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INDUSTRY-BASED FOREIGN DIRECT INVESTMENT AROUND STATE GUBERNATORIAL ELECTIONS: EVIDENCE FROM THE UNITED STATES

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ABSTRACT

As American governors acquire enhanced regulatory and decision-making powers for economic development, the prevalence of statewide business scorecards and other factors are prompting voters to make these politicians and their agents responsible for the financial well-being of their states. Consequently, governors are expanding their policymaking authority and have gone to greater lengths to entice global executives to commit their increasingly mobile capital to their locales in efforts to increase jobs. More than any other sector, manufacturing is the area in which American incoming foreign direct investment is concentrated or what this study will refer to as international industry investment. Data has been collected from three global-manufacturing related Bureau of Economic Analysis datasets, namely FDI in the US- Employment of Nonbank U.S. Affiliates, by State, FDI in the US- Manufacturing Employment of Majority-Owned Nonbank U.S. Affiliates, and Gross Property, Plant, and Equipment of Nonbank U.S. Affiliates, by State. Based on a cross-sectional analysis of this information and gubernatorial tenure, it has been determined that global executives are most likely to devote their industry-based capital to a state in the year after the reelection of a governor and in the second term of an administration.

JEL: A11, B22, C21, D72, D73

KEYWORDS: Administration, Agents, Politics, Capital Mobility, Communication, Competitive Advantage, Economic Development, Election, Foreign Direct Investment, Trade

INTRODUCTION

The structure of the American economy has altered dramatically during the past 50 years, particularly after the passage of the North American Free Trade Agreement (Chase, 2003). Fifty years ago, a third of all Americans were employed in manufacturing; currently less than a tenth of American workers work in factories, although many are trained in and have experience in industry (Hagenbaugh, 2002). During the past several decades, the US has lost its competitive advantage in production vis-a-vis developing countries, most notably China, especially when considering costs dedicated to wages and environmental customizations (Harney, 2009). The deindustrialization in locales around the US that once were booming with factories and high-paying jobs has contributed to economic hardships for many Americans and was the impetus for this study.

As global capital has become increasingly mobile, competition to attract industry from outside sources has risen in salience. Consequently, US lawmakers, particularly those in statewide offices, have been forced to take a proactive approach. Public pressure in America is now directed towards states to bring manufacturing capital to their regions in order to remedy the negative trends associated with lost factory jobs. American state leaders now commonly engage in strategies involving economic development policy, the use of governments and their agents to actively facilitate local strategies to promote job creation and an increased standard of living in a locale, a phenomenon which first started to take shape in the 1980s (Roberts, 2004; Feenstra, 1997). Goodman (1979) first pointed out that economic development policy and planning are no longer exclusively the practice of socialist governments.

This paper will: (a) introduce international industry investment and explain its rise in prominence, (b) detail the rise of regulatory authority in the American state, (c) analyze data related to this study by examining the entire population of United States governors while observing the correlation between their tenures in office and the predictability of obtaining international industry investment to their respective American states, (d) describe the increase in international industry investment for Year 5 of a gubernatorial administration for each of the three most closely-related US government Bureau of Economic Analysis (BEA) datasets, (e) develop a conceptual model to measure international industry investment, and (f) discuss future studies related to this field.

LITERATURE REVIEW AND BACKGROUND

Since the 1980s, Foreign Direct Investment (FDI) flowing into America has increased in prominence as a focus of the literature and is included in disciplines such as political science, organizational leadership, economic analysis, and international trade theory. Blonigen (2005) recently argued that the literature on determinants of FDI is relatively new enough so that most hypotheses still have not yet been explored. In general, scholarly works in this area point to leadership as a common element, particularly the level of commitment by those involved in lower levels of government (Eisinger, 1990). Because the perception of leadership and lawmaking strategies are key ingredients when attempting to lure incoming FDI, ascertaining whether tenure of an American statewide administration affects incoming industry-based FDI became a goal of this study.

Governors, the democratically-elected heads of state government for each of the 50 American states, serve four-year terms, with reelection occurring during year four. To date, the impact of gubernatorial tenure has not been studied as a determinant of incoming FDI for individual American states. This information would be especially valuable if a governor running for reelection during the fourth year could predict what the incoming global capital might be in the following year if he is victorious, and subsequently, it would be beneficial if a model was constructed to predict such an inquiry.

While numerous variables have been identified as factors that either help or hinder the flow of capital as it relates to industry, the effect of gubernatorial tenure on FDI has not been adequately addressed. Current research has focused on leadership strategies and trends involving bringing global capital to a region, but little information has been compiled about longevity in American statewide leadership and its effect on international manufacturing during those years. This is a significant gap in scholarly work, and the research contained in this study provides new information regarding the relationship between tenure of gubernatorial leadership and FDI and fills a hole in literature on determinants of FDI. Grant and Wallace (1994) contributed the only other similar research with their analysis of general domestic industry growth increases during the years of state gubernatorial elections (p. 57). However, this study did not take into account the amount of tenure in the gubernatorial administrations or any international data. Through conclusions drawn by this paper, Statehouses around the US will be better able to more accurately predict, enhance, and develop the future economic landscape and financial well-being of their states.

The main purpose of this study was to investigate the relationship between a governor's tenure and incoming foreign direct investment directed at manufacturing capital and related jobs in that governor's state. More specifically, an objective of this study was to develop an economic model to predict how production-related incoming foreign direct investment is impacted by the reelection of a governor to a second term, or Year 5 of a gubernatorial administration. This study's interdisciplinary approach yields valuable information to the fields of international business, leadership, political science, global marketing, business & society, management, industry, economics, and technology.

Manufacturing and production in the United States constantly are affected by the social, regulatory, and economic environments in which they coexist; the economic downturn of 2007-2010 has further

increased the significance of American statewide efforts to draw fresh streams of income to mitigate state budget deficits (Blakely & Leigh, 2010). Coincidentally, incoming Foreign Direct Investment (IFDI) in the US has been concentrated in industry, the very sector that has witnessed the most domestic job losses (Anderson & Zeile, 2009).

This study will refer to the expression *international industry investment* as a general label describing any globally-supplied manufacturing job, multinational-funded capital, machinery, or asset, and/or any infusion of transnationally-financed property, plant, and equipment related to incoming foreign direct investment directed at American assembly and/or production. The research was conducted based on an analysis of key variables, namely gubernatorial tenure and *international industry investment*. At the same time, this study will also serve to outline why a specific term is important enough to merit its own designated piece of newly constructed terminology.

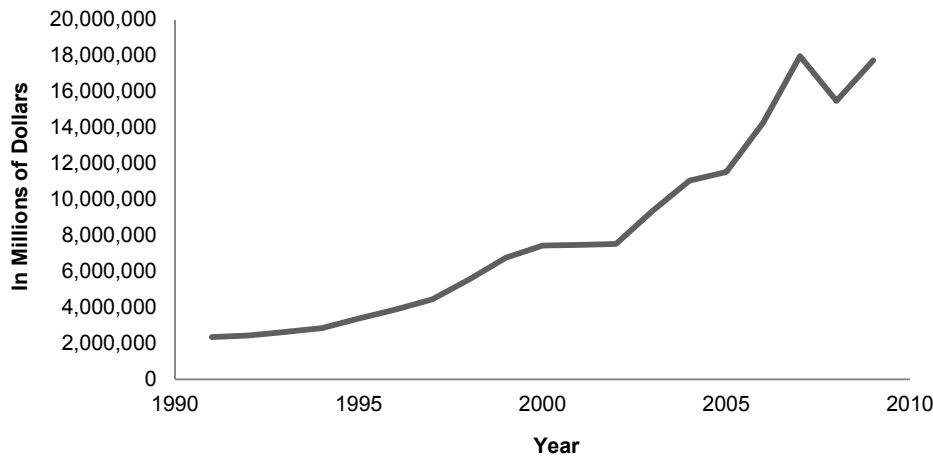
“Made in America” is an American nationalistic sentiment advocating the purchasing of goods assembled or manufactured domestically and stems from the desire to invest in sectors that employ US citizens (Hennart & Park, 1994). Americans are more likely to embrace a company and buy a product if they know that it was manufactured by an American or literally made in America (John & Klein, 2003). Buying a homemade product is an important factor providing motivation for international companies to produce their products in the US, and it has become commonplace for additional incentives to be offered to these multinational manufacturers by local communities so that the investment is directed toward their specific employment-base.

In today’s US economy, the phrase “Made in America” may indicate a product manufactured within the US borders by a multinational company and has become one of the principle reasons why foreign companies set up operations and produce goods in America as they work to develop better access to the vast US market (Hennart & Park, 1994). Contrary to the common belief that production of goods in America has sharply decreased since the passage of NAFTA, new foreign capital arriving in the US has continued to increase sharply, providing an indication that America will continue to be a place where manufacturing will prosper (Rupert, 1995). When taking into account international industry investment, US manufacturing actually is still on the rise, and domestic producers have more than doubled their total trade from 1982-2003 as a result of the increased capital mobility in world markets (Duesterberg & Preeg, 2003, p. 145). In 2010, the US was confirmed as the best destination for FDI from investment promotion agencies (UNCTAD, 2010). Indeed, “Made in America” still has more cache than ever (Kichen, 2009).

Beginning in the 1980s, IFDI provided a major economic boost to economies of American states (Liner & Ledebur, 1987). Hines (1996) reported that a striking new development of the 1980s consisted of the appearance of sharp increases of US IFDI and stated that as the impact of global business increases, the policies designed to attract new global industry become more important (p. 1076).

The total world FDI flows in 2010 showed an increase of seven times the FDI of 1991. Figure 1 displays the 2010 investment flow, or the patterns of international capital movements. Many factors can be attributed to the steady increases in FDI over the past several decades. One, the liberalization of worldwide economic markets and upgrades in infrastructure have helped facilitate the movement of global capital (Sethi, Guisinger, Phelan, & Berg, 2003). Two, more transparency in financial transactions and the rapid economic development of new host areas are credited as primary reasons for the brisk growth of FDI (Stallings, 2007). And three, higher capital flows are attributed to modern international governmental trends that encourage economic reforms and investment-oriented policies as well as the increased ease of cross-border mergers and acquisitions (EconomyWatch, 2011).

Figure 1: 2010 World Investment Report: FDI Flows



Source: UNCTAD. This table displays several decades of United Nations data indicating a sharp rise in total worldwide Foreign Direct Investment since the early 1990's. During the past generation, the spread of globalization has prompted FDI flows to have increased by over seven times. This trend is expected to continue.

American Statehouses have been forced to utilize various policy instruments and creative strategies to make themselves attractive venues for foreign capital. Because the US is hindered by high health care costs and relatively high wage rates compared to developing countries, governors have been forced to compete globally by being innovative and creative. Crandal (1993) indicated that governors should be encouraged to provide an environment in which human capital can develop. Goodman (1979) first concluded that US state and local governments, who are able to offer incentives such as job training, anti-regulations, and tax deals, have become international entrepreneurs.

Today, both US conservative and liberal political solutions to the deindustrialization issue in America now put faith in the private sector and the profit motive more the federal government as solutions to both sustain and attract global manufacturing (Bluestone, 1984). Krugman (1994) indicated that regulations enacted by European countries have allowed the US to have more attractiveness when employers are deciding whether the US or Europe are more hospitable destinations in which to create new jobs. Even so, massive bureaucracy still exists in the US (Rowley, Thorbecke, & Wagner, 1995), which forces leaders to be creative with tax incentives and other recent economic development enticements, including infrastructure upgrades and donations of land.

Free-trade first-world nations have increasingly embraced the benefits of unencumbered capital flows. Richetto & Moitra (1990) pointed out that since World War II, the expansion of international commerce and investment has been facilitated by rising economic growth and liberal IFDI policies observed by most of the world's industrialized nations. However, unlike the governments of other nations, the US federal government has not actively solicited IFDI (McMillan, 2006).

Much of the recent IFDI in the US has been specifically dedicated to manufacturing, and historically, the bulk of the capital inflows into America have been industry-based (Anderson & Zeile, 2009; Madura, 2003). Since 1970, the American economy has undergone major changes, including sharp increases in IFDI into the US, especially in the manufacturing sector. Eisinger (1988) stated:

Another development of this decade and a half, scarcely remarked until the late 1970s, concerned the growth of direct foreign investment in the United States, more of which has been in manufacturing than any other area of commerce. (p. 290)

Specifically, the US Department of Commerce (1986) reported that of all global investment from 1970-1984, the capital committed to industry increased by 725 percent. Reich (1996) confirmed that multinationals still constitute a sizeable proportion of the American industrial economy. The United States has seen steady increases in incoming manufacturing capital, even during the economic downturn that started in 2007. Table 1 below shows the increase in IFDI by sector, from 2005-2009.

Table 1: Incoming Foreign Direct Investment in the United States: Selected Items by Detailed Industry of U.S. Affiliate, 2005-2009 (millions of dollars)

	2005	2006	2007	2008	2009
All industries	1,634,121	1,840,463	2,055,176	2,165,748	2,319,585
Manufacturing	499,851	569,324	684,555	746,475	790,568
Wholesale trade	235,508	255,590	294,697	316,581	328,430
Retail trade	30,934	31,677	31,363	40,129	44,330
Information	102,584	135,986	155,704	164,491	146,114
Depository institutions	130,184	135,391	107,242	92,565	111,913
Finance and insurance	214,623	283,364	275,722	238,875	293,204
Real estate and rental and leasing	37,341	41,924	53,780	57,459	54,539
Professional/scientific/technical svcs	51,546	47,597	55,201	62,934	46,087
Other industries	331,549	339,610	396,912	446,238	504,399

This table displays the United States federal government statistics for various industries that contribute to US Incoming Foreign Direct Investment in recent years. Manufacturing is the most prevalent industry, followed by wholesale trade and finance/insurance. Total IFDI in the US, as well as that dedicated specifically to manufacturing, even increased as the US first began to face macroeconomic challenges starting in 2008. Source: US Bureau of Economic Analysis

Manufacturing, and in particular innovative technology-based industry, has been the primary focus of this new IFDI development in the US. Tasse (2005) stated that half of Gross Domestic Product (GDP) growth in industrialized areas is attributed to technology, and productivity in high-tech industry has increased three times as fast as other industry. It is widely accepted that it is essential for an American state's high-tech manufacturing sector to have global networks in order to advance the economy and that contact with global markets is essential for continued economic growth and increased productivity in high-tech industry (Eisinger, 1990; Dueterberg & Preed, 2003). Increasingly, technology-based industry has been a vital aspect of the IFDI entering the US. The following table shows total global manufacturing capital in the US as a percentage of total IFDI.

Research and development (R&D) associated with US IFDI has also been directed toward manufacturing, and Site Selection magazine reported that by 2009, expenditures for R&D performed by multinationals operating in the US totaled \$39.8 billion, accounting for 15 percent of the R&D performed by all US businesses (Bruns, 2010). In 2007, multinationals operating in the US classified in manufacturing accounted for the largest share of US affiliate value added, at 42 percent (Anderson & Ziele, 2009). The Figure 2 depicts all "new" IFDI for 2008. Manufacturing accounts for 54% of this total, which is much higher than the 35% of total IFDI that comes from manufacturing. The increase in new IFDI is predictive of the importance of global industry to the future of the US economy.

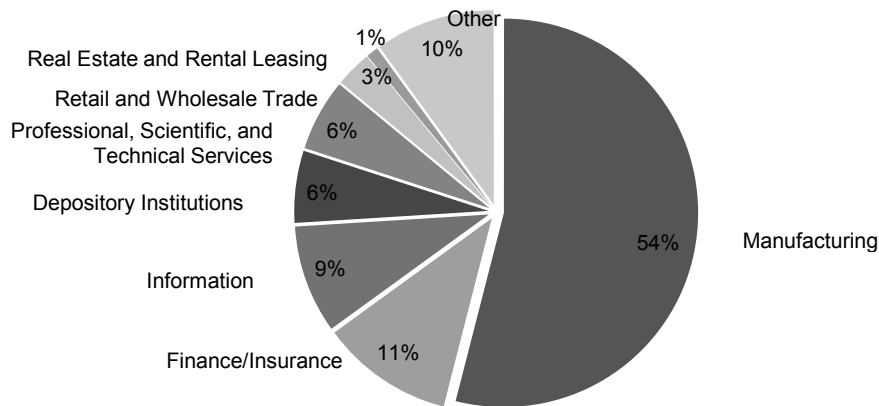
These sharp increases indicate that as capital into the US becomes more mobile, international industry investment becomes increasingly available for the taking. The American governors that are best able to provide the leadership necessary to claim these riches will provide high paying jobs in their locales for decades to come. In recent years, greater regulatory responsibility in several US lawmaking areas has moved from the federal government to state government. As a result, a new phenomenon known as devolution revolution has emerged in which state governments have established or reestablished themselves as powerful entities, capable of spending more time and effort on specific regulations and policymaking (Gerber & Teske, 2000).

Table 2: Incoming Foreign Direct Investment in the United States: Manufacturing as a Percentage of Total, 2005-2009.

