_m M_t = \beta_0 + \sum_{i=0}^{n}(\beta_{1i}\Delta TCM_{t-i} + \beta_{2i}\Delta GFF_{t-i} + \beta_{3i}\Delta INF_{t-i} + \beta_{4i}\Delta EXR_{t-i} + \beta_{5i}\Delta INT_{t-i})$$
$$+ \beta_6\Delta EC_{t-i} + \gamma_t \dots\dots (2)$$

$$\Delta GDP_m A_t = \delta_0 + \sum_{i=0}^{n}(\delta_{1i}\Delta TCA_{t-i} + \delta_{2i}\Delta GFF_{t-i} + \delta_{3i}\Delta INF_{t-i} + \delta_{4i}\Delta EXR_{t-i} + \delta_{5i}\Delta INT_{t-i})$$
$$+ \delta_6\Delta EC_{t-i} + \varepsilon_t \dots\dots (3)$$

The models were estimated using OLS estimation techniques on annual data for the period 1980-2010. The results for manufacturing sub sector reported as equation 1 in Table 3 show that credit to the sub sector increases manufacturing growth. A 1 per cent increase credit to the manufacturing sub sector will increase manufacturing GDP by 1.2 per cent. This should not come as a result because finance is crucial to production in the subsector. The results show that gross fixed capital formation is positively related to manufacturing growth but the coefficient is not significant. Lending rate (INT) has a significant positive effect on manufacturing contrary to a priori expectation. The results show that a 1 per cent increase in prime lending rate will increase manufacturing growth by 0.52 per cent. One possible reason for this result could be that higher cost of borrowing leads to increase production efficiency in the sub sector. As a result of high cost of borrowing in the country, managers might have no option than to implement cost reduction strategies such as increased working hour and downsizing of workers to ensure high increased efficiency.

Table 3: Results for Error-Correction Model

Variable	(1) Coefficient	(2) Coefficient
Constant	0.135	0113
	(1.496)*	(0.892)
TCM	1.247	-
	(3.085)***	
TCA	-	0.262
		(0.734)
GFF	0.002	0.221
	(0.020)	(1.127)
INF	-1.451	0.021
	(-5.687)***	(0.217)
EXR	-0.289	-0.083
	(-1.903)*	(-0.267)
INT	0.515	0.313
	(2.367)**	(0.737)
EC_{t-1}	-1.02	-0.730
	(-5.011)***	(-3.392)***
Adjusted R^2	0.746	0.205
SE	0.242	0.492
F-statistic	15.179 (0.0000)	2.247 (0.074)

Table 3 shows the error correction model results based on the equation: $\Delta GDP_t = \beta_0 + \sum_{i=0}^{n}(\beta_{1i}\Delta TC_{t-i} + \beta_{2i}\Delta GFF_{t-i} + \beta_{3i}\Delta INF_{t-i} + \beta_{4i}\Delta EXR_{t-i} + \beta_{5i}\Delta INT_{t-i}) + \beta_6\Delta EC_{t-i} + v_t$ specified for each of the agricultural and manufacturing subsectors. The values in parenthesis are the t-values. ***, ** and * denote significance at 1%, 5% and 10% critical levels respectively.

The coefficients of exchange rate and inflation are negative and significant at 10% and 1 per cent respectively. This shows that increase in exchange (depreciation) will reduce output growth of the manufacturing sub sector. The negative effect of the inflation on manufacturing could partly be attributed to the destabilizing effect of high prices on investment and resources allocation with adverse effect on output. Asides, the uncertainty associated with high prices could send unwanted signals to the producers

leading to temporary resource allocation. The associated adjustment costs and temporary nature of reallocation could result in efficiency losses leading to a reduction in manufacturing output. The negative effect of exchange rate on manufacturing is understandable. Nigerian manufacturing sub sector depends largely on imported intermediate inputs and raw materials for production. Consequently, depreciation of the exchange rate tends to increase costs of these imported materials, which in turn leads to increased cost of production with adverse effect on output in the sector.

The relative fit and efficiency of the regression is averagely alright and as the theory predicts, the EC term is negative and significant. The coefficient value and sign of EC_{t-1} (approximately = 1.00) indicates that any disequilibrium formed in the short run will be temporary and get fully corrected 100 per cent over a period of a year. The results for agricultural sector are reported as equation 2 in Table 3. The results obtained in the short run model are quite similar to the long run results. All the variables except exchange rate have positive effect on agricultural growth. However, none of the variables is significant. This clearly suggests that credit investment, lending rate inflation and exchange rate are not the main determinants of agricultural output in Nigeria. This should not come as a surprise as farming is mostly practiced at subsistence level in the country. Farming at subsistence does not necessarily required credit, huge capital investment and high level manpower. In the same way, macroeconomic factors such as exchange rate, lending rate and inflation may not have significant effect on agricultural production at subsistence level.

Finally, the error correction term (EC) is negative and significant. The coefficient value and sign of the EC_{t-1} (-0.73) indicates that about 73 per cent of the disequilibrium error which occur in the previous year are corrected in the current year. In terms of performance, manufacturing subsector model performed better than agricultural growth model. This is clearly shown in the values of the adjusted coefficients of determination, F-statistics, Durbin-Watson statistics, standard error of regression, signs and significance of the parameters. However, the estimated error correction model for the two subsectors were found to be stable over the period studied based on the CUSUM and CUSUM of Squares tests

CONCLUSION

In this paper, we attempt to examine the impact of bank credit on the growth of the real sector namely agriculture and manufacturing subsectors. To achieve this goal, we followed the procedure of Engel and Granger (1987) approach by estimating the long-run and the error –correction models based on annual data for the period 1980-2010. The results of the estimation show that bank credit to the manufacturing sub sector has significant effect on its growth both in the long-run and short run. However, bank credit to the agricultural sub sector did not impact significantly on agricultural growth both in the long-run and short run. Inflation tends to reduce manufacturing growth while exchange rate depreciation reduces manufacturing growth in the short-run and long-run. These variables inflation and exchange rate were not significantly related to agricultural output in the economy.

Therefore, based on these findings, we discuss certain policy implications. Given that credit is positively related to growth in the real sector, policies designed to increase bank credit to the real sector would appear very useful. More bank credit to the real sector would be beneficial to higher growth in the real sector. Higher output growth in the real sector will no doubt have positive effect on employment and, aggregate demand and output.

Second, low inflation is conducive to more manufacturing output growth. Therefore, policies designed to reduce inflation will enhance manufacturing output growth. Such policies will include reduction in domestic money supply and increase in domestic output to meet demand. Third, policies designed to enhance the value of the domestic currency will help in boosting manufacturing output growth. As the value of domestic currency depends mostly on the level of domestic productivity, policies should be designed to boost productivity in the economy. Finally, the study only examines the real sector of the

economy. Future research should focus on other subsectors of the economy. Such an analysis will enable us compare the impact of bank credit in all the sectors of the economy. This will help the monetary authority in the allocation of credit to the various sectors of the economy.

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AUDITING AND COMPARING INNOVATION MANAGEMENT IN ORGANIZATIONS

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ABSTRACT

The objective of this paper is to audit innovation management in one of the largest Saudi petrochemical companies (SABIC) and compare the results with those of companies in Brazil and China in order to identify the company's strengths and weaknesses from an innovation perspective. First, an audit survey was carried out in the Saudi company. The results revealed that there is top management commitment and support for innovation, learning is well managed, the company is committed to the development of its employees worldwide and the innovation system is flexible enough to allow small projects to be fast-tracked. Second, the audit results were compared with those of four companies in Brazil and China. SABIC was doing better than some companies in the linkages, learning and process dimensions. Some of the gaps between SABIC and the average of the Chinese and Brazilian firms are very low and could easily be closed. SABIC has strengths and weaknesses similar to the Chinese firms. They both showed strength in learning and weakness in strategy, while the Brazilian firms showed strength in the strategy and weakness in linkages. On the other hand, SABIC's innovative organization and strategy dimensions ranked lowest and special attention is needed in these aspects

JEL: O32

KEYWORDS: Developing Countries, Technological Innovation, Innovation Audit, Innovation Assessment

INTRODUCTION

A World Bank Institute report described the innovation climates in developing countries as problematic, characterized by poor business and governance conditions, low educational levels, bureaucratic climate and mediocre infrastructure (Aubert, 2004). The World Bank (2010) recommended that governments need to pay attention to innovation, particularly in the developing world, because innovation is the key driver of economic development and it is the main tool to cope with major global challenges. A report made by UNESCO (2010) stated that even oil-rich-Arab states like Saudi Arabia need innovation. Despite the need for innovation, literature shows that Saudi Arabia lags far behind developed countries in terms of Science and Technology (Sanyal & Varghese, 2006; UNESCO, 2010) and there are few published works that evaluate technological innovation in Saudi Arabia. The objective of this paper is to audit innovation in one of the largest petrochemical company in Saudi Arabia in order to analyze and evaluate how well the company manages innovation. This paper consists of five parts. The first part examines the literature on innovation auditing. The second discusses the case company's background. The third part describes the data and used methodology. The forth part explains the results. And finally, the last part presents the conclusions from the case study analyses. This is followed by the references and authors' biography.

LITERATURE REVIEW

Innovation: From the date of the first printing press to the current explosion of the Web, the great moments in the history of innovation has been catching the attention of economists, scientist, researchers, engineers, and people in the management field. The reason for this interest according to Pasher and Ronen (2011) is the realization that constant innovation is a must for the survival of organizations. Many definitions were made about innovation. Tidd and Bessant (2009) state that the origin of the word 'innovate' comes from the Latin 'innovare' meaning 'to make something new'. Another definition of innovation was given by Ramalingam, et al. (2009) as "dynamic processes which focus on the creation and implementation of new

or improved products and services, processes, positions and paradigms. Successful innovations are those that result in improvements in efficiency, effectiveness, quality or social outcomes/impacts". The definition emphasizes that novelty itself is not enough but successful innovations must result in efficiency, effectiveness, quality or society improvements.

Innovation Measurement and Evaluation: In the modern business world, innovation is considered an engine of growth, but surprisingly many companies still don't measure their innovation performance and look at the innovation process as something that is mysterious and difficult to master (Skarzynski & Gibson, 2008). Wetter (2010) categorized the main measurable characteristics of innovation into hard and soft. Hard measures refer to the ones that are linked directly to the innovation process such as the number of patents. Soft measures, like productivity improvements, may be direct but are less clear due to their influence by other factors such as managerial factors. Abdel-Razek and Alsanad (2013b) developed and implemented an innovation mapping model capable of *mapping and evaluating the innovation space available to organizations.* They also suggested and implemented an evaluation approach by simultaneous innovation mapping and auditing. They stated that linking mapping and auditing results provides a wider, finely-tuned overview of innovation status and should make it possible for progressive innovation improvement in the company (Abdel-Razek and Alsanad, 2013a). Innovation could be categorized according to the scope and place to be measured. It could be measured at the company level, sector level and even country level. Each has its own characteristics and calls for different types of metrics. Another categorization of innovation measurement is by using quantitative measures such as the input output model or qualitative measures by using an innovation audit.

Innovation Audit: Innovation audit is defined as a tool that can be used to reflect on how the innovation is managed in a firm and is a significant breakthrough in the area of technological innovation management (Liao et al. 2011). There are several tools and frameworks to audit innovation management. One framework was suggested to audit innovation against a core process model which consisted of concept generation, product development, process innovation and technology acquisition (Chiesa et al., 1996). Another framework, "inventory for organization innovativeness", was proposed by Tang (1999) and intended to measure organizational effectiveness in innovation. Mentz (1999) developed what he called a "competence audit for technological innovation", the aim was to check the organization's abilities relative to best practices in innovation. Radnor and Noke (2002) presented a self-diagnostic tool referred to as the "innovation compass" to pinpoint gaps between current and desired performance of organizations regarding innovation. Another innovation audit framework was suggested by Goffin and Mitchell (2005) for identifying strengths and weaknesses using the "Pentathlon Framework". A recent audit tool was presented by Tidd and Bessant (2009) who have identified the factors that influence the success and failure of innovation and used these factors to develop an audit tool for assessing innovation performance in organizations.

Auditing Innovation in Sabic: Petrochemicals are making their impact worldwide as they are an essential part of our everyday lives. There's a broad scope of petrochemicals products ranging from cables, book covers, rubber, plastic and a lot of everyday items. A couple of decades ago, Saudi Arabia didn't seem as a location for major industrialization drive (Ramady, 2010). Oxford Business Group (2007) stated that Saudi Arabia is one of the largest petrochemical-producing countries in the world that in recent years, it has managed an output almost equal to China's.

DATA AND METHODOLOGY

This study is implemented in a large public petrochemical company based in Riyadh, Saudi Arabia. Its main manufacturing facilities are located in two industrial cities: Al Jubail on the east coast and Yanbu on the red sea coast of Saudi Arabia. It operates in more than forty countries with more than thirty three thousand employees across the world and is composed of six business units: Chemicals, Polymers, Performance Chemicals, Fertilizers, Metals and Innovative Plastics. It has seven technology centers distributed around the globe. The company has ownership rights or licenses to about 3,760 active patents and 3,394 pending patent applications around the world and received many awards for its innovativeness.

One of these awards was from the European Polycarbonate Sheet Extruders (EPSE). As petrochemicals play a vital role in economics and also in our everyday lives, the demand on it grows day after day making it one of the most competitive and innovative industries.

The Audit Tool: The selected tool to audit innovation was developed by Tidd and Bessant (2009). It was used in different studies such as Duin (2006), Ye and Zhou (2009), Pang and Qu (2010), Lima (2011) and Karlsson et al. (2011). The questionnaire composed of five audit dimensions: strategy, learning, linkages, processes and innovative organization. It consists of forty statements and for each statement, a score between 1 to7 is determined. The scores determine the respondents' degree of agreement or disagreement that the statements are true.

The Participants: The data was obtained using a combination of online and email questionnaire sent to the participants of this study between September 2011 and April 2012. All fifty employees from one of SABIC's technology centers, the Technical Service Lab, were surveyed using the audit questionnaire (Alsanad 2012). This particular centre was chosen for the study since it is the closest to innovation activities. Two thousand audit statements were answered. The participants were categorized according to their job title as shown in Table 1. The highest percentage of participants was engineers (36%), followed by scientists (20%), and followed by both administrators and technicians with (22%) each. Employees were also categorized into four levels according to their educational qualifications. Table 2 shows that four of the respondents (8%) were Ph.D. holders, eight (16%) were Master degrees holders, eleven (22%) were Post Graduate Diploma holders and twenty seven (54%) were Bachelor degree holders.

Table 1: Participants' Job Titles

Job Role	No of Employees	No of Participants	Percentage	Response Rate
Scientists	10	10	20%	100%
Engineers	18	18	36%	100%
Administrators	11	11	22%	100%
Technicians	11	11	22%	100%
Total	50	50	100%	100%

This table shows the categories of the participants according to their job titles.

Table 2: Respondents' Educational Qualifications

Degree	No of Respondents	Percentage
Ph.D.	4	8%
Master's	8	16%
Bachelor	27	54%
Diploma	11	22%
Total	50	100%

This table classifies the participants according to their qualifications.

RESULTS

Overall Auditing Results

The data were analyzed (Alsanad & Abdel-Razek, 2013). The average scores given by the respondents to each of the auditing statement of the five audit dimensions are summarized in Table 3. The results showed that the average score of the learning dimension is the highest, 5.04, which indicates that the employees are satisfied and agree that the company is managing the learning aspect very well. The linkages and process dimensions ranked in the middle while the innovative organization and strategy aspects received the lowest scores.

Table 3: The Company's Audit Results by All Employees

Strategy		Process		Innovative Organization		Linkages		Learning	
Statement No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean
1	4.46	2	4.54	3	4.58	4	5.68	5	4.84
6	4.30	7	4.30	8	4.64	9	4.82	10	5.38
11	4.42	12	4.58	13	4.48	14	3.86	15	5.86
16	4.48	17	4.36	18	3.98	19	4.78	20	5.22
21	4.34	22	4.94	23	4.38	24	4.22	25	4.92
26	5.10	27	4.32	28	4.96	29	4.84	30	4.62
31	4.22	32	4.40	33	4.16	34	4.46	35	4.82
36	4.82	37	5.12	38	5.04	39	5.04	40	4.62
Total	36.14	Total	36.56	Total	36.22	Total	37.70	Total	40.28
Score	4.52	Score	4.57	Score	4.53	Score	4.71	Score	5.04
Rank	5	Rank	3	Rank	4	Rank	2	Rank	1

This table summarizes the respondents' scores to the audit statements.

Learning: This dimension stands out as the highest ranking among the five dimensions of the audit. The results showed that the company has established itself as a learning organization. An in-house teaching structure has been established which focuses on learning the real, day-to-day challenges that managers and teams face in order to develop new skills which allow them to reach their full potentials. The average score of 5.04 out of 7 signifies that the employees agree that the company is managing the learning aspects well. Among all of the 40 audit statements, statement number 15: "We learn from our mistakes" received the highest score. The results also showed that the company works closely with its customers and end-users. Statement number 10: "We are good at understanding the needs of our customers/end-users" received a relatively high score of 5.38.

Linkages: This dimension ranked second among the five audit dimensions. It implies that this dimension is managed relatively well. The highest score in this dimension was 4.7 and was given to statement number 4: "There is a strong commitment to training and development of people". This score and other statements scores showed that the company is committed to training its employees. The organization invests in its employees worldwide in terms of training and education, both in-house and in partnership with academic institutions in order to achieve its vision. However, the lowest score was 3.86 and was given to statement number 14: "We work well with universities and other research centers to help us develop our knowledge". This problem is more emphasized by knowing that this statement was given the lowest score among all forty statements in the 5 dimensions. This is most probably due to the fear of leaking their projects to others. Process: The process ranked third out of the five dimensions with an average score of 4.57. Statement 37 of the survey: "There is sufficient flexibility in our system for product development to allow small 'fast-track' projects to happen", received the highest score of 5.12 among the eight statements that are concerned with the process dimension. Therefore, the positive element in this aspect is that the company has flexibility in their innovation system. However, statement number 7: "Our innovation projects are usually completed on time and within budget", received the lowest score of 4.3 which implies that there are some flaws in the process.

Innovative Organization: This dimension ranked fourth out of the five innovation audit dimensions, with a 4.53 score. Table 3 shows that the highest score in the eight statements of the organization dimension was 5.04 and was given to statement number 38: "We work well in teams" (5.04). The lowest score was 3.98 and was given to the statements number 18: "Our structure helps us to take decisions rapidly". This statement is linked to deficiency in the innovation organizational structure which doesn't allow taking decision rapidly. The second lowest score was 4.16 and was given to statement number 33: "We have a supportive climate for new ideas".

Strategy: Strategy received the lowest average score of 4.52 among the five dimensions of innovation audit and was ranked the fifth. This indicated that strategy could be considered one of the company's relative weaknesses from an innovation audit view. Statement 31 of the strategy dimension: "We have processes in place to review new technological or market developments and what they mean for our firm's strategy", received the lowest score of 4.22 among all the eight strategy statements. However, the results also showed

that the participants mostly agree that there is top management commitment and support for innovation, as statement number 26: "There is top management commitment and support for innovation" received the highest score of 5.1 among the eight strategy statements.

Innovation Audit by Job Titles

The participants were classified according to their job titles: scientists, engineers, administrators and technicians. The results showed that scientists are the most satisfied group with how well the company manages innovation. They gave the highest scores in matters related to strategy, process and learning, with average scores of 5.03, 4.93 and 5.48 out of 7 respectively. Engineers are the second most pleased group about how well the company manages innovation. They gave the highest score to the innovative organization dimension among the four employee groups with a score of 4.78. Administrators gave the highest score of 4.86 for linkages dimension, their view to the strategy dimension is better than engineers and technicians. Technicians on the other hand, are the least satisfied group with the way the organization manages innovation. They gave the lowest score among the four groups in strategy, innovative organization and learning.

Comparing the Company's Innovation Management with Chinese and Brazilian Companies

Ye and Zhou (2009) and Pang and Qu (2010) carried out the questionnaire in Chinese firms. Lima (2011) also used it for auditing some Brazilian firms. The scores given by SABIC were compared to the scores of these companies. The comparison was made in order to examine how well the Saudi company manages innovation relative to other companies. Studies from China and Brazil were selected simply because of the lack of published work in this area and because Saudi Arabia, China and Brazil are considered developing economies. The comparisons neither represent all Saudi, Chinese or Brazilian organizations; nor do they represent the petrochemical organizations in Saudi Arabia. However, the comparisons are useful in demonstrating how they could be done and illustrating the usefulness of the auditing tool when the relevant data are available. Table 4 shows the audit scores for SABIC, the two Chinese companies (Huagong Tools Company and Guizhou YiBai Pharmaceutical Co. Ltd) and the two Brazilian companies (Poly Easy and Arinos). The comparison showed that the Brazilian company Poly Easy is doing best in strategy, linkages and learning dimensions, while the Chinese company Huagong Tools is leading in the process and innovative organization dimensions. SABIC did not score highest in any of the innovation dimensions and ranked fourth in the process, linkages and learning.

The percentage differences between SABIC's scores and those of each of the four companies were also calculated for each of the five dimensions and are also presented in Table 4. The results revealed that the largest gap was between SABIC and Huagong Tools, with a difference of 25.79% in the process dimension. The smallest gap, a difference of just 0.43%, was between SABIC and the Brazilian company Arinos in the process dimension. SABIC, however, was doing better than some companies in various aspects; it was better than Guizhou YiBai Pharmaceutical Company by 6.7% in the process dimension, and better than Arinos by 10% in linkages and by 0.57% in the learning dimension.

The average scores of the two Chinese companies and of the two Brazilian companies were calculated and compared with SABIC's scores, as shown in Table 5. The results showed that the Chinese companies had the highest scores in process, innovative organization, linkages and learning, whereas the Brazilian companies received the highest score in the strategy dimension. The percentage differences between SABIC's scores and the averages of the Chinese and the Brazilian scores were also calculated for each of the five dimensions and are also given in Table 5. The results revealed that the differences are small and range between 0.57% and 14.71%. The comparison between SABIC and the Brazilian companies showed that the greatest gap of 14.71% was in the strategy dimension, whereas the smallest gap of 0.57% occurred in the linkages dimension. Similarly, the comparison between SABIC and the Chinese companies showed that the greatest gap of 11.04% was in the strategy dimension, whereas the smallest gap, 3.87%, occurred in the linkages dimension. The results also revealed that SABIC has strengths and weaknesses similar to

the average of the Chinese firms. They both showed strength in learning and weakness in strategy, while the Brazilian firms showed strength in the strategy dimension and weakness in linkages.

Table 4: Percentage Differences between Innovation in the Company and Four Other Companies

Company	Strategy	Processes	Innovative Organization	Linkages	Learning
The Saudi Company	4.52	4.57	4.53	4.71	5.04
Score as a percentage (%)	64.57	65.29	64.71	67.29	72.00
Huagong Tools Company (Chinese firm)	4.75	6.38	5.50	5.18	5.32
Score as a percentage (%)	67.86	91.07	78.57	74.00	76.02
Difference between the Saudi Company and Huagong Tools (%)	3.29	25.79	13.86	6.71	4.02
Guizhou YiBai Pharmaceutical Co. Ltd (Chinese firm)	4.90	4.10	5.10	5.40	5.30
Score as a percentage (%)	70.00	58.57	72.86	77.14	75.71
Difference between the Saudi Company and Guizhou YiBai (%)	5.43	-6.71	8.14	9.86	3.71
Poly Easy (Brazilian firm)	5.60	5.50	5.30	5.50	5.60
Score as a percentage (%)	80.00	78.57	75.71	78.57	80.00
Difference between the Saudi Company and Poly Easy (%)	15.43	13.29	11.00	11.29	8.00
Arinos (Brazilian firm)	5.50	4.60	4.90	4.00	5.00
Score as a percentage (%)	78.57	65.71	70.00	57.14	71.43
Difference between the Saudi Company and Arinos (%)	14.00	0.43	5.29	-10.14	-0.57

This table shows the percentage differences between the Saudi company's score and each of the foreign companies' for each of the five dimensions.