	2005	2006	2007	2008	2009
Manufacturing	499,851	569,324	684,555	746,475	790,568
All industries	1,634,121	1,840,463	2,055,176	2,165,748	2,319,585
% of all	30.6%	30.9%	33.3%	34.5%	34.1%

This table displays the United States federal government statistics for the proportion of manufacturing as a percentage of all US Incoming Foreign Direct Investment. Manufacturing now accounts for over 1/3 of all US IFDI. The importance of production-based IFDI is increasingly essential for the health of state economies across the US. Source: Bureau of Economic Analysis

Figure 2: Outlays for New Investment in the US by Foreign Direct Investors, by Industry



This pie-chart displays the United States federal government statistics for all “new” Incoming Foreign Direct Investment. Manufacturing accounts for more new IFDI than any other industry, at 54%. Increasingly, manufacturing is an integral component for injections of economic activity in state economies. Source: Bureau of Economic Analysis

For many regulatory areas, the federal government establishes broad policy objectives and parameters, while state governments act as the key implementing agents (Gerber & Teske, 2000). The trend of American states serving in essence as laboratories for major legislations started in the early 1980s with programs such as environmental policy. Since then, state governments have accumulated considerable authority and discretion in regulatory areas such as worker safety, and in other policy arenas, including occupational regulation and insurance regulation standards, states have more or even complete jurisdiction (Keller & Levinson, 2002). American states’ rights have been also recently increasing recently in key legislation areas such as medicinal marijuana and gay marriage (Singh, 2003). Donovan, Moody, and Smith (2009) surmised that today, local and state governments have a greater impact on the daily lives of Americans than the federal government. “All politics is local”, a commonly held adage in the United States political arena, is often used to describe the notion that voters are inclined to support candidates and issues that directly affect themselves and their well-being rather than national issues (Cox & Mair, 1988; O’Neill & Hymel, 1995). Economic development is now one of those policy arenas in which states have more powers (Sapat, 2004). Simmons and Elkins (2004) found that the most profound effect on US policy transitions to state governments is from economic competition.

Since no major US national policy hinders international industry investment but none solicits it either, many US states started advocating their own agendas in the late 1980s. As a result, statewide leadership strategies have increased in importance, which has prompted state governments to get more creative when marketing potential business climates to multinationals (Jamison, 1998). State governments have utilized an array of various tools to market their states, including the now common use of strategic tax incentives, which has become a widely accepted and standardized governmental tool to entice and retain new IFDI

(Crandall, 1993). This consensus has formed comparatively quickly, because in 1983, the National Governor's Association (1983) reported in a comprehensive study that active state involvement in the solicitation of high-tech industry as part of an economic development strategy was a recent phenomenon.

Because of the nature of federalism within the US governmental system, individual states contain considerable institutional diversity in their models of authority (Donovan, Mooney, & Smith, 2009). The pursuit of international industry investment is now at the top of the agenda for many governors, because it represents a long-term venture from a multinational corporation that involves capital transactions whereby the management of the new enterprise is influenced or completely operated by the direct investor (OECD, 1995). International industry investment contributes more financial growth and productivity than domestic growth and has a greater impact on economic development than other means of business (Borensztein, Gregorio, & Lee, 1998). Once a multinational company commits its resources to a global locale, the entire investment becomes immobile, and while a multinational organization has lots of bargaining power before the destination is decided, the power thereafter shifts to the host area (Jensen, 2006). Those international first mover organizations that set up their operations in US locales will provide high-paying jobs for years to come in the states where they decide to set up operations.

Most recently, more opportunities to attract IFDI from India and China have become available, as indicated by the increased prevalence of gubernatorial trade missions to the Far East starting in the 1990s. Trade missions are designed to leverage business relationships and cultivate new partnerships and assist in first networking and eventually facilitating job commitments from international decision-makers (Kotler, 1993). These trade missions are economic development activities undertaken abroad in an effort to spur IFDI (Cassey, 2007), and the most recent statewide marketing phenomenon has been the aggressive pursuit of international industry investment through trade missions. Eisinger (1988) found that although states do not keep ongoing records of deals that are struck as a result of trade missions, foreign executives consider gubernatorial trade missions to be the most valuable strategy in developing trade contracts.

Multinational organizations know of the increased importance of international industry investment to a US state's economy and have become more apt to research potential manufacturing destinations in order to get the best deal possible. As a consequence, more emphasis has been placed on comparing and contrasting a manufacturing work environment in one state with another through the creation of statewide scorecards (Chen, Chen, & Ku, 2004). Statewide scorecards are ratings created by outside evaluators of state governments and their economic systems (Quillen, 2009). Other methods of evaluation are being analyzed by MNCs to compare potential investment destinations.

Leicht and Jenkins (1994) argued that over the past few decades, state governments have become the major innovators in US economic development policy. Today, many international executives simply bypass national lawmakers in order to form more personal partnerships with state-level policymakers and their related organizations (Eisinger, 1988; Jamison, 1998), in hopes of winning out the riches of international industry investment.

DATA AND METHODOLOGY

This study examined the entire population of United States governors, observing the correlation between their tenures in office and the predictability of obtaining international industry investment for their respective American states. The study also analyzed incoming foreign direct investment for each of the 50 states, focusing on the ability for state leaders to attract new production jobs for economic development.

The timeframes of the governors’ tenures in office were compared to the three most recent closely related international industry investment datasets provided by the United States Federal Government’s Bureau of Economic Analysis. The most recent federal data covers statistics gathered from 1997 to 2007.

The United States Bureau of Economic Analysis is the federal organization that tracks US IFDI and as such, the three distinct, most current BEA datasets were utilized because they best reflected where the measurement of international industry investment in America was concentrated. Anderson (2010) indicated that the most recent data included: (a) Foreign Direct Investment in the US- Employment of Nonbank U.S. Affiliates (in thousands), by State, 1999-2006, (hereby referred to as FDI); (b) Foreign Direct Investment in the US- Manufacturing Employment of Majority-Owned Nonbank U.S. Affiliates (in thousands), 1997-2005, (ME); and (c) Gross Property, Plant, and Equipment of Nonbank U.S. Affiliates (in millions), by State, 1999-2006 (PPE). The data in these three datasets served as independent variables for their models and were utilized to create the framework for their equations.

The average increase in international industry investment was an independent variable and became the general multiplier for its distinct model. It was determined by calculating the mean change in Year 5 from the prior year for the entire population of governors in its specific dataset published by the US BEA. The prior year’s international industry investment was used as a benchmark for the model. The next independent variable was geographic location, because the state’s geographic location directly affects its likelihood of attracting international industry investment (Kim, 1995). Additionally, since economic momentum in the first years of a gubernatorial administration can culminate in a robust economy in Year 4 (Sisson, Zacher, & Cayton, 2007), a special independent variable caveat was included for Northern states that were able to create economic momentum to control for a scenario in which a Northern state saw an unusually high economic growth of 1.06% or higher in Year 4 of a gubernatorial administration. As such, the models above depict a special multiplier of 1.1 which was attached to those equations.

These variables were included in the three models which were constructed to see if the dependent variable could be predicted (the Year 5 international industry investment) for an administration. A cross-sectional analysis was used as the research method. A cross-sectional analysis does not take into account the result based on forward or backward timing, but instead locates its outcomes during a specific, constructed span of time (Glenn, 2005).

Three distinct models, FDI, ME, and PPE, were created for each of the three datasets, based on the variables described. The calculated output was then compared to the actual international industry investment for those given years for each of the three BEA datasets. These models are shown in tables 3, 4, and 5 below.

Table 3: Model for Foreign Direct Investment (FDI) Into a State: Year 5 of a Gubernatorial Administration

If Year 4 State Real GNP ≥ 1.06 and s = Northern,	
Year 5 FDI = (Multiplier)(s)(Year 4 FDI)(1.1*Year 4 State Real GNP)	(1)
<i>Whereas</i> s = .95 if Northern state or s = 1 if Southern state	
Multiplier = \sum (% Δ in FDI Year 4 → Year 5), for entire population in dataset	(2)
Otherwise,	(3)
Year 5 FDI = (Multiplier)(s)(Year 4 FDI)	
<i>Additionally,</i>	
\sum (Year 5 FDI) = \sum ((Multiplier)(s)(Year 4 FDI)(1.1*Year 4 State Real GNP))	(4)
<i>This table shows foreign direct investment into a state for year 5 of a gubernatorial administration.</i>	

Table 4: Model for Manufacturing Employment (ME) Into a State: Year 5 of a Gubernatorial Administration

If Year 4 State Real GNP ≥ 1.06 and s = Northern,	
Year 5 ME = ((Multiplier)(s)(Year 4 ME)(1.1* Year 4 State Real GNP))	(1)
<i>Whereas</i> s= .98 if Northern state or s= 1 if Southern state	
Multiplier = \sum (% Δ in ME Year 4→Year 5), for entire population in dataset	(2)
Otherwise,	
Year 5 ME = (Multiplier)(s)(Year 4 ME)	(3)
<i>Additionally,</i>	
\sum (Year 5 ME) = \sum ((Multiplier)(s)(Year 4 ME)(1.1*Year 4 State Real GNP))	(4)

This table shows a model for manufacturing employment (ME) into a State for year 5 of a gubernatorial administration

Table 5: Model for International Plant, Property, and Equipment (PPE) Into a State: Year 5 of a Gubernatorial Administration

If Year 4 State Real GNP ≥ 1.06 and s= Northern,	
Year 5 PPE = ((Multiplier)(s)(Year 4 PPE)(1.1* Year 4 State Real GNP))	(1)
<i>Whereas</i> s= .94 if Northern state or s= 1 if Southern state	
Multiplier = \sum (% Δ in PPE Year 4→Year 5), for entire population in dataset	(2)
Otherwise,	
Year 5 PPE = (Multiplier)(s)(Year 4 PPE)	(3)
<i>Additionally,</i>	
\sum (Year 5 PPE) = \sum ((Multiplier)(s) (Year 4 PPE)(1.1* Year 4 State Real GNP))	(4)

This table shows a model for international plant, property, and equipment (PPE) into a state for year 5 of a gubernatorial administration.

RESULTS

Table 6 below shows the number of governors included in each of the cohorts from Year 1 to Year 8 of a gubernatorial administration for each of these three BEA datasets. The most significant decrease was between Years 7 and 8; by Year 8, the number of governors in the cohort had been reduced significantly. Five governors served in their eighth year for the FDI and PPE cohorts, and six governors served in their eighth year for the ME cohort. As such, international industry investment was not calculated for Year 8 due to such low subsets.

The next task was to find the percentage change in BEA data from the previous year for each individual state, which was then attributed to each gubernatorial cohort. In many cases, a small state saw an extreme increase or decrease, presumably from a major plant closing or a major commitment of jobs, and thus, two outliers, one with the highest total and one with the lowest total, were discarded from the average for each cohort. Table 7 below displays the complete descriptive statistics of each cohort before the outliers were thrown out, including the mean of each cohort, the standard deviation, the range, the minimum and maximum, and other related data.

Table 6: Cohort Table: “FDI”, “ME”, and “PPE”

Cohort	Number of Governors in Cohort							
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
FDI	56	47	47	18	31	27	28	5
ME	59	55	51	36	35	33	32	6
PPE	53	46	46	16	29	26	23	5

This table shows the total number of governors for each cohort from Year 1 to Year 8 for three BEA datasets including FDI, ME, and PPE from which the change in international industry investment from the prior year will be measured.

The multiplier for the models, or the average increase from the previous year for each of the three international industry investment equations, was calculated to be 1.036 for the FDI dataset, 1.0299 for the ME dataset, and 1.1214 for the PPE dataset. Table 7 below depicts the average increase or decrease for each of the cohorts from Year 1 to Year 7 for a gubernatorial administration in each of the three BEA datasets.

Table 7: Descriptive Statistics for Year 1-8 cohorts

	Year 1-FDI		Year 2-FDI		Year 3-FDI		Year 4-FDI		Year 5-FDI		Year 6-FDI		Year 7-FDI	
Mean	1.001	Mean	1.000	Mean	0.991	Mean	0.973	Mean	1.036	Mean	1.002	Mean	0.981	
Med.	1.008	Med.	0.977	Med.	0.993	Med.	0.977	Med.	1.034	Med.	0.996	Med.	0.983	
SD	0.083	SD	0.086	SD	0.070	SD	0.044	SD	0.068	SD	0.071	SD	0.079	
SV	0.007	SV	0.007	SV	0.005	SV	0.002	SV	0.005	SV	0.005	SV	0.006	
Range	0.354	Range	0.437	Range	0.375	Range	0.165	Range	0.239	Range	0.287	Range	0.302	
Min.	0.814	Min.	0.873	Min.	0.821	Min.	0.908	Min.	0.926	Min.	0.891	Min.	0.855	
Max.	1.168	Max.	1.310	Max.	1.196	Max.	1.073	Max.	1.164	Max.	1.178	Max.	1.158	
N	54	N	45	N	45	N	16	N	29	N	25	N	26	
	Year 1-ME		Year 2-ME		Year 3-ME		Year 4-ME		Year 5-ME		Year 6-ME		Year 7-ME	
Mean	1.022	Mean	0.966	Mean	0.995	Mean	0.942	Mean	1.030	Mean	0.948	Mean	1.009	
Med.	1.007	Med.	0.964	Med.	0.980	Med.	0.963	Med.	1.000	Med.	0.964	Med.	1.040	
SD	0.158	SD	0.141	SD	0.108	SD	0.082	SD	0.124	SD	0.110	SD	0.163	
SV	0.025	SV	0.020	SV	0.012	SV	0.007	SV	0.015	SV	0.012	SV	0.027	
Range	0.818	Range	0.983	Range	0.507	Range	0.294	Range	0.526	Range	0.417	Range	0.877	
Min.	0.818	Min.	0.300	Min.	0.687	Min.	0.779	Min.	0.882	Min.	0.733	Min.	0.667	
Max.	1.636	Max.	1.283	Max.	1.194	Max.	1.072	Max.	1.407	Max.	1.150	Max.	1.544	
N	57	N	53	N	49	N	34	N	33	N	31	N	30	
	Year 1-PPE		Year 2-PPE		Year 3-PPE		Year 4-PPE		Year 5-PPE		Year 6-PPE		Year 7-PPE	
Mean	1.040	Mean	1.016	Mean	1.039	Mean	0.995	Mean	1.121	Mean	1.015	Mean	1.019	
Med.	1.029	Med.	1.011	Med.	1.029	Med.	1.013	Med.	1.085	Med.	1.011	Med.	1.027	
SD	0.073	SD	0.098	SD	0.094	SD	0.071	SD	0.134	SD	0.120	SD	0.107	
SV	0.005	SV	0.010	SV	0.009	SV	0.005	SV	0.018	SV	0.014	SV	0.011	
Range	0.384	Range	0.497	Range	0.535	Range	0.247	Range	0.557	Range	0.701	Range	0.447	
Min.	0.889	Min.	0.806	Min.	0.837	Min.	0.851	Min.	0.905	Min.	0.564	Min.	0.799	
Max.	1.273	Max.	1.303	Max.	1.372	Max.	1.098	Max.	1.462	Max.	1.265	Max.	1.246	
N	51	N	44	N	44	N	14	N	27	N	24	N	21	

This table depicts the complete descriptive statistics for the percentage change in BEA data (FDI, ME, and PPE) from the previous year for each year of a gubernatorial administration from Year 1 to Year 8.

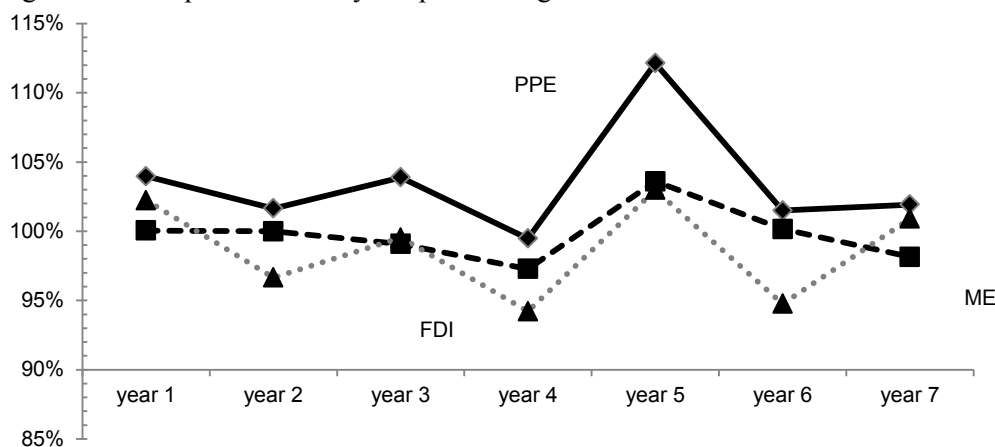
Most noticeably, there was a sharp increase in Year 5 for each of the three BEA datasets. Additionally, the largest net decrease occurred during Year 4 for each of the three BEA datasets. Figure 3 below illustrates the average change in international industry investment for the three BEA datasets from the previous year. As shown in figure 3, the average change from the previous year is higher in Years 5, 6, and 7, all years after the reelection of a governor, as compared to Year 4, the last year in the first administration for a governor.

Table 8: Average change for cohorts based on datasets “FDI”, “ME”, and “PPE”, or multiplier for the models

	% Change from Previous Year						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
FDI	1.0223	0.9664	0.9953	0.9422	1.0299	0.9476	1.0090
ME	1.0006	0.9999	0.9908	0.9728	1.0360	1.0016	0.9815
PPE	1.0397	1.0164	1.0389	0.9947	1.1214	1.0149	1.0193

This table provides the average increase or decrease in international industry investment for each gubernatorial cohort as compared to the prior year. The rows are arranged based on the BEA dataset, with the first row including the FDI dataset, the second row including the ME dataset, and the third row including the PPE dataset.

Figure 3: Multiplier: Summary Graph- Average Increase/Decrease in International Industry Investment



This graph displays the average increase or decrease for each of the three most closely associated United States Bureau of Economic Development categories of international industry investment for Years 1-7 of a gubernatorial administration. For each of the three categories, the Year 4 cohort, or the last year of the first term of an administration, had the lowest calculations. For each of the three categories, the Year 5 cohort, or the first year after the reelection of a governor, had the highest calculations.