Table 5: Comparison Between the Company's Innovation and the Averages of the Chinese and Brazilian Companies

Company	Strategy	Processes	Innovative Organization	Linkages	Learning
Saudi Company	4.52	4.57	4.53	4.71	5.04
Score as a percentage (%)	64.57%	65.29%	64.67%	67.29%	72.00%
Average of Chinese Firms	4.83	5.24	5.30	5.29	5.31
Score as a percentage (%)	68.93%	74.82%	75.71%	75.57%	75.87%
Average of Brazilian Firms	5.55	5.05	5.10	4.75	5.30
Score as a percentage (%)	79.29%	72.14%	72.86%	67.86%	75.71%
Average difference (Saudi and Chinese firms)	4.36%	9.54%	11.04%	8.29%	3.87%
Average difference (Saudi and Brazilian firms)	14.71%	6.86%	8.19%	0.57%	3.71%

This table summarizes the percentage differences between the Saudi company score and the Chinese and Brazilian scores.

CONCLUSION

Innovation management in one of the largest petrochemical companies in the Middle East, SABIC, was audited. The results revealed that there is top management commitment and support for innovation, learning is well managed, the company is committed to the development of its employees worldwide and the innovation system is flexible enough to allow small projects to be fast-tracked. The audit results of SABIC were compared with those of two companies in Brazil and two in China. The results supported the audit results. SABIC was doing better than some companies in the linkages, learning and process dimensions. Some of the gaps between SABIC and the average of the two Chinese firms and the average of the two Brazilian firms are very low and could easily be closed. The results also revealed that SABIC has strengths and weaknesses similar to the Chinese firms. They both showed strength in learning and weakness in strategy, while the Brazilian firms showed strength in the strategy dimension and weakness in linkages. On the other hand, SABIC's innovative organization and strategy dimensions ranked lowest and special attention is needed in these aspects.

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CONTRIBUTION OF LOCAL AUTHORITY TRANSFER FUND TO DEBT REDUCTION IN KENYAN LOCAL AUTHORITIES

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ABSTRACT

Debt can be rewarding in cases of moderate use, but can be disastrous in cases of imprudence. Excessive debt has been a key challenge to Kenyan local authorities, constraining service delivery and undermining financial sustainability. The Government established and decentralized the Local Authorities Transfer Fund (LATF) to enable local authorities reduce the debt burden. The purpose of this study was to assess and document information on the contribution of LATF towards debt reduction at the Council, as well as identify institutional vulnerabilities that may perpetuate further indebtedness. We sourced primary data from 162 community members, including opinion leaders and civil servants. The study found that the debt portfolio had reduced steadily from KES 157.4 million in the 1999/00 to KES 98.4 million in the 2010/11, while allocations to the Council had increased from KES 11.7 million to KES 57.4 million over the same period of time. The analysis found that LATF allocation significantly correlated with outstanding debts, suggesting up to 99% chance that access to LATF resources may have contributed to debt reduction. To achieve financial sustainability, the Government must address various institutional vulnerabilities, including corruption (76.5%), procurement malpractices (59.3%), revenue collection inefficiency (58.0%), outdated accounting systems (54.9%), political influence (39.5%), nepotism (38.9%), and weak internal audit and control systems (30.9%). The study emphasizes that County Governments must take a bold step to enforce key legislations, including Public Officers Ethics Act, as well as the Anti-Corruption and Economic Crimes Act to dismantle corruption cartels, as well as initiate appropriate reforms programs.

INTRODUCTION

Excessive debt has been one of the key challenges constraining service delivery and financial sustainability among Kenyan local authorities. By the end of 2012, the local authorities had accumulated a debt of KES 17,281,183,162, in form of bank loans, salary arrears, among other statutory debts owed to the National Hospital Insurance Fund, National Social Security Fund, Pensions Fund, Kenya Revenue Authority, Savings and Credit Cooperatives, as well as suppliers (Limo, 2012). In response to the debt situation, the Government of Kenya (GoK) established the Local Authorities Transfer Fund (LATF) through the Local Authorities Transfer Fund Act, No. 8 of 1998 (GoK, 1999) to, among other objectives, enable local authorities reduce their debt stock and achieve financial sustainability (Kibua & Mwabu, 2008; Mboga, 2009). Debt is an inevitable phenomenon for all existing and functional entities, be they individuals, corporate bodies or public institutions (Karazijiene & Saboniene, 2009). Debt can be rewarding in case of moderate use, but can be disastrous in cases of imprudent use (Das, Papapioannou, Pedras, Ahmed, and Surti, 2010). In the public sector, over-borrowing or excessive accumulation of debt can lead to bankruptcy; thus, stifling the ability of public institutions to deliver essential services. For this reason, Cecchetti, Mohanty, and Zampolli (2011) metaphorically equate debt

to a two-edged sword. Borrowing is important because it allows public institutions to smooth taxes in the face of variable expenditures (Barro, 1979). Without debt, economies cannot grow and macroeconomic volatility would be greater than desirable (Levine, 2005). As pointed out by Cecchetti et al. (2011), without debt, public institutions remain poor and may not cope with the growing population's demands. With debt, public institutions can invest even when their revenues would otherwise not allow. However, borrowing can create severe financial crises when debt ratios rise beyond a certain level (Reinhart & Rogoff, 2009). Debt accumulation is a risky economic circumstance that may stifle operations of public institutions and deny citizens essential services. In this regard, Cecchetti et al. (2011) note that as debt levels increase, borrowers' ability to repay becomes progressively more sensitive to drops in revenues as well as increases in interest rates. In the event of shocks, the higher the debt the greater the probability of defaulting, and heavily indebted institutions may suddenly become less creditworthy. The consequences may include non-completion of development projects, narrow revenue base, salary arrears, unmotivated workers, and industrial action, court cases, which may bear heavy fines and increase debt stock.

According to Bernanke and Gertler (1990), debt increases financial fragility and impairs financial stability; while Das et al. (2010) as well as Maana, Owino and Mutai (2008) warn that debt is bad for economic growth beyond a certain level. Cecchetti et al. (2011) suggest that public institutions should not have a debt stock beyond 85% of the Gross Domestic Products (GDP). In view of the consequences of heavy indebtedness, public institutions should have in place appropriate measures for debt management to prevent pile-up and facilitate the achievement of financial sustainability. In view of this, various pieces of literature indicate that Kenyan local authorities remain heavily burdened in excessive debts, which continue to rise by day (Ngunjiri, 2010; Nyangena, Misati & Naburi, 2010; Oywa & Opiyo, 2011; Limo, 2012). In 2010, a survey conducted by Transparency International ranked local authorities/Ministry of Local Government as the second most corrupt public institution after the Kenya Police (Ngunjiri, 2010).

In 2011, the National Taxpayers Association (NTA) revealed that the Government lost KES 444 million in Constituency Development Fund (CDF) and LATF in 28 constituencies and five local authorities. Siaya Municipal Council alone had a debt stock of close to KES 100 million. On the same note, Oywa and Opiyo (2011) indicates that many local authorities have been misusing LATF resources, while Limo (2012) points out that about 75% of the 175 local authorities in the country have been sinking in the abyss of indebtedness. A little earlier in 2007, an independent study on the impact of the LATF in Kenya indicated that local authorities were reeling under the burden of debts, which prevented some of them from securing statutory clearance letters, a prerequisite for accessing LATF resources (GoK, 2007). The Government's policy required local authorities to clear all debts by the year 2010; thenceforth, no institution would use LATF resources to pay debts. Nonetheless, there is little documentation about how LATF resources have contributed towards debt reduction and achievement of financial sustainability by local authorities. Even though a number of studies, including Smoke (2000), Institute of Economic Affairs [IEA] (2005), Kageri (2010), and Nyangena et al. (2010) have documented various issues associated with LATF, none has explicitly assessed the role of LATF in debt reduction and persistent vulnerabilities that may still fuel debt levels and further undermine the financial sustainability.

This study adopted a case study approach to assess the contribution of LATF towards debt reduction and vulnerabilities of Siaya Municipal Council to further indebtedness. Understanding debt vulnerabilities will enable County Governments, which have since taken over local authorities, to initiate appropriate measures to avert solvency issues in the future. The paper has four key sections, including literature review, data and methodology, results, as well as concluding comments, which culminates to limitations and recommendation for further research.

LITERATURE REVIEW

Local Authorities Transfer Fund (LATF) is one of the financing facilities that the Government has devolved to local authorities within the decentralization framework. Decentralization entails the transfer of authority and responsibility for public functions, which may be fiscal, administrative, political, or economic, from the central government to subordinate or quasi-independent public institutions as well as the private sector (Rondinelli, 1999; Cheema, 2007; Phillip, 2009). Public finance scholars have applied the concept in various fields, including public administration, economics, management science, law, and public finance, among others. Whatever the area of application, decentralization responds to limitations and challenges associated with centralized governance systems (Conyers, 2007).

Fiscal decentralization is one of the components of decentralized government functions, whose purpose is to improve efficiency in handling, management, expenditure, and accountability for public funds. Fiscal decentralization involves the passing of budgetary authority from centralized governance systems to elected sub-national governments in the form of the power to make decisions on matters revenue and expenditure (Menon, Mutero, & Macharia, 2008). Fiscal decentralization has four key attributes, including assigning clear expenditure and revenue responsibilities; intergovernmental fiscal transfer mechanisms from central to local governments; as well as authorization for borrowing and revenue mobilization through loan guarantees from the central government (Phillip, 2009).

According to Wachira (2010), governments pursue fiscal decentralization to facilitate the participation of citizens in identification of community priorities, planning and budgeting, implementation as well as monitoring and evaluation. Besides, Bonoff and Zimmerman (2010) notes that fiscal decentralization stems from the premise that local communities have the ability to prioritize projects in line with their needs, and that, local resources are easily accessible where community members are involved in development processes. In view of this, fiscal decentralization strengthens citizens' role in ensuring accountability and transparency in the management of public funds.

In Kenya, the pursuit of decentralized development started soon after independence in 1963. In this regard, the Government first proposed the decentralization agenda in the Sessional Paper No. 10 of 1965 on *African Socialism and its Application to Planning in Kenya*, with a view to strengthening the fight against poverty, disease and illiteracy (Chitere & Ireri, 2008). The Sessional paper marks one of the key initial attempts to decentralize development agenda and resources to the districts and local government authorities across the country (Kibua & Mwabu, 2008; Chitere & Ireri, 2008). In 1983, the Government introduced the District Focus for Rural Development (DFRD) mechanism as its official decentralization policy (Alila & Omosa, 1996; Chitere & Ireri, 2008). Under the DFRD framework, districts became the planning units for decentralized service delivery. However, performance of the strategy was constrained by various factors including limited involvement of communities in project cycle management (Chitere & Ireri, 2008). As noted by Kibua and Mwabu (2008), decentralized development initiatives brings forth numerous benefits including, better governance, improved equity in resource sharing, improve the quality of government service delivery, as well as enhanced accountability in the administration of public resources. More recently, decentralization was revisited in the *Economic Recovery Strategy for Wealth and Employment Creation (ERSWEC) 2003-2007*, which stands out as the policy document providing a clear framework against which devolved funds are leveraged (Kibua & Mwabu, 2008; GoK, 2003). Fiscal decentralization framework is further set out in the *First Medium Term Plan (MTP) 2008-2012* (GoK, 2008), as well as *Kenya's Vision 2030* (GoK, 2010).

These policy efforts culminated to the establishment of various devolved funds, including LATF, which draws from the national revenues - 5% of the annual national income tax collection (Kibua & Mwabu, 2008; Mboga, 2009). The Government designed allocation criteria to ensure consistency, fairness and transparency, as follows: a basic minimum lump sum of KES 1.5 million (6.6%) is shared equally among

the country's 175 local authorities, while 60% of the fund is disbursed according to relative population sizes of local authorities. The Government allocates the remaining 35.4% subject to local authorities meeting specified accountability criteria (Kibua & Mwabu, 2008; Mboga, 2009). The money disbursed through LATF supplements local authorities' revenues; it forms about one-quarter of local authority revenues (Kibua & Mwabu, 2008; Mboga, 2009).

In order to access LATF resources, local authorities are required to have action plans, known as Local Authority Service Delivery Plans (LASDAP), which are prepared through participatory processes, involving stakeholder groups and communities. LASDAP specifies prioritized projects and activities for which the Government and local authority funds should finance. The participatory approach amplifies local communities' voice in project identification, planning, monitoring, evaluation, and accountability processes, as well as nurture ownership of LATF projects (Kibua & Mwabu, 2008; Menon et al., 2008; Bonoff & Zimmerman, 2010). Furthermore, LASDAP anchors on key pillars focusing on poverty reduction in line with the *Poverty Reduction Strategy Paper (PRSP)* and the *Economic Recovery Strategy (ERS)* whose priority areas include health, education, and infrastructure and upgrading of informal settlements (Mboga, 2009). The concept behind the LASDAP is to match all expenditure by local authorities to the needs of target communities; thus, avoid spending scarce resources on activities that are not addressing the immediate need so of target beneficiaries (IEA, 2005).

Local authorities adopt completed plans as a resolution, before submitting to the Ministry of Local Government (MoLG). It is however, the responsibility of stakeholders to hold councilors and chief officers accountable for LASDAP's implementation; hence, the primacy of their monitoring role (Kibua & Mwabu, 2008; Mboga, 2009). The MoLG encourages accountability and transparency by disbursing 60% of LATF upon submission of necessary budgetary and technical proposals. The Ministry further emphasizes performance by distributing the remaining 40% of the funds based on LASDAP's performance metrics, such as revenue enhancement strategies (Bonoff & Zimmerman, 2010). In the event of delayed delivery of reports, local authorities are subject to penalties: 15% loss of allocated funds for late filing of returns of up to 30 days, 40% of allocations for lateness of between 31 and 60 days late, and complete loss of LATF for local authorities whose documents are more than 60 days late (GoK, 1999; Bonoff & Zimmerman, 2010). Furthermore, MoLG requires local authorities to publicize funds received from the Government each year in national newspapers. Besides, local authorities should to hold annual budget days in the month of June, which provide forums to discuss revenues and expenditures for previous financial years and planned budgets for subsequent financial years with citizens (GoK, 1999; Bonoff & Zimmerman, 2010).

DATA AND METHODOLOGY

We applied the cross-sectional survey design to guide the research process, including planning, training and pretesting, data sourcing, data processing and analysis, as well as reporting. The study targeted community members, opinion leaders and civil servants in Siaya Municipality. For a period of 10 days, we contacted up to 200 potential participants. However, only 162 (81.0%) met the inclusion criteria; we issued them with self-administered questionnaires. We collected primary data in the month of June 2011 and the process involved identification and prequalification of potential participants, consenting, questionnaire issuance and follow-up. Whereas some participants completed the questionnaires on the spot, others took two days to provide their perspectives on institutional vulnerabilities that may push the Council into further indebtedness. We applied purposive and snow-ball sampling procedures to select potential participants. In this regard we selected key opinion leaders and civil servants who demonstrated awareness about Local Authority Transfer Fund (LATF) and who had either participated in Local Authorities Service Delivery Plan (LASDAP) planning and budgeting processes or had engaged in formal business with the Council, in their capacity as government officers or personal capacity as suppliers of goods, services or works. As part of prequalification for participation, we engaged participants in

informal interviews to gauge their knowledge about operations of the Council. We used a self-administered questionnaire with structured and semi-structured questions to source the data. Furthermore, we employed quantitative and qualitative techniques to process and analyze the data. Quantitative analysis generated frequency distributions with percentages and cross-tabulations. We also transcribed, clustered into nodes and explored qualitative data for patterns about institutional vulnerabilities to further indebtedness. Detailed description of the design and methods that we used in this study are available in the following publications: Nachmias & Nachmias, 1996; Bryman & Cramer 1997; American Statistical Association, 1999; Owens, 2002; Rindfleisch, Malter, Ganesan & Moorman, 2008.

RESULTS

We sourced the requisite information from 162 community members, including opinion leaders and civil servants. We present the results under three sub-sections, including information on participants' background profile in the first sub-section, contribution of LATF to reduction of the Council's debt stock in the second sub-section as well as institutional factors predisposing the Council to further indebtedness in the third sub-section. Table 1 provides a summary of participants' socio-economic profile. The results shows that participants included 120 (74.1%) men and 42 (25.9%) women, suggesting that men were probably more aware and more involved in LATF activities, as well as business with the Council than women. The participants were aged between 25 and 65 years, with majority, 56 (34.6%) being in the 40-49 years bracket and about one-third, 49 (30.2%) falling between 30 and 39 years.

The results further show that most participants had attained at least secondary education. More specifically, 81 (50.0%) reported having college training, 56 (34.6%) had attained secondary education, while 22 (13.6%) were university graduates. Regarding occupation type, the results show that most participants, 72 (44.4%), were businessmen and women, while 21 (13.0%) were politicians, including serving and retired councillors. Participants reported various occupations. In this regard, the results show that 12 (7.4%) participants were civil servants sampled from MoLG, Municipal Council of Siaya, District Treasury, Ministry of Water and Irrigation, District Tender Committee and Ministry of Health. Participants also included 12 (7.4%) primary and secondary school deputy and head teachers, 10 (6.2%) farmers, 8 (4.9%) health facility staff, and 7 (4.3%) faith leaders, among others. This shows that the study captured views of a wide spectrum of community members. Furthermore, participants reported average monthly incomes ranging from KES 18,000 to KES 166,000. More specifically, 46 (28.4%) participants stated average incomes of at least KES 100,000, 44 (27.25) were in the KES 40,000 to 69,000 income group, while 34 (21.0%) stated average incomes ranging between KES 20,000 and 39,000. These results suggest that the study included participants with good educational, income background, as well as general awareness about functions of the Council vis-à-vis the debt accumulation.

We sourced secondary data on LATF allocations and the Council's debt stock from the MoLG. The data show that the amount allocated has increased from KES 11.7 million in the FY 1999/00 to KES 57.4 million in the FY 2010/11, with significant increment noted between the years 2004/05 and 2005/06. Contrastingly, the data indicate that debt portfolio has reduced steadily from KES 157.4 million in the FY 1999/00 to KES 98.4 million in the 2010/11 FY. Although the Council had not fully paid its debts, participants affirmed that access to LATF contributed significantly to the reduction of debt stocks, as indicated in Table 2.

Table 1: Socio-Economic Profile of Participants

Participants attributes	Frequency	Percent
Gender		
Male	120	74.1
Female	42	25.9
Total	**162**	**100.0**
Age		
20-29 years	37	22.8
30-39 years	49	30.2
40-49 years	56	34.6
50 years+	20	12.3
Total	**162**	**100.0**
Education level		
Primary	3	1.9
Secondary	56	34.6
College	81	50.0
University	22	13.6
Total	**162**	**100.0**
Occupation		
Civil servants	12	7.4
Business	72	44.4
Faith leaders	7	4.3
Politicians	21	13.0
Teachers	12	7.4
Farmers	10	6.2
Lecturers	3	1.9
Healthworkers	8	4.9
Retired civil servants	6	3.7
Community health workers	7	4.3
NGO worker	4	2.5
Total	**162**	**100.0**
Average monthly income		
<KES 20,000	5	3.1
KES 20,000-39,000	34	21.0
KES 40,000-69,000	44	27.2
KES 70,000-99,000	33	20.4
KES 100,000+	46	28.4
Total	**162**	**100.0**

Presented in this Table is the distribution of participants about socio-economic attribute, such as gender, age, educational attainment, occupation, and average income level. Participants included insiders such as Ministry of Local Government staff, Council staff as well as serving and retired councilors. The purpose is to show the caliber of the people whose perspectives about the financial management and accountability systems existing at the time of the study, we have documented in this paper.

Table 2: Amount of LATF Allocations and Outstanding Debts (1999/00-2010/11)

Financial year	LATF Allocations	Outstanding Debts
1999/00	11.7	157.4
2000/01	14.1	154.4
2001/02	16.6	141.2
2002/03	17.5	138.7
2003/04	19.6	135.3
2004/05	21.0	129.9
2005/06	28.0	126.2
2006/07	31.0	117.6
2007/08	39.3	115.1
2009/10	45.2	110.0
2010/11	57.4	98.4

Table 2 shows the data obtained from the annual LATF reports about amounts allocated to Siaya Municipal Council. The data show that the amount allocated has increased from KES 11.7 million in the FY 1999/00 to KES 57.4 million in the FY 2010/11, with significant increment noted between the years 2004/05 and 2005/06. The data further indicates that debt portfolio has reduced steadily from KES 157.4 million in the FY 1999/00 to KES 98.4 million in the 2010/11 FY

We performed Pearson's Correlation Coefficient analysis between LATF allocations and outstanding debts, the results of which we present in Table 3. The analysis obtained a correlation coefficient of -0.950, which is significant at 0.05 error margin; thus, suggesting up to 99% chance that LATF allocation significantly correlated with outstanding debts. This suggests that access to LATF resources may have contributed to the observed reduction in the Council's debt stock.

Table 3: Pearson Correlation Results

Correlations			
		LATF Allocations	**Outstanding Debts**
	Pearson Correlation	1	-0.950**
LATF allocations	Sig. (2-tailed)		.000
	N	11	11
	Pearson Correlation	-0.950**	1
Outstanding debts	Sig. (2-tailed)	.000	
	N	11	11

**. Correlation is significant at the 0.01 level (2-tailed). *This Table presents the summary of Pearson Correlation Coefficient. The analysis obtained a correlation coefficient of -0.950, which is significant at 0.05 error margin; thus, suggesting up to 99% chance that LATF allocation significantly correlated with outstanding debts. This suggests that access to LATF resources may have contributed to the observed reduction in the Council's Debt stock.*

Despite the achievement, participants identified various institutional factors that were likely to drive the Council back to excessive indebtedness, which we present in Table 4. The results show that up to 124 (76.5%) participants cited corruption as the main factor increasing the Council's vulnerability to further indebtedness. Participants also identified various forms of corruption at the Council, including embezzlement (30.8%), bribery (26.3%), extortion (24.8%), and patronage systems (18.0%). Participants affirmed that corruption led to loss of Council resources and properties, affecting the completion of development projects, as well as the payment of bank loans, salaries, and suppliers' fees, among other statutory debts. Arguably, local authorities may be more susceptible to corruption because interactions between private individuals and officials happen at greater levels of intimacy and with more frequency at more decentralized levels. Thus, the need for the Government to enforce necessary legal frameworks, including the Public Officers Ethics Act of 2003, as well as the Anti-Corruption and Economic Crimes Act of 2003. Closely associated to corruption is the public procurement, which is the main process through which local authorities spend public funds. In Kenya, public procurement accounts for over 10% of the GDP, making it a large market for suppliers and contractors. With this amount of resource, public procurement tops the list of sectors with high opportunities for corruption. In this study, the results in Table 2 show that up to 98 (59.3%) mentioned procurement malpractices as a key institutional vulnerability towards excessive indebtedness.