The table below provides a summary of the highest and lowest years in international industry investment for each of the three BEA datasets. The results were consistent across datasets because the lowest average for each dataset occurred in Year 4, whereas the highest average for each dataset occurred in Year 5.

Table 9: Summary Lowest and Highest Years for Cohort Data

	Lowest Year	Change	Highest Year	Change
FDI	Year 4	0.9728	Year 5	1.0360
ME	Year 4	0.9422	Year 5	1.0299
PPE	Year 4	0.9947	Year 5	1.1214

This table summarizes the calculations for the lowest and highest years from Year 1-Year 8 for each of the gubernatorial cohorts for the BEA datasets including FDI, ME, and PPE. For each of the datasets, the lowest calculations from the prior year were in Year 4, with the highest average change being in Year 5 for each of the three datasets.

Each of the three separate models constructed for this study were able to predict the specific dataset associated with international industry investment in Year 5 of a gubernatorial administration within 1% of

the actual. Overall, the three models predicted the individual American state’s international industry investment by 10% in Year 5 of a gubernatorial administration for 72 of 89 states, or 80.9%.

For the FDI Year 5 dataset, the model calculated the real output at 99.987%. The following table depicts the model’s results from the FDI population summation. For the individual states’ Year 5 FDI dataset, the model calculated the real output by 10% in 26 of 29 instances, or 89.7% of the time. In addition, of the three instances where the model did not predict the Year 5 FDI output by 10%, one actual total was less than 10% and two actual totals were above 10%.

Table 10: FDI Model: Aggregate and Individual Breakdown

\sum Year 5 Actual = 2617.0
\sum Year 5 Calculated = 2617.3
=0.99987, 99.987%
Individual State Year 5 Model Predictions with 10% of Actual= 26 of 29
Individual State Year 5 Model Predictive Rate= 89.7%

This table summarizes the model’s predictability of Year 5’s FDI. The second row describes the sum of all individual Year 5s for a gubernatorial administration, and the third row includes the percentage of actual. The table further depicts the model’s predictability of each of the individual 29 Year 5 totals.

For the ME Year 5 dataset, the model calculated the real output at 100.14%. The following table depicts the model’s results from the ME population summation. For the individual states’ Year 5 ME dataset, the model calculated the real output by 10% in 26 of 33 instances, or 78.8% of the time.

Table 11: ME Model: Aggregate and Individual Breakdown

\sum Year 5 Actual = 1048.2
\sum Year 5 Calculated = 1046.7
=1.0014, 100.14%
Individual State Year 5 Model Predictions with 10% of Actual= 26 of 33
Individual State Year 5 Model Predictive Rate= 78.8%%

This table summarizes the model’s predictability of Year 5’s ME. The second row describes the sum of all individual Year 5s for a gubernatorial administration, and the third row includes the percentage of actual. The table further depicts the model’s predictability of each of the individual 33 Year 5 totals.

Of the seven instances where the model did not predict the Year 5 ME output by 10%, three actual totals were less than 10% and four actual totals were above 10%. For the PPE Year 5 dataset, the model calculated the real output at 99.3%. The following table depicts the model’s results from the FDI population summation. For the individual states’ Year 5 PPE dataset, the model calculated the real output by 10% in 20 of 27 instances, or 74.1% of the time.

Of the seven instances where the model did not predict the Year 5 PPE by 10%, one actual total was less than 10% and six actual totals were above 10%. For the 17 total instances where the three models did not predict the actual international industry investment total within 10%, 12 actual totals were above the 10% threshold and only 5 actual totals were below the 10% threshold. The table below summarizes the individual Year 5 for the totals of the three datasets.

Table 12: PPE Model: Aggregate and Individual Breakdown

\sum Year 5 Actual = 590,444
\sum Year 5 Calculated = 594,803
=0.993, 99.3%
Individual State Year 5 Model Predictions with 10% of Actual= 20 of 27
Individual State Year 5 Model Predictive Rate= 74.1%%

This table summarizes the model's predictability of Year 5's PPE. The second row describes the sum of all individual Year 5s for a gubernatorial administration, and the third row includes the percentage of actual. The table further depicts the model's predictability of each of the individual 27 Year 5 totals.

The summary statistics in the table above depicting instances in which the model did not accurately predict the international industry investment contain value. Of the 17 occasions when the model did not predict the actual total within 10%, only five of those actual totals were well below the predicted, whereas the other 12 actual totals far exceeded expectations for Year 5.

Table 13: FDI, ME, and PPE Models: Summation

Individual State Year 5 Model Predictions with 10% of Actual= 72 of 89
Individual State Year 5 Model "Misses"= 17
Instances where the actual total was below the 10% Threshold= 5
Instances where the actual total was above the 10% Threshold= 12

This table summarizes the models' individual Year 5 predictability for all 3 BEA datasets, including FDI, ME, and PPE within 10% of the actual. The second row describes the total times that the model did not predict the actual within 10%, the third and fourth rows break down the times the model was not able to predict the actual.

Based on this body of evidence, key findings of this study appear to be the increase in international industry investment for Year 5 of a gubernatorial administration in each of the three most closely-related BEA datasets, as well as the higher rates of international industry investment in all years during the second term of a gubernatorial administration, or after a reelection of a governor, as compared to the final year of the first administration. Thus, the following assertions which are central to this study can be made:

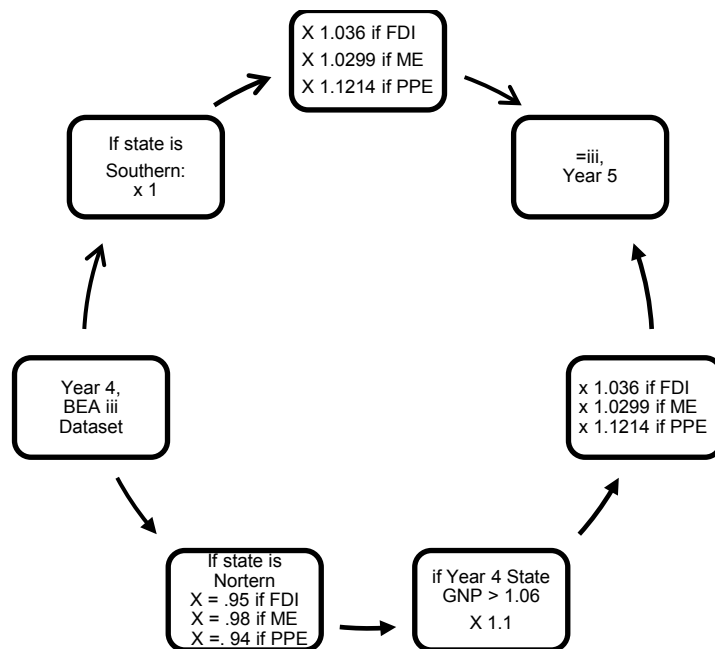
1. The reelection of a governor in Year 4 resulted in increased average international industry investment, "FDI in the US- Employment of Nonbank U.S. Affiliates, by State, 1999-2006" (FDI) in Year 5, for the entire population of governors.
2. The reelection of a governor in Year 4 resulted in increased average international industry investment, "FDI in the US- Manufacturing Employment of Majority-Owned Nonbank U.S. Affiliates, 1997-2005" (ME), in Year 5, for the entire population of governors.
3. The reelection of a governor in Year 4 resulted in increased average international industry investment, "Gross Property, Plant, and Equipment of Nonbank U.S. Affiliates, by State, 1999-2006" (PPE), in Year 5, for the entire population of governors.

Another claim might be also made. Very few of the individual Year 5 outputs were higher than the actual totals, leading to the conclusion that in most of the occasions where the model did not predict the correct total for Year 5, the international industry investment gains were well above the 10% threshold. Of the 17 total "misses", only 5 model outputs predicted higher than the actual totals. Even after taking into account the multiplier, or average increase in international industry investment in Year 5, the models were

more likely to underestimate the actual Year 5 totals. Based on this output, an assertion can be made that *a governor is more likely to far exceed already-elevated expectations of international industry investment in Year 5*. Of the 17 of 89 “misses”, 12 actual totals were above the models’ predictions, whereas only 5 of the 17 “misses” were below the actual international industry investment.

A final conclusion can be drawn from the information provided from the output. Namely, output from Years 5, 6, and 7 of the BEA datasets, or the international industry investment for every year in a second term of a gubernatorial administration, were each higher than Year 4, or the last year of the first term. From the results provided by the central research questions of this study, the following conceptual model has been developed to measure international industry investment.

Figure 4: Tanoos Model: Determinants of International Industry Investment (iii) for Year 5 of a Gubernatorial Administration



CONCLUDING COMMENTS

The three models constructed for this study have added to literature that has not yet been the focus of any related field, including global economics, management, and political leadership. The predictability of international industry investment and the noted increases in the year after the reelection of a governor provide a rationale that could be utilized in future campaign talking points. Politicians might use this information as campaign content, since the case can be made that the reelection of a governor can provide the impetus for increased international industry investment to their locales.

An important sign is sent by a state electorate upon the reelection of a governor, and only after these points in time is an international executive assured that a current governor will be in office for four additional years. Hughes, Ginnett, & Curphy (2009) found that decision makers are unable to adequately assess leadership potential, and with the added risk of assessing cross-cultural fit, perhaps a MNC’s attempts to locate in the US wait until a signoff by the electorate before adequately gauging the quality of statewide leadership.

Limitations of this paper include the lack of first-hand interviews of those international executives who commit capital to various US states. Also, the three Bureau of Economic Analysis datasets chosen were most closely concentrated in international industry investment, but no specific subset was available that measured this category specifically. In addition, the data obtained from US federal government's Bureau of Economic Analysis is secondary data and was not verified independently.

Subsequent research can be developed from these conclusions and implications. For possible future studies, it would behoove a researcher to ascertain if foreign officials make conscious decisions to wait to increase their FDI until after the end of the fourth year in gubernatorial office in order to determine if the incumbent governor wins a reelection campaign. It also might be worthwhile to search for evidence that a governor might be too preoccupied by the demands of an election in Year 4 to actively solicit international industry investment.

Collectivist cultures emphasize the maintenance of harmony and value comfort and trust in business, while also placing importance in partnerships where faith and confidence have been established. Future research might analyze whether the Far East, which is deemed to be a collectivist area, tends to wait and commit their resources until after the reelection of a governor as compared to international industry investment originating from Europe.

Indeed, the Statehouse has been proposed as a basis for variations of international industry investment. Governmental policy advocating continuity over change suggests that leadership, and the tenure of leadership, has become an increasingly important feature when assessing the level of international industry investment across the various United States.

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BIOGRAPHY

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A STUDY ON THE ESTABLISH AND EVALUATION OF ADULT DAY CARE SERVICE CENTERS

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ABSTRACT

The purpose of this paper is to aid in planning for the provision of adult welfare and care services, and to ensure that strategies are in place to effectively cope with the aging society. This investigation aims to review an operating assessment system for the execution of long-term care within Nantou County, Republic of China. Based on theoretical considerations and a hierarchical model of perspectives, the Balanced Score Card (BSC), was used to evaluate management. We also used a fuzzy Delphi method, and a Fuzzy Analytic Hierarchy Process (FAHP), to assess nonprofit organizations which manage senior day care centers. The model includes financial, customer, internal business process, and learning and growth perspectives. The results show the level of importance of the perspectives was: Internal business process perspectives; Customer perspectives; Learning and growth perspectives; and Financial perspectives. The performance assessment system provides an accurate representation when used to assess long-term care services. The various indicators can guide organizations to continuously improve their services, in order to provide the best possible service for the adults.

JEL: I11; L31

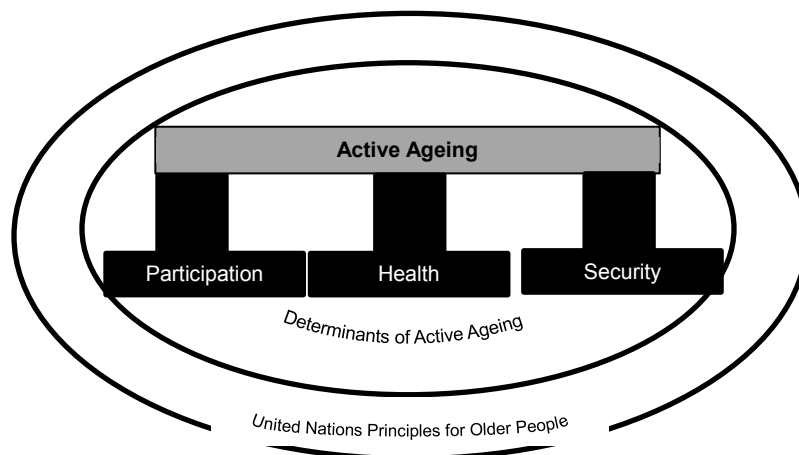
KEYWORDS: Adult Day Care Service Center, Balance Score Card, Fuzzy Delphi Method, Fuzzy Analytic Hierarchy Process

INTRODUCTION

According to figures released by the statistics department of the Ministry of the Interior (MOI), as of the end of 2010 Taiwan had over 24.8 million people older than 65 years. This equates to 10.74% of the total population. Executive Yuan of the Council for Economic Planning and Development (CEPD) forecasts 4,981,000 citizens aged over 65 by 2026, equating to 20.90% of the total forecast population at that time (Department of Health, Ministry of the Interior, Economic Planning and Development, 2009). Facing an ageing population, the Taiwanese government has actively promoted health care strategies including a pilot program for the development of long-term care systems, the new century health care plan, the aged intensive care service, the plan for the development of the care-services and welfare industry, and a ten-year plan for long-term care in Taiwan. In addition, the government is devoted to establishing a complete long-term care system, to plan for the welfare of the elderly, and to satisfying the welfare needs of the elderly, including catering to their probable future needs.

The ageing population trend is common to many countries. The United Nations proposed their Proclamation on Ageing in early 1991, disclosing 5 universal principles that elderly should have access to: independence, participation, care, self-fulfillment, and dignity. They declared 1999 the International Year of Older Persons, in apprehension of world nations adapting to the needs of elderly people. In addition the WHO proposed an active ageing policy framework, defining active ageing as providing the greatest chance of health, social participation, and social security during the ageing process so as to enhance Quality of Life (QOL) in old age (World Health Organization, 2002). A policy framework proposed by the WHO, shown in Figure 1, suggests that an active ageing policy should be built upon the three pillars of health, participation and security. In addition to fostering the mental health of individuals and their connection to society, all plans and policies possess an important goal of prolonging the healthy life expectancy of individuals, and maintaining good QOL during the ageing process.

Figure 1: Policy Framework of Active Ageing



This figure shows the policy framework of active ageing from World Health Organization in 2002. Resource: World Health Organization, 2002

The government needs to ensure that their policy management encompasses supply, demand and management aspects to ensure the elderly receive an active and friendly service environment. In order to combat the currently insufficient and diminishing staffing levels, the use of community resources to jointly promote welfare services has become a popular strategy (Hsu, 1998) , which is also the primary method being utilized to promote the Ten-Year Plan for Long-term Care in Taiwan. However, the lack of competition in partial markets, where welfare services are entirely privatized, reduces the consumer’s choice and results in operational risks. This leads to a situation where the government is required to create standards for the management of welfare services to ensure their quality. As a result, private organizations must adapt to these standards to obtain approval to supply welfare services. This results in the need for a cooperative model between the government and the private providers for the delivery of welfare services. Inevitably, this system will lead to challenges for both government and private organizations. Experience in the execution of welfare services, an understanding of the insufficiency of the current system, and a willingness to improve upon the current system are not only closely associated with the topic of service quality, but are also elements which should guide partnerships between private and public sectors, and the case for utilizing a passive or habitual use of the existing performance management system. Therefore, the government should use inspections for practical operations, and effectively utilize performance reviews for any changes in the general national environment including politics, economics, society and technology. In addition they should propose related improvement measures, and assist under-performing organizations to maximize social welfare for all citizens while using the least resources.

Utilizing empirical research of adult day care centers, this study aims firstly to review the current situation of long-term care execution within Nantou County from a supply and demand perspective. This will enable discussions surrounding performance evaluation indicators for such centers. We also aim to apply a performance management tool, the Balanced Scorecard (BSC), to consolidate the execution process and trends for future development. Secondly, due to limited government resources, the outsourcing of evaluations has become more popular. There is an ongoing discussion surrounding the best methods of performance evaluation in the social service field. While performance evaluation is an imperative tool to ensure government effectiveness for those who support privatization, it is also an important tool to ensure social rights for advocates of social democracy. Performance evaluation must be connected with both service targets and service demand. Balancing various performance indicators from the perspectives of the public, expertise, organizations, and politics requires government input. The benefits of day care services for the elderly can serve as a reference for the improvement of government administration, and its outsourcing process. Therefore, the purpose of this study can be summarized to analyze and establish performance evaluation indicators for adult day care centers.

LITERATURE REVIEW

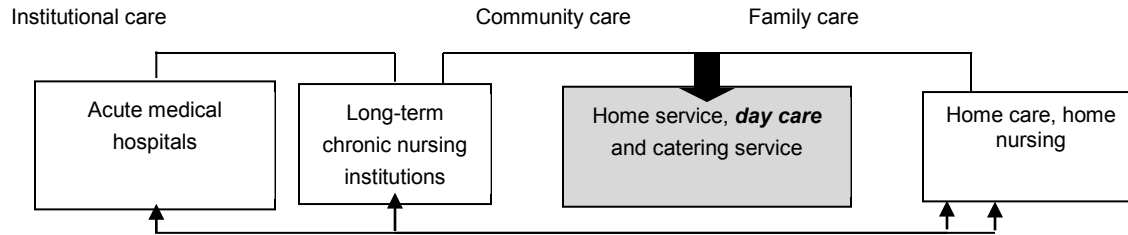
The type of care that a particular care service industry provides can vary significantly. There are many terms used to describe the different industries, such as long-term care, community care, home care, day care, or respite care. According to Yeates (2005), care is defined as the provision of social and health care services by either a private or public service, which can be paid or unpaid. According to this definition, it is not simply catering, cleaning, ironing, and maintenance of household affairs. This definition is generalized, and is not limited to elderly citizens. In addition, while living assistance and nursing care is essential, it cannot replace or mimic the care-giving abilities of family members, such as the physical contact and long-term close interaction that they generally provide.

The provision of care is a service industry, and while an individual may be able to experience the quality of service, it is difficult to detect poor service, due to its intangibility. Moreover, the heterogeneity of available services sets the care service industry apart from other service industries. According to both Yang (2009) and Zhuang (2008), the care service industry has the following characteristics: 1.) It has a high degree of customer contact. Unlike standardized products, in the provision of elderly care the formation, contents and mode of delivery varies with the individual's needs, and therefore a high degree of contact is required to enable a sufficient understanding of their preferences. 2.) There is a need for customer participation in the service offering. Consumers of products are not usually involved in the production process, and their primary concerns are the product's cost and value. Conversely, elderly people and their relatives are normally involved in tailoring care to the individual, including the selection of a service, its contents, and the drafting of a care plan. 3.) There is difficulty in service and performance standardization. The demands and requirements of service vary with the individual, which has led to difficulties in both standardizing the care service industry, and in the measurement of performance and quality of service. It is difficult to judge which providers are more efficient and which provide superior service quality, which has caused issues in the management and supervision of such services. 4.) It is not possible to pre-produce services. Unlike the provision of goods, there can be no pre-production in the service industry, as the service and production happen simultaneously. This causes difficulties in capacity management. 5.) It is labor intensive. Unlike automated production seen in the manufacturing industry, the care service industry is labor intensive. Services largely need to be provided by people, and cannot be mass produced. As such, a reduction in staff, equipment, or costs can often lead to a reduction in quality. 6.) There is a relatively high degree of risk. The recipients of care are invariably weak or vulnerable. This means that when offering home based care, which is usually in a private setting, there is an increased risk of complaints. It is difficult for the care-giver to defend themselves against these complaints. This is especially true of illegal actions or misunderstandings between caregivers and care recipients. 7.) There is a public cultural benefit to their provision. Care services to the elderly are not simply the provision of essential services, there also needs to be some attention given to their cultural and social needs. This includes service philosophy, and the creation culture specific strategies, which can enhance customer satisfaction in a more natural way.

Day Care

Currently, long-term service organizations are categorized into nursing homes, nursing, maintenance, and long-term care. Care methods can be categorized as: home care, community care, and institutional care, all of which form a continuum between care and comprehensive care, varying by age, health, and dependence as can be seen in Figure 2. The scope of community care includes home based care, day care, and catering services. According to current regulations, day care is considered a form of social care, as opposed to nursing homes, nursing, and community care.

Figure 2: Long-term Care Models



This figure shows the long-term service organization categorized from department of health in Taiwan. Source: Department of Health, Ministry of the Interior, Economic Planning and Development (2009)

Day care service is normally provided during the day in fixed locations, with recipients usually returning home during the night, or sometimes to respite care. The services provided vary between professional and semi-professional providers. Day care services can include recreation, catering, transportation, nursing, health promotion, occupation competency language rehabilitation, and memory retention therapy. These services not only relieve the pressure and burdens on primary caregivers, but also enable social interaction, which some researchers believe is its biggest advantage (Hooymann and Kiyak, 2008). Primary care givers can then continue working (Crewe and Chipungu, 2006). Depending on the specific provider, day care and nursing centers can be divided into 3 types (Naleppa, 2004) 1.) Social-based where the society-based day care center mainly provides social contact, creative classes, educational activities, catering, nutrition management, and other such services. 2.) The medical-based day care center mainly provides nursing, medical care, and services such as physical therapy or occupational therapy. 3.) The hybrid-based day care center provides a mixture of the two above day care center types.

In the Ten-Year Plan for Long-term Care in Taiwan it was stated that centers will be categorized by services offered. Those governed by social administrative units will be termed day nursing centers (Crewe and Chipungu, 2006). The ten year plan mostly deals with the management of disabled people, while day care centers usually deal with a more diverse range of patients who can be categorized by their care needs under the terms disabled, health, and comprehensive. The term disabled is used to describe people who require help with more than two activities of daily living (ADL), and the term comprehensive is used to describe people who require help with one or more ADL.

Currently, day care centers established domestically are mostly society based, including private community caring centers, which are operated by community groups and community development associations and are highly advocated by the MOI, and day care centers. Day care centers under the commission of various city or county governments use community or unit volunteers to provide care, and health care professionals to plan the educational and recreational activities for those patients who are relatively healthy. These centers usually operate at hours which suit the needs of the patients and their care plans, which usually coincide with normal working hours. These centers allow patients to engage in activities and educational sessions which deal with strategies to reduce the impact of ageing, and provide an opportunity for socialization. In addition, some centers engage volunteers to conduct phone calls and home visits, to allow for those who cannot be present at the center to receive the same care.

Case background- Adult Day Care Center in Nantou Country

As of the end of 2010, Nantou County reported a population of 71,366 people over 65 years of age, comprising 13.56% of the total population. This is higher than the national average, of 10.74%. Nantou County has the fourth largest population of citizens aged over 65 in the Republic of China (ROC). Owing to the high ratio of the ageing population in Nantou County, it is important to provide an effective welfare

delivery system. As such, since 2000 there has been a trial of adult day care centers in three centers in Nantou County. These trial centers provide daytime life care services, programs to recover functions, nursing and health care services, educational sessions, counseling, catering, and recreation activities. These centers target citizens aged over 65 who reside in Nantou County (Sun, Xiao, Zhang, Kuo, and Hung, 2009) , and who have a physical or mental health problem, but are still able to care for themselves. In recent years, the Nantou government has continuously commissioned the establishment of multiple day care community centers and day care centers to educate the elderly on disease prevention and health promotion, and to provide support and socialization to reinforce health, social participation, and security, all of which further enhance their QOL. The current performance review program for these day care centers, run by the Social Welfare Division of the Nantou County government, includes evaluations of the administrative management, life care services, catering services, exercise programs for function recovery, nursing and health care services, educational sessions, counseling services, staff qualifications, staff training and job requirements, strategic and innovative management, integration of community resources, and satisfaction surveys. The satisfaction surveys cover 28 evaluation items.

Balance Scorecard (BSC)

Performance indicators, usually derived from private enterprise, are generally used to evaluate the activities of an organization so that organizational performance can be supervised (Challis, Clarkson and Warburton, 2006) . Kaplan and Norton (1999) jointly announced *The Balanced Scorecard: Measures that Drive Performance in the Harvard Business Review*, which has aroused attention from various circles. Financial performance is often the key consideration for an enterprise, which is true for non-profit organizations as well. However, there are two major flaws in evaluating performance management by financial means alone: 1.) research shows that financial indications are not good predictors of success, and 2.) it is normal for the current market value of an enterprise to exceed its market value. Tobin's q-value calculates the ratio of company market value to assets, while additional market value can be found from intangible assets. Financial reports do not reflect these assets. As far as future business performance is concerned, financial statistics are not a particularly good indicator.

Kaplan and Norton summarized the three major advantages of the BSC method as: 1.) it focuses on the most important affairs of the business, which enables other areas to enhance their value once the key functions are controlled; 2.) it helps business integrate multiple project plans, such as quality versus quantity management, work flow reform, and customer service plans; and 3. it removes any ambiguity from the strategic targets of the organization, which ensures that managers and staff understand the key goals and requirements of the organization, and how their performance will affect them.

The BSC is a tool for strategic planning, and also a performance management tool which enables business to execute their vision and strategies. Business performance is measured based on four perspectives: financial, customer, internal business processes, and learning and growth. These four perspectives are not invariable, as, for example, a non-profit organization can be evaluated by their satisfaction of community needs. The BSC is scored in terms of the following four observations for each perspective: 1.) the primary purpose of the organization, for example profit or growth; 2.) the parameters which will be used to measure the achievement of goals, for example using net marginal profit growth to measure profit growth; 3.) the targets for achievement, for example a 7% annual reduction rate in disconnected business production; and 4.) Motion indicating concrete items or plans which ensure goals can be realized. The modern business relies on the measurement and monitoring of performance. Measurement methods must relate to business strategies, and provide information regarding work flow, outcomes and products. There are many possible statistics, including: customer retention, product or service performance, operation efficiency, market position, comparisons with competition, supplier pricing, employee satisfaction, cost minimization, and finance goals. The process of statistical analysis includes utilizing trend analysis to

precede prediction and other ad hoc analysis. It is imperative to have correct information, as statistics and data analysis support many business activities, such as strategy planning, performance evaluation, operation improvement and performance comparisons with competitors and benchmarks.

METHODOLOGY

This study investigates the problem of achieving consensus in group decisions when utilizing the fuzzy Delphi method (FDM) and Fuzzy Analytic Hierarchy Process (FAHP) and uses the following approaches: 1. The study utilizes FDM not only to save money and time, but also to faithfully represent of group views, 2. The study utilize FAHP to reverse the program, 3. The study adopts a straightforward process of building fuzzy numbers, 4. The study uses simple procedures to handle multi-level, multi-attribute and multi-program decision-making problems. Consequently, this investigation uses FDM and FAHP as a research methodology. The fuzzy theory was proposed by Zadeh (1965) at the university of California at Berkeley. Dr. Zadeh was of the opinion that traditional scientific methods often ignored the uncertainty and ambiguous existence of human life, so he set out to use fuzzy sets theory and adopt the fuzzy logical concepts to process. Buckley (1985) incorporated the fuzzy set theory into the traditional AHP. FAHP thus became a suitable tool for solving real-world multi-criteria decision-making (MCDM) problems (Buyukozkan, 2004; Huang and Wu, 2005) .

This study introduces fuzzy theory into the Delphi method by integrating the points of view of many scholars, including Hsu (1998) and Chen (1997) . In order to improve the problems faced by the traditional Delphi method, this study uses the bi-triangular fuzzy arithmetic to integrate the advice of experts and has then tested the convergence effect recognized by experts that refers to the gray zone test method. The fuzzy Delphi method is established by means of the following steps: Step1) Each expert respectively offers a possible interval value to each assessed item. The minimum value of this interval number represents the most conservative perceived value given by the expert to the quantitative score of the assessed item and the maximum value represents the most optimistic perceived value given to the quantitative score of the assessed item. Step2) involves performing an analysis of the most conservative and optimistic perceived values given to each assessed item i by all of the experts. After the extreme values falling outside the two times the standard deviation are eliminated, the minimum value C_L^i , the geometric mean C_M^i , and the maximum value C_U^i of the most conservative perceived value that has not been eliminated, as well as the minimum value O_L^i , the geometric mean O_M^i and the maximum value O_U^i of the most optimistic perceived value are determined. Step3.) Through the foregoing steps, the triangular fuzzy number $C^i = (C_L^i, C_M^i, C_U^i)$ of the most conservative perceived value and the triangular fuzzy number $O^i = (O_L^i, O_M^i, O_U^i)$ of the most optimistic perceived value of each assessed item i can be established. Step 4.) Finally, the following methods can be applied to verify the degree of consensus by experts.

In some instances the Grey Zone does not exist. If $C_U^i \leq O_L^i$, namely, the bi-triangular fuzzy number has no overlap, the interval values given by the experts share the common section. That is the most conservative perceived values given by each expert to the assessed item i tend to move towards the section scope of the triangular fuzzy number of the most conservative perceived value, and the most optimistic perceived value given by each expert to the assessed item i tends towards the section scope of the triangular fuzzy number of the most optimistic perceived value. This implies that the most conservative perceived values and the most optimistic values given by all of the experts have reached a consensus as far as the assessed item i is concerned. Therefore, the value G^i regarding the importance of the degree of consensus of the assessed item i shall equal the mean value of C_M^i and O_M^i , and its operational formula is seen as follows:

$$G^i = (C_M^i + O_M^i) / 2 \tag{1}$$

In other instances the Grey Zone exists, and a small difference exists among the experts' advice. If $C_U^i > O_L^i$, namely, the bi-triangular fuzzy number has an overlap, and when the gray zone of the fuzzy relation $Z^i = C_U^i - O_L^i$ is smaller than the interval value $M^i = O_M^i - C_M^i$ between the geometric mean of the optimistic perceived value and the geometric mean of the conservative perceived value given by the experts to the assessed item, although the interval value given by each expert produces a fuzzy section, the extreme values given by some experts do not greatly differ from the ones given by the other experts, and so no differences and divergences in terms of the value are caused. Therefore, the value G^i of the importance of the degree of consensus of the assessed item i shall equal the fuzzy set $F^i(\chi_j)$ resulting from the intersection (min) operation for the gray zone of the fuzzy relation of the bi-triangular fuzzy number, and the quantitative score of the maximum value of the membership grade $\mu_{F^i}(\chi_j)$ owned by the fuzzy set shall then be figured out. Its operational formulas are seen as follows:

$$F^i(x_j) = \left\{ \int_x \{ \min [C^i(x_j), O^i(x_j)] \} dx \right\} \tag{2}$$

$$G^i = \left\{ \chi_j \mid \max \mu_{F^i}(\chi_j) \right\} \tag{3}$$

In yet other instances the Grey Zone exists, and big differences exist among the experts' advice. If $C_U^i > O_L^i$, namely, the bi-triangular fuzzy number has an overlap, and when the gray zone of the fuzzy relation $Z^i = C_U^i - O_L^i$ is bigger than the interval value $M^i = O_M^i - C_M^i$ between the geometric mean of the optimistic perceived value and the geometric mean of the conservative perceived value given by the expert to the assessed item, it means that the interval value given by each expert will be seen to produce a fuzzy section, and the extreme values given by some experts greatly differ from the ones given by other experts, so differences and divergences in the values are caused. Therefore, “the geometric mean of the optimistic perceived value” and the “geometric mean of the conservative perceived value” of the assessed items that have not reached convergence must be provided for the experts as the references. Then, Steps 1 to 4 shall not be repeated to conduct the next questionnaire survey until all the assessed items reach convergence, and “the value of the importance of the degree of consensus” G^i is calculated. The higher the value of the degree of the importance degree of each item figured out respectively in the foregoing paragraphs, the higher the degree of consensus among the experts it stands for. The arithmetic mean could then be calculated by using of the geometric mean of the most likely single value for each item, and be taken as the threshold value for the research to select a suitable number of assessment criteria featuring the consensus reached by of the experts.

In incorporating the Fuzzy Theory into the Analytic Hierarchy Process developed by Saaty (1980), we evaluate the weight attached to various assessment criteria and identify their importance through which more objective and reasonable key success factors could be induced. This analytical process combines the concepts of several scholars, including Buckley (1985), and Hsu (1998). It has the advantage in that experts need to fill in only one definite value when making paired comparisons, without falling into the dilemma of not knowing how to specify the fuzzy number or the need to understand its definitions. Step1) Establish the Hierarchy Structure. Based on the assessment criteria screened out by the Fuzzy Delphi Method and the sequence of the terminal target, secondary target, and assessed items, the hierarchal structure is established, and each level has seven elements at most. Step2.) Establish the

Pairwise Comparison Matrix. The opinion of expert K at Level L on the relative importance of any two assessed items at Level L+1 could be obtained through the questionnaire survey, by which the pairwise comparison matrix A, $A = [a_{ij}]$ could be established. Step 3.) Establish the Triangular Fuzzy

Number. This study has adopted the geometric average to represent the consensus of most experts as the model of the triangular fuzzy number. Afterwards, triangular fuzzy numbers were established based on the FDM to integrate experts' fuzzy opinions on the relative importance of paired elements. It may be expressed as follows:

$$\tilde{a}_{ij} = (\alpha_{ij}, \delta_{ij}, \gamma_{ij})_{L-R}, \quad \alpha_{ij} \leq \delta_{ij} \leq \gamma_{ij}, \quad i, j=1, 2, \dots, n \quad (4)$$

$$\alpha_{ij} = \text{Min}(B_{ijk}) \quad k = 1, 2, \dots, n \quad (5)$$

$$\delta_{ij} = \left(\prod_{k=1}^n B_{ijk} \right)^{1/n} \quad (6)$$

$$\gamma_{ij} = \text{Max}(B_{ijk}) \quad k = 1, 2, \dots, n \quad (7)$$

\tilde{a}_{ij} : Triangular fuzzy number

α_{ij} : Minimum from expert countering the relative importance of both of criteria i and j

δ_{ij} : Geometric average from expert countering the relative importance of both of criteria i and j

γ_{ij} : Maximum from expert countering the relative importance of both of criteria i and j

B_{ijk} : Expert K's subjective opinion on the relative importance of attributes i and j, which is a definite value.