Table 4: Institutional Vulnerabilities to Further Indebtedness

Valid responses	Frequency	Percent of Responses	Percent of Cases
Corruption	124	21.4	76.5
Procurement malpractices	96	16.6	59.3
Political influence	64	11.0	39.5
Outdated accounting systems	89	15.3	54.9
Nepotism	63	10.9	38.9
Internal audit and control systems	50	8.6	30.9
Revenue collection inefficiencies	94	16.2	58.0
Total	**580**	**100.0**	**358.0**

This Table presents factors that may push Siaya Municipal Council to further indebtedness, including corruption, procurement malpractices, political interference, outdated accounting system, nepotism, weak internal audit and control systems, as well as revenue collection inefficiencies. The third column presents percentages of each response based on total responses (580), while the fourth column presents percentages of participants mentioning a particular factor based on the sample size (162).

In addition, the participants identified various procurement malpractices that were rampant at the Council at the time of the study. This included emergency procurement, where senior Council officers created emergencies to justify immediate sourcing of goods and services without going through the long tendering process as provided for in the Procurement Regulations. Malpractices also included tender splitting, where senior Council officers spilt tenders into small amounts that fall within their threshold to authorize, without necessary going through the District Tender Committee. Other issues that participants cited include designing tender documents to fit particular bidders, as well as collusion with particular politically connected bidders to inflate the prices of goods and services. Participants indicated that the Council generated revenues through housing rents, land rates, trade license fees, burial permits, parking fees, bus park fees, and market cess, among others. They pointed out that the revenue base was not only narrow but also deficient in terms of appropriate control measures to prevent revenue loss in the hands of Council officers. Table 4 shows that 94 (58.0%) participants mentioned revenue collection inefficiency as one of the vulnerabilities that may force the Council to further indebtedness. This implies that non-expansion of the revenue base as well as failure to initiate appropriate reforms in revenue collection may compel the Council to continue operating on deficit budgets, which will inevitably, perpetuate indebtedness.

For decades, local authorities in Kenya have been following the colonial British municipal accounting system. At the time of the study, the Council was in the process of upgrading the accounting and financial reporting system under the Kenya Local Government Reform Program. Table 4 shows that 89 (54.9%) participants cited outdated accounting system as a key vulnerability to further indebtedness. Participants associated the existing accounting systems with numerous shortcomings, including the ease of manipulation by deliberately making wrong entries, as well as altering or transposing figures.Even worse was that such manipulations were often so hidden that they escape the attention of external auditors, particularly because of bulkiness and untidiness of file storage facilities. Participants also pointed out that the existing accounting system lacked appropriate security safeguards, making the files accessible to Council officers who may have ill motives. Based on this, some participants asserted that so long as the accounting system is not upgraded, the Council remains vulnerable to loss of public resources by existing and future cartels; thus, increasing the risk of indebtedness.

The results in Table 4 further shows that up to 64 (39.5%) participants cited political influence, which the closely linked to corruption and procurement malpractices. Political influence manifested itself through deliberate diversion of funds to non-prioritized projects with the aim of rewarding specific communities perceived to be politically loyal; as well as influence of the procurement process to favour political loyalists, business associates or family members. Participants noted that projects that were politically-driven were often never completed or if completed, provided evidence of poor workmanship. In some cases, political leaders harassed, intimidated, assaulted and even manipulated the system to have professional MoLG staff standing on their way transferred to other stations. Under such circumstances, professional found it extremely difficult to fulfil the interests of political leaders without breaching formal internal control systems and overspending. Political influence remains one of the key factors likely to push the Council into further indebtedness.

The results in Table 4 show that up to 63 (38.9%) participants identified nepotism as one of the factors making the Council vulnerable to further indebtedness. Participants further revealed that nepotism had led to the flooding of lower cadres of support staff without appropriate and comprehensive job descriptions. Reportedly, most workers in the lower cadres were relatives of either senior Council officers or serving and past civic leaders, as well as influential persons in Siaya District. Moreover, nepotism encouraged the proliferation of ghost workers. In this regard, key decision makers filled the payroll with names of non-existent workers, who drew salaries from the Council; thus, contributing huge wage bills, pushing the Council into debts. Participants confirmed that ghost workers was still a reality at the Council at the time of the study and their number would increase in future if appropriate preventive

measures are not initiated. Internal control systems are useful in controlling and minimizing chances of fraud. The results in Table 4 shows that up to 50 (30.9%) participants cited weak internal audit control system as one of the factors likely to push the Council into further indebtedness. Participants argued that internal control systems could be effective in environments where the rule of law prevails as well as environments that are devoid of political influence and impunity. However, the Council presented an environment in which internal control systems remain vulnerable to manipulation by senior Council officers and political leaders. Without proper checks, the system may not be useful in preventing fraud and safeguarding Council resources.

CONCLUDING COMMENTS

The purpose of this study was to assess and document information on the contribution of LATF towards debt reduction at Siaya Municipal Council, as well as identify institutional vulnerabilities that are likely to perpetuate further indebtedness. The study found that the debt portfolio had reduced steadily from KES 157.4 million in the FY 1999/00 to KES 98.4 million in the 2010/11 FY, while the amount allocated to the Council had increased from KES 11.7 million to KES 57.4 million over the same period of time.

Based on this, the study found that LATF allocation significantly correlated with outstanding debts (computed r^2 = -0.950, p-value = 0.000); thus, suggesting up to 99% chance that access to LATF resources may have contributed to the observed reduction in the Council's debt stock. However, financial sustainability may not be achieved until various institutional vulnerabilities are fully addressed, including corruption (76.5%); procurement malpractices (59.3%), revenue collection inefficiency (58.0%), outdated accounting systems (54.9%), political influence (39.5%), nepotism (38.9%) and weak internal audit and control systems (30.9%). The results show indications that access to LATF resources may have contributed to the reduction of the debt burden for the Council. However, stakeholders must note that LATF has not fully addressed the debt challenge. As County Governments take over local authorities, there is no doubt that, they are going to inherit the debt baggage, which regrettably, may slow down their take-off. Stakeholders should not mistake the takeover of local authorities for a reform process, as the old systems, the corruption cartels, decision-makers remain the same.

Hence, this study emphasizes that County Governments must take a bold step to enforce key legislations, including Public Officers Ethics Act of 2003, as well as the Anti-Corruption and Economic Crimes Act of 2003 to dismantle existing corruption cartels, as well as initiate appropriate programs to reform the accounting system, revenue collection and internal control systems. Only then can LATF achieve its objectives of helping local authorities to reduce accumulated debts and enable local authorities to achieve financial sustainability.

This study relies on secondary data from the Ministry of Local Government and Siaya Municipal Council regarding LATF allocations and outstanding debts. However, we noted inconsistency between the information obtained at the two sources, due to incomplete financial records and high turnover of technical staff, which created information gaps. To cope with the challenge, we used indirect methods for estimating missing data, such as interpolation to generate accurate data. Again, the study relies on community perspectives about institutional vulnerabilities that my perpetuate indebtedness at the Council. The challenge arising from this approach is that perspectives are vulnerable to distortion by political affinity, as well as socio-economic circumstances; thus, leading to inaccurate and biased findings. Although we contacted 200 community members during data collection, up to 38 (19.0%) indicated lack of awareness about LATF; leading to their exclusion from the study, but which, may have implications on the representativeness of the findings. Kenya has 175 local authorities; however, this study purposively focused in Siaya Municipal Council. Hence, the findings reported in this paper should be treated with caution, because it may not provide an accurate national picture regarding the contribution of LATF to

debt reduction among Kenyan local authorities. In view of this, there is for future research activities to scale-up the study to cover at least one-third of the Kenyan local authorities.

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POTENTIAL FOR GREEN BUILDING ADOPTION: EVIDENCE FROM KENYA

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ABSTRACT

The construction industry plays an important role in economic, environmental, and social development and sustainability. Several studies have demonstrated that green building evolution is key to promoting sustainability in the built environment. This paper is based on a recent research study that employed a mixed methods approach to explore the potential for adoption of green building in Kenya. The study unveiled a set of select green attributes that would provide best potential for adoption. Kenya stands out as a suitable case study because of its latitude as a leading economic hub in a region that is endowed with an abundance of natural resources, some of which could constitute renewable energy sources. Essentially, this study was timely in providing a preliminary platform for developing green building guidelines and best practices that would be meaningful to the Kenyan construction industry.

INTRODUCTION

This paper is based on a recent study which sought to determine what green building attributes provide the best potential for adoption in Kenya. As the green building concept continues to permeate the construction industry globally, preliminary findings of the study revealed that there were no green building guidelines in Kenya as of that time. However, there was an apparent interest in green building practices among stakeholders in Kenyan construction industry. This combination of findings underscores the need for the study.

The study utilized focus groups and personal interviews to identify and validate 26 green building rating attributes that could be adopted as a platform for developing a meaningful green building rating system for the context of Kenya without necessarily reinventing the wheel of other green building rating systems. Further, the study employed descriptive statistics to rank order the attributes in order of importance, as perceived by construction professionals in Kenya. Ideally, the 26 green building attributes are the 'low-hanging fruits' that would provide the best potential for adoption in Kenya.

Beyond Kenya's boundaries, this study provided a template that could be used to create green building standards and best practices in countries where economic, environmental and social geographies are similar to those in Kenya. Additionally, the tenets of this study would provide guidance for future research efforts dedicated to inquiry on similar subjects. In arguing that the construction industry has not done enough to reduce its environmental footprint, Horvath (1999) asserts that concerted national and international research and educational efforts are therefore needed to change the situation.

The next section of this paper provides a summary of some of the literature that was used to develop the background research. This is followed by an outline of the research methodology employed for data collection. Next are results and discussions. The paper closes with conclusions and directions for future research.

LITERATURE REVIEW AND RESEARCH DEVELOPMENT

Extensive review of literature was conducted to provide a foundational understanding of what would be required to develop green building practices and a green building standard that is meaningful to Kenyan construction industry. Some of the literature review areas that were relevant to the theme of this research were: 1) definition of green building in regard to three pillars of sustainability: economic, environmental, and social; 2) an overview of the construction industry in Kenya, including its characteristics and the roles of key stakeholders; and 3) an examination of characteristics of select green building standards and their adoption in other countries.

The increasing adoption of green building practices is primarily driven by global efforts to build resilience to the negative impacts of the built environment on economic, environmental and social systems. Liu (2011) proclaims that the built environment has huge impact on the natural and social environment, resource consumption, indoor environmental quality, human health associated with it, and land use. Kozlowski (2003) defines a green building as one "that uses a careful integrated design strategy that minimizes energy use, maximizes daylight, has a high degree of indoor air quality and thermal comfort, conserves water, reuses materials and uses materials with recycled content, minimizes site disruptions, and generally provides a high degree of occupant comfort."

Since the detrimental effects of the construction practices on the natural environment were highlighted, the performance of the buildings has become a major concern for occupants and built environment professionals (Cooper, 1999; Crawley & Aho, 1999; Kohler, 1999; Ding, 2008). The overarching implication is that the construction industry needs to pay heed to the triple bottom concept of sustainability – economic, environmental, and social. For example, the quest for green building can be seen as a contributing factor to the significant research that has recently been conducted to determine the financial benefit of adopting green building technologies (Fuerst, 2009; Miller, Spivey, & Florence, 2008; Wiley, Benefield , & Johnson, 2010). A study conducted by Kats (2003) found that the financial benefits of green buildings are ten times their initial cost premium.

In response to growing trend toward embracing green building, various green building rating tools, or systems/standards, have been introduced into the marketplace to provide a systematic approach, or guidelines, to achieving sustainability in the built environment (Bebbington, & Gray, 2001; Hemphill, McGreal, & Berry, 2002; Wyatt, Sobotka, & Rogalska, 2000). These tools provide a way of showing that a building has been successful in meeting an expected level of performance in various declared criteria (Cole, 2005). A typical rating system contains a variety of green attribute categories such as sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovative design. Each of these categories is assigned a specific number of points, and a building that achieves a specific number of points in each category is awarded a certificate level based on the requirements of the rating system. Such a building is then regarded as "green." In particular, the green rating attributes of the U.S. Leadership in Energy and Environmental Design (LEED) system were adopted as a key model for developing this research since the standard has been adopted as a template for framing green building standards in other countries, such as Canada, China, and India.

Economic Perspective

Industrialized nations, particularly in Europe incur enormous replacement costs of existing energy grids and related production infrastructure; developing nations like Kenya can learn and avoid a similar experience in the future as they build their economies today. The costs of replacing or updating obsolete and inefficient energies can be burdensome, especially for developing nations. Besides, sustainable energy production has an important role in achieving the Millennium Development Goals targeted by Kyoto. From

an industrial perspective, better access to sustainable energy is necessary at macro and micro levels, to foster economic growth and stimulate income-generating activities respectively (KAS, 2007).

Kenya's 2030 vision projects a long-term development blue-print to create a globally competitive and prosperous nation on economy as one of its pillars. A part of the action plans for the vision involve major infrastructure projects such as the *Dongo Kundu Freeport*. It is possible that as the envisioned substantial growth unfolds, so can growth in energy inefficiencies and even pollution. It is a known fact that the rapid pace of industrialization in developing nations has also seen increases in the usage of unsustainable energy forms.

Further details from a previously cited 2003 report to California's Sustainable Building Task Force by Greg Kats estimates that minimal increases in upfront costs of about 2% to support green design would, on average result in life cycle savings of up to 20% of total construction costs, which is more than ten times the initial investment. Cost implications are further amplified with the incorporation of externalities. Anthony Owen (2006) argues that incorporating associated externalities would likely serve to hasten the transition process to green alternatives. Generally, it is accepted that green design adoptions are bound to have financial and externality impact, with implications to resource allocation patterns in industry.

METHODOLOGY

In an attempt to encompass as much of Kenyan construction industry as possible, all survey participants for this study were drawn from the Board of Registration of Architects and Quantity Surveyors of Kenya (BORAQS) database. This is Kenya's nationally accredited body for construction professionals, and consists of industry stakeholders that are deemed likely to play a major role toward embracing green building concept in the country. As a way of conforming to appropriate research ethics, prior consent was obtained from the Registrar of BORAQS before inviting the study participants.

The study consisted of two phases of survey, with the first phase serving as a pilot to the second. Both surveys were completed between August 31 and December 31, 2012. The pilot survey was guided by the research question, "What green building attributes are applicable to the construction industry in Kenya?" In an attempt to answer this question, a combination of focus groups and personal interviews was utilized to generate and validate a list of green building attributes that would make sense to industry context in Kenya. The sample of participants in the pilot survey consisted of 12 building professionals who had international experience and were actively involved in managing construction projects within Kenya.

The pilot findings revealed 26 green building attributes that were identified as having the potential for adoption in Kenyan construction industry. These attributes belong to 5 broad categories of green building: sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality (Table 1).

The preliminary list of green building attributes was then used to develop a comprehensive questionnaire research instrument for the second, or main, survey. The main survey targeted all construction professionals in the BORAQS database. Convenience sampling was utilized to narrow down the selection to only 608 potential participants. These were individuals that had an active email on their registration profiles. In order to avoid bias in responses, participants of the pilot survey were not allowed to take the main survey.

Out of the 608 questionnaires that were distributed, only 347 responses were received and analyzed for the purpose of the study. This represented a response rate of 57.1%. In an effort to ensure unbiased geographic representation across Kenya, all data for this phase of the study was collected electronically. This strategy would also contribute to environmental friendliness of the survey.

The main survey was guided by the question, "What is the likelihood of adopting certain green building rating attributes and what is their level of importance, as perceived by Kenyan building professionals?" In pursuance of this question, the respondents were asked to rank each attribute based on perceived level of importance. A five point Likert scale ranging from 1 to 5 was employed; 1 being lowest and 5 being the highest score respectively.

Table 1: Green Building Rating Attributes That Are Applicable to Kenyan Building Industry

Category	Green Building Rating Attribute
Sustainable Sites	Prevent construction activity from causing site and air pollution.
	Protect or restore the natural state of the building site in terms of ecosystem, agriculture, plants and animal habitat.
	Build/construct on a previously developed site.
	Preferably locate the project site in a location with higher population density.
	Build/construct on a contaminated site such as brownfield.
	Preferably build/construct near to existing transport and utilities infrastructure.
	Provide secure bicycle storage space for building occupants/users.
	Encourage building occupants to use vehicles that are fuel-efficient and emit lesser pollutants.
	Minimize the number of car parking spaces on the building premises/site.
	Maximize open space on the building/site.
	Control the quantity of storm water runoff from the building/site.
	Control the quality of storm water runoff from the building/site.
	Preferably use roof and non-roof materials with higher heat reflection.
Water Efficiency	Implement strategies to minimize the amount of water used in the building.
	Treat and re-use waste water in the building.
	Collect rainwater for use in the building.
Energy and Atmosphere	Implement strategies to minimize the amount of energy used in the building.
	Preferably use renewable energy that is generated on the building site (e.g., solar and wind).
	Implement strategies to measure and verify energy use in the building.
Materials and Resources	Preferably re-use an existing building structure instead of constructing a new one.
	Preferably use recycled or salvaged building materials.
	Preferably use materials that are available close to the building/site.
	Preferably use building materials that are rapidly-renewable or replenishable.
Indoor Environmental Quality	Prohibit smoking indoors.
	Provide walk-off mats, grills, or grates at building entries.
	Implement strategies to achieve maximum daylight entering the building.

This table shows the list of 26 green building attributes that were identified and validated during the pilot survey as demonstrating potential for adoption in Kenya. The attributes are displayed according to the corresponding categories of sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality.

Responses garnered from the main survey were computed for results by using descriptive statistical tools for mean ratings of each attribute according to its level of importance, as perceived by industry stakeholders in Kenya. The mean scores were then ranked according to their weighted importance, followed by a comparative analysis of the results, as displayed in Table 2. Each green building rating attribute corresponding to the survey items was identified with one of the following categories: 'sustainable sites,' 'water efficiency,' 'energy and atmosphere,' 'materials and resources,' and 'indoor environmental quality.' The following formula was then used to calculate and rank the importance of each attribute and corresponding category:

Mean rating = $(\sum_{i-1}^{5} W * Fi)/n$
where,
W = weight assigned or scale value of respondent's response for the specified survey item (variable):
W=1, 2, 3, 4 and 5;
F_i = frequency of the ith response;
n = total number of respondents to the survey item (variable); and i = response scale value = 1,2,3,4 and 5 for no opinion/do not know, disagree, somewhat agree, agree, and strongly agree, respectively.

For the purpose of this analysis, responses with variable means below 2.5 were considered low/not important; those between 2.5 and 3.0 were considered moderate; those between 3.0 and 4.0 were considered moderately high; while those above 4.0 were considered high. The results of data analysis for each green building ratting attribute and its corresponding category is are tabulated in Table 2. For ease of data interpretation, each green building attribute was assigned a unique code (e.g. Q**). Also, there were variations in response counts due to skipping of some questions by respondents.

Table 2: Comparative Ranking for Green Building Attributes in Order of Importance

Survey Code	Green Building Attribute	Category	Mean Rating	Rank
Q17	Minimize the amount of energy used in the building	EA	4.88	1
Q24	Use strategies to achieve maximum daylight entering the building	IQ	4.68	2
Q14	Collect rainwater for use in the building	WE	4.66	3
Q18	Use renewable energy that is generated on the building site	EA	4.63	4
Q15	Treat and re-use waste water in the building	WE	4.55	5
Q16	Minimize the amount of water used in the building	WE	4.40	6
Q19	Measure and verify energy use in the building	EA	4.39	7
Q1	Protect or restore the natural state of the building site in terms of ecosystem, agriculture, plants and animal habitat	SS	4.37	8
Q2	Control the quality of storm water runoff from the building/site	SS	4.25	9
Q3	Control the quantity of storm water runoff from the building/site	SS	4.22	10
Q4	Prevent construction activity from causing site and air pollution	SS	4.20	11
Q20	Use materials that are closely available to the building/site	MR	4.13	12
Q5	Maximize open space at the building/site	SS	3.98	13
Q25	Build/construct using recycled or salvaged building materials	MR	3.85	14
Q6	Use roof and non-roof materials with higher heat reflection	SS	3.85	14
Q22	Use building materials that can be renewed or replenished rapidly	MR	3.85	14
Q7	Build/construct near to existing transport and utilities infrastructure	SS	3.76	17
Q25	Prohibit smoking inside the building	IQ	3.71	18
Q8	Encourage building occupants to use vehicles that are fuel-efficient and emit lesser pollutants	SS	3.68	19
Q9	Provide secure bicycle storage space for building occupants	SS	3.61	20
Q10	Build/construct on a contaminated site (e.g., industrial site or brownfield)	SS	3.34	21
Q26	Provide walk-off mats, grills, or grates at building entries	IQ	3.20	22
Q25	Re-use an existing building structure instead of constructing a new one	MR	3.15	23
Q11	Build/construct on a previously developed site	SS	3.03	24
Q12	Minimize the number of car parking spaces at the building premises/site	SS	2.85	25
Q13	Build/construct in a densely populated neighborhood	SS	2.74	26

*This table shows the rank-order list of 26 green building attributes that demonstrate potential for adoption in Kenya. The ranking is based on computed mean rating that indicates each attribute's perceived importance, as perceived by Kenyan construction professionals. The mean value is directly proportional to the level of perceived importance. Each attribute was assigned a unique code (Q**) in the survey questionnaire. Also, each attribute is identified with its corresponding green building category, thus Sustainable Sites (SS), Water Efficiency (WE), Energy and Atmosphere (EA), Materials and Resources (MR), and Indoor Environmental Quality (IQ).*

RESULTS AND DISCUSSIONS

According to the results in Table 2, all the 26 green building rating attributes identified and tested in this study were perceived to be important. This is based on the scale of importance that was employed in this study, which shows that all the mean scores ranged from moderate, to moderately high, to high. Essentially, this affirms that the green building rating attributes and corresponding categories identified in this research provide potential for adoption in Kenyan building industry. Results further show that all the three green building attributes in the category of 'energy and atmosphere' were ranked as having top-most importance. Q17 *(minimize the amount of energy used in the building)* was ranked the most important overall with a mean rating of 4.88; Q18 *(use renewable energy that is generated on the building site)* had a mean rating of 4.63 was ranked 4th overall; while Q19 *(measure and verify energy use in the building)* was ranked 7th overall.

Besides the 'energy and atmosphere' category, the 'water efficiency' green building attributes were also rated as highly important. Q14 *(collect rainwater for use in the building)* took 3rd place overall with a mean rating of 4.66; Q15 *(treat and re-use waste water in the building)* was 5th overall with a mean rating of 4.55;

while Q16 *(minimize the amount of water used in the building)* was ranked 6th overall with a mean rating of 4.40.

Out of the three 'indoor environmental quality' green building attributes, only one was rated as being highly important. This was Q24 *(use strategies to achieve maximum daylight entering the building)*, and had a mean rating of 4.68. Second in this category was Q25 *(prohibit smoking inside the building)* which was rated moderately high in importance with a mean value of 3.71. Q26 *(provide walk-off mats, grills, or grates at building entries)* was rated as being moderately important and had a mean rating of 3.20.

Among 'materials and resources' green building attributes, only Q20 *(use materials that are closely available to the building/site)* was rated as highly important, and had a mean value of 4.13. Both Q25 *(build/construct using recycled o salvaged building materials)* and Q22 *(use building materials that can be renewed or replenished rapidly)* were rated as being of moderately high importance with a mean value of 3.85. However, Q25 *(re-use an existing building structure instead of constructing a new one)* was rated as having moderate importance and received a mean rating of 3.15.

Out of the thirteen green building attributes in the category of 'sustainable sites,' four were rated as being highly important. These were: Q1 *(protect or restore the natural state of the building site in terms of ecosystem, agriculture, plants and animal habitat)* which had a mean rating of 4.37 and was ranked 8th overall; Q2 *(control the quality of storm water runoff from the building/site)* which had a mean rating of 4.25 and was ranked 9th overall; Q3 *(control the quantity of storm water runoff from the building/site)* which had a mean rating of 4.22 and was ranked 10th overall; and Q4 *(prevent construction activity from causing site and air pollution)* which had a mean rating of 4.13 and was ranked 11th overall.