$L - R$: Fuzzy interval of triangular fuzzy numbers

Step4.) is to establish a Fuzzy Positive Reciprocal Matrix. Triangular fuzzy numbers are established to express the phenomenon of assessing experts' fuzzy opinions. Hence, a fuzzy positive reciprocal matrix \tilde{A} could be established.

$$\tilde{A} = [\tilde{a}_{ij}] = \begin{bmatrix} \tilde{a}_{11} & \tilde{a}_{12} & \dots & \tilde{a}_{1n} \\ \tilde{a}_{21} & \tilde{a}_{22} & \dots & \tilde{a}_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ \tilde{a}_{n1} & \tilde{a}_{n2} & \dots & \tilde{a}_{nn} \end{bmatrix}, \quad i, j = 1, 2, \dots, n \quad (8)$$

$$\tilde{a}_{ij} = [\alpha_{ij}, \delta_{ij}, \gamma_{ij}], \quad \tilde{a}_{ij} \times \tilde{a}_{ji} \approx 1, \quad \forall i, j = 1, 2, \dots, n \quad (9)$$

Step5.) Fuzzy Matrix: \tilde{A} Consistency Verification. We assume $A = [a_{ij}]$ is a positive reciprocal matrix

and $\tilde{A} = [\tilde{a}_{ij}]$ is the corresponding fuzzy positive reciprocal matrix. Hence, $A = [a_{ij}]$ is consistent,

as well as $\tilde{A} = [\tilde{a}_{ij}]$, by which we can judge the validity of the questionnaires. If experts think criterion i

is more important than j , then the fuzzy paired comparisons are:

$$\begin{aligned} \tilde{a}_{ij} &= (\alpha_{ij}, \delta_{ij}, \gamma_{ij}), \quad \alpha_{ij}, \delta_{ij}, \gamma_{ij} \in \{1, 2, \dots, 9\}, \quad \text{while} \\ \tilde{a}_{ji} &= (\tilde{a}_{ij})^{-1} = (\gamma_{ij}^{-1}, \delta_{ij}^{-1}, \alpha_{ij}^{-1}) \end{aligned} \quad (10)$$

If experts think criteria i and j are equally important, the fuzzy pair wise comparisons are $\tilde{a}_{ij} = (1,1,1)$.
 Step6.) Calculate the Fuzzy Weight of the Fuzzy Positive Reciprocal Matrix.

$$\tilde{Z}_i = \left[\tilde{a}_{ij} \otimes \dots \otimes \tilde{a}_{in} \right]^{\frac{1}{n}}, \forall i, j = 1, 2, \dots, n \quad (11)$$

$$\tilde{W}_i = \tilde{Z}_i \otimes \left(\tilde{Z}_i \oplus \dots \oplus \tilde{Z}_n \right)^{-1} \quad (12)$$

\tilde{Z}_i : Geometric average of triangle fuzzy numbers

$$\tilde{a}_1 \otimes \tilde{a}_2 \cong (\alpha_1 \times \alpha_2, \delta_1 \times \delta_2, \gamma_1 \times \gamma_2) \quad (13)$$

$$\tilde{a}_1 \oplus \tilde{a}_2 \cong (\alpha_1 + \alpha_2, \delta_1 + \delta_2, \gamma_1 + \gamma_2) \quad (14)$$

$$\tilde{Z}_1^{-1} = (\gamma_1^{-1}, \delta_1^{-1}, \alpha_1^{-1})_{L-R} \quad (15)$$

$$\tilde{a}_1^{\frac{1}{n}} = \left[\alpha_1^{\frac{1}{n}}, \delta_1^{\frac{1}{n}}, \gamma_1^{\frac{1}{n}} \right] \quad (16)$$

Step7.) Defuzzification. Since the weight of every element and assessed item is a fuzzy value, the single fuzzy weight must be obtained by the defuzzification process. This study has adopted the gravity method for defuzzification and it is expressed as follows:

$$W_i = \frac{W_{\alpha_i} + W_{\delta_i} + W_{\gamma_i}}{3} \quad (17)$$

W_{α_i} : the left end fuzzy weight value of triangular fuzzy numbers, namely the minimum.

W_{δ_i} : the value of the grade of membership of the triangular fuzzy numbers' fuzzy weight which is 1.

W_{γ_i} : The right end fuzzy weight value of triangular fuzzy members, namely the maximum.

W_i : Convert the fuzzy weight of the triangular fuzzy numbers into a single value.

Step8.) Normality Weight values obtained are normalized to compare easily the importance of various major structural dimension criteria and secondary assessment criteria so that their sum is 1. The formula for weight normalization is as follows:

$$NW_i = \frac{W_i}{\sum_{i=1}^n W_i} \quad (18)$$

NW_i : normalized weight

W_i : single fuzzy weight

Establishing a Hierarchical Structure of Performance Measurement Indicators for Day Care Centers in Nantou County

This study evaluates the use of the four major perspectives of the BSC method, finance, customer, internal business flow, and learning and growth, as a performance indicator for day centers in Nantou County in 2008. The performance evaluation system is established by hierarchical methods, utilizing focus groups, a

fuzzy Delphi, and a fuzzy FAHP applied to various performance indicators. This study will comprise of a questionnaire targeting designated personnel of adult day care centers in Nantou County. The primary purpose of this research is to establish performance measurement indicators which can be used to evaluate day care centers. First we examine the related performance of domestic and overseas adult day care centers, which we utilized in the questionnaire design through a fuzzy Delphi method. We also examine benchmark screening, to facilitate the subsequent empirical study. Figure 3 details the primary perspectives and the 28 performance evaluation indicators which will be used in this study.

RESULTS

As of 2010, there are eight day care centers in Nantou County. Also, due to the vast geographical size of Nantou County, the poor transportation system, and other reasons, these eight centers were divided into 16 sub branches, based on organizational resources (including HR resources, funding, market expansion ability, and other factors). In the first stage, 15 fuzzy Delphi expert questionnaires were distributed between February 15 and 27, 2011. There were 13 valid questionnaires returned representing an effective response rate of 86.7%. During the second stage, a further 13 fuzzy Delphi expert questionnaires were distributed between March 7 and 18, 2011. There were 12 valid questionnaires returned, implying an effective response rate of 92.3%.

This investigation proposed a program based on the fuzzy Delphi operation model in the statistical software EXCEL Expert Choice 2000, to calculate the relative number. Our study utilized a bi-triangle fuzzy number to identify evaluation criteria, and then analyzed the outcomes. We utilized a threshold value of 7.6, meaning that if the value of G^i for each criterion exceed 7.6 then they would be retained. We deleted 9 evaluation criteria and retained 19, giving an effective ratio of 67.86% as shown in Table 1.

Based on the results obtained during the first stage, in the second stage we designed a FAHP questionnaire. We utilized the retrieved questionnaires to construct the fuzzy positive reciprocal matrix, and used consistency verification to measure the consistency index (C.I.) and the consistence ratio (C.R.). Next, we calculated the fuzzy weight and normality weight values of the evaluation criteria for each concept. Finally we utilized these results to rank the importance of the weights, and adopted the FAHP analytical software, run in Expert Choice 2000, to calculate the key judgment values.

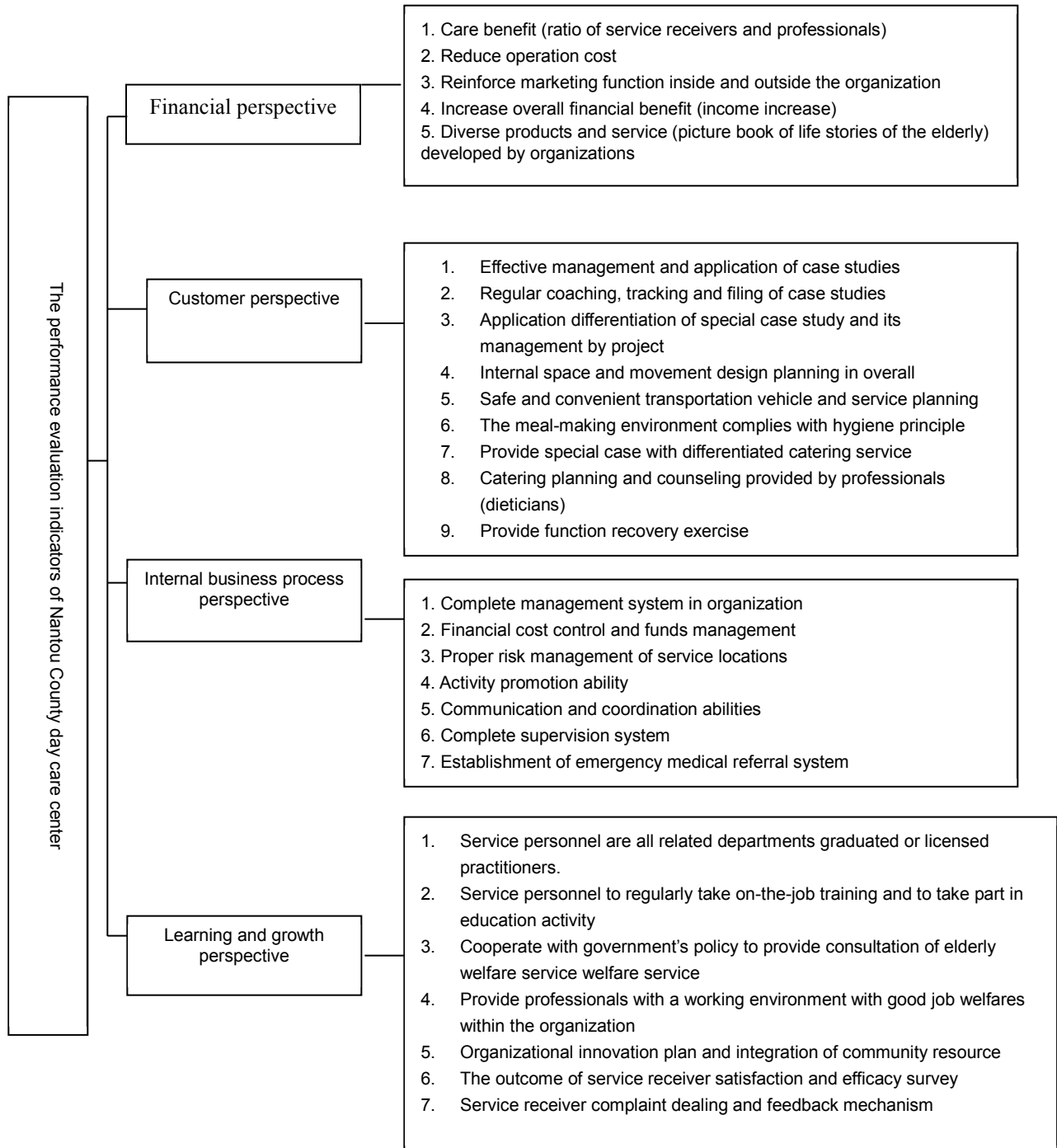
Statistics from the Second Stage Questionnaire

During the second stage, a further 30 fuzzy Delphi expert questionnaires were distributed between April 21 and 31, 2009. There were 22 valid questionnaires returned, for an effective response rate of 73.3%. Firstly, a triangle fuzzy number is applied to establish a fuzzy positive reciprocal matrix as shown in Table 2, which is then regarded as the calculation base of the fuzzy weight number shown in Table 3. This allows us to conduct consistent examinations of the fuzzy positive reciprocal matrix upon the crisp value given on the expert questionnaire.

As can be seen in Table 2, the consistent indicator values are $CI=0.07$ and $CR=0.08$, both of which are within an acceptable error range of $CI \leq 0.1$. Therefore, the reports of our expert participants show consistency. According to the results of the weight analysis, the level of importance for the four evaluation perspectives was: 26% weighted value for internal business process, 25.3% weighted value for customer perspective, 24.7% weighted value for learning and growth perspective, and 24% weighted value for financial perspective. The results show, the expert participants considered the internal business processes of the day care centers to be subject to financial cost control and proper funds management indicators, service location risk management fitness, liaison and communication capabilities, complete supervision management systems, and a focus on developing capabilities with regards to long-term care policy in Taiwan. Additionally, the indicator highlights that an emergency medical referral system must

be established for day care centers. The internal business process perspective is more focused on indicator reviews of software elements than operation management perspectives within the organization.

Figure 3: The preliminary Hierarchical Structure



This figure shows the preliminary hierarchical structure forms from the Fuzzy Delphi Method in this research.

Table1 : Fuzzy Delphi Questionnaire Analysis

Concept	Evaluation criteria	The most optimistic perceived values (O_L^i, O_M^i, O_U^i)			The most conservative perceived values (C_L^i, C_M^i, C_U^i)			Geometric mean	M ⁱ	Z ⁱ	Interval value of expert opinion	G ⁱ
Financial perspective	Care benefit (ratio of service receivers and professionals)	8	9.1	10	4	6	8	7.5	3.1	0	o	7.6
	Reduce operation cost	6	9.1	10	3	5.7	8	7.3	3.4	2	★	7.1
	Reinforce internal & ext. mkt. function	8	9.5	10	3	6.4	8	7.7	3.1	0	o	8.0
	Increase overall financial benefit (income increase)	7	8.6	10	3	5.7	8	7.4	2.9	1	★	7.4
	Diverse products and service (picture book of life stories of the elderly) developed by organizations	8	9.3	10	2	5.8	8	7.6	3.5	0	o	7.6
	Effective management & application of case studies	8	9.0	10	4	6.2	8	7.5	2.8	0	o	7.6
	Regular coaching, tracking and filing of case studies	9	9.9	10	5	7.1	9	8.1	2.8	0	o	8.5
Customer perspective	Application differentiation of special case study and its management by project	7	8.5	10	3	5.3	9	6.9	3.2	2	★	7.6
	Internal space and movement design planning in overall	6	9.0	10	4	5.9	8	7.8	3.1	2	★	7.2
	Safe and convenient transportation vehicle and service planning	8	9.4	10	5	6.4	9	7.8	3.0	1	★	8.4
	The meal-making environment complies with hygiene principle	8	9.3	10	2	5.8	8	7.6	3.5	0	o	7.6
	Provide special case with differentiated catering service	9	9.9	10	5	7.2	9	8.4	2.7	0	o	8.6
	Catering planning and counseling provided by professionals (dieticians)	9	9.8	10	2	6.7	9	8.0	3.1	0	o	8.3
	Provide function recovery exercise	9	9.9	10	5	7.3	9	8.4	2.6	0	o	8.6
	Complete management system in organization	7	8.8	10	2	5	7	7.4	3.8	0	o	6.9
	Financial cost control & funds management	9	9.8	10	2	6.7	9	8.0	3.1	0	o	8.3
	Proper risk management of service locations	8	9.5	10	3	6.6	9	7.9	2.9	1	★	8.4
Internal business process perspective	Activity promotion ability	7	9.3	10	2	5.6	7	7.4	3.6	0	o	7.4
	Communication and coordination abilities	8	9.5	10	5	6.5	8	8.0	3.1	0	o	8.0
	Complete supervision system	8	9.5	10	5	6.8	8	8.3	2.7	0	o	8.1
	Establishment of emergency medical referral system	8	9.2	10	4	6.1	8	7.7	3.1	0	o	7.7
	Service personnel are all related departments graduated or licensed practitioners	8	9.4	10	4	6.0	7	7.7	3.4	-1	o	7.7
	Service personnel to regularly take on-the-job training and to take part in education activity	8	9.5	10	5	6.5	7	8.2	3.0	-1	o	8.0
	Cooperate with government's policy to provide consultation of elderly welfare service welfare service	8	9.2	10	3	5.5	7	7.3	3.0	0	o	7.4
Learning and growth perspective	Provide professionals with a working environment with good job welfares within the organization	7	8.9	10	3	5.4	8	7.4	3.5	1	★	7.4
	Organizational innovation plan and integration of community resource	9	9.7	10	4	6.3	8	7.9	3.4	-1	o	8.0
	The outcome of service receiver satisfaction and efficacy survey	7	8.9	10	2	5.4	7	6.8	3.5	0	o	7.2
	Service receiver complaint dealing and feedback mechanism	7	8.9	10	3	5.9	8	7.4	2.9	1	★	7.5
Threshold value							7.6					

This table shows the relative number from the method proposed a program based on the fuzzy Delphi operation model in the statistical software EXCEL Expert Choice 2000 in this research. 「○」 indicate $C_U^i \leq O_L^i$ that experts' opinions in the consensus section, and utilizes

$G^i = (C_M^i + O_M^i)/2$ to calculate. 「★」 indicate $C_U^i > O_L^i$, and $Z^i = C_U^i - O_L^i \leq M^i = O_M^i - C_M^i$ that experts' opinions not difference. It might calculate fuzzy set by min and get G^i . Grey-region indicates the evaluation criteria are deleted.

Table 2: Consistency Verification of Primary Perspectives

Perspective	Fuzzy Positive Reciprocal Matrix			
	Financial Perspective	Customer Perspective	Internal Business Process Perspective	Learning & Growth Perspective
Financial perspective	(1.00 , 1.00 , 1.00)	(0.11 , 1.38 , 9.00)	(0.13 , 1.52 , 9.00)	(0.11 , 1.36 , 8.00)
Customer perspective	(0.11 , 0.72 , 9.09)	(1.00 , 1.00 , 1.00)	(0.11 , 1.74 , 9.00)	(0.14 , 1.31 , 9.00)
Internal business process perspective	(0.11 , 0.66 , 7.69)	(0.11 , 0.57 , 9.09)	(1.00 , 1.00 , 1.00)	(0.11 , 0.59 , 8.00)
Learning & growth perspective	(0.13 , 0.74 , 9.09)	(0.11 , 0.76 , 7.14)	(0.13 , 1.69 , 9.00)	(1.00 , 1.00 , 1.00)

This table shows the consistency verification between the four primary perspectives. $\lambda_{max}=4.21$ C.I.=0.07 C.R.=0.08

Secondly, the customer perspective should be the highest priority, and should include the provision of the highest quality service as well as attention to individual needs. This should also include the provision of individually managed cases based on each patient’s needs, as well as effective tracking and review to ensure that their care remains appropriate. This may also include differentiated and professional services for special cases. Furthermore, there should be an ability to deliver nutritious meals, and to educate patients on how to hygienically prepare their own meals. In addition there should be the provision of convenient and safe transport planning, and the ability to provide exercise classes to recover functions. These performance indicators will assist the elderly to attain the goal of successful ageing, which is the key purpose of the day care centers in Nantou County.