Seven of the green building attributes in the category of 'sustainable sites' were rated as having moderately high importance. These were: Q5 *(maximize open space at the building/site)* which had a mean rating of 3.98 and was ranked 13th overall; Q6 *(use roof and non-roof materials with higher heat reflection)* which had a mean rating of 3.85 and was ranked 14th overall; Q7 *(build/construct near to existing transport and utilities infrastructure)* which had a mean rating of 3.76 and was ranked 17th overall; Q8 *(encourage building occupants to use vehicles that are fuel-efficient and emit lesser pollutants)* which had a mean rating of 3.68 and was ranked 19th overall; and Q9 *(provide secure bicycle storage space for building occupants)* which had a mean rating of 3.61 and was ranked 20th overall; Q10 *(build/construct on a contaminated site (e.g., industrial site or brownfield))* which had a mean rating of 3.34 and was ranked 21st overall; and Q11 *(build/construct on a previously developed site)* which had a mean rating of 3.03 and was ranked 24th overall.

Out of the entire list of twenty six green building attributes investigated, only two were determined to be of moderate importance to the context of building practices in Kenya. Both belonged to the category of 'sustainable sites.' They were: Q12 *(minimize the number of car parking spaces at the building premises/site)* which had a mean rating of 2.85 and was ranked 25th overall; and Q13 *(build/construct in a densely populated neighborhood)* which had a mean rating of 2.74 and was ranked 26th overall.

CONCLUSION AND RECOMMENDATIONS

This paper is based on a recent study which sought to determine what green building attributes provide the best potential for adoption in Kenya. In pursuit of this goal, the study 1) utilized qualitative research methods of focus groups and personal interviews to identify and validate 26 green building rating attributes that would address the research gap; 2) utilized descriptive statistics to rank the attributes in order of importance, as perceived by construction professionals in Kenya. The survey participants were sampled from the BORAQS database – a key source of nationally recognized construction professionals in Kenya.

Data for the main survey was collected by means of an electronic questionnaire instrument which was developed upon findings that were garnered from the pilot survey.

By unveiling green building rating attributes that have highest potential for adoption in Kenya, this study is imperative to fostering creation of a green building standard that is contextual to the country's construction industry. Also, it is evident from the study that 'energy and atmosphere' attributes are generally rated highest in regard to likelihood, or potential, for adoption in Kenya. This implies that, among other green building attributes, Kenyan building professionals perceive 'energy and atmosphere' green building attributes to be of topmost importance. 'Water efficiency' attributes were ranked second while 'indoor environmental quality' were ranked third overall. In fourth place were 'materials and resources' while 'sustainable sites' attributes were ranked fifth. This rank order of potential green building attributes in order of their perceived importance serves as an additional platform toward creating a meaningful green building template for Kenya.

It would not be an overstatement to articulate that this research is one of the pioneer studies that attempts to create a platform for adoption and uptake of green building practices and green building rating system in Kenya. However, the scope of the study was limited to a sample of 608 construction professionals who were listed as members of BORAQS as of August 31, 2012, and had an email address on their registration profiles. It was further limited to only 347 survey responses that were received by the data collection deadline of December 31, 2012. This might impact the generalization of the present results.

As a way of expounding on the theme of this study, it is recommended that future research looks at unveiling barriers to green building adoption in Kenya. A combined understanding of both the potential and barriers would equip the Kenyan construction stakeholders with a more robust roadmap to developing green building practices in the country. Secondly as mentioned elsewhere in this paper, LEED was adopted as a key model for developing this study. It would therefore be interesting for alternative research to pursue a similar theme but use different green building standard/s as their model. Lastly, it is recommended for future research to adopt the tenets of this study to explore a similar theme but employ alternative research instruments such as the Delphi method or panel technique.

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SAME POWER BUT DIFFERENT GOALS: HOW DOES KNOWLEDGE OF OPPONENTS' POWER AFFECT NEGOTIATORS' ASPIRATION IN POWER-ASYMMETRIC NEGOTIATIONS?

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ABSTRACT

This article focuses on dyadic negotiations in which negotiators have asymmetric best alternatives to the negotiated agreement (BATNAs). We argue it is important to consider negotiator's knowledge states of opponent's BATNAs. The experimental study also examined how negotiator's perceptions of opponent's BATNAs were formed and how knowledge given to different negotiators affected negotiator aspiration levels. The findings show that Negotiator estimates of opponent BATNAs are affected by their own BATNAs even when the range of possible BATNAs is given; strong negotiator's knowledge of opponent's BATNAs increases their aspiration levels; and weak negotiator's knowledge reduces their aspiration levels. How knowledge of BATNA-asymmetries affects aspiration depends on which party has access to it.

INTRODUCTION

In almost all business fields, one cannot avoid negotiating. For example, a manager from one department needs to negotiate how to distribute limited resource with another department. A manager may need to negotiate the price of products and services the company provides to its customers. Negotiation involves two or more parties who agree on different issues. The resulting agreement makes the parties better off than without an agreement. Unless in a laboratory setting, negotiators usually have different power. It is therefore not surprising that a growing body of research focuses on negotiations where negotiators have different power (Anderson & Thompson, 2004; Kim & Fragale, 2005; Kray, Reb, Galinsky, & Thompson, 2004; Mannix & Neale, 1993; Pinkley, Neale, & Bennett, 1994; Van Kleef, De Dreu, Pietroni, & Manstead, 2006; Wolfe & Mcginn, 2005).

Power is a relational variable, in that negotiator power can be understood only in relation to their opponents (Anderson & Thompson, 2004; Emerson, 1962; French & Raven, 1959). The more dependent one negotiator is on the upcoming negotiations than his or her opponent, the more power the opponent has over him or her. Fisher & Ury (1981) contend the value of a negotiator's Best Alternative to a Negotiated Agreement (BATNA) is a source of power, from which theoretical and empirical attention has been drawn (Brett, Pinkley, & Jackofsky, 1996; Kim & Fragale, 2005; Kim, Pinkley, & Fragale, 2005; Magee, Galinsky, & Gruenfeld, 2007; Pinkley et al., 1994; Roloff & Dailey, 1987; Saorín-Iborra, Redondo-Cano, & Revuelto-Taboada, 2013; Thompson, Wang, & Gunia, 2010; Wei & Luo, 2012). The possession of an attractive BATNA not only protects one from a poor agreement but also helps generate a good agreement (Fisher & Ury, 1981). This study is confined to situations where negotiators have asymmetric BATNAs. Hereafter, negotiators with a relatively more attractive BATNA are referred to as strong negotiators. Those with a less attractive BATNA are weak negotiators. When negotiators have different BATNAs, strong negotiators are have greater bargaining strength over their weaker counterparts (Fisher & Ury, 1981; Lewicki & Litterer, 1985; Pinkley, 1995; Pinkley et al., 1994; Raiffa, 1982). We know that in BATNA-asymmetric negotiations,

a better quality BATNA is converted into a higher portion of bargaining surplus (Komorita & Leung, 1985; Pinkley et al., 1994).

Most studies addressing BATNA-asymmetric negotiations make knowledge of others BATNAs available to negotiators. Yet, an assumption of complete knowledge of power-asymmetries entails significant loss in generalizability. This study considers whether, and how, knowledge of BATNA-asymmetries affects negotiators' aspiration levels. Negotiator aspiration has been shown to be an important pre-negotiation parameter as it determines negotiators feeling of success, concession pattern, own outcomes and joint outcomes (Mannix & Neale, 1993; Thompson, 1995). The current experiment was designed to address the following questions: (i) how does the perceived quality of one's own BATNA affect one's perception of the quality of the other's BATNA?; and (ii) how does knowledge of BATNA-asymmetries affect negotiator aspiration levels?

Next, a review of existing literature on BATNA-asymmetric negotiations and the hypotheses tested in this study are given. It is followed by a detailed description of experimental design and measurements used. Finally, the results will be reported and discussed, followed by concluding comments.

LITERATURE REVIEW

Formation of Negotiator Perceptions About Opponents

It is common that information regarding opponent positions is not available to negotiators. Negotiators often have their own expectations about opponents, prior to negotiations, for example, opponent payoff structure, interests, BATNA, etc. Given this lack of common knowledge I am left to wonder how negotiator expectations of the other's positions are formed. Experimental psychological and economic literature addressing the importance of information about opponents may help shed light on this issue (Roth & Malouf, 1979; Roth & Murnighan, 1982; Thompson & Hastie, 1990).

One stream of research considers how negotiator expectations about opponents are formed when negotiations involve multiple issues and contain potential for integrative agreements (Raiffa, 1982; Thompson, 1990, 1991; Thompson & Hastie, 1990). Essentially, Thompson (1990) and Thompson & Hastie (1990) examined negotiator perceptions of their opponent's preferences. These studies show that when no information about opponents is available, negotiators often assume that the other party's intensity of preferences across issues is the same as their own and that others interests within issues are completely opposed to their own within issues. Together, these findings are consistent with Thompson & Hastie's (1990) projection hypothesis which argues negotiators tend to base their perceptions of others on their own situations. In other words, when negotiators are in different situations to their opponents (i.e. different preferences or different prizes), their estimations about opponents tend to be inaccurate.

Knowledge of opponent BATNAs is probably the most important information negotiators can have in a negotiation. Pinkley et al. (1994) first attempted to show the quality of negotiators own BATNAs affects how they perceive their opponents BATNAs, when no information of opponents BATNAs is available. In real-life negotiations, although it is often the case that negotiators would not know precisely the value of others BATNAs, at most times they have at least some information about the others position (i.e. range of possible BATNAs). For example, most people, when purchasing cars, can access information about dealer costs and selling prices of other cars in the same model. This valuable information helps them determine the range of sellers possible BATNAs to some degree. To tighten external validity, I consider the effect of a range of possible BATNAs on negotiators' perception about others BATNAs.

Being given the range of possible BATNAs provides negotiators with knowledge of where they are. For instance if their BATNAs are within the range. Accordingly, it allows them to identify to a certain extent,

whether their BATNAs are relatively attractive or not. Whether this range affects negotiator perceptions about opponent BATNAs depends on where their BATNAs are.

Assuming that negotiators possible BATNAs are normally distributed, the best estimate of opponent BATNAs would be the range median. When negotiator's BATNAs are in the extremes of the range (i.e. weak negotiators in this study), they would know that their opponents BATNAs are likely to be better than their own. We speculate that this range median can alleviate the anchoring effect of their own BATNAs on perceptions about the others. In effect, it is likely they are more inclined to adjust their estimates from their own BATNAs to the range median, than those without knowledge about the range of possible BATNAs. On the other hand, when negotiator's BATNAs are close to the range median, the range of possible BATNAs will have no impact on their perception about the others'. To test the effect of BATNA-range on weak negotiators perceptions of others BATNAs, I propose the following hypothesis:

Hypothesis 1: Weak negotiators adjust their estimates about others' BATNAs farther away from their own BATNAs, when the range of possible BATNAs is given than when it is not.

Knowledge of BATNA-Asymmetries and Aspiration

Apart from estimating opponents BATNAs, negotiators usually identify their aspiration levels prior to negotiations. A number of studies have emphasized the importance of negotiator aspirations and they have been shown to impact initial offers and rates of concession, thus affecting the structure of outcomes (Lai, Bowles, & Babcock, 2013; Miles, 2009). In particular, negotiators with high aspirations generally make higher demands from their opponents and tend to be less willing to concede (Brodt, 1994; Cummings & Harnett, 1969; Hamner & Harnett, 1975). As a result, they end up with more of the pie and greater profits than those with low aspirations (Hamner & Harnett, 1975; Thompson, 1995).

Given the importance of aspiration to the structure of negotiated outcomes, research on BATNA-asymmetric negotiations has examined the impact of the quality of negotiator's BATNAs on their aspiration levels (Pinkley et al., 1994). Three levels of BATNAs (High, Low and No BATNA) were considered. Pinkley *et al.* (1994) showed that negotiators with high BATNAs (i.e. worth more than a compromise solution by agreeing on the mid-point of all negotiated issues) reported higher aspirations than those with low (i.e. worth less than a compromise solution) or no BATNAs. But, there was no difference between negotiators with low BATNAs and those with no BATNAs. These findings indicate that a strong BATNA increases aspiration levels. In other words, it assumes that a strong BATNA is defined in absolute terms. However, when BATNAs are in the low level, they have no impact on negotiators aspiration levels.

It is widely held that the relative quality of the BATNA available to a negotiator reflects the relative power of the negotiator (Lewicki & Litterer, 1985; Raiffa, 1982). It is, however, unclear as to why the relative strength of a BATNA does not affect negotiators aspiration. It is worth considering whether knowledge of BATNA-asymmetries influences negotiators aspiration levels. Such a relationship has not been explored in past research and will be addressed in this study. According to Thompson and Hastie's (1990) projection hypothesis, it is possible that negotiators assume their opponents have a similar BATNA. It is possible that knowledge of BATNA-asymmetries is key to negotiators' aspiration levels.

When negotiators have different BATNAs, the effect of this knowledge may differ depending on the quality of one's BATNA in relation to another's. Specifically, the direction of how this information influences aspiration depends on who has access to this knowledge and whether it identifies negotiators as expecting too much or too little relative to established social norms (Brodt, 1994; Roth & Murnighan, 1982). This identification is required to determine whether negotiators initial aspiration levels are high or low. For instance, some may suggest that in fixed-sum negotiations, negotiators initial aspiration level is low when their expected profit is less than half of the maximum joint profit. Their aspiration level is high if expected

profit is more than half the maximum joint profit. However, it becomes more difficult to define whether one's initial aspiration is (arguably unrealistically) high or low in variable-sum and BATNA-asymmetric negotiations. To accomplish this, I attempt to define strong and weak negotiators' initial aspirations when no knowledge of BATNA-asymmetries is available, followed by exploring the impacts of information about BATNA-asymmetries on aspiration levels of strong and weak negotiators respectively.

Past research implies that strong negotiators, who cannot compare their BATNAs with their opponents, tend to overestimate their counterparts BATNAs (Pinkley et al., 1994). Consequently, they may not set their aspiration as high as those who can learn BATNA-imbalances between parties. For example, when strong negotiators lack information about BATNA asymmetries, they may be prepared to accept an offer that does not give them a large surplus. However, providing strong negotiators with information of others BATNAs could help them identify whether an offer is unreasonable. Hence, when this information is not made available to strong negotiators, their initial aspiration is expected to be low. Because knowledge of BATNA asymmetries gives strong negotiators an acceptable justification for their demand of a higher share of the resources, it is suggested that this knowledge increases their aspiration level. To test this possibility, the hypothesis is proposed as follows:

Hypothesis 2a: The aspiration level of strong negotiators increases with knowledge of their weaker counterparts' BATNAs.

On the other hand, it is plausible to predict that when weak negotiators have no information about opponents BATNAs, their aspiration is unrealistically high. Again, this is because they tend to assume that their opponents are in a similar situation as they are. This assumption deflates their estimations about counterparts BATNAs. So, it is speculated that when informed of another's BATNA, weak negotiators expect less from the existing negotiation than when they lack information about another's BATNA. This is due to the fact that this information shows that they are the weaker member of negotiation dyads. The influence of knowledge about BATNA-imbalances is hypothesized in the following:

Hypothesis 2b: The aspiration level of weak negotiators decreases with the knowledge of her opponent's BATNA.

DATA AND METHODOLOGY

Subjects and Procedure

Two hundred and three undergraduate and master students at London School of Economics and University College London participated in this study between 2007 and 2008. They volunteered to take part in what was described as a negotiation experiment. The sample included 108 men and 95 women, with ages ranging from 18 to 51 years and a mean of 25.15 ($SD = 4.78$) years (see Table 1 for details).

Participants were randomly assigned to experimental conditions and received the following instructions on a paper handout before the exercise began:

> "The purpose of this study is to examine negotiation behavior. There will be a negotiation between an employer and employee about a job contract for the post of Assistant Manager. You will be randomly assigned as either an employer or employee. There are six issues of concern in the negotiation: salary, annual leave, bonus, starting date, medical coverage and company car. You will negotiate for points. Before you negotiate, you will be given a chart that describes all the possible ways you can settle this negotiation and how many points you can get for each alternative settlement. Your goal in this negotiation is to maximize the number of points you

gain for yourself. You will be given thirty minutes to negotiate and if you are unable to reach an agreement during that time, a disagreement will be declared."

Table 1: Demographic Profile

Characteristics	Frequency	Percentage (%)
Gender		
Male	108	53.2
Female	95	46.8
Age		
20 or below	26	12.8
21 - 30	127	62.6
31 - 40	39	19.2
41 - 50	9	4.4
51 or above	2	1.0
Level of Academic Program		
Undergraduate	89	43.8
Postgraduate	114	56.2

Table 1 illustrates the characteristics of subjects who took part in the experiment.

As an incentive, subjects were informed the money that they received at the end of the experiment was related to the number of points they earned. They received 10p for every 100 points earned. The maximum possible payment to subjects was £12.80 and the minimum was £0.00. The experimenter provided subjects with specific negotiation instructions, a payoff chart, details their role, their own BATNAs, information about opponents BATNAs (if applicable), and a short quiz to ensure that subjects understood their BATNAs and payoff chart. All of these instructions, information, and quiz were given in writing on paper. Subjects were tested individually. The quiz showed subjects some sample agreements and asked them to indicate which agreement was better and which agreement was worse than their BATNAs. The experimenter checked answers to every question. Subjects in error were told to attempt the question again. Most subjects were correct on their first attempt and all were correct on their second attempts.

Questionnaires were used for the dependent measures as well. All participants were asked to complete a questionnaire at three points in the experiment. The first questionnaire included a number of demographic questions and elicited the participant's perceptions of other parties BATNAs, which was given after reading initial role materials and receiving details about their own BATNAs. The second questionnaire elicited participants aspiration levels, which was distributed after participants were given information about others BATNAs (only applies to one of the experimental conditions). After participants completed the final questionnaire, they were debriefed about the purpose of the experiment.

Negotiation Task

The negotiation simulation used in this study was a variable-sum task. The negotiation situation involved an employer and employee resolving six issues in a job contract. As shown, all pairs negotiated a job contract that included different options on the following issues: salary, annual leave, bonus, starting date, medical coverage and company car. Table 2 describes all possible ways participants could settle this negotiation. There were several alternatives for each issue (e.g., the bonus varies between 2% and 10%). Each party had different preferences for the different alternatives defined by the points he or she would receive if that alternative was agreed upon.

The task contained six issues to be resolved including three types of issues: distributive, compatible and integrative (see Table 2). The salary was a purely distributive issue; when one party gained, the other party lost in a direct, fixed-sum fashion. The starting date was one in which both parties have perfectly compatible interests. In this negotiation task, there were two fully integrative trade-offs possible, in which preferences are inverse so that one party places a higher value on one issue and a lower value on another issue. For

instance, they had different priorities for medical coverage and company car issues and could trade-off these issues in the most profit-maximizing way (employer giving employee the best company car for the least medical coverage plan).

Table 2: Pay-off Schedules for Job Negotiation Task

Salary	Annual Leave	Bonus	Starting Date	Medical Coverage	Company Car
Employer Pay-off Schedule					
£24,000 (0)	25 days (0)	10% (0)	1st July (1,200)	Plan A (3,200)	BMW 330i (0)
£23,000 (500)	20 days (1,000)	8% (400)	15th July (900)	Plan B (2,400)	VW Golf (200)
£22,000 (1,000)	15 days (2,000)	6% (800)	1st Aug (600)	Plan C (1,600)	Honda (400)
£21,000 (1,500)	10 days (3,000)	4% (1,200)	15th Aug (300)	Plan D (800)	Ford Focus (600)
£20,000 (2,000)	5 days (4,000)	2% (1,600)	1st Sept (0)	Plan E (0)	No Company Car (800)
Employee Pay-off Schedule					
£24,000 (2,000)	25 days (1,600)	10% (4,000)	1st July (1,200)	Plan A (0)	BMW 330i (3,200)
£23,000 (1,500)	20 days (1,200)	8% (3,000)	15th July (900)	Plan B (200)	VW Golf (2,400)
£22,000 (1,000)	15 days (800)	6% (2,000)	1st Aug (600)	Plan C (400)	Honda (1,600)
£21,000 (500)	10 days (400)	4% (1,000)	15th Aug (300)	Plan D (600)	Ford Focus (800)
£20,000 (0)	5 days (0)	2% (0)	1st Sept (0)	Plan E (800)	No Company Car (0)

Note. Negotiators were instructed that the number of points they would obtain was in parentheses. Employers and employees were given the upper half and the lower half of this table respectively.

Negotiators could earn a maximum of 12,800 points or a minimum of 0 points. According to Table 1, an obvious compromise solution (settling at the mid-point for each issue) would be £22,000 salary, 15-day annual leave, 6% bonus, starting on the 1st August, Plan C medical coverage, and a Honda company car, yielding each negotiator 6,400 points for a joint total of 12,800 points. Of course, there were several other possible solutions that negotiators could reach.

Experimental Manipulation and Dependent Measures

Strong negotiators were represented by the role of employer; while weak negotiators were in the employee role. Strong negotiators and weak negotiators would receive 6,000 and 1,200 points respectively in case of a disagreement. Participants were randomly assigned to the role of employer and employee. To create BATNA-imbalances between parties, each employer was randomly assigned to an employee so that each dyad was constituted of one employer and one employee. One might argue that employers (employees) always being strong (weak) negotiators may have created more than just BATNA differences. In other words, any observed significant differences between strong and weak negotiators may be attributable to their roles rather than their BATNAs. However, past research suggests that this is unlikely to be an issue. Pinkley (1995) considers the potential effect of role in job contract negotiation but no significant impact of role was found on pre-negotiation parameters (i.e. reservation price, aspiration levels) and negotiated outcomes. In addition, the current study concerns the absolute difference across experimental condition. As a result, any difference in role (between employer and employee) should not interfere with hypotheses validity.

Knowledge of BATNA-asymmetries was manipulated. To summarize the design, I identified two basic conditions, to which negotiation pairs were randomly assigned. They were: (1) Neither player knew the opponent's BATNA (control); and (2) Weak negotiators knew strong negotiators' BATNAs, and strong negotiators knew weak negotiators' BATNAs.

Negotiators' perceptions of others' BATNAs were assessed prior to negotiations. Their perceptions were surveyed after reading materials about their role, payoff schedules and BATNA manipulation but before receiving information about another's BATNA (if applicable).

Subjects were given the range of others BATNAs, 0 - 12,000 points, and they were asked to indicate what they believed the probability of the range(s) which their opponents BATNAs would fall within. A series of questions was asked for each interval, for example: "What is the probability that the opponent's BATNA is greater than 0?"; "What is the probability that the opponent's BATNA is greater than 1,000?". Given the probability distributions of participants perceptions, an 'expected estimate of another's BATNA' for each participant can be computed.

Negotiators aspiration levels were assessed by asking participants to indicate what constituted an ideal situation for them prior to negotiations. Specifically, following the provision of role material, pay-off schedules, BATNA manipulation and information of others BATNAs (if available), the experimenter provided participants with a questionnaire with the following instructions:

> "Below is a pay-off chart similar to the one that has been given to you. Now, we would like you to fill in the boxes in this to indicate what your ideal settlement would be on each issue. Please note that only one alternative can be ticked for each issue."

A measure of aspiration was computed by transforming negotiator predictions into the number of points they would receive if that settlement was obtained.