Importance ranking of Performances Evaluation Indicators for Day Care Centers in Nantou County

We calculated a 0.07 consistency ratio hierarchy (CRH) that constructs various performance evaluation indicators of Nantou County day care centers, which is within the acceptable range of $CRH < 0.1$. This value shows that the hierarchical structure established by our study demonstrates a proper allocation of relatedness between various performance evaluation indicators, and hence the consistency of our architecture model is acceptable.

Lastly, our study conforms to relative comparative and relative priority (local propriety) generated from the performance evaluation indicators of various perspectives. The key aim was to understand the weight ratio of various performance evaluation indicators in the overall structure, and to select the importance ranking of various performance evaluation indicators for the establishment of day care centers in Nantou County. This would be done in terms of absolute weighted value and the importance ranking of various performances evaluation indicators as shown in Table 3.

Table 3: Weight Analysis of Primary Perspectives

Perspective	W_{ai}	$W_{\bar{a}i}$	$W_{\bar{b}i}$	Normality Weight Value	Importance Ranking
Financial perspective	0.192	0.165	6.079	0.240	4
Customer perspective	0.395	0.237	6.161	0.253	2
Internal business process perspective	0.203	0.272	6.512	0.260	1
Learning & growth perspective	0.010	0.312	6.307	0.247	3

This table shows the weight analysis of the four primary perspectives in this research. W_{ai} the left end fuzzy weight value of triangular fuzzy numbers, namely the minimum, $W_{\bar{a}i}$ the value of the grade of membership of the triangular fuzzy numbers' fuzzy weight which is 1, $W_{\bar{b}i}$ The right end fuzzy weight value of triangular fuzzy members, namely the maximum.

CONCLUSION AND COMMENTS

This study introduced the concept of the BSC to construct a performance evaluation hierarchical system for Nanto County day care centers. In addition, it analyzed of the elements of the hierarchical structure, and provided weighted ratios of the various performance measurement indicators in order to create a

structure for the performance evaluation indicator system. The performance evaluation system truly shows the performance and differentiation of services provided by the various day care centers, which are regarded as the best indicators of self-improvement by assessing their mechanisms and outcomes. In order to review and discuss the performance evaluation indicator system, we used a fuzzy Delphi's method, as well as a FAHP, as the analytical methods to re-construct the assessment indicators of existing day care centers in Nantou County.

According to our research outcomes, the level of importance for the assessment of various perspectives of day care centers in Nantou County is as follows: 1. internal business process perspectives, 2. customer perspectives, 3. Learning and growth perspectives, and 4. financial perspectives. The internal business process perspectives of day care centers covers financial cost control, proper funds management indicators, service location risk management, liaison and communication capabilities, complete supervision management, and a focus on the development of capabilities with regard to long-term care policy in Taiwan. The latter capability highlights that internal business processes are more focused on reviews of software elements.

The customer perspective refers to the views of the recipients of care at the day care centers. The provision of the highest quality care and attention to individual needs should be the highest priority. This should include individual case management, as well as effective tracking and evaluation to ensure that the care remains appropriate. In addition, this may include the provision of differentiated and professional services in special cases. Furthermore, this may include professional planning of meals, as well as educational sessions devoted to the preparation of hygienically prepared, nutritious meals. Also, there should be the provision of convenient and safe transport for patients, as well as exercise sessions to aid in the recovery of mobility. All of these steps will ensure that the goal of successful ageing will be achieved through the day care centers.

The learning and growth perspective refers to the expertise and continued training of employees. This perspective includes innovative integration with other community resources. Finally, in respect to the financial perspective, most day care centers are run by non-profit organizations. This means that instead of actively seeking funding, they must wait to receive funds from the governments or through donations. Therefore, this is a less important assessment indicator.

The Performance assessment system was an accurate measure for long-term care service. The system could be combined with performance incentives to increase cooperation between government and industry, as well as encourage innovative solutions and management. The Taiwanese government evaluates the service outsourcing process through a system analyzing input-process-output-outcome. The outcome is not usually a concern for the government, as their policies are often limited to an analysis of ratios of input to output. The assessment of day care services is the primary tool for governments to take control of the industry, and the results of assessments can affect who will be granted contracts to provide such services. However, most of the evaluation indicators refer to administration, finance, personnel, environment, and service perspectives, which mainly measure quality of care, instead of QOL.

According to WHO policy, active ageing should enhance QOL for seniors, which has also been shown in past studies (Kane, Kling, Bershadsky, Kane, Giles, Degenholtz, and Cutler, 2003) . Recently, more studies have considered the concept and measurement of QOL with regard to long-term care, and have concluded that they should adopt a customer perspective. Pieper and Vaarama (Pieper and Vaarama. 2008) argued that QOL should be the key feature of health models. Currently, a report on the home care subsidy user condition survey, published by MOI (Department of Health, Ministry of the Interior, Economic Planning and Development, 2009) , found that current measurement tool to improve QOL is relatively insufficient when applied within the care services commissioned by various local governments. They state

that the reason for this was a long-term preference for the outsourcing of services within the public sectors, as well as a shortage of local manpower.

Due to complexities associated with demanding quality service for elderly citizens during the process of care service privatization, health professionals need to argue for effective reform. Effective management of outsourced care service, which are evaluated by life quality indicators. will not only guarantee benefits to the elderly, but also for the government. It will show accountability, enable partnerships between private and public sectors, and extended the use of existing management assessment tools.

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DIMENSIONS OF BRAND PERSONALITY IN MEXICO

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ABSTRACT

The principal objective of this study was to develop an exploratory investigation of the dimensions of brand personality in Mexico. Furthermore, the brand personality dimensions were compared to study the differences between males and females. An estimated 400 undergraduate students participated. They were given a questionnaire to measure brand personality divided into two sessions (six brands of think products in one session and six brands of feel products in another session). However, not all the students attended class on both days, so some completed only one of the two sessions. In the end, 313 participants completed the questionnaire on the six brands of think products and 320 completed the questionnaire on the six brands of feel products. A total of seven factors were extracted from the brand personality scale: Success, Hipness/Vivacity, Sophistication, Sincerity, Domesticity/Emotionality, Ruggedness and Professionalism. The women rated the brands higher for Success and Hipness/Vivacity, while the men rated the brands higher for Domesticity/Emotionality, Ruggedness and Professionalism. The author discusses the implications of the research for marketing practice and the meaning of these brand personality dimensions in the Mexican cultural context.

JEL: M310

KEYWORDS: Brand personality, gender differences, product category, personality traits

INTRODUCTION

The American Marketing Association (AMA) defines a brand as “a name, term, design, symbol or any other feature that identifies one seller's good or service as distinct from those of other sellers.” Brands provide their customers with emotional and experiential benefits. The benefits that brands provide their customers are essential to building strong brand equity. In order to build this strong brand equity in the market, it is fundamental to understand the core dimensions of brand image, which is brand personality (Lee and Oh, 2006). Brand personality is an essential component of brand imagery—a soft attribute of an image—that helps create brand equity (Batra, Lehmann, and Singh, 1993; Biel, 1993). Plummer (1985) suggested that brand image consists of three essential features: (1) physical attributes or product attributes (e.g., green in color); (2) functional characteristics or consumer benefits (e.g., cleans teeth more effectively); and (3) characterization (e.g., youthful). Plummer (1985) termed this latter characterization process “brand personality,” and he believed that it is a key element in understanding consumers’ brand choices.

Therefore, brand personality is defined as “the set of human characteristics associated with a brand” (Aaker, 1997, p. 347). Aaker (1996) defines the associated personality of a brand as a set of human demographic characteristics like age, gender, and race; human lifestyle characteristics like activities, interest, and opinion; and human personality traits such as extroversion, dependability, and sentimentality. The brand becomes a living person and is often attached to a metaphor. In this way, the abstract intangible assets and characteristics can be visualized in a tangible way, and customers interact with brands as if they were human beings. Similar to human personality, brand personality is distinctive and enduring (Aaker, 1996, p.141-142). In contrast to “product-related attributes,” which tend to serve a utilitarian function for consumers, brand personality tends to serve a symbolic or self-expressive function (Keller, 1993). Customers associate human personality traits with brands because they relate to brands as they would to partners or friends (Fournier, 1998), because they perceive brands as extensions of themselves (Belk, 1988), or because marketers suggest that brands have certain characteristics.

The attribution of human personality characteristics to brands is of great interest among marketing researchers and practitioners, since understanding how consumers perceive products and brands can be useful for the elaboration and implementation of marketing actions. Consumers tend to look for products and brands whose cultural significance corresponds to the person that they are or that they would like to be in order to maintain or establish a social role. This is consistent with the symbolic meaning of consumption, where consumers exploit brands to construct and maintain their identities and to experience emotional gratification (O'Donohoe, 1994). Therefore, being able to measure a brand's personality may help firms to communicate effectively with their consumers and may play a major role in advertising and promotional efforts (Aaker, 1996; Batra, Lehmann, and Singh, 1993; Plummer, 1985). A brand personality can be used as a basis of differentiation from other brands and help to differentiate the brand from competitors in a particular product category. As such, marketing practitioners have become increasingly aware of the importance of building "a clear and distinctive brand personality" (Yaverbaum, 2001, p. 20) as a central driver of consumer preference.

This study aims to develop an exploratory investigation of the dimensions of brand personality in Mexico using the theoretical basis established in Aaker's study (1997) of personality traits, since we found only one study about brand personality in Mexico.

This article is organized as follows: section two briefly analyzes the theoretical framework of brand personality. Section three exposes the methodology and instrument used in the study. Next section, section four, presents the statistical analyses made as well as the principal findings. And section five will offer the conclusions, limitations of this study and directions for future research.

LITERATURE REVIEW

Similar to the "Big Five" model of human personality (Goldberg, 1990; McCrae and John, 1992), brand personality is measured along five dimensions that uniquely apply to consumers' characterization of brands (Aaker, 1997). It was with Aaker's research (1997) that a generalizable (reliable and valid) scale was developed to assess brand personality (Koebel and Ladwein, 1999). Jennifer Aaker (1997) developed a theoretical framework of the brand personality construct by determining the number and nature of dimensions of brand personality traits. Aaker (1997) developed a measurement scale called the Brand Personality Scale, which consisted of 42 traits. The development of the scale involved more than 1000 surveys in the United States, 37 very well known brands and 114 personality traits that were reduced through clusters to 42 traits. Even when the sample was divided by age or sex, or when subgroupings of brands were used, five personality dimensions emerged. These five brand personality dimensions and 15 facets desired by many companies for their products are Sincerity; Excitement; Competence; Sophistication; and Ruggedness. The five dimensions explained almost all (93%) of the differences observed among the brands and described the personalities of many strong brands.

The impact of this model has been so profound that since 1997 most of the academic publications about brand personality are based on Aaker's methodology (1997) (e.g., Farhangmehr and Azevedo, 2000; Musante, Milne, and McDonald, 1999). With the aim of determining the adaptability of Aaker's original model (1997) to other cultures, the model has been used in other countries, such as France (Koebel and Ladwein, 1999), Japan and Spain (Aaker, Benet-Martinez, and Garolera, 2001), Mexico (Álvarez-Ortiz and Harris, 2002), Russia (Supphellen and Grohaug 2003), Korea (Lee and Oh, 2006), and Venezuela (Barrios and Massa, 1999; Pirela, Villavicencio, and Saavedra, 2004). The studies conducted in these countries differed in three aspects: the use of Aaker's methodology (1997), the dimensions found, and the conclusions. The studies from Japan and Spain both used Aaker's methodology (1997), although the results were different. In France, Venezuela, Korea and Mexico, the researchers used Aaker's scale (1997) only to measure the brand personality. Aaker, Benet-Martinez, and Garolera (2001) found that three of the five original factors applied to Japan and Spain, but that a Peacefulness dimension replaced

Ruggedness in both Japan and Spain, and a Passion dimension emerged in Spain instead of Competence. In Korea, Lee and Oh (2006) found Excitement/Sophistication and Smoothness dimensions. The study carried out in Venezuela in 1999 (Barrios and Massa) found Sociability, Success, and Proactiveness dimensions. However, another study in Venezuela in 2004 (Pirela, Villavicencio, and Saavedra) found Passion and Passivity dimensions. In the French study, Koebel and Ladwein (1999) found only one dimension, Competence, in common with the dimensions found in Aaker's study. France and Venezuela are countries that found dimensions very different from those found by Aaker and by researchers in other countries. Additionally, Competence remained constant in all of the countries investigated except in the last studies conducted in Venezuela (Pirela, Villavicencio, and Saavedra, 2004) and in Spain (Aaker, Benet-Martinez, and Garolera, 2001). In the United States, Japan, Spain and Mexico three common dimensions appeared: Competence, Sincerity and Sophistication. In the study conducted in Mexico, Alvarez-Ortiz and Harris (2002) found a dimension called Gender, which was more representative than that of Ruggedness and contained only feminine and masculine traits. From this, it appeared that Mexican consumers perceived brands with masculine and feminine traits, a perception that represented a bipolar dimension rather than the dimension Ruggedness. Therefore, in Mexico, the model consisted of Sincerity, Enthusiasm, Competence, Sophistication and Gender.

Based on the objective of this study, I believe that using the Brand Personality Scale by Aaker represents the best way to measure brand personality and identify brand personality dimensions to explore the differences between Mexico and other countries. Given that different brand personality dimensions have been found in other countries, in the case of Mexico it was not expected to find exactly the same dimensions as Aaker (1997) did in the United States and Alvarez-Ortiz and Harris (2002) did in Mexico. For example, this study differs from the study conducted in Mexico by Alvarez-Ortiz and Harris in 2002 in the methodology, brand selection, sampling used and characteristics of participants. The brand personality measures in the Alvarez-Ortiz and Harris study (2002) were collected on a set of twenty brands. Ten global brands in Mexico were selected from the list of brands used by Aaker (1997) and ten brands originating in Mexico were also chosen in consultation with marketing research professionals in Mexico City. Alvarez-Ortiz and Harris (2002) collected the brand personality measures during face-to-face interviews with a sample of 400 adult consumers in Mexico City who were obtained using a mall-intercept method and 49.1% of the sample included respondents between 31 and 50 years of age. Therefore, it was expected to find more coincidence with the dimensions originally proposed by Aaker than with those found in other countries because of the geographic proximity of Mexico to the United States, the influence the United States has on Mexico, and the characteristics of the sample (students with an upper-middle socioeconomic level who are accustomed to buying U.S. products when they spend vacations in the United States). In addition, in Mexican culture, masculinity and femininity are still prominent characteristics and sex roles are still markedly accentuated in some sectors. As Alvarez-Ortiz and Harris (2002) found in the study of brand personality in Mexico, in this study it was expected that a dimension related to gender would also be found in this study because of the macho culture in Mexico. Thus, the following hypotheses were made: H₁: Brand personality among 12 global brands in Mexico will be identified by at least five dimensions similar to those established in other cultures. Moreover, the brand personality dimensions will be more similar to those that Aaker originally proposed, compared with those found in other countries. H₂: At least one brand personality dimension will be related to gender (masculine and feminine traits).

Brand personality includes characteristics such as gender, age, and socioeconomic class, as well as classical personality aspects such as cordiality and sentimentality. However, although in Aaker's study and other studies age was analyzed as a factor that influences how brand personality forms, neither the perception of the gender of the product as a variable that can also influence personality, nor the differences between men and women in the perception of brands, have been analyzed in depth. For this reason, another one of the specific objectives of this investigation is to analyze the differences between men and women in their perception of brands. As a function of the traditional gender stereotypes of the

Mexican culture, the following was hypothesized: H₃: Independent of the product category, men will tend to perceive brands as having traits that are markedly more masculine, such as Ruggedness and Competence, compared with women, who will tend to perceive brands with traits that are more feminine, such as Sincerity and Sophistication.

DATA AND METHODOLOGY

Brand Selection

In the majority of studies on brand personality conducted previously, researchers selected brands as Aaker (1997) proposed originally: brands with symbolic significance, those with utilitarian significance and those with both. In others, researchers selected a different universe of brands, where the local brands were the most important. In this study, it was considered that the brand selection would be according to the students' familiarity with and use of the brands. In addition, it was considered that the best way to represent all the product-type categories was to use the FCB Grid by Ratchford (1987) and Vaughn (1986), which allows products to be classified as feel or think and as having high or low involvement. Following the FCB Grid, four product categories were selected: (a) laptops as think products with high involvement; (b) shampoos as think products with low involvement; (c) perfumes as feel products with high involvement; and (d) soft drinks as feel products with low involvement.

A total of 150 students completed a survey in which they were asked to write the first three top-of-mind brands for these four product categories: laptops, shampoos, perfumes and soft drinks. Finally, using a combination of top of mind and top of share, the brands selected were the following: a) Laptops: Dell, HP, Apple; b) Shampoos: Pantene, Herbal Essences, Sedal; c) Perfumes: Ralph Lauren, Hugo Boss, Chanel; and d) Soft drinks: Coca-Cola, Pepsi, Sprite. Local brands did not appear in any of the categories, as they did in other studies. For this reason, only brand personality dimensions for global brands could be measured. This allowed us to compare brand dimensions between Mexico and other countries that used global brands.