RESULTS

Manipulation Checks

After receiving the experimental material containing BATNA manipulations, subjects were asked to specify the numbers of points they would receive in case of an impasse. In order to create BATNA asymmetries between parties, it is necessary to check the number of points that subjects believed they would receive for different roles (6,000 and 1,200 points for strong and weak negotiators respectively). Only a few participants (less than 2%) gave the wrong answers in the first trial. All of them were correct on their second attempts. In addition, manipulations of knowledge of BATNA asymmetries should be considered. All negotiators who were given knowledge of BATNA asymmetries correctly reported their opponents BATNAs. Thus, the BATNA and knowledge of BATNA asymmetries manipulations worked as intended.

Hypothesis 1 suggested that the range of possible BATNAs would reduce the anchoring effect of weak negotiator's BATNAs (in the lower- or upper-end) on their perceptions about others BATNAs. To test this hypothesis, I compared the difference in weak negotiators perceptions between two groups, one without being given the range and another with the range given. The finding supports Hypothesis 1. When weak negotiators were given the range of possible BATNAs, their perceptions about their counterparts BATNAs (M_{range} = 3,323) were higher than those without knowledge of the range ($M_{no\ range}$ = 1,375), t = 7.26, p < 0.0005. Considering the range was 12,800 points, the 2,000 difference in perceptions between these two groups is not trivial. This suggests the range of possible BATNAs lessens the anchoring effect of BATNAs on weak negotiators perceptions. However, the impact of weak negotiators own BATNAs (1,200 points) remains strong enough to pull their perceptions away from the best guess the range median.

Does knowledge of BATNA asymmetries affect negotiators aspiration levels? Yes. An analysis of variance, ANOVA, with a priori contrasts requested was performed to examine the impact of experimental conditions (knowledge of BATNA-asymmetries) on strong negotiators aspiration levels. A significant main effect for

Experimental Condition was found, $F(1,100) = 10.76$, $p < 0.005$.

Hypothesis 2a predicted this knowledge would have a positive impact on their aspiration levels. The findings support this hypothesis. As can be seen in Table 3, a planned comparison was conducted to compare strong negotiators aspiration in the control group and Condition 2. Informed strong negotiators reported higher aspirations ($M_{knowledge} = 8,060$) than those without information ($M_{no\ knowledge} = 7,371$), $t = 3.28$, $p < 0.01$. The finding suggests that strong negotiators knowledge of BATNA-asymmetries results in higher goals that they set for themselves.

Table 3: Means (Standard Deviations) for Negotiators Aspiration Levels as a Function of Experimental Condition

Experimental Condition	Strong Negotiators' Aspiration Levels
Control	7,371[***]
	(988)
Strong Negotiators' Knowledge	8,060[***]
	(1,130)
	Weak Negotiators' Aspiration Levels
No Weak Negotiators' Knowledge	7,484[***]
	(1,767)
Weak Negotiators' Knowledge	6,160[***]
	(1,813)

Note. No. of Strong Negotiators = 102 and No. of Weak Negotiators = 101. This table shows the mean values of strong and weak negotiators' aspiration levels in the two experimental conditions. Standard deviations are indicated in parentheses. In the second column, the upper two cells suggest that the mean strong negotiators' aspiration level was significantly higher in Condition 2 than that in the control group, and the lower two cells indicate that the mean weak negotiators' aspiration level was significant lower in Condition 2 than that in the control group. ***indicates significance at 1 percent level.

An ANOVA was used to consider the impact of negotiators' knowledge of BATNA-asymmetries (Experimental Condition) on weak negotiators aspiration levels. A significant main effect for Experimental Condition was found, $F(1,99) = 13.82$, $p < 0.0005$. Hypothesis 2b suggested that weak negotiators aspiration will decrease with their knowledge levels of others BATNAs. This hypothesis is supported. As can be seen in Table 3, a planned contrast of weak negotiators aspiration (control vs. Condition 2) revealed that when weak negotiators were informed, their aspiration levels were significantly lower than when they lacked this knowledge ($M_{knowledge} = 6,160$ compared to $M_{no\ knowledge} = 7,484$), $t = -3.78$, $p < 0.0005$. The result indicates that when weak negotiators knew both BATNAs, they tended to lower expectations about what constituted an ideal situation for themselves.

DISCUSSION

The first research question addressed an apparent lack of supportive empirical evidence for theoretical arguments predicting a relationship between the quality of negotiator's BATNAs and their perceptions about others. According to Thompson and Hastie's (1990) projection hypothesis, negotiators should tend to base their perceptions about opponents on their own position. Given that BATNA imbalanced negotiations were considered in this study, I examined the impact of weak negotiator's BATNAs on their perceptions about others BATNAs, prior to negotiations.

In real-life situations, negotiators often do not know the precise value of others BATNAs, but they may have some information about the others position. This study examined the effect of the range of possible BATNAs on negotiators perceptions about others BATNAs, when negotiator's BATNAs were in the extreme of the range (weak negotiators in this case). Given the range, the best guess of others BATNAs should be the range median. It was found that when weak negotiators were given the range, their perceptions were farther from their own BATNAs than those who did not know the range. Being given the range lessened the anchoring effect of negotiator's BATNAs. Nonetheless, it is important to note the perceptions

of weak negotiators were still below the range median. This suggests that negotiators perceptions of opponent's BATNAs are anchored to their own BATNAs, to a certain extent. In other words, it is likely that knowledge of opponents BATNAs plays an important role in negotiations where negotiators have different BATNAs. The findings from the present study provide a fuller understanding of the process by which negotiators with a BATNA perceive their counterparts BATNA status.

Next, I emphasize the importance of an opportunity of interpersonal BATNA comparisons in another important pre-negotiation variable: aspiration levels. Previous research has shown the quality of BATNAs does not affect negotiators aspiration levels when their BATNAs are worth less than what a compromise agreement constitutes (Pinkley et al., 1994). This was replicated in this study. When knowledge of BATNA asymmetries is not available, strong and weak negotiators reported very similar aspiration levels. Another issue addressed was that whether knowledge of BATNA-asymmetries influences negotiators aspirations when they have different BATNAs.

Knowledge of BATNA asymmetries decreased with weak parties aspiration levels (see Figure 1). This is because an assumption of equal-BATNA situations led to an underestimation of the wideness of BATNA differences between parties. As a result, when weak negotiators lacked information of BATNA asymmetries, their initial aspiration levels were unrealistically high. Therefore, the role of this information was to help them reasonably identify their position in the negotiation, in comparison with their opponents. Clearly, weak negotiators would expect less from the existing negotiation when they better understood how a bargaining situation was characterized, than when they lacked this knowledge.

On the other hand, strong negotiators aspiration levels increased with their knowledge of BATNA imbalances (see Figure 1). An explanation is that in the absence of this knowledge, strong negotiators aspiration levels were unrealistically low, since they assumed their opponents would also have attractive BATNAs. Knowledge of BATNA asymmetries would help them identify they were in a position of higher power than their opponents. As a result, informed strong negotiators expected to obtain more from the existing negotiation than uninformed strong negotiators who overestimated their opponents BATNAs.

Many scholars argue that negotiators with high aspirations would outperform those with lower aspirations because high aspirations lead to higher demands and fewer concessions (Brodt, 1994; Cummings & Harnett, 1969; Hamner & Harnett, 1975; Thompson, 1995). Coupling theorist suggestions with the effect of knowledge on strong negotiators aspirations, informed strong negotiators were therefore expected able to do better in claiming values than those without knowledge.

Another theoretical contribution is that being given knowledge of BATNA asymmetries may place strong negotiators in a position of greater bargaining strength, resulting in a bigger slice of the resource pie than those who lack this knowledge. It explains why in some studies strong negotiators were able to reflect their BATNA advantage (Kim & Fragale, 2005; Komorita & Leung, 1985; Magee et al., 2007; Pinkley et al., 1994) but in another study strong negotiators did not reflect their power (Pinkley, 1995). The finding that strong negotiators knowledge of BATNA asymmetries increases their aspirations has other important implications. Magee *et al.* (2007) examine the relationship between BATNAs and the likelihood and pattern of negotiators making the first offer. They show that strong negotiators, compared to weak negotiators, are more likely to make an advantageous first offer, but this finding was confined to situations where strong negotiators knew both BATNAs. It is possible the observed effect of BATNA on the first offer made is also mediated by knowledge of BATNA asymmetries. More research is necessary to address this issue.

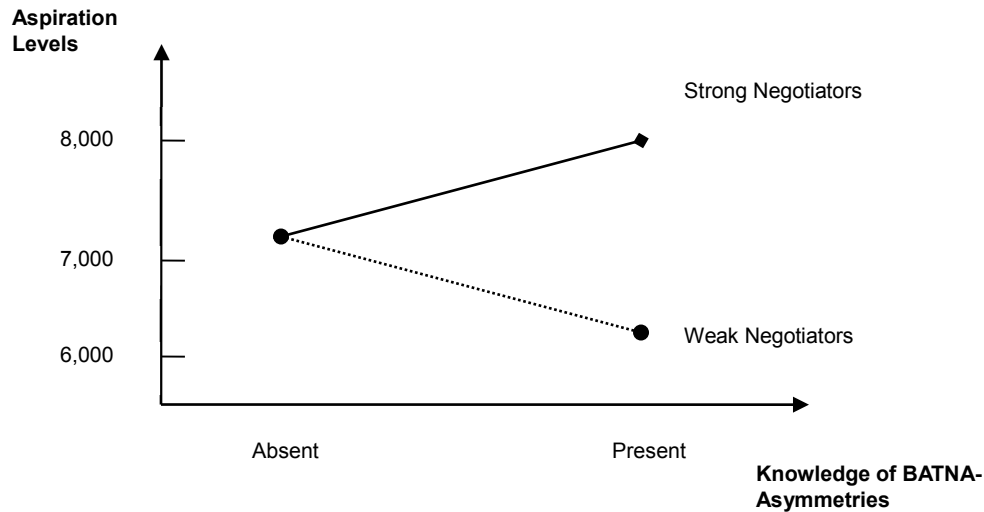Figure 1: Negotiators' Aspirations as a Function of BATNA Knowledge

Figure 1illustrates the opposite impacts of knowledge of BATNA asymmetries on strong and weak negotiators aspiration levels.

The findings also provide insights into strong parties mind-set when they did not have knowledge of BATNA asymmetries. One possible explanation is that uninformed strong negotiators, as shown previously, assumed that their counterparts also had an attractive alternative to the negotiation. As a result, they would act as if they were in equal BATNA situations. In contrast, knowledge of BATNA-asymmetries provided strong negotiators with a *justification* of a larger share of the resource pie. It signals to them that their counterparts rely on the existing negotiation to a greater extent than they do.

Prescriptive advice based on these experimental findings can be made to practitioners and managers in different business fields. Prior to negotiations, people's estimates about opponents BATNAs are often biased even when they have information regarding the possible value of opponents BATNAs. Managers are advised to be aware of failing to adjust sufficiently from their own BATNAs when estimating about others BATNAs. Coupling past findings about aspiration levels with the current findings, people's aspiration could be unrealistically too high or low, depending on their relative attractiveness of BATNAs. Even for negotiators in a weaker position, negotiators may benefit from learning more about their opponents positions, in terms of better identifying what a realistic agreement constitutes.

CONCLUDING COMMENTS

The current research considers two important pre-negotiation parameters, perception of opponents BATNA and aspiration, in BATNA asymmetric negotiations. The empirical data is a product of a simulated negotiation experiment in which 203 undergraduate and master students participated. The major findings are that knowledge of BATNA asymmetries increases strong negotiators aspiration but decreases weak negotiators aspiration. A limitation of this study is that it is uncertain as to whether this knowledge affects the structure of negotiated outcomes. The relationship between knowledge and aspirations found in this study opens several avenues to explore in future studies. Without knowledge of BATNA asymmetries, it is seen that weak negotiators would expect more from negotiation. It leads to a question: How will the negotiation dynamic be affected if the two parties have different levels of knowledge? One place to begin is that there would be higher levels of hostility and conflict between negotiators, when only strong negotiators are aware of their BATNA advantage but weak negotiators do not. Hence, knowledge of BATNA asymmetries is an important focus in future research on power-asymmetric negotiations.

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BIOGRAPHY

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CORPORATE SOCIAL RESPONSIBILITY PRACTICES OF UAE BANKS

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ABSTRACT

The study aims at investigating corporate social responsibility (CSR) practices of UAE banks. A modified questionnaire has been developed. The questionnaire is divided into two parts. The first part covers general information, namely the experience, position and educational level of the respondent. The second part consists of 18 questions about awareness of CSR, CSR dimensions, the most important issues of CSR, CSR instruments, stakeholders' engagement and co-operation, the community activities carried out by UAE banks, voluntary activities to mitigate climate change, CSR practices, organizational responsibility for CSR, CSR payback, public policy support for corporate social responsibility and the relationship with the stakeholders. The main results indicate that the UAE banks are aware of the concept of corporate social responsibility; they place more emphasis on compliance with mandatory social and environmental legislation and less on the non-mandatory legislation; the social specific issues are the most important ones; the banks collect information about/from stakeholders and consult stakeholders and participate in multi-stakeholder initiatives; the banks contribute positively in supporting community activities, for instance through donations and sponsorship; the banks are not heavily involved in problems of climate change; the banks ensure equal access to their banking services for all women, irrespective of their marital status, race, etc.; the banks meet the mandatory legislation requirements related to CSR; and finally, the majority of the respondents (90 percent) indicated that it is important for their banks to inform stakeholders about their corporate social responsibility activity.

JEL: G2, G21

KEYWORDS: Corporate Social Responsibility, UAE banks, UAE Islamic Banks, Direct and Indirect Aspects of CSR

INTRODUCTION

Carroll (1991) defined corporate social responsibility (CSR) as "an organization's commitment to operate in an economically and environmentally sustainable manner while recognizing the interests of all its stakeholders." CSR is also defined as "Corporate initiative to assess and take responsibility for the company's effects on the environment and impact on social welfare. The term generally applies to company efforts that go beyond what may be required by regulators or environmental protection groups" (investopedia). Wikipedia indicates that "CSR is one of the newest management strategies where companies try to create a positive impact on society while doing business." It can be concluded that CSR affects positively the success and sustainability of corporations. Geva (2008) describes the importance of CSR as follows: *Decades of debate on corporate social responsibility (CSR) have resulted in a substantial body of literature offering a number of philosophies that despite real and relevant differences among their theoretical assumptions express consensus about the fundamental idea that business corporations have an obligation to work for social betterment.*

Working for social betterment means corporations are committed towards their society to achieve this goal. In other words, they are socially responsible in this regard. Geva provided a comprehensive review of three models of corporate social responsibility, namely pyramid, intersecting circles, and concentric circles as is shown in Figure 1. The models consist of four dimensions: economic, legal, ethical and philanthropic. Geva also indicated that these four dimensions of social responsibility constitute total CSR: economic ("make profit"), legal ("obey the law"), ethical ("be ethical"), and philanthropic ("be a good corporate citizen").

Figure1 : Three Basic Models of CSR. Relationships between Domains of Responsibility (Geva, 2008)
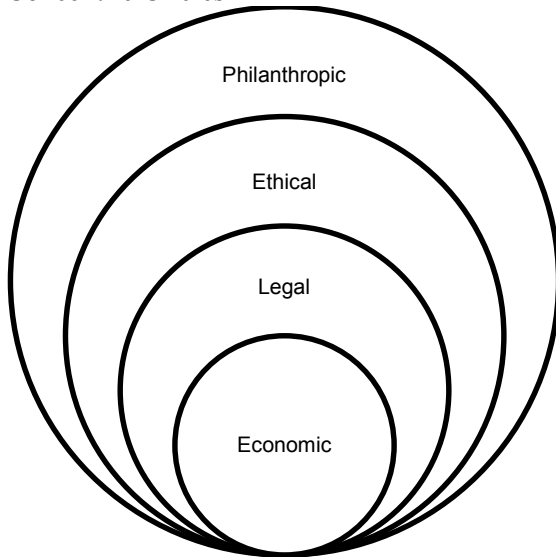
(a) Pyramid
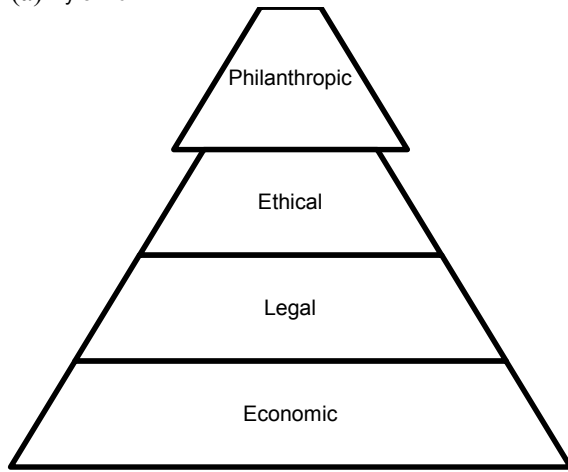
(b) Intersecting Circles
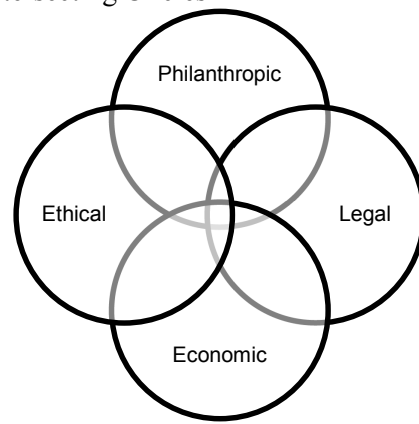
(C) Concentric Circles

The importance of CSR is also reflected in the UN Global Compact which was launched in July 2000. The UN Global Compact asks companies to embrace, support and enact, within their realm of influence, a set of core values in the areas of human rights, labor standards, the environment and anti-corruption. The ten principles are presented in Table 1.

It should be noted that the Global Compact is a voluntary learning and dialogue platform for businesses that are committed to the above mentioned ten universally accepted principles. Jamali (2007) reviews two different CSR conceptualizations, one by Carroll (1979 and 1991) and the other by Lantos (2001 and 2002). Carroll differentiated between four types of corporate social responsibility: economic, legal, ethical and discretionary, which are the almost same as the dimensions mentioned above. Lantos (2001 and 2002) distinguished between three types of CSR, which he referred to as ethical (mandatory fulfillment of a firm's economic, legal and ethical responsibilities), altruistic (fulfillment of an organization's philanthropic responsibilities, irrespective of whether the business will reap financial benefits or not), and strategic (fulfillment of philanthropic responsibilities that will simultaneously benefit the bottom line). Jamali

indicated that that Lantos' dichotomous categorization of CSR into altruistic and strategic may be useful in a developing country context.

Table 1: Ten Principles UN Global Compact

Area	Principles
Human Rights	Principle 1: Businesses should support and respect the protection of internationally proclaimed human right
	Principle 2: make sure that they are not complicit in human rights abuses
Labor	Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
	Principle 4: the elimination of all forms of forced and compulsory labor;
	Principle 5: the effective abolition of child labor;
Environment	Principle 6: the elimination of discrimination in respect of employment and occupation.
	Principle 7: Businesses should support a precautionary approach to environmental challenges;
	Principle 8: undertake initiatives to promote greater environmental responsibility
	Principle 9: encourage the development and diffusion of environmentally friendly technologies.
Anti-Corruption	Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.

The paper is organized as follows. In the following section we discuss the literature related to corporate social responsibility. This section is followed by an exposition of the data and methodology. The fourth section is devoted to the discussion of the main results. In the final section a summary of the concluding comments is provided.

LITERATURE REVIEW

Remišová and Búciová (2012), in their paper entitled "Measuring Corporate Social Responsibility towards Employees," presented a new methodology for measuring CSR level based on the Integrative model of CSR. Accordingly a company cannot be viewed as socially responsible if it does not accept at least basic responsibilities towards all its stakeholders. The methodology adopted by the authors placed emphasis on determining the CSR basis towards one selected stakeholder – employees – and on providing a set of indicators for measuring a CSR level towards them. The functionality of the indicators was tested in empirical research and proved to be applicable. The authors indicated that their paper can be viewed as a guideline to define a CSR basis towards other stakeholders by analogy. In his 2012 article, Sigurthorsson discussed the Icelandic banking crisis in relation to the notion of CSR. The article explores some conceptual arguments for the position that the Icelandic banking crisis illustrates the broad problem of the indeterminacy of the scope and content of the duties that CSR is supposed to address. Sigurthorsson suggested that the way the banks in question conceived of CSR, i.e., largely in terms of strategic philanthropy, was gravely inadequate. He concluded by proposing that the case of the Icelandic banking crisis gives us reason to rethink CSR. Jacob (2012) explores the impact of the financial crisis of 2008 on corporate social responsibility initiatives and its implications for reputational risk management. The findings indicate that the 2008 financial crisis had a clear impact on CSR initiatives in many companies. However, many CSR issues gained greater depth after the crisis, such as organizational governance and environmental policies, as well as compensation policies.

Tongkacho and Chaikeaw (2012) examined corporate social responsibility of listed companies in the Stock Exchange of Thailand. Their results indicated that the factor on transformational leadership had the most positive influence on corporate social responsibility, followed by the factor on corporate governance and the factor on stakeholder engagement respectively. The public duties and social responsibilities of large British banks were examined by Mullineux (2011). The study recommended that in order for the big banks to maximize shareholder value, they need to close the less profitable branches. The author also concluded that post-1990, the big banks had substantially increased their dependency on wholesale funding and

dramatically reduced their liquid asset holdings, which increased their leverage and risk exposure thereby reducing access to finance and increasing risk taking.

Demetriou and Aristotelous (2011) examined whether a bank is expected to play the role of a non-profit organization, and how its stakeholders feel about this issue. Their empirical analysis was based on a questionnaire distributed to 75 Bank of Cyprus customers using a non-probability but convenience sampling approach. The results indicate that according to the gender and age criteria, the majority of participants were aware of the term CSR. Also they verified that it is important for business corporations to adopt a socially responsible and ethical attitude towards the community. Moreover, a large percentage of the respondents indicated that they are not at all aware of CSR activities and strategies that the Bank of Cyprus applies. Bayoud et al. (2011) investigate factors influencing levels of corporate social responsibility disclosure by Libyan firms. In this study, company age, industry type and company size have a potential influence on levels of corporate social responsibility disclosure (CSRD) in the annual reports of Libyan companies. The findings reveal that there is a positive relationship between company age and industry type and the level of CSRD. In addition, the findings show a positive relationship between all factors influencing levels of CSRD used in the study and level of CSRD in Libyan companies. Khan et al. (2011) examined corporate sustainability reporting of major Bangladeshi commercial banks in line with the global reporting initiative (GRI).

The results indicate that information on society is addressed most extensively with regard to extent of reporting. This is followed by the disclosures prepared on decent works and labor practices and environmental issues. Disclosures of product responsibility information and information on human rights were found to be rather scarce in banks' reporting; on the subject of FSS-specific disclosures, only seven items out of 16 were disclosed by all sample banks. The connection between CSR and competition was explored by Lanoizelée (2011) among companies listed on the "CAC 40" of the French stock market. The study found that, on a theoretical level and in terms of corporate disclosure on CSR, there is a large gap between the economic view and the CSR view of competition. It also noted the limits of the competitive advantage obtained by CSR strategy, in that the "demand for virtue is weak even if the stakeholders' 'expectations' for responsible practices are strong." Khan (2010) investigated the CSR reporting information of Bangladeshi listed commercial banks and examined the potential effects of corporate governance elements on CSR disclosures. The main results of this study indicated that though voluntary, overall CSR reporting by Bangladeshi private commercial banks is moderate; however, the variety of CSR items is quite impressive. The results also indicated that there is no significant relationship between women's representation on the board and CSR reporting. However, the results demonstrate a significant impact on the CSR reporting by non-executive directors and inclusion of foreign nationalities.