Participants

The research adopted a nonprobability convenience sampling. Participants were recruited from the Instituto Tecnológico de Estudios Superiores de Monterrey, Campus Guadalajara, Mexico. The study was conducted with approval from the university, where participants were selected from the classes of the School of Business and Humanities. An estimated 400 undergraduate students participated from the classes that were selected as part of the study. They were given a questionnaire divided into two sessions (six brands of think products in one session and six brands of feel products in another session). However, not all the students attended class on both days, so some only completed one of the two sessions. In the end, 313 participants completed the questionnaire on the six brands of think products (48.6% women; 51.4% men; ages between 17 and 25, M= 20.44, SD= 1.76), and 320 completed the questionnaire on the six brands of feel products (47.8% women; 52.2% men; M= 20.60 years, SD = 1.83).

Measures

Even though Aaker (1997) provides a brand personality scale, and there is a Spanish (Castilian) brand personality scale (Aaker Benet-Martinez, and Garolera, 2001), these could not be assimilated into the Mexican culture and language. Therefore, a rigorous scale-adjustment process was necessary. Consequently, the original Brand Personality Index (BPI), which includes 42 items of brand personality traits developed by Aaker (1997), was translated to the Spanish language, with modifications to some items for the Mexican culture and language.

A pilot study with 85 students was conducted to validate the Spanish version of the Brand Personality Index created especially for this study. The questionnaire had 42 items of brand personality traits and respondents had to assign a value from 1 (very unlikely) to 5 (very likely) to each attribute. A principal component factor analysis with Varimax rotation procedures was used to modify or rewrite the items, as necessary, before applying the scale to the definitive sample. After the statistical analysis with the pretest study, 10 items were changed and the other 32 items remained the same. The following items were modified using another word in Spanish with the same meaning: real, sentimental, spirited, reliable, leader, upper class, smooth, western, tough and rugged.

Procedure

The scale with the 42 items of brand personality traits for the twelve brands was administered to each group by the investigator during class time, with the previous consent of the professors who taught their subjects at that time. As Aaker (1997) pointed out, choosing a large number of brands had the advantage of increasing the generalizability and robustness of the measurement scales. Its disadvantage, however, was possible subject fatigue and boredom, which potentially could result in response bias. To minimize this problem, the scale was applied at two different times with one week of rest between sessions to avoid the learning effect and lack of motivation. A counterbalancing process was carried out: In the first session, half of the sample was given the section of the personality scale for the six brands of think products, and in the second session, after the week of rest, they completed the six brands of feel products. The other half of the sample began with the six brands of feel products, followed by the week of rest and then the six brands of think products. In the sections of the six think brands and six feel brands, the order of the brands of high and low involvement in each category were counterbalanced to control for the effect of fatigue. In addition, the management of Starbucks supported the study by providing vouchers for free coffee to distribute among the participants at the beginning of the second section to motivate them to finish the questionnaire.

RESULTS

Brand Personality Dimensions

For the validation of the brand personality scale, it was designed that each participant evaluated the personality of the 12 brands in each of the 42 items that composed the questionnaire. This way the total of the sample for the validation of this scale was made up of 3,798 evaluations, which were used for the rest of the statistical analyses.

To extract the underlying brand personality dimensions, we used exploratory factor analysis (Principal component) with Varimax rotation. Without forcing the number of factors, a factorial solution of seven factors was obtained: Success, Hipness/Vivacity, Sophistication, Sincerity, Domesticity/Emotionality, Ruggedness and Professionalism. A factorial analysis was also used for five factors, obtaining optimal groupings of personality traits in the seven factors originally obtained. The amount of variance of the data explained by the five-factor solution was 55.1%.

As can be seen in Table 1, the indices for all of the dimensions were quite high, with the exception of Ruggedness and Professionalism, which had more moderate coefficients due to the fact that these dimensions consisted of only three items each. Nevertheless, the alpha coefficients that were presented in the first five dimensions demonstrate that the scale had a satisfactory internal consistency whose values oscillated between 0.75 and 0.91. The internal consistency of the seven factors, evaluated by the alpha coefficient, was 0.95. The most reliable factors were Success, Hipness/Vivacity, Sophistication, Sincerity and Domesticity/Emotionality. The amount of variance of the data explained by this solution was 60.3%

(Success = 36.7%; Hipness/Vivacity = 6.6%; Sophistication = 5.1%; Sincerity = 3.9%; Domesticity/Emotionality = 2.8%; Ruggedness = 2.7%; and Professionalism = 2.5%).

A validation of the brand personality scale was also carried out by dividing it in function of the feel vs. think products. For the feel products, without forcing the number of factors, a factorial solution of seven factors was obtained: Success, Sophistication, Hipness/Vivacity, Sincerity, Domesticity/Emotionality, Ruggedness and Professionalism. For the think products, a factorial solution of five factors was obtained: Excitement, Sincerity, Sophistication, Domesticity/Emotionality and Ruggedness/Professionalism. The internal consistency was the same for the feel and for the think products: 0.95. The amount of variance of the data explained by the seven-factor solution for the feel products was 60.3% and by the five factor solution for the think products was 57.3%.

Table 1: Results of Factor Analysis: Brand Personality

Factor Name	Items	Factor Loading	M (SD)	Eigen-value	% of variation	Cronbach's Alpha
1. Success	Leader	0.672	3.69 (1.15)	15.43	36.73	0.91
	Successful	0.654	3.97 (1.04)			
	Original	0.606	3.68 (1.15)			
	Up-to-date	0.584	3.86 (1.09)			
	Imaginative	0.578	3.66 (1.12)			
	Secure	0.513	3.69 (1.13)			
	Unique	0.494	3.50 (1.21)			
	Trendy	0.474	3.79 (1.13)			
	Real	0.44	3.73 (1.11)			
	Daring	0.437	3.51 (1.19)			
	Independent	0.43	3.56 (1.18)			
Exciting	0.422	3.36 (1.17)				
2. Hipness/Vivacity	Young	0.755	3.77 (1.16)	2.76	6.56	0.85
	Spirited	0.645	3.71 (1.10)			
	Cool	0.626	3.77 (1.13)			
	Cheerful	0.576	3.67 (1.13)			
	Charming	0.494	3.68 (1.14)			
	Confident	0.478	3.97 (1.04)			
	Contemporary	0.446	3.67 (1.10)			
3. Sophistication	Good looking	0.773	3.47 (1.27)	2.15	5.12	0.80
	Glamorous	0.747	3.40 (1.29)			
	Upper-class	0.721	3.49 (1.27)			
	Western	0.513	3.77 (1.16)			
	Feminine	0.477	3.29 (1.36)			
4. Sincerity	Honest	0.696	3.47 (1.18)	1.65	3.92	0.85
	Sincere	0.658	3.47 (1.12)			
	Reliable	0.627	3.68 (1.15)			
	Wholesome	0.596	3.35 (1.30)			
	Down-to-earth	0.548	3.48 (1.15)			
	Intelligent	0.513	3.71 (1.10)			
5. Domesticity/Emotionality	Family-oriented	0.665	3.03 (1.33)	1.20	2.86	0.75
	Smooth	0.643	3.32 (1.18)			
	Friendly	0.547	3.55 (1.14)			
	Small-town	0.536	2.50 (1.26)			
	Sentimental	0.493	3.43 (1.17)			
	Outdoorsy	0.438	3.15 (1.35)			
6. Ruggedness	Masculine	0.76	2.89 (1.37)	1.14	2.71	0.63
	Rugged	0.746	2.60 (1.28)			
	Tough	0.456	3.51 (1.18)			
7. Professionalism	Technical	0.69	3.13 (1.23)	1.03	2.46	0.55
	Corporate	0.672	3.43 (1.30)			
	Hardworking	0.561	3.35 (1.20)			

This table presents the results relative to internal consistency (Cronbach's alpha) for each of the brand personality dimensions together with the means and standard deviations of the total sample, the eigenvalue and the explained variance for each factor.

Gender Differences

In order to make all of the statistical analyses that are detailed next, the seven dimensions of brand personality were transformed into a scale from 1 to 100. This way, the scores nearest one in each dimension imply that the personality dimension does not describe the brand, whereas the scores nearest 100 mean that the personality dimension describes the brand totally. Without considering either the type of product (feel or think) or the involvement level (high or low), the ratings of the men and women were compared for all of the brand personality dimensions.

As can be seen in Table 2, Student’s t-test highlighted the existence of significant differences between the sexes for Success and Hipness/Vivacity, which the women rated higher than the men did. Significant differences were also found for Domesticity/Emotionality, Ruggedness and Professionalism, which the men rated higher. That is, the women perceived the brands as more successful and hip/vivacious and the men perceived the brands as more domestic/emotional, rugged and professional than did the women. For Sophistication and Sincerity, no significant differences were found.

Comparisons of the sexes were also carried out for each of the product categories, with the following results: For the brands of laptops, significant differences were found between the sexes for Sophistication ($t_{926} = 2.094, p = .037$), Domesticity/Emotionality ($t_{909} = 3.248, p = .001$), and Ruggedness ($t_{927} = 3.414, p = .001$), with males rating HP, Apple, and Dell as more sophisticated, domestic/emotional, and rugged than did females (*Sophistication*: males: $M = 69.54, SD = 17.97$; females: $M = 66.99, SD = 18.96$; *Domesticity/Emotionality*: males: $M = 63.35, SD = 17.53$; females: $M = 59.61, SD = 17.22$; *Ruggedness*: males: $M = 66.13, SD = 18.78$; females: $M = 62.03, SD = 17.83$). No significant differences were found between the sexes for Success, Hipness/Vivacity, Sincerity or Professionalism.

Table 2: Means and Significances of Gender Differences

Dimensions	Mean (SD)		t (D.F.)
	Women	Men	
Success	73.98 (16.85)	72.71 (16.26)	-2.295 (3.598)*
Hipness/Vivacity	76.18 (16.28)	73.85 (16.20)	-4.328 (3665)***
Domesticity/Emotionality	62.74 (17.15)	63.99 (16.05)	2.265 (3647)*
Ruggedness	57.09 (19.09)	63.18 (19.42)	9.638 (3719)***
Professionalism	65.21 (20.01)	67.08 (18.60)	2.951 (3707)**

*This table allows us to verify the gender differences (Student’s t-tests) of each brand personality dimension. ***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively*

For the brands of shampoos, significant differences were found between the sexes for Success ($t_{889} = -2.700, p = .007$), Hipness/Vivacity ($t_{904} = -4.442, p = .000$), Ruggedness ($t_{919} = 6.025, p = .000$), and Professionalism ($t_{916} = 3.782, p = .000$). The women scored the shampoo brands higher than did the men for Success and Hipness/Vivacity (*Success*: females: $M = 71.49, SD = 15.84$; males: $M = 68.61, SD = 15.95$; *Hipness/Vivacity*: females: $M = 77.19, SD = 15.29$; males: $M = 72.46, SD = 16.71$). On the other hand, the men rated the shampoo brands higher than did the women for Ruggedness and Professionalism (*Ruggedness*: males: $M = 54.55, SD = 19.20$; females: $M = 47.51, SD = 16.24$; *Professionalism*: males: $M = 61.04, SD = 18.40$; females: $M = 56.40, SD = 18.75$). No significant differences were found between the sexes for Sophistication, Sincerity or Domesticity/Emotionality.

For the brands of perfumes, we found significant differences between the sexes for Hipness/Vivacity ($t_{913} = -3.406, p = .001$), Sophistication ($t_{922} = -2.456, p = .014$), and Ruggedness ($t_{927} = 4.932, p = .000$). The women rated the perfume brands higher than did the men for Hipness/Vivacity and Sophistication, while

the men rated the brands higher than did the women for Ruggedness (*Hipness/Vivacity*: females: $M = 78.27$, $SD = 15.51$; males: $M = 74.78$, $SD = 15.43$; *Sophistication*: females: $M = 82.09$, $SD = 15.98$; males: $M = 79.50$, $SD = 16.06$; *Ruggedness*: males: $M = 66.52$, $SD = 19.99$; females: $M = 59.98$, $SD = 20.34$). No significant differences were found between the sexes for Success, Sincerity or Professionalism.

Finally, for the brands of soft drinks, significant differences between the sexes were found only for Ruggedness ($t_{940} = 5.786$, $p = .000$); the men rated the brands higher than the women for this dimension (males: $M = 65.44$, $SD = 17.11$; females: $M = 58.74$, $SD = 18.34$).

CONCLUDING COMMENTS

The principal objective of this study was to develop an exploratory investigation of the dimensions of brand personality in Mexico. In function of these objectives, two hypotheses were made that were reviewed and corroborated with the results found in this study. Hypotheses H_1 and H_2 were partially confirmed. In hypothesis H_1 it was hypothesized that brand personality in Mexico would be identified by at least five dimensions similar to those established in other cultures, and that those would be more similar to those that Aaker (1997) originally proposed, compared with those found in other countries. Seven dimensions of brand personality were extracted in this study. Although the factor loading of the brand personality traits in this sample differed from other samples and in particular from Aaker's study (1997) due to differences in culture and language, three of the brand personality dimensions were very similar to Aaker's findings (1997): Sincerity, Sophistication, and Ruggedness. Nevertheless, other dimensions that were found in this study, such as Success, Hipness/Vivacity, Domesticity/Emotionality and Professionalism, were found to carry more specific cultural meanings.

Although the dimension Competence remained constant in all of the countries investigated except in the latest studies conducted in Venezuela (Pirela, Villavicencio, and Saavedra, 2004) and in Spain (Aaker, Benet-Martinez, and Garolera, 2001), in this study three of the personality traits (hardworking, technical, and corporate) that made up Competence in Aaker's study (1997) formed a new dimension that I called Professionalism. Additionally, the personality traits that made up the dimension Success in this study coincided with personality traits that were part of the dimensions Excitement and Competence in Aaker's study (1997). For Hipness/Vivacity, personality traits were found that coincided with four of the traits that made up the dimension Excitement in Aaker's study (1997). Thus, the dimensions Success and Hipness/Vivacity could correspond with Aaker's dimension Excitement. Finally, the dimension Domesticity/Emotionality was made up of three personality traits that correspond with Aaker's Sincerity dimension and one trait each from Aaker's Sophistication and Ruggedness dimensions. The personality dimensions found in this study also presented coincidences with the studies in Japan and Spain (Aaker, Benet-Martinez, and Garolera, 2001) with Sincerity and Sophistication and with the study in Korea (Lee and Oh, 2006) with Excitement/Sophistication, Sincerity, and Ruggedness. In addition, coincidences were also found with the study in Mexico (Alvarez-Ortiz and Harris, 2002) with Sincerity and Sophistication and with that in Venezuela (Barrios and Massa, 1999) with Sophistication and Success. Coincidences were also found with the most recent study in Venezuela (Pirela, Villavicencio, and Saavedra, 2004) with Sincerity and Ruggedness. With respect to the study of Koebel and Ladwein (1999) in France, the results of this study did not find any coincidence with the French dimensions. These results imply that a set of brand personality dimensions such as Sophistication, Sincerity and Ruggedness is common to Mexico, the United States and Korea, although the traits that make up each dimension differ with respect to the original studies. Thus the brand personality dimensions that were found in this study were more similar to those that Aaker originally proposed, compared with the dimensions found in other countries. In addition, all of these differences in the brand personality dimensions supported the Aaker, Benet-Martinez, and Garolera (2001) study, in which they suggested that the symbolic aspects associated with a brand, such as brand personality, tended to vary in different cultures.

With respect to hypothesis H₂ it was expected that at least one brand personality dimension would be related to gender (masculine and feminine traits) as was true for the study conducted in Mexico (Alvarez-Ortiz and Harris, 2002), in which they found a dimension with masculine and feminine traits, which they called Gender. However, contrary to expectations, in this study the feminine and masculine traits were not as accentuated in the personality dimensions. The results showed that the brands were not perceived only as traditionally masculine or feminine, but instead I intuit that there are different types of masculinity and femininity. Perhaps it was due to the characteristics of the sample, students of a high socioeconomic class that is distanced from Mexico's lower socioeconomic class. The consumers in this study did not perceive the brands as simply feminine, but instead perceived two different types of femininity. One type is the woman who represents elegance and glamour, and is upper class, Western and feminine. This profile can be inferred as the one that the students from this study identified with because of their high socioeconomic status. On the other hand, they perceived some brands with a different type of femininity: the woman who is affectionate, friendly, provincial, emotional, and family-oriented, or in other words, the woman who in Mexico is called a *ranchera* (small-town, country bumpkin) and who is represented by a large part of the population, perhaps the type of woman who represents a socioeconomic class that is uneducated or from past generations such as those of their mothers or grandmothers. As for masculinity, it was perceived as rugged and strong, represented by the personality dimension Ruggedness. And perhaps in this dimension we can glimpse another type of man, the man who is professional, corporate, and hardworking, and who has technical knowledge. In addition, when a factorial analysis for the category of think products was carried out, it was found that the feminine trait was included with the traits that explain the Domesticity/Emotionality factor and not with those that explain the Sophistication factor. The masculine trait was included with those that explain the Ruggedness and Professionalism dimension. Perhaps for think products, young people tended to perceive masculine brands together with other traits related to ruggedness and professionalism while perceiving feminine brands as continuing to be part of the domestic and family realm. Without a doubt, although gender will always form part of the personalities of brands, and especially in Latin American cultures, in which gender roles are still very traditional, the meaning associated with brands differs depending on the samples used, the types of products and the historical moment.

As brand personality includes characteristics such as sex, age, and socioeconomic class, another of the specific objectives of this investigation was to analyze the differences between men and women in their perception of brands. As a function of the traditional gender stereotypes of the Mexican culture, it was hypothesized in hypothesis 3 that independent of the product category, men would tend to perceive brands as having traits that are markedly more masculine, such as Ruggedness and Competence, compared with women, who would tend to perceive brands with traits that are more feminine, such as Sincerity and Sophistication. In this study, the hypothesis was confirmed partially. The results showed that the women rated the brands higher than did the men for Success and Hipness/Vivacity. However, men perceived the brands as more rugged and professional, as we expected, and more domestic/emotional than did the women. For the brands of laptops, the men rated the brands as more sophisticated, domestic/emotional and rugged. For the brands of shampoo, the women scored the shampoo brands higher than did the men for Success and Hipness/Vivacity. On the other hand, the men rated the shampoo brands higher than did the women for Ruggedness and Professionalism. For the brands of perfume, the women rated the brands higher for Hipness/Vivacity and Sophistication, while the men rated the brands higher than did the women for Ruggedness. Finally, for the brands of soft drinks, the men rated the brands higher than did the women for Ruggedness. As we can confirm, in all of the product categories in general, the men tended to perceive the brands as more rugged and professional (competent in Aaker's study); however, the women scored the brands higher than did men for Success, Hipness/Vivacity and Sophistication. Perhaps the differences between the men and the women in their perception of the brands are reflecting traditional gender roles among them that they are also projecting onto the brands.

Theoretical Contributions and Managerial Implications

Similar to the “Big Five” model of human personality (Goldberg, 1990; McCrae and John, 1992), in this study it was hypothesized that brand personality would be measured along five dimensions that, following Aaker (1997), uniquely applied to consumers’ characterization of brands. However, recent research has established the structural robustness of the “Big Seven” model of human personality across samples and targets (Benet and Waller, 1997). Although the “Big Five” model has been advocated as a basic paradigm for personality description and assessment (McCrae and John, 1992), the utility and comprehensiveness of the “Big Five” has recently been challenged (see Benet and Waller, 1995; Block, 1995). Benet and Waller (1997) demonstrated that the “Big Seven” were cross-culturally and cross-linguistically robust personality dimensions that are were subsumable by the “Big Five.” This further evidence for the “Big Seven” factor model suggests that we probably need to reinterpret the “Big Five” brand dimensions toward a “Big Seven” model. Perhaps the seven factors found in this investigation were related to the effects of time, given that this study was conducted approximately twelve years after Aaker’s (1997) original study and seven years after the study conducted in Mexico. Without a doubt, this is sufficient time for the change of the characteristics of the consumer and of the market, buying preferences and perception of brands due to new marketing strategies. Moreover, there are differences between this study and others with respect to the sample, the product categories, and the brands used, which could explain these results.

The results found with respect to the validation of the brand personality scale suggest that the appearance of different personality traits in dimensions common to Aaker’s original study (1997) correspond to each other to the degree that those traits contain a universal meaning in relation to the specifics of each culture. The five dimensions of Aaker’s (1997) original model cannot be generalized to other cultures, as Aaker, Benet-Martinez, and Garolera (2001) had already proposed, since the different brand personality dimensions reflect the meaning that is given to them through marketing strategies that may be different from the values of each culture. In the case of the Mexican consumers of the sample in this study, many have direct contact with U.S. television and with U.S. brands and products, which could explain the coincidence with many U.S. personality dimensions, as opposed to those of other countries. Mexican consumers perceive and mentally organize the meaning of brands differently in their culture; nevertheless, the influence of the geographical proximity remains latent. Even so, the model is useful to define similarities between personality dimensions in an environment of globalization and those of a specific culture (Pirela, Villavicencio, and Saavedra, 2004). The traits that are common to those found in Aaker’s model (1997) can be grouped in different dimensions for each culture, in this way explaining the dimensions particular to each cultural reality. Moreover, the scale created to measure brand personality is sufficiently reliable, valid and robust to be used to obtain consistent results for each type of target population and to select different products and brands.

The high internal consistency and reliability that was found in each of the brand personality dimensions, those with the most explained variance being Success, Hipness/Vivacity, Sophistication and Sincerity, provide evidence that the personality traits surrounding these dimensions could help explain the personality of young Mexicans. As was pointed out in this study, brand personality is an important topic in marketing research, and the measure of brand personality should be seen as a first empirical contribution in this area. The results found in this study also represent important implications in the areas of marketing and management; since they permit us to conclude that it is valid to use a more direct approximation of the original methodology of Aaker (1997) by using a scale that measures brand personality. For organizations, using a scale to measure brand personality allows them to know quickly, directly, and inexpensively the perception that consumers have about brands and allows them to monitor changes in brand personality over time in order to be able to better define positioning strategies.

Limitations and Future Research

This study has limitations; the first concerns the sample. Although the intention was to sample a diverse pool of young Mexican college students, for convenience I was able to sample students from only one university. Mexico is a country with many public and private universities, and thus future research should compare these findings with personality taxonomies from other institutions or Mexican states. Although the sample could be a limit in this study (we cannot generalize the results), the use of students for the sample was appropriate for several reasons. The fact is that students are also consumers, and so are part of the general consuming public. Moreover, because of their homogeneity, student samples are often preferred to the general population, as they tend to reduce the effects of other external factors. So it was determined that a student sample was an appropriate and valid population for the study. Moreover, the sample was appropriate because this study used the brands that the same students had selected in a previous survey. In addition, the sample represents an important sector of the segment of young Mexicans with a high socioeconomic level.

Another limitation of the study is that only 12 brands were used; it would be interesting to use other brands to make comparisons with their different competitors. In addition, since in this study an exhaustive study about the brands used was not conducted, it would be recommendable to analyze the brands that are going to be used in a future study and the vision of the company with respect to the brands, or to analyze previous studies that have carried out comparisons of brand personality dimensions between competitors' brands.

The differences found in the perception that the men and the women in this study have of the brands indicates that additional research is needed in order to investigate how gender stereotypes could affect how men and women perceive brands. Future research might consider the possibility of using the customers' personality as a variable that can be associated with brand personality, as well as studying how the dimensions of brand personality explain brand loyalty, brand satisfaction, and brand preferences. Also, it would be interesting to analyze whether the brand personality envisioned by a company relates to the brand personality formed by consumers. It would also be interesting to assess customer satisfaction with respect to products' functional attributes and how these form a brand personality. In addition, it would be interesting to use Aaker's original methodology, as well as that used in Japan and Spain, in Mexico. Moreover, future research is needed to determine whether brand personality is different in various geographical and cultural contexts. As a final point, it would be important to study the process by which a brand personality is built, the most important factors in forming a personality impression, and the factors that allow the stability over time of that personality.

In conclusion, the results of the study suggest that a Mexican taxonomy of personality trait terms should include at least seven higher-order personality dimensions, and that future research is needed to verify the stability of brand personality dimensions for different brands and with other Mexican samples. Also, the possibility of using local Mexican brands and product categories could be helpful in improving the generalizability of results.

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BIOGRAPHY

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VENTURE CAPITAL PRE-INVESTMENT DECISION MAKING PROCESS: AN EXPLORATORY STUDY IN MALAYSIA

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ABSTRACT

Venture capital is an alternative source of funding for SMEs in Malaysia. Recognizing the importance of this industry toward economic growth, the Malaysian government has initiated various strategic plans. Despite promising growth of the venture capital market, past empirical findings reveal that the performance of venture capital backed companies (investee companies) over long run has been relatively poor, especially after venture capitalist exit. Thus, there is a need to understand the decision-making process practiced by Malaysian venture capitalists. Most decision making processes evolve from classical decision-making models. The current study purports to find disparity between the current practice and the classical venture capital decision-making model. The current study incorporates an exploratory research survey of 16 venture capitalists. Findings reveal significant similarities in the decision making procedure and investment criteria used to select investment with the classical model. As for investment criteria, greater importance is given to management integrity and exit opportunity rather than to the business idea. Findings also reveal that VCs experience does not correspond to expertise in decision -making.

JEL: G24, M13, D81, L20

KEYWORDS: Venture capital decision making process, investment criteria, investment stage, investment sector, investment timing.

INTRODUCTION

Venture capitalists (VCs) are professionals who pool funds from high net worth investors and invests these funds into promising young business enterprises (Jain, 1999). Traditionally, companies that have yet to meet listing requirements or qualify for bank loans (Florin, 2005) recognize VC as providers of financial support and value added services. However, over the years, the VCs role has become more challenging. They rely on new business ideas, which can withstand the competitive environment (Kaplan, Sensoy & Stromberg, 2009).

Due to the nature of uncertainties in the small business environment, VCs are very selective with their investments deals. Schweinbacher (2007) documented that VC specialize in financing large amounts of capital in small businesses that they find relatively attractive. Thus, not all-small business can attract VC investment. Jain (1999) documents VCs have the expertise to separate high quality firms from marginal ones. However, empirical findings in developing nations reveal that lack of experience and improper decisions on the part of VCs lead to adverse selection over the long run (Wang, Wang & Lu, 2003). Thus, it is interesting to note how VCs make decisions in an environment of high uncertainties. Do they have a structured decision making process? Can the VC decision-making process apply across different nations? Most of the study from 1970s – 2000s documents the influence of investment stages on venture capital decision making process (Wells, 1974; Tyejbee & Bruno, 1984; Hall, 1989; Fried & Hisrich, 1994; Boocock & Woods, 1997; Bliss, 1999; Larsson & Roosvall, 2000). These stages include “seed capital” characterized by small investment which enables young business enterprises to test their innovation (of product and services), “start up capital” characterized by investment pumped into actual

business operations, “expansion capital” supports continuation of business operations and growth and “later stage capital” invested to facilitate takeover, acquisition, divestiture or management buyout process. These studies also reveal that investment criteria (management capabilities, uniqueness of product, market acceptance, & degree of competition) influence the decision-making stages. Some later studies (2000 – 2008) explored the importance of investment criteria and the influence of cultural differences across nations on the venture capital decision-making process (Bruton & Ahlstrom, 2003; Bruton, Ahlstrom & Yeh, 2004; Naqi & Hettihewa 2007). Another issue discussed in these studies is the difference between the concept of venture capital investment practiced in developing nations and the traditional concept of venture capital investment practiced in developed nations. Recent studies, however address the importance of understanding the physiological trait of venture capitalists and the oversimplification of investment criteria in the decision making process (Dmitry, 2006; Blair, 2008).

Development of Venture Capital Market in Asia

The phenomena of venture capital investment originated from United States in late 1940s (Mueller, 1972). Venture capital investment (VC) entered the Asian market in the late 1960s with Japan being the first to attract foreign venture capital investment followed by China and Singapore (Mueller, 1972; Bruton *et al.* 2004; Naqi & Hettihewa, 2007). By 1980s, venture capital activity started to grow at an impressive rate in Asia. The Asian VC market reports an annual average growth rate of 15% over the last 15 years compared to 6% in Europe and 4% in United States (Naqi & Hettihewa, 2007). This growth mainly attributed to the major economic development within the region during this period.

Despite the growth, empirical evidence reveals that the performance of venture capital backed companies in Asia has been mixed (da Silva, Velayuthen & Walter, 2003; Wang *et al.* 2003; Brau, Brown & Osteryoung, 2004). Unfortunately, this evidence has not been successful in revealing the significant economic contribution of VC as compared to developed nations (Megginson & Weiss, 1991; Gompers, 1995; Chemmnuar & Loutskina, 2006). The observed performance between the two regions can be associated to several factors. One is the difference between the practice of venture capital activities in Asia from those practiced in developed nations. Naqi and Hettihewa (2007) documents that venture capitalists in Asia were private equities investors.

Past literature attributes the differences to the unique business culture, economic and regulative environment in Asia (Bruton *et al.* 2004; Naqi & Hettihewa, 2007). These studies claim that most small businesses in Asia are family owned across generations. Venture capital and any other form of external funding are given least importance by small business owners (Michaelas, Chittenden, & Poutziouris, 1998). Third party involvement is seen as a threat of expropriation to their business (Ueda, 2004). Moreover, the main source of Asian venture capital funding comes from government and financial institutions. Thus, the venture capital activities and decisions are highly influenced by these institutions (Pandey, 1998).

The venture capital industry set foot in Malaysia in late 1980s with four VC firms and US\$20m funds (Boocock & Presley, 1993). Business ventures however, were very pessimistic about the traditional venture capital activity resulting in poor responses in the early days (Naqi & Hettihewa, 2007). Wang *et al.* (2003) reveal that companies backed by venture capital perform poorly over long run especially after VCs exit their investee companies. The study claims that there are adverse selection and grand standing effects in the Malaysian venture capital market. As a result the Malaysian government initiated joint venture programs with the private sectors and foreign investors in 2004. The Government remained the largest contributor of venture capital funds attributing to almost 40% of VC funds here. Venture capital continued to gain popularity under the 9th Malaysian plan where government played a prominent role in promoting the industry (Malaysian Venture Capital Development Council). Islamic venture capital market came into place in 2008. By year 2011, the total number of venture capital firms in Malaysia raised to 109

firms, of which 53 are venture capital management corporations and 56 are venture capital corporations (Securities Commission). The relaxation of regulative policies (such as allowing listing of technology incubators, granting 10 years of exempt dealer status for venture capital companies which provides seed capital funding) has been very supportive in promoting the growth of VC industry in Malaysia (Malaysian Venture Capital Development Council). Unlike in developed nations venture capital decisions in Malaysia are not only dependent on venture capitalists activities but also on the perception of investees (small business owners) and investors (mainly government).

The current paper investigates VC decision-making process and investment criteria practiced in Malaysia as an exploratory study. It is particularly interested in addressing issues of: Do Malaysian VCs have sufficient experience in the industry? What is the time frame taken to evaluate investment deals? Which sector is most preferred by Malaysia VCs? Which investment stage is most preferred by Malaysian VCs? Are Malaysian VC decision-making procedures and investment criteria similar to the classical decision making model? The remainder of this paper is structured as follows; past literature on VC decision-making process and method of soliciting survey response are narrated in literature review, followed in methodology an introduction of survey method and analysis of current study. The forth section presents the findings of current study and final section presents the conclusion and recommendation for future study.

LITERATURE REVIEW

Evolution of the investment decision-making process practiced by venture capitalists since 1970 is shown in Table 1. VCs in the early days face less doubts on the prospect of their investment companies, thus less criteria/procedures were set in their decision making process. As competition in the business environment starts to grow, more innovative and high-risk businesses seek venture capital funding (Larsson & Roosvall, 2000). Hence, VCs face greater uncertainties in their investment and more criteria added in selecting their investment companies. They believe that a good decision model helps them to separate best investments candidate from marginal ones (Jain, 1999). Later studies however attribute the differences in decision-making process to cultural, institutional, and regulative environment in different nations (Bruton *et al.* 2004).

Table 1: Venture Capital Decision-Making Process

Author	Decision model	Decision process
Wells (1974)	3-step decision model	investment search; proposal screening; proposal evaluation
Tyebjee and Bruno (1984)	4- step decision model	deal origination; proposal screening; proposal evaluation; deal structuring
Hall (1989)	6- step decision model	Generate a deal flow; proposal screening; proposal assessment; proposal evaluation; due diligence and deal structuring.
Fried and Hisrich (1994)	6- step decision model	Deal origination; firm specific screen; generic screen; first phase evaluation; second phase evaluation and closing.
Boocock and Woods (1997)	7-step decision model	generating a deal flow; initial screening; first meeting; second meeting; board presentation; due diligence and deal structuring.
Gluer (2003)	4-step decision model	Generating deal flow; initial screening; due diligence and preparation of the term sheet

Note: Source of information compiled by author of current paper.

Among all the proposed models, Fried and Hisrich (1994) model was widely accepted and tested in different regions (Silva, 2004). Fried and Hisrich (1994)’s study involves personal interviews with VCs from 18 venture capital firms. VCs were asked to describe their investment process, select their investment criteria, time taken to make decisions and whether any reference checking was involved in the decision process. Base on the responses Fried and Hisrich developed a six stage venture capital decision making model (shown in Table 1) and three investment criteria (shown in Table 2). The findings also reveal that VC firms not only provide supply-side benefits to their business ventures (business can raise

fund without financial track record and collateral) but they also provide demand-side (alternative source of capital) benefits to their business ventures.

Fried and Hisrich (1994) model was adapted by Bliss (1999) to investigate decision making process for transition economies. He used interviews and follow-up questionnaires with a sample of six VC firms in Poland. VCs were required to describe their investment process base on actual investment deals. Similar questions to the earlier model were raised. Bliss (1999)'s finding reveals the venture capital decision making model for transition economies diverges from past research in two areas. First, it was seen that privatization of state-owned enterprises are considered important in deal origination and most of the VCs were active to solicit deals from targeted industries. Second, the study revealed that firm-specific screens were rarely used in the venture capital investment process as industry segmentation was not well defined and due to a lack of firm specific knowledge on the part of VCs. His study also showed that two important evaluation criteria in VC decision making process are government influence and legal system. Bliss (1999) asserts that a short track record in a free market like Poland makes it difficult for VCs to evaluate managerial skills of their investee companies. However, Kaplan *et al.* (2009) recently documented that VCs concern should be the business (horse) they are investing not the management (jockey). This study claims that the uniqueness of the business idea can avoid imitation or a sudden failure of the small business in the competitive market. Since VCs are known for their own expertise, the investees' management criteria (jockey) should be considered secondary.

Some recent studies on decision making processes use comparative case study approaches. They use existing decision making models in different contexts and also make comparisons between existing models and classical ones (Larsson & Roosvall, 2000; Dmitry, 2006). Larsson and Roosvall (2000) explored VC decision making process and investment criteria used by Sweden venture capitalists. They interviewed a total of 30 VCs via e-mail enquiry. They tested past theories with empirical results and find that classical theory do not totally explain decision making process but it can explain why the decision making model is conducted as it is. The study claims decision making processes proposed in the past cannot be the most suitable