Corporate social responsibility within the context of international banks was examined by Scholtend (2008). Scholtend developed a framework to assess the social responsibility of internationally operating banks. He applied this framework to more than 30 institutions and found significant differences among individual banks, countries and regions. He also concluded that social responsibility of these banks had significantly improved during the period covered, from 2000 to 2005. Scholtend suggested that it might be interesting to repeat the study following the financial crisis in 2008. Achua (2008) investigated corporate social responsibility in the Nigerian banking system. The study supports the restructuring of the commercial banks of Nigeria by creating a new supervisory agency to enable it to focus exclusively on bank supervision for more effective enforcement of good corporate governance by the banks. The new structure would allow the commercial banks of Nigeria to focus adequately on fiscal policy management to create a macro-economic environment that is conducive for the banks to operate socially and profitably. Jamali (2007) examined the practices of CSR of eight Lebanese companies including two banks. According to the author, these companies were selected because of their reputation and CSR involvement. The results indicate that all the eight companies adhered to a voluntary action or philanthropic type conception of CSR. The study reached

the conclusion that CSR in the Lebanese context seems anchored in the context of voluntary action, with the economic, legal and ethical dimensions assumed as taken for granted.

A survey conducted by the RARE Project Consortium in 2006 explored CSR in relation to 17 European banks in the European Banking Sector. The results are systematically organized around six steps: Relevance of issue; Commitment; Corporate strategy; Organizational embedding; Level of activities; and Performance measurement. The results indicate that a high number of banks recognize the relevance of the three policy issue areas (Mitigating climate change, Promoting gender equality, Countering bribery) but when it comes to commitment, results decrease.

González et al. (2006) summarized three approaches on CSR and the banking industry: 1) theoretical frameworks linking ethical and economic assumptions; 2) empirical research into the positive link between social and financial performance; and 3) research into the generation and implementation of accountability or reporting systems which lead to the measurement of corporate social performance.

The effects of CRS on organizational practices were studied by Enquist et al. (2006). They emphasized incorporating a stakeholder perspective. Their case study on Swedbank includes four business-related CSR activities to use as empirical data when interpreting CSR adoption: 1) the "savings virtue" approach; 2) Swedbank and the global reporting initiative (GRI); 3) Swedbank and the environment/ISO 14001; and 4) multicultural banking at Swedbank.

They concluded that Swedbank provides a useful contextual understanding of how stakeholder thinking can be combined with the CSR initiative to bring about more proactive CSR adoption. This can be achieved through cultural changes whereby core values are developed in order to build a trust relationship with stakeholders. A benchmark study of European banks and financial service organizations was presented by Weber (2005), who attempted to find out the extent to which these banks have integrated sustainability into their policies, strategies, products, services and processes. Among the results of this study, he found five models for successful integration of sustainability into the banking business: event related integration of sustainability, sustainability as a new banking strategy, sustainability as a value driver, sustainability as a public mission and sustainability as a requirement of clients. The main result of his survey was that the social aspects of sustainability find their way into the banking business.

The current study attempts to answer the following questions 1)Are the UAE banks' managers aware of the implementation requirements of Corporate Social Responsibilty?,2)What are the most important dimensions of CSR of UAE banks?, 3) What are the most important issues of CSR of UAE banks?, 4).Are the UAE banks' managers aware of the importance of the activities supporting stackholders engagement? ,5) Are the UAE banks' managers aware of the importance of the activities supporting community needs?,6) Are the UAE banks' managers aware of the importance of the activities supporting climate change?,7) Are the UAE banks' managers aware of the importance of the activities supporting gender equality?, 8) What are the most common forms of Corporate Social Responsibility practice by the UAE banks?, 9) Is there any payback of Corporate Social Responsibility of UAE banks from the UAE bank managers' view?, 10) Does the public policy of UAE banks support Corporate Social Responsibility? And 11) Is the attitude of the UAE bank managers supportive of the implementation of Corporate Social Responsibility?

DATA AND METHODOLOGY

Research Instrument

The questionnaire used in this study was a modified one based mainly on Federica and Daniele's (2006) survey on CSR in the European Banking Sector. According to Federica and Daniele the questionnaire differentiates between direct and indirect aspects of CSR. Direct practice was seen as that implemented by

the banks or linked to the most prominent activity of the banks, whereas the indirect aspects were indirectly linked to the most prominent activity of the banks. The modified questionnaire is divided into two parts. The first part covers general information, namely the respondents' experience, position and educational level. The second part consists of 18 questions on awareness of CSR, CSR dimensions, the most important issues of CSR, CSR instruments, stakeholder engagement and co-operation, community activities carried out by UAE banks, voluntary activities to mitigate climate change, CSR practices, organizational responsibility for CSR, CSR payback, public policy support for CSR and the relationship with the stakeholders. Although the questionnaire used is mainly based on a previously tested questionnaire, the questionnaire draft was piloted by three academicians and four practitioners and the researcher eliminated, added or reworded some of the questions included in the first draft.

<u>Sampling and Data Collection</u>

The targeted population of this study was the directors and senior managers of UAE banks and the sample was a convenience sample consisting of 223 respondents. From the 280 questionnaires distributed to UAE banks during the period June 2012 to November 2012, we received 223 responses, of which 35 were excluded because of incomplete data or response bias of extreme values. The remaining 188 usable questionnaires represent an effective response rate of around 84.3% of the total sample. The questionnaires were distributed by three research assistants to all the UAE banks, both national and foreign.

RESULTS

<u>Awareness of Corporate Social Responsibility Concept</u>

Only 7 percent of the total respondents indicated that they have no idea what is meant by CSR and 23 percent showed little knowledge about CSR, whereas 30 percent made some effort to better understand the advantages and disadvantages of CSR. However, the highest number of responses, around 40 percent, reveal that respondents think actively about CSR and it is an aim of their bank (Figure 1).

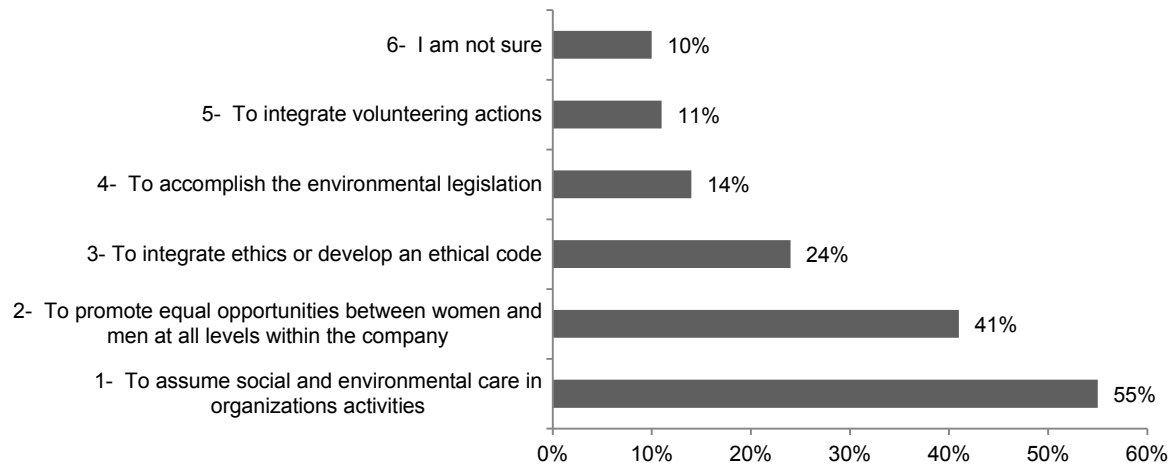Figure 1: Awareness of Corporate Social Responsibility Concept
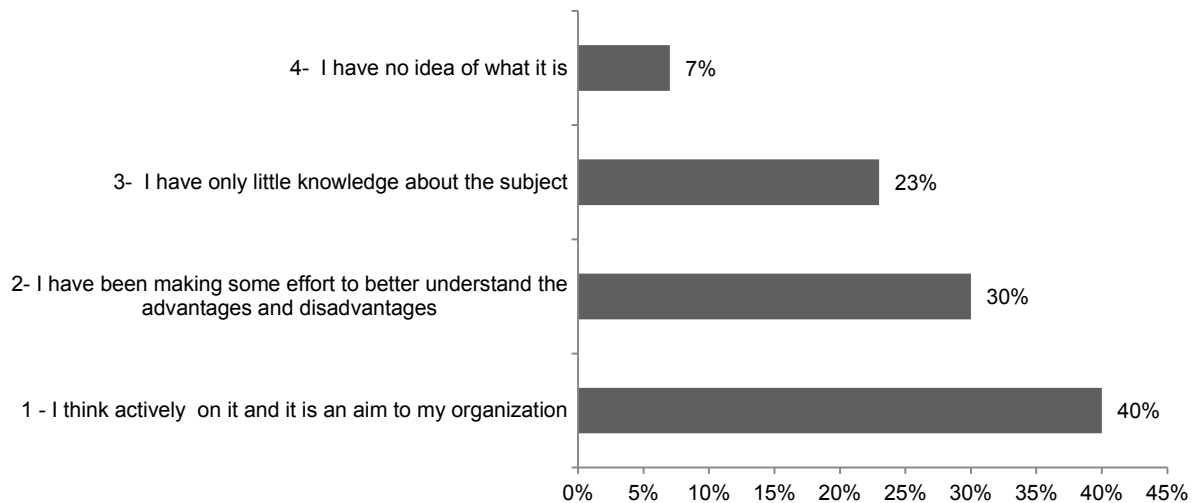
The figure summarizes the respondents' answers on a question about the awareness of corporate social responsibility concept.

On the other hand, 55 percent of total respondents viewed their bank to be social responsible by assuming social and environmental care in organization activities; 41 percent viewed it by promoting equal

opportunities between women and men at all levels within the company and only 24 percent viewed it by integrating ethics or developing an ethical code (Figure 2). The figure provides the respondents' answers on a question about awareness of corporate social responsibility concept from banks' view.

Figure 2: Awareness of Corporate Social Responsibility Concept: Bank's View

This figure shows awareness of corporate responsibility from the bank's viewpoint.

Thus, the UAE banks' senior management were aware of CSR from two views, namely their understanding of the concept of CSR, and their interpretation of CSR practices of their bank. These responses answer positively the first study question. This is consistent with the findings of Demetriou and Aristotelous (2011).

CSR Dimensions

The highest responses (58 percent) indicate that UAE banks placed greater emphasis on compliance with mandatory social and environmental legislation and much less on the optional dimensions or non-mandatory legislation (Figure 3). For example only 8.5 percent of total responses indicated that UAE banks emphasized the contribution to political processes that lead to new mandatory legislation, followed by meeting of non-mandatory government recommendations (12.5 percent), then 16 percent to activities that go beyond mandatory legislation.

The responses reveal that meeting the mandatory legislation requirements related to CSR was the first priority of UAE banks, whereas less attention has been given to the optional dimensions or non-mandatory legislation. This conclusion provides the answer to the second question of the research questions of this study. The same finding was reached by RARE (2006), namely, compliance with mandatory social and environmental legislation. Jamali (2007) reached the conclusion that CSR in the Lebanese context seems anchored in the context of voluntary action, with the economic, legal and ethical dimensions being assumed as taken for granted.

The Most Important Issues of CSR

Based on the respondents' classification of the most important issues, their responses reveal the social specific issues (46 percent) as the most important ones, indicating that UAE banks need to address the social issues for growth and sustainability purposes. The second type of issues was the indirect responsibility in social and environmental issues via customers (32 percent). However, around 25 percent of the respondents showed that customers are also share the responsibility with their banks regarding the social and environmental issues (Figure 4).

Figure 3: The Most Important Dimensions of CSR
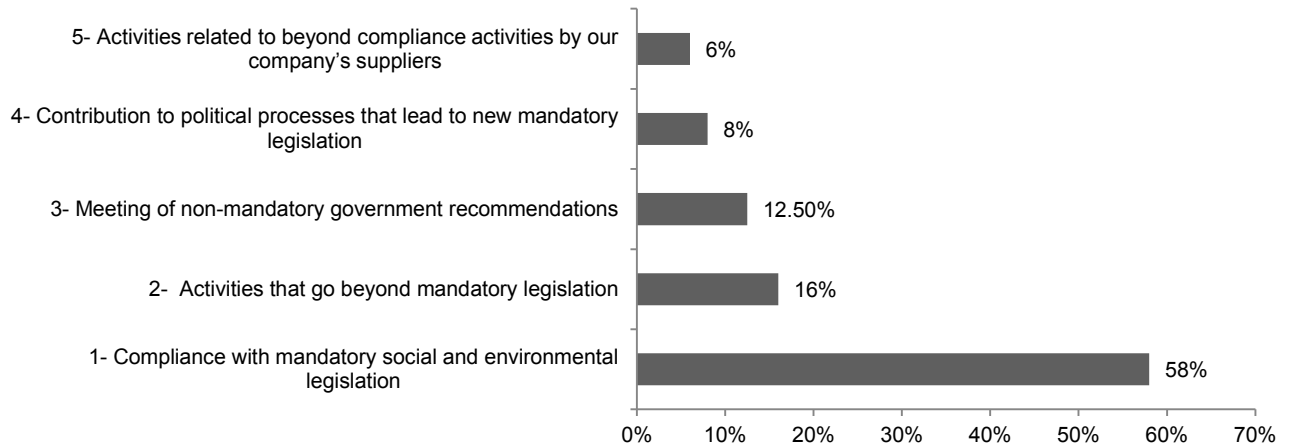
The figure summarizes the respondents' answers on a question about the most important dimensions of CSR.

The responses answer the third question of the most important issues of CSR. This indicates that UAE banks need to give more attention to customers' needs, customer satisfaction and customer relations. The other CSR issues were classified as less important than the first three issues in the following order: laundering and corruption, employees issues, environmental specific issues, financial inclusion and combating bribery and money issues.The RARE (2006) results indicate the following ranking of the most important issues in the case of the European banking sector: indirect responsibility in social and environmental issues via customers, employees, social specific issues, environmental specific issues, financial inclusion combating bribery, money laundering and corruption.

Figure 4: The Most Important Issues of CSR
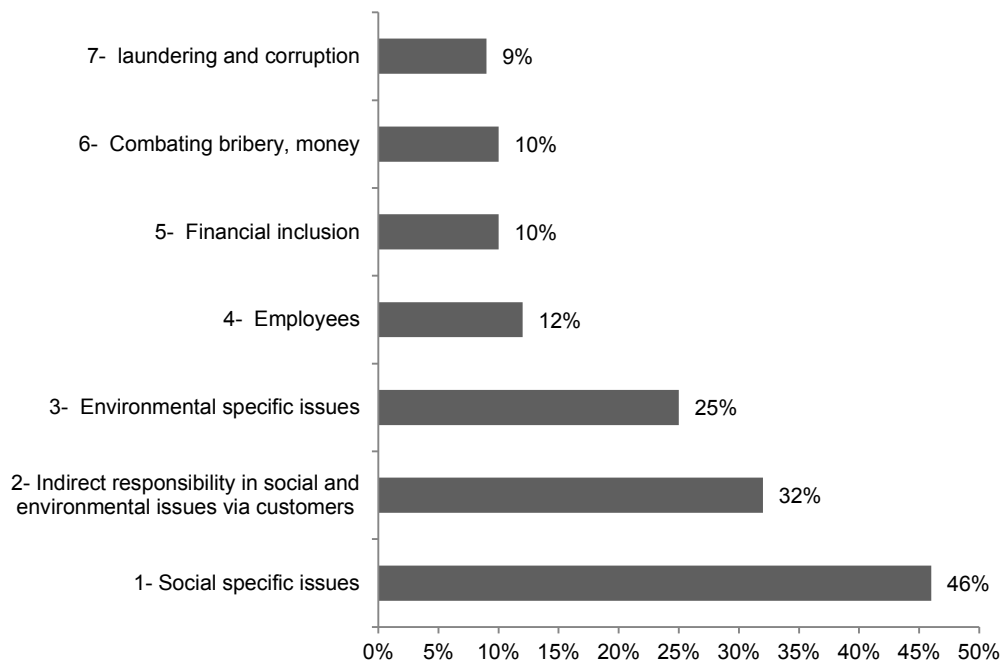
The figure summaries the respondents' answers on a question about the most important issues of CSR.

CSR Instruments

The respondents indicate that the most important instruments adopted by UAE banks are company-specific management systems (36 percent), consistent with RARE (2006) findings, followed by company-specific codes (27 percent) and the financial action task force (FATF) on money laundering (27 percent). This is consistent with the above conclusion that the UAE banks' first priority is to meet the mandatory legislation requirements related to CSR (Figure 5).

Stakeholder Engagement and Co-Operation

Engagement and co-operation with stakeholders of the UAE banks, according to survey respondents, is reflected by: participation in multi-stakeholder initiatives (37 percent), collecting information about/from stakeholders (31 percent), and consultation of stakeholders and dialogue with them (around 21 percent); only 8 percent of the respondents indicate that stakeholder engagement is reflected by adopting global reporting initiative (GRI) (Figure6). Engagement and co-operation with stakeholders of the UAE banks, according to survey respondents, is reflected by: participation in multi-stakeholder initiatives (37 percent), collecting information about/from stakeholders (31 percent), and consultation of stakeholders and dialogue with them (around 21 percent); only 8 percent of the respondents indicate that stakeholder engagement is reflected by adopting global reporting initiative (GRI) (Figure 6).

Figure 5: CSR Instruments
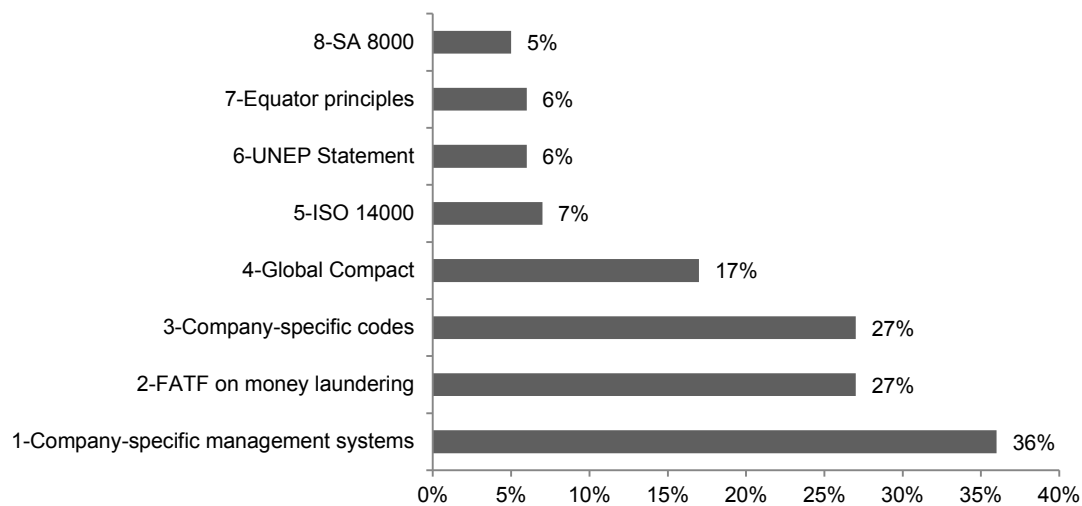
The figure shows the respondents' answers on a question about the CSR Instruments used by the UAE banks.

The RARE (2006) results indicate that collecting information about/from stakeholders, consulting stakeholders and participating in multi-stakeholder initiatives came first, which is almost consistent with the current study's results. The results are also consistent with other studies such as Tongkacho and Chaikeaw (2012), Remišová and Búciová (2012) and González et al. (2006).

Figure 6: Stakholders Engagement
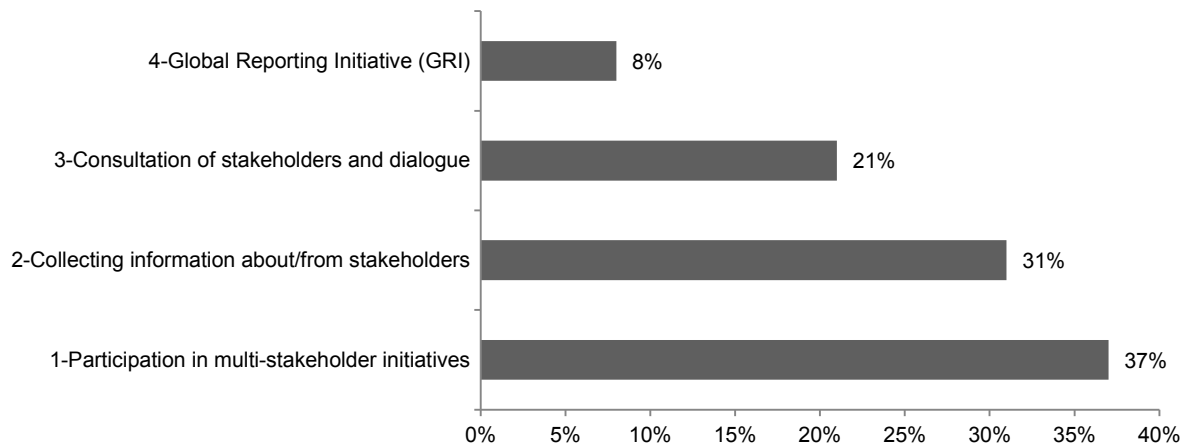
The figure indicates the respondents' answers on a question about the stakeholder's engagement and co-operation.

The responses indicate that the engagement of the stakeholders of the UAE banks is not strong enough which provides the answer to the fourth question of the research questions related to the current study. Based on this conclusion, the UAE banks should direct more efforts towards the active involvement of their stakeholders. Community Activities Carried Out by UAE Banks The respondents' responses reveal that their banks contribute added value, donate to or sponsor socially or environmentally committed organizations (42 percent of total responses), whereas 23 percent indicate that their bank supports volunteering of staff with socially or environmentally committed organizations. However, 15 percent of total responses showed that UAE banks align product sale to a social or environmental cause(Figure 7). These results are consistent with RARE (2006) findings. It can be concluded that the UAE banks make some positive contributions in supporting community activities through actions such as donations and sponsorship and this provides the answer to the fifth question of this study.. However, based on the sample responses it is clear that the support is not strong enough.

Figure 7: The Community Activities Carried Out by UAE Banks
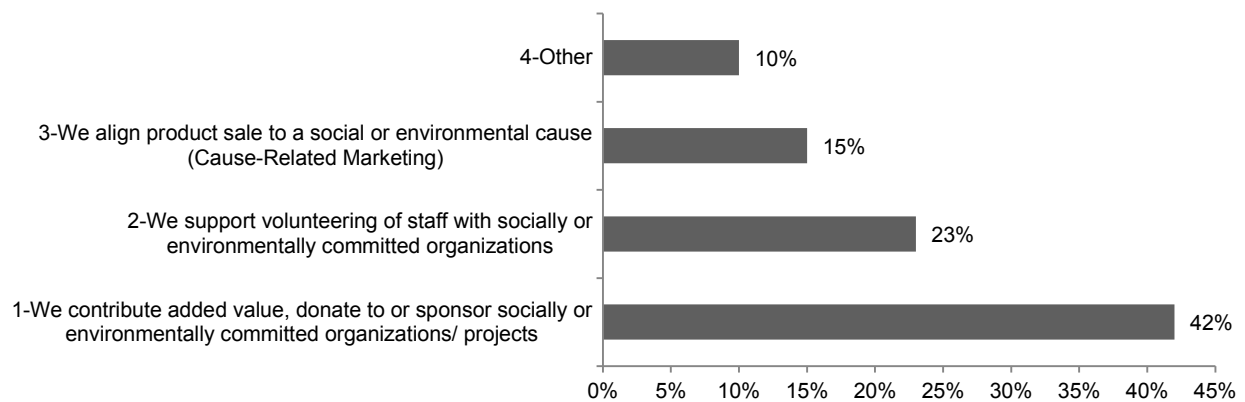
The figure summarizes the respondents' answers on a question about community activities carried out by UAE banks

 Direct and Indirect Voluntary Activities to Mitigate Climate Change Among the direct voluntary activities practiced by UAE banks was their work to reduce the energy use on their premises, supported by 31 percent of total respondents. Nineteen percent of total respondents showed that their bank had switched to using renewable energy sources. However, much less support was given to other direct activities such as replacing business travel with video phone conferences, and increasing business travel by train. Regarding the indirect
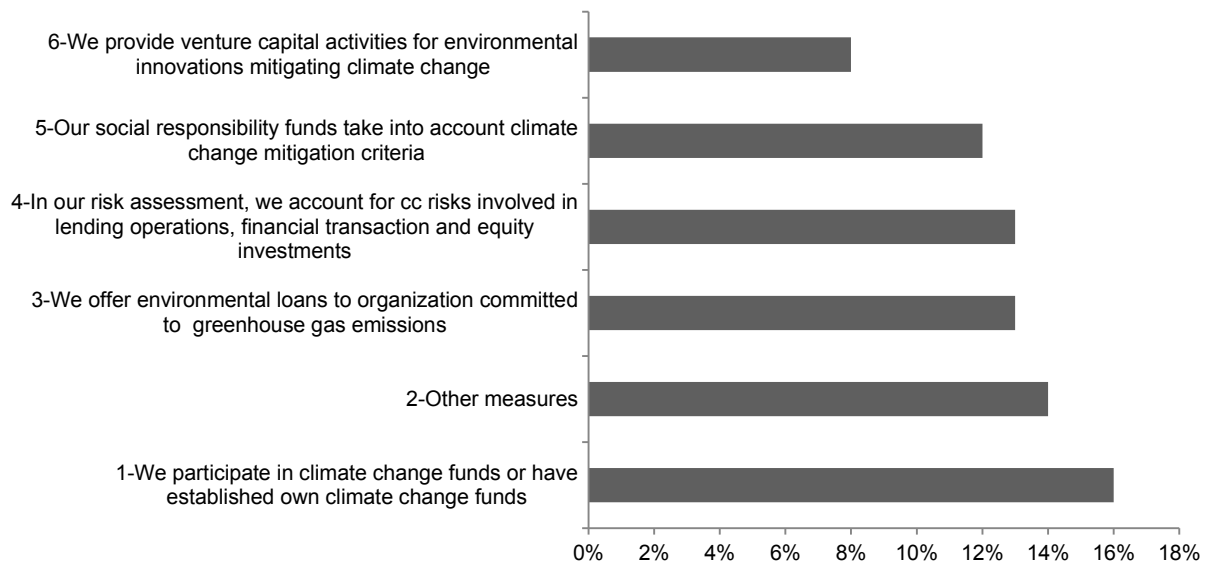
voluntary activities to mitigate climate change, the sample responses reveal that the UAE banks were not heavily involved in such activities, as only 16 percent of the respondents indicate that their banks provide venture capital activities for environmental innovations mitigating climate change; 15 percent of UAE banks participate in climate change funds or have established their own climate change funds; 13 percent reveal that their banks account for climate change risks involved in lending operations, financial transaction and equity investments; and 12 percent indicate that their banks' social responsibility funds take into account climate change mitigation criteria (Figure 8 and 9).

Figure 8: The Direct Voluntary and Indirect Activities to Mitigate Climate
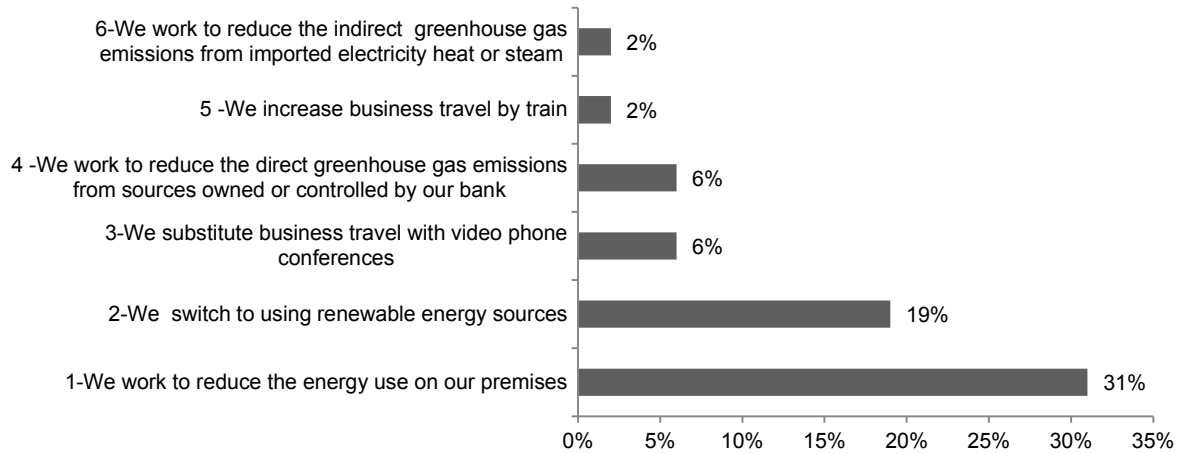
This Figure shows respondents' answers on questions about direct and indirect voluntary activities to mitigate climate change.

Figure 9: Indirect Voluntary Activities to Mitigate Climate Change

This figure shows respondents' answers to questions about direct and indirect voluntary activities to mitigate climate change.

The responses on both the direct and indirect voluntary activities to mitigate climate change indicate that the UAE banks were not heavily involved in problems of climate change, which might be attributed to the nature of the weather. This provides the answer to the sixth question of the research questions that are

related to the current research. These results are inconsistent with the findings of Jamali (2007) and RARE (2006).

Voluntary Activities to Promote Gender Equality

The UAE banks, based on the responses of 76 percent of respondents, ensure equal access to their banking services for all women, irrespective of their marital status, race, etc.; 32 percent of the respondents support employees with care responsibilities beyond minimum statutory requirements and 34 percent indicate that their banks established flexible working time arrangements. 32 percent of total responses reveal that UAE banks have a range of means and programs for supporting professional career and advancement of women (Figure 10).

Figure 10: the Voluntary Activities to Promote Gender Equality
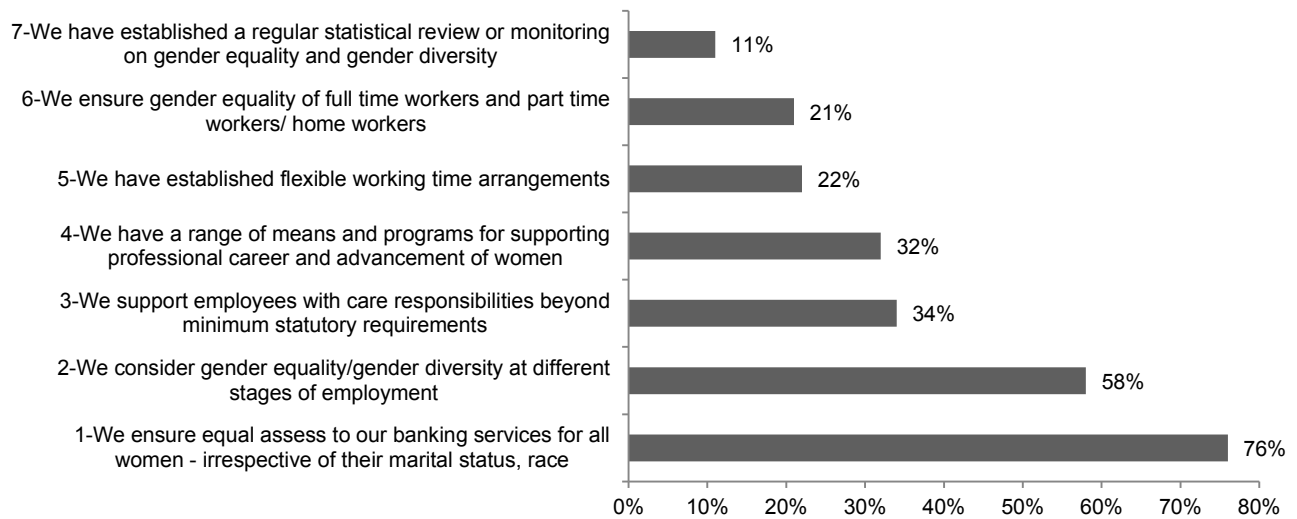
The figures shows the respondents' answers on a question about activities to promote gender equality

However, less attention was given to establishing a regular statistical review of monitoring on gender equality and gender diversity, ensuring gender equality of full-time workers and part-time workers/ home workers and the establishment of preventive measures against sexual harassment and bullying. Based on these results, the practice of UAE banks regarding the voluntary activities to promote gender equality was slightly less than the level of practice of European banks indicated by the RARE survey in 2006. This conclusion provides the answer to the seventh question of the current research questions.
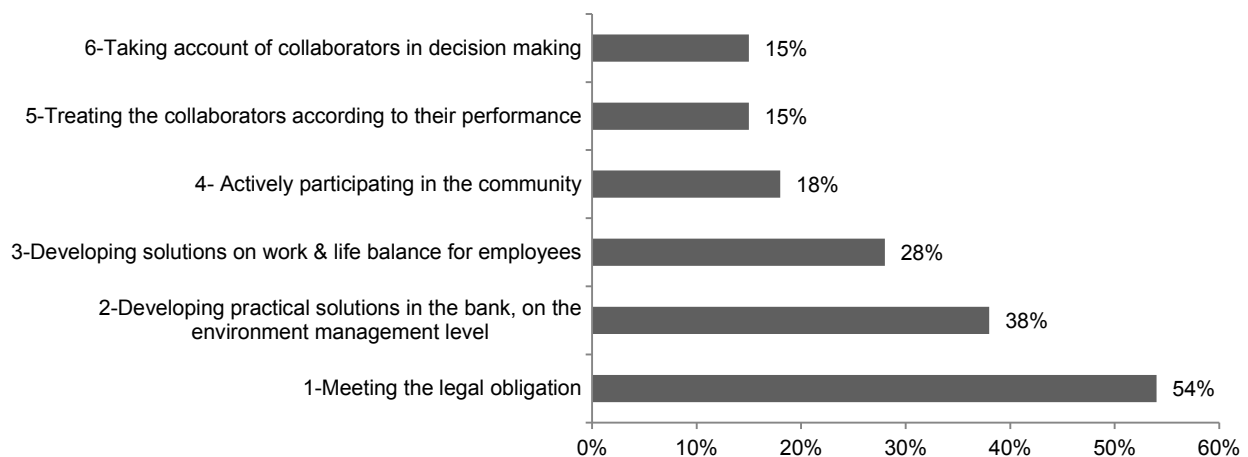
Corporate Social Responsibility Practices

The UAE banks' directors ranked their banks CSR practices in the following order: To train their employees who have client contact and their compliance personal to raise their awareness and skills on money laundering prevention (67 percent of total responses), to take all reasonable steps to verify the identity of their customers (55.5 percent of total responses), to take all reasonable steps to identify the legitimacy of the source of funds for their customers' banking (43 percent of total responses), to have a policy on countering money laundering that applies to all countries in which they operate (31 percent of total responses), to make prompt reports of suspicious activity, or propose activity to the relevant authorities (29 percent of total responses), to work with other banks and government agencies to strengthen measures to counter money laundering throughout the banking system (25.6 percent of total responses), to have a management system for countering the risk of bribery in money laundering (14.3 percent of total responses), to restrict/control giving and receiving of gifts (14 percent of total responses), to provide secure issues

reporting (whistle blowing) channels for employees (8.3 percent of total responses), to account for risks of bribery associated with management of bank's assets and lending operation (8 percent of total responses), to have a sanctions process for employee violations of the bank's program (8 percent of total responses),to provide or be developing guidelines for employees on countering bribery (7.4 percent of total responses).

The respondents' responses on this question were consistent with their answers to question no. 2 regarding CSR dimensions, where the responses reveal that meeting the mandatory legislation requirements related to CSR is the first priority of UAE banks. The UAE banks' CSR practices were directly connected with the mandatory legislation requirements. The respondents' responses on this question were also consistent with their answers to question no. 13 regarding actions of CSR practices. Accordingly, the respondents' responses ranked their bank's practices in the following order: meeting the legal obligation (54 percent), developing practical solutions in the bank, on the environment management level (38 percent), developing solutions on work and life balance for employees (28 percent), actively participating in the community (18 percent), treating the collaborators according to their performance (15 percent), and taking account of collaborators in decision making (15 percent)-Figure(11). The above mentioned analysis of the sample responses on the two questions related to the UAE banks' CSR practices, answered question no. 8 of the current research questions. The RARE (2006) survey ranked the practices of the European banks in mitigating climate change, followed by promoting gender equality and countering bribery.

Figure 11: Actions of Corporate Social Responsibility Practices in Your Bank

This figure summarizes the respondents' answers on a question about corporate social responsibility practices.

Organizational Responsibilities for Corporate Social Responsibility The respondents indicate that among the most important organizational responsibilities of the UAE banks is compliance control and auditing responsibility (around 48 percent), followed by functional responsibility (around 27 percent) and then board-level responsibility of executive/non-executive directors (21 percent of total responses). The responses also reveal less important organizational responsibilities such as bodies that consider the issue regularly (around 12 percent), followed by senior management responsibility other than executive (13 percent)-Figure 12. The answers also support the above mentioned conclusion that meeting the mandatory legislation requirements related to CSR was the first priority of UAE banks.
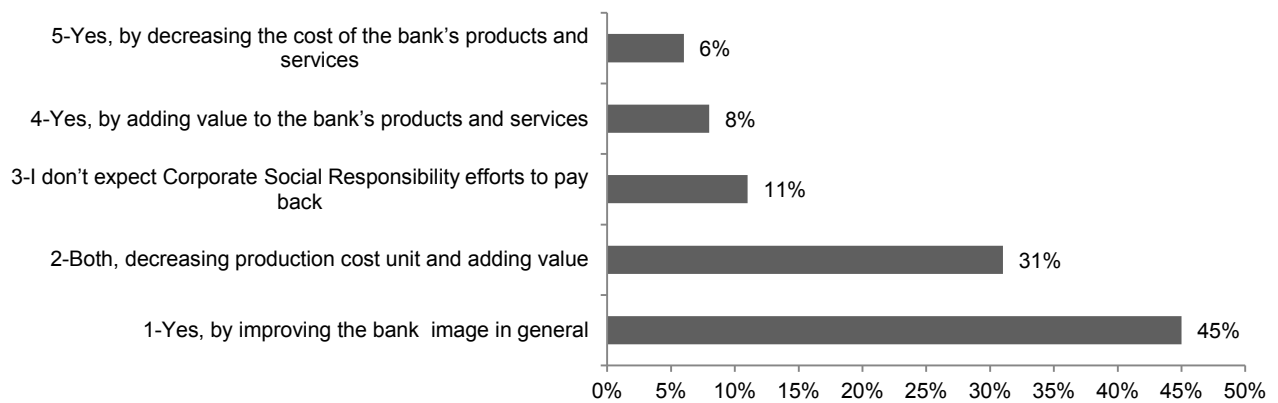
Figure 12: Organizational Responsibilities for Corporate Social Responsibility

The figure shows the respondents' answers on a question about organizational responsibilities for corporate social responsibility.

Corporate Social Responsibility Payback The respondents were asked about CSR payback. Respondents believe that payback can be achieved by improving the bank's image in general (45 percent), and by decreasing production cost unit and adding value (31 percent). Only 11 percent of the respondents believe that they don't expect CSR efforts to pay back (Figure 13). Overall , the responses indicate that the UAE banks strongly support corporate social responsibility efforts to payback, which provides the answer to question no.9 of the current research questions.

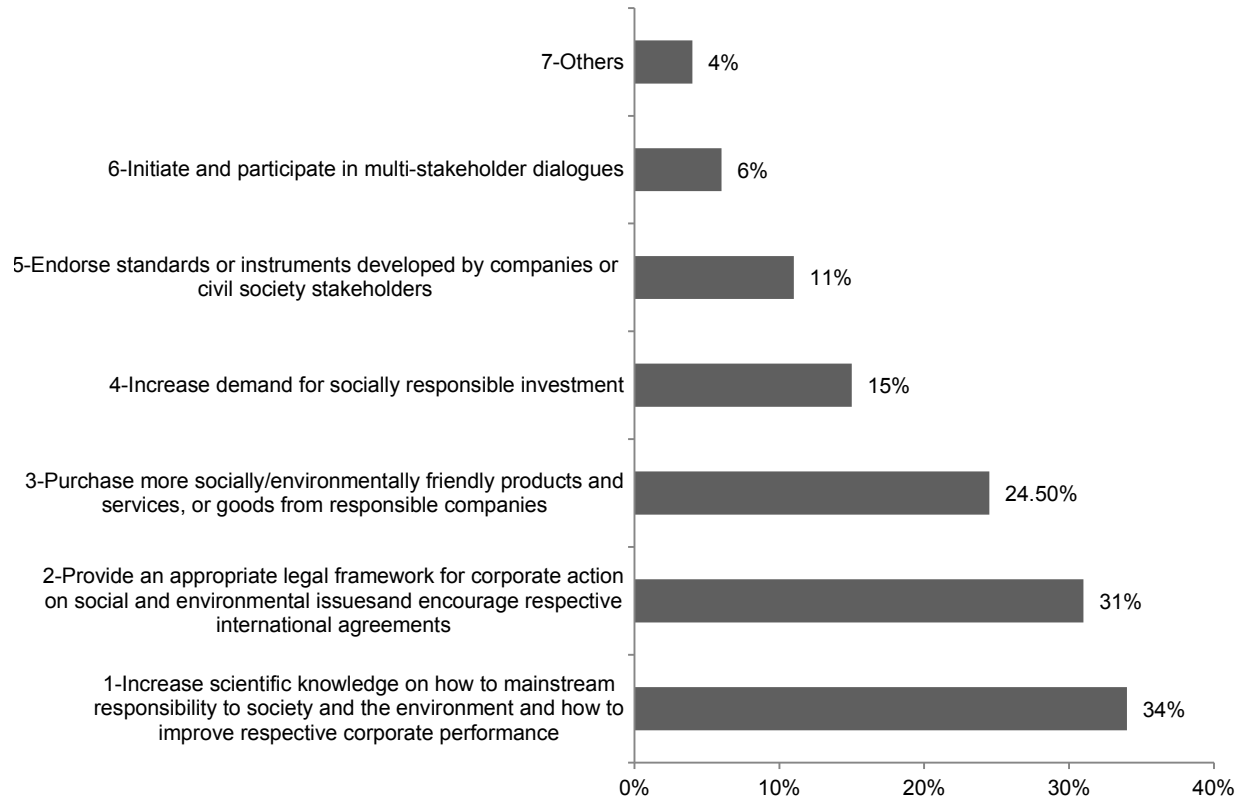Figure 13: Social Responsibility (Social or Environmental Efforts) to Pay Back

The figure shows the respondents' answers on a question about corporate social responsibility payback

UAE Banks' Public Policy Support for Corporate Social Responsibility The sample of UAE directors ranked the following three elements of public policy support for CSR: increase scientific knowledge on how to mainstream responsibility to society and the environment and how to improve respective corporate performance (34 percent), provide an appropriate legal framework for corporate action on social and environmental issues and encourage respective international agreements (31 percent), purchase more socially/environmentally friendly products and services, or goods from responsible companies (24.5). To a lesser extent, the respondents ranked three other elements of public policy support for CSR: increase demand for socially responsible investment (15 percent), endorse standards or instruments developed by companies or civil society stakeholders (11 percent) and initiate and participate in multi-stakeholder dialogues(6 percent) -(Figure 14). This is consistent with the above conclusion that the UAE banks support corporate social responsibility practices. However, and based on the sample responses, the UAE banks need

more emphasis on public policy support for corporate social responsibility which provides the answer to question no.10 of the current research questions.

Figure 14: UAE Banks Public Policy Support for Corporate Social Responsibility

The figure indicates the respondents' answers on a question about UAE banks' public policy support for corporate social responsibility

The RARE (2006) survey ranked the following three policies: 1) increase demand for socially responsible investment, 2) initiate and participate in multi-stakeholder dialogues and develop or encourage voluntary standards or instruments in issue areas where there are none, and 3) increase scientific knowledge on how to mainstream responsibility to society and the environment and how to improve respective corporate performance.

Relationship with the Stakeholders

The majority of the respondents (90 percent) indicated that it is important for their banks to inform stakeholders about their corporate social responsibility activity. The respondents were also asked about whether they are capable of penalizing an enterprise (for example, not buying its products/services) if they consider it "socially irresponsible." Sixty-three percent of the total responses indicated that they were capable of doing so, which gives more support to the concept of social responsibility. This is supported by another question related to the respondents' willingness to pay more for a product produced by a "socially responsible" enterprise. Sixty percent of the total respondents indicated that they were willing to pay. This is consistent with the finding reached by González et al. (2006) and provide positive answer to the last question of this research related to the attitude of the UAE banks' managers regarding the implementation of CSR.

CONCLUDING COMMENTS

The study aimed to investigate corporate social responsibility (CSR) practices of UAE banks. A modified questionnaire was developed, divided into two parts. The first part covered general information, namely the experience, position and educational level of respondents. The second part consisted of 18 questions on awareness of CSR, CSR dimensions, the most important issues of CSR, CSR instruments, stakeholder engagement and co-operation, the community activities carried out by UAE banks, voluntary activities to mitigate climate change, CSR practices, organizational responsibility for CSR, CSR payback, public policy support for corporate social responsibility and the relationship with the stakeholders.

The results indicate that the UAE banks are aware of the concept of CSR; they place more emphasis on compliance with mandatory social and environmental legislation and much less on the optional dimensions or non-mandatory legislation; the social specific issues are the most important ones, indicating that UAE banks need to address the social issues for growth and sustainability purposes; the most important instruments adopted by UAE banks are company-specific management systems followed by company-specific codes; the UAE banks collect information about/from stakeholders and consult stakeholders and participate in multi-stakeholder initiatives; the UAE banks make a positive contribution in supporting community activities such as donations and sponsorship, but they need to contribute more; the UAE banks are not heavily involved in problems of climate change; the UAE banks ensure equal access to their banking services for all women, irrespective of their marital status, race, etc.; they meet the mandatory legislation requirements related to CSR; the most important organizational responsibility of the UAE banks is compliance control and auditing responsibility; the UAE banks strongly support corporate social responsibility efforts to payback; they place less emphasis on public policy support for CSR; and finally, the majority of the respondents (90 percent) indicated that it is important for their bank to inform stakeholders about their corporate social responsibility activity. Among the limitations of this study, is the accurateness of some of the responses, as the bank managers and directors are always busy and don't have enough time to read the questions carefully and response accordingly. The other limitation is the lack of similar study for countries having the same features of UAE's economy. Further research can be conducted by examining CSR practices of UAE Islamic banks compared with the conventional banks.

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BARRIERS TO YOUTHFUL ENTREPRENEURSHIP IN RURAL AREAS OF GHANA

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ABSTRACT

The study examined the barriers to youth entrepreneurship in rural areas of Ghana specifically the challenges encountered by youths who want to set-up their own businesses. The study collected both primary and secondary data using semi-structured questionnaires, interviews and review of empirical and theoretical literatures. Youths in Komenda, Edina, Eguafo, Abirem Municipal Assembly was the target population. Purposive sampling technique was applied to select 240 respondents. Descriptive statistics which involves simple percentage, graphical charts and illustrations was purposefully applied in data presentations and analysis. The findings of the study reveal youths perceive lack of capital, lack of skill, lack of support, lack of market opportunities and risk as the main obstacles to entrepreneurial intention. It is recommended that Ghanaian youths be equipped with entrepreneurial skills to move them to the next level of development.

JEL: O15, O16

KEYWORDS: Entrepreneurship, Barriers, Youth, Resources, Solutions, KEEA District

INTRODUCTION

The Ghanaian economy suffered its worst growth performance for about a decade in 2009 when real GDP growth slumped to 4.0 per cent. The fiscal and monetary positions deteriorated in response to poor domestic policies and external constraints. The rate of inflation rose sharply from 12.81% in January 2008, generating annual inflation rate of 19.3% in 2009, the cost of borrowing rocketed and the Ghana cedi also depreciated against the US dollar by 50 per cent from January 2008 to June 2009. These economic challenges worsened around year 2009 which was evidenced by high inflation, dramatic fall in gross domestic product, low productive capacity, loss of jobs through downsizing, restructuring, massive work scarcities.

The overall economy continues to suffer from significant Ghana cedi depreciation, as a result of the combined political uncertainty, a growing external imbalance, accumulation of large public expenditure float from 2011, and delayed response from the central bank to mop excess liquidity in the economy as a result of the macro imbalance, the risk free interest rate rose from 10.9% in January to 23.1% in September 2012 causing commercial banks rush for government financial instruments instead of lending to the private sector coupled with the fact that business environment is engulfed with bureaucratic procedures, corruption and inefficiency makes job creation a mirage, thus fuelling youth unemployment especially among students exiting secondary and tertiary education (Amankrah, 2012).

Youth unemployment can be seen as a form of deprivation robbing youth of the benefits of work and represents a dark era in their personal and social development (Chimucheka, 2012). This makes entrepreneurship indispensable in Ghana, especially when one considers the socio-economic challenges this nation has faced over the last two decades.

Entrepreneurship including youth entrepreneurship improves the general standard of society as a whole, which leads to political stability and national security (Dei-Tumi, 2011; Shukla et al, 2001; UNDP, 2000). Taking this into account, developing the micro and small enterprise sector can be regarded as the seedbed for the development of large companies, and probably the life blood of commerce and industry (Kantis et al., 2002). Of the tools used to create employment micro and small enterprises (MSEs) has become the most popular in recent times across developing countries as a whole. The importance of small businesses, as the driver of sustainable job and wealth creation, has been confirmed by Abor et al., (2010) and Midfred, (2010). Mkhize (2010) adds that entrepreneurship, as a possible solution to the growing problem of youth joblessness, is necessary to ensure the success of small and micro enterprises (SMEs).

Youth entrepreneurship reduces crime, poverty, drug addiction, and income inequality. This indirectly induces an environment for national and regional economic growth and development (Mutezo 2005; Curtain, 2004). Muchini et al (2011) argue that although various age and social groups have been hit in varying scales and degrees by the economic crisis in the sub-region including Ghana, the unemployed youths are the most affected. Considering the dwindling fortunes in the employment capacity of enterprises operating in Ghana, it can be accepted that youth entrepreneurship can play a vital role in reducing joblessness levels and contributing to economic growth (Kanyenze et al, 2000).

An investigation of the possible barriers to youth entrepreneurship is very vital. This study focuses on the youths in the rural areas of Ghana. An analysis of studies on entrepreneurship in Ghana revealed that few studies have been made in the past to identify the barriers to youth entrepreneurship with a focus on rural areas of Ghana. The primary objective of this study is to examine the barriers to youth entrepreneurship in rural areas of Ghana. The remainder of this paper covers a section on literature review, data and methodology, results and discussions, as well as concluding remarks.

LITERATURE REVIEW

Definition of Youth and Ghana's Youth Profile: For purposes of this study, a definition by Ministry of Youth and Sports (MOYS, 2010) as espoused in National Youth Policy was adopted. The policy defines "youth" as "persons who are within the age bracket of fifteen (15) and thirty-five (35)".

Unemployment and Underemployment among Ghanaian Youth: It is an indisputable fact that Ghana is one of the Sub- Saharan African countries with high levels of youth unemployment and underemployment. According to Mensah (2009), the problem of youth unemployment and under-employment in Africa poses complex political, socio-economic and moral policy issues. The author opines that supporting entrepreneurship through promoting the development of the micro and small enterprises (MSE) sector can be a solution to reducing unemployment levels in most Sub-African countries. Given that the majority of the Sub-Saharan African population is composed of the youth, this population group can be a potential resource for growth (NPC, 2006). Uneca and Ecowas (2010) argued that young people are a potential resource for growth and social development if gainfully and productively engaged. This implies that Ghana can boast of this if there is ability and capacity to productively engage the youths. One form of engagement would be the encouragement and support for youths to start own enterprises. The fact that youth unemployment is high in Ghana is incontestable hence the debate must be on the best approach to combat the problem. This study proposes youth entrepreneurship as a solution to the challenge of unemployment, underemployment and vulnerable employment. It is apparent that entrepreneurial activity is beneficial for Ghana both at a micro level - in terms of creating stable and sustainable employment for individuals - and at a macro level - where it significantly increases a nation's GDP. This would go a long way in tapping into the potential of the young population. Since the majority of African youths live in the rural areas, it is reasonable to argue that the youth programs be concentrated also in rural areas.

Causes of youth Unemployment in Ghana: According to the Ministry of Employment and Labour Relations the causes of youth unemployment in Ghana include the following: 1.) The introduction of the Junior High School and Senior High School system without adequate planning for integration into the trades/vocations and job placement, 2.) Education and training have no link to the needs of the important sectors of the economy, 3.) The near collapse of Ghana's industrial base due to ineffective management; 4.) The shrinking of public sector employment opportunities coupled with a relatively slow growth of the private sector; and 5.) The lack of a coherent national employment policy and comprehensive strategy to deal with the employment problem.

Entrepreneurship: Entrepreneurship is considered the economic engine by many countries in the world (Carree et al, 2002). This is due to the fact that it involves the creation of new ventures that provide goods and services to people, creates jobs as well as enhancing the economic growth and development of any country. Involving youth in the formal sector through entrepreneurship is a way of gainfully engaging this population group. Furthermore, entrepreneurship help strengthen social networks, giving a sense of belonging and opportunity to add value to the local community and economy.

Successful youth entrepreneurship is possible if the youths possess the characteristics of entrepreneurs. These characteristics include a desire to start own enterprise, readiness to undertake any venture and activity of which the outcome and result is shrouded in a state of uncertainty, vision, single-mindedness, perseverance, high need for achievement, initiative and responsibility (Zimmerer et al., 2008; Garfield, 1986).

Resources Needed to Support the Youths Who Want to Start Businesses: Every business needs resources to function and operate successfully. Abor et al (2006), and Aryeetey et al (1994), identified financial resources, physical assets, human resources and technological resources as some of the resources necessary for any business start-up and growth. Financial resources are needed for day to day operations of the business. These resources are needed to finance all other types of resources like physical resources, human resources and technological resources. Sutton et al (2007) point out that many businesses fail because of inadequate financial resources and failure to manage these resources. This implies that there is need to raise the finances and to properly manage business funds. Physical resources that are needed by businesses or by prospective entrepreneurs include buildings, equipment, raw materials and land (Aryeetey et al, 1994). These resources are essential for production. Human resources speak to the nature of people who are there to support in the running of the business. Their expertise, know-how and experience are very vital and can be developed through education and training.

Technological resources include intellectual property (copyrights, trademarks and patents) and these can be a source of competitive advantage (Chimucheka, 2012). Goodwill can also be a crucial resource. Goodwill as a resource has more to do with the overall reputation of the business. It can also enhance brand loyalty and good name of a business venture. When looking at the barriers of youth entrepreneurship, it is very important to also look at the support structures that are set to promote youth entrepreneurship in Ghana.

Support structures that promote youth entrepreneurship: The government of Ghana has identified entrepreneurship as a major policy thrust to achieve economic growth (www.ndpc.gov.gh). Although there are some support structures that promote entrepreneurship in Ghana, there is still need to assess the extent to which their contribution can lead to sustainable entrepreneurship which generates jobs for the active population. This is evidenced by a number of institutions such as rural enterprise programs that have been established by the government to provide funding and improve operational efficiency in the micro and small enterprises sector (www.home.moti.gov.gh). The current structures that promote youth entrepreneurship in Ghana include the Ministry of Trade and Industry, Ministry of Youth and Sports, National Youth Authority, Ghana Youth Employment and Entrepreneurial Development Agency (GYEEDA), National Board for Small Scale Industries (NBSSI), vocational and technical training centres; and microfinance schemes such

as Micro and Small Loans Centre (MASLOC). These agencies have reported some recent developments in funding, training and mentorship programs targeting youth in enterprises or those interested in starting their own enterprises. There are also other structures at regional and Metropolitan, Municipal and District Assembly (MMDA) levels.

DATA AND METHODOLOGY

Study Area

The Central Region has thirteen (13) districts, three (3) municipalities and one (1) metropolis. Komenda, Edina Eguafo Abirem (KEEA) municipality is one of the municipalities in the region. It is bordered on the west by Mpohor-Wassa East district; on the north by Twifo-Hema-Lower Denkyira; on the east by the Cape Coast Metropolitan Assembly and on the south by the Gulf of Guinea. The municipality covers about 396 km^2. KEEA which has Elmina as the capital has a population of 144,705 constituting 6.6% of the total population in the region (Ghana Statistical Service, 2012). The sex distribution of the municipality shows that 69,665 are males whereas 75, 040 are females with sex ratio of 69:75. The rural-urban proportion is almost 64.28-35.72 in the municipality. The 2010 population and housing census show that 64.28% of the population of 144,705 dwells in the rural areas whereas 35.72% are urban dwellers. There is therefore significant difference between rural-urban settlements in KEEA Municipality. The urban settlement has 64.28% females and 35.72% males whereas the rural settlement has 51.86% females and 48.14% males.

Data Collection

Primary data was obtained using a semi-structured questionnaire that was interviewer-administered and interviews which was also conducted with the youths to obtain additional but necessary qualitative data. Secondary data was through review of the theoretical and empirical literatures sourced from books and scholarly journals, Internet and conference papers among others.

The population of the study consisted of youths in the rural areas of the KEEA municipality. It was difficult to find an up to date database with all the youths in KEEA that could be used as a sampling frame. Purposive sampling technique was applied to select 240 respondents from the target population. The reasons for the purposive sampling was to enable the researchers choose participants randomly for their unique characteristics or their experiences, attitudes or perceptions. In this study, the researchers only selected sample elements that showed the desire and passion for entrepreneurship and those that started, or have tried to start their own enterprise. Respondents also had to be in the youth category as defined by National Youth Policy of Ghana.

The return rate of completed questionnaire was 85 percent as we were able to get back 204 out of 240 questionnaires given to our respondents. Thus, only 204 questionnaires were used for final analysis in this study. In an effort of making the presentation of information clearer and easy to understand, tables, frequency counts and percentages were used.

RESULTS AND DISCUSSION

Gender of Respondents

The researchers sought to know gender of respondents, since sex is a determining factor in many economic decision making consideration. From the analysis, it was found that 149 (73.04%) were males whilst 55 (26.96%) are females. The analysis of the gender of respondent's can be observed from Table 1. This was attributed to ethnic specialisation, willingness of females to engage in menial jobs and strength of respondents' 'informal social network'.

Table 1: Distribution of Respondents by Sex, impact of Unemployment on Youth and Unemployment Urban and Rural Challenge

Sex Distribution		Impact of Unemployment on Youth		Unemployment a Challenge for Both Urban and Rural Youth	
Sex	*Frequency*	*Respondent*	*Frequency*	*Respondent*	*Frequency*
Male	149 (73.04%)	Yes	198(97.05%)	Yes	204 (100%)
Female	55 (26.96%)	No	6(2.95%)	No	0 (0%)

Source: Field Work, July 2013. This table shows the observation used in the analysis. The column labelled sex distribution indicates the gender of respondents. The researchers sought to know gender of respondents, since sex is a determining factor in many economic decision making consideration. The column labelled impact of unemployment on youth displays results of respondents directly affected by unemployment. The researchers sought information from respondents as to whether unemployment was a real challenge confronting youth in both urban and rural areas. The column labelled unemployment as a challenge for both urban and rural youth shows results of unemployment as a real challenge to both rural and urban youth.

The researchers sought information from respondents as to whether they have been affected directly by unemployment. As evident from Table 1, 198 (97.05%) responded 'YES' while 6 (2.95%) of respondents responded 'NO'. Those affected directly by unemployment claimed the disgrace of relying on relatives for sustenance has forced a lot of them to lodge with friends because they can no longer contain family demands.

The researchers sought information from respondents as to whether unemployment was a real challenge confronting youth in both urban and rural areas. As shown in Table 1, all the respondents agreed that unemployment was a real challenge confronting both rural and urban youth

Requisite Knowledge and Skills to Operate Own Business

The researcher sought information from respondents as to whether they believed they have the necessary knowledge and skills to start and run their own businesses. From Table 2, 62 (30.39%), believed that they had the necessary knowledge, skills etc to run their own businesses, while 142 (69.61%) said they did not have all the necessary skills, knowledge to start ads run their own businesses.

Table 2 Requisite Knowledge and Skills to Operate Own Business

RESPONDENTS	FREQUENCY	PERCENTAGE (%)
Yes	62	30.39
No	142	69.61
Total	204	100

Source: Field Work, July 2013. The table displays results of respondents' possession of skills, knowledge and attitude. The researchers sought information from respondents as to whether they believed they have the necessary knowledge, attitude and skills to start and manage their own businesses. 62 (30.39%), believed that they had the necessary knowledge, skills etc to run their own businesses, while 142 (69.61%) said they did not have all the necessary skill and, knowledge to start ads run their own businesses.

Challenges Faced by Ghanaian Youths Seeking Employment

The findings on the Table 3 are based on the question, "What are the challenges faced by Ghanaian youths seeking employment?" A summary of the respondents perceived challenges faced by Ghanaian youths seeking employment are shown in Table 3.

More than 90% of the interviewed youths that are seeking employment mentioned that they lacked experience for the jobs that they were seeking. They believed that they could not also establish their own businesses without experience in any industry. 76% of the respondents mentioned corruption as a challenge. This corruption is mainly by individuals serving in hiring organisations that have the tendency of accepting bribes from less qualified individuals. 60% of respondents cited nepotism also as a challenge. Nepotism involved hiring friends and relatives for positions that other youths are better qualified to occupy. Close to

70% of the respondents indicated that lack of training was also a challenge. These individuals mentioned that they lacked knowledge and skills that are needed for most of the advertised job vacancies. Most of these respondents either dropped out of school, or failed to attain the required grades to enroll at any tertiary institution. This leaves them in a position where they can be exploited to work long hours yet they are underpaid. 60% indicated lack of relevant skills needed in the job market can also lead to youths failing to meet their personal and family needs and expectations. This in most cases force people into desperation, where they can accept any job offer allowing employers to take advantage of them.

Table 3: Challenges Faced by Ghanaian Youths Seeking Employment

RESPONSE	PERCENTAGE (%)
Lack of experience	90
Corruption	76
Nepotism	60
Lack of training	75
Lack of relevant skills needed in the job	60
Family needs and expectations	60

Source: Field Work, July 2013. This table displays summary of respondents' perceived challenges faced by Ghanaian youths seeking employment. The findings on the table 5 are based on the question, "What are the challenges faced by Ghanaian youths seeking employment?"

Impediments to Youth Entrepreneurship in Ghana

The findings on the Table 4 are based on the question, "What are the impediments to entrepreneurship in Ghana?" A summary of the respondents perceived barriers are shown in Table 4.

Table 4: Barriers to youth entrepreneurship in Ghana

RESPONSE	PERCENTAGE (%)
Corruption by local authorities	79.41
Lack of capital	100
Unstable and Unpredictable economic environment	50
Insufficient and unreliable government support	57
Poor location	63
Insufficient demand for the products and services	48
Others	

Source: Field Work, July 2013. The table shows respondents perceived barriers to youth entrepreneurship in Ghana. The findings on the table 6 are based on the question, "What are the impediments to youth entrepreneurship in Ghana.

Some of the challenges mentioned would be discussed. Corruption by local authorities was mentioned by 79.41% of the respondents. This was said to be affecting access to resources, especially those provided by the state to promote youth entrepreneurship. This concurs with Transparency International Global Corruption Barometer (www.transparency.org) which puts public office/civil servants as fifth most corrupt category of institutions. All respondents mentioned lack of capital as the main impediment to youth entrepreneurship in rural areas of Ghana. This is mainly because most youths in rural areas lack proper skills to be employed in order to save for capital. Although there are banks offering loans in Ghana, bank finance is not easily accessible to youths in rural areas for they, in most cases lack the required collateral security needed to obtain a bank loan (see Sowa et al., 1992; Aryeetey et al., 1994; Bigsten et al.,2000; Buatsi, 2002). Inaccessibility of financial resources by youths in rural areas of Ghana is also because of lack of connections, lack of the needed financial deposit and lack of knowledge pertaining to the sources of financing available. The unstable and unpredictable economic environment in Ghana was mentioned by close to 50% of the respondents as another factor discouraging youths to start and grow their own businesses. Insufficient and unreliable government support is said to be another impediment to youth entrepreneurship. Close to 57% of the respondents indicated that the government does not really support entrepreneurship as a career opportunity for youths. Respondents highlighted that the government

encourages the youths to participate in other government programmes such as indigenization and black empowerment as opposed to promoting real youth entrepreneurship. 63% of respondents in business but operating in the rural areas indicated that poor location was a great challenge for it affected the sales and the performance of their businesses. 48% of respondents mentioned insufficient demand for the products and services offered on the market by most youths together with high production costs as an impediment to youth entrepreneurship. Other challenges that were mentioned and explained by the respondents as the impediments to successful youth entrepreneurship in the rural areas include lack of information technology. High transport costs, unattractive business environment, lack of relevant experience, lack of and inaccessibility to skilled labour, high registration costs, high costs to obtain licences to operate formally, poor roads, unreliable electricity, unreliable communication services and lack of networking opportunities were also stated as the impediments to youth entrepreneurship. This concurs with findings by Fjose et al (2010) that electricity and access to finance is considered by far the most important hindrance by MSMEs in Sub-Saharan African.

Benefits of Entrepreneurship to Youths in Ghana

Entrepreneurship development, especially in the form of MSMEs can ameliorate the problem of high unemployment facing Ghana. This can be possible because MSMEs usually have low start-up costs, low risk and can help exploit untapped knowledge and creativity (Mfaume et al, 2004).

Entrepreneurship is of benefit not only in creating wealth for individuals but also for the nation. Ghana can eradicate poverty, reduce unemployment and underemployment levels, and improve national propensity through entrepreneurship. Equipping youth in rural and semi-urban areas with entrepreneurial capabilities can be a step forward towards self-sufficiency. In short the benefits include: 1.) Creating employment, 2.) Providing local goods and services to the community, thereby revitalizing it, 3.) Raising the degree of competition in the market, ultimately creating better goods and services for the consumer, 4.) Promoting innovation and resilience through experience-based learning, 5.) Promoting a strong social and cultural identity, and 6.) Continuously creating and growing diverse employment opportunities different than the traditional fields available in a particular city.

The Role of Government in Promoting Entrepreneurship among Youths in Ghana

The Government of Ghana still have a long way to go in supporting youth entrepreneurship. The following were suggested by the respondents as the roles of the government in promoting youth entrepreneurship in the rural areas of Ghana: 1.) Enhancing access to finance for start-ups, growth enterprises, technology enterprises and micro entrepreneurs, 2.) Entrepreneurial training should be provided to the youths through entrepreneurship support structures that were established by the government. Entrepreneurial training can help improve the entrepreneurship competencies of the youth and possibly the desire to start own businesses, 3.) Promoting an eco-system for accelerating entrepreneurship, enhancing the flow of information on procedures and formalities to set up an enterprise by creating and strengthening one-stop-shop i.e. single-window system; and, ensuring ease of 'entry and exit', and 4.) The government should also foster 'Social Entrepreneurship among Ghanaian youths. This may help in increasing information sharing, especially on opportunities available.

DISCUSSION AND RECOMMENDATION

This study managed to identify and discuss the barriers to youth entrepreneurship in Ghana. The results reveal that the challenges faced by youth entrepreneurs in Ghana can be compared to those faced by entrepreneurs in Nigeria and South Africa, which are considered the economic engines of Africa. These challenges are not peculiar to Ghana only. A study conducted in South Africa by Odeyemi and Fatoki (2010) concluded that the problem of access and availability of finance to entrepreneurs in South Africa

was ranked second after lack of entrepreneurial and management competencies in most aspiring and existing entrepreneurs (in the MSMEs sector) in South Africa. This is also supported by Atieno (2001), Yon et al. (2011) and Tadesse (2009) who also conducted their studies in Kenya, Ghana and Sub-Saharan Africa respectively. Quartey et al (2000) also found similar challenges as hampering entrepreneurial activity in Ghana and Malawi. These results also concur with the findings of Association of Ghana Industries (2010) which identified lack of collateral security resulting in inaccessibility to credit facilities, lack of managerial skills and challenges in business registration as some of the difficulties faced by both women and youths in business in Ghana. According to Bindu et al. (2011) availability and accessibility to finance and skills development are crucial for entrepreneurial success.

The Government of Ghana should set up a National Commission on Entrepreneurship with the Vice President as Chairperson, Deputy Chairperson being President of House of Chiefs, Ministers of the relevant ministries, captains of industry, young entrepreneurs (with at least 30% representation), academia and specialized institutions engaged in promoting entrepreneurship, R&D institutions, angel investors/venture capitalists, etc., as members, to achieve convergence. Also, entrepreneurship should be introduced into the national education system to orient and prepare students for an entrepreneurship career by imparting skills, knowledge and aptitude for entrepreneurship. Further, MMDA authorities should work with government agencies and ministries that support youth entrepreneurship in a way that will benefit the youths in their respective districts. Furthermore, the government should create district, regional and national level "Entrepreneurship Ambassadors" from amongst successful entrepreneurs to recognize their success and achievements. This can be modelled along the lines of National Farmers Award as pertains in Ghana. Also, the study recommends entrepreneurship surveys and research and sharing findings to inform policy formulation and implementation. For without proper research and authentic data, policies passed may create unintended negative consequences according to Curtain (2004). Again, the government should strive to undertake mass campaign to promote entrepreneurship/self-employment among the rural dwellers by enlisting support of opinion leaders of such communities to encourage youth to look up to entrepreneurship and self-employment rather than seek employment or be dependent on government. The government should invest in specific micro enterprise development programmes for youth to build their capacities in terms of knowledge, skills and aptitude so that they are able to negotiate with the market forces successfully.

CONCLUSION AND THE WAY FORWARD

This study sought to examine the barriers to youth entrepreneurship in rural areas of Ghana. Primary data was obtained using a semi-structured questionnaire that was interviewer-administered and interviews which was also conducted with the youths to obtain additional but necessary qualitative data. Secondary data was through review of the theoretical and empirical literatures sourced from books and scholarly journals, Internet and conference papers among others. The data collected was analyzed using a combination of qualitative and quantitative techniques. The findings of the study reveal youths perceive lack of capital, lack of skill, lack of support, lack of market opportunities and risk as the main obstacles to entrepreneurial intention. A major limitation in this study was time constraint which led to the use of case study approach and a combination of secondary and primary data. In future, different methods of research could be used for study of the same topic or other related aspects of the topic. Specifically future research should focus on entrepreneurship development and employment generation in rural Ghana: problems and prospects.

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Review of Business & Finance Studies

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Revista Global de Negocios

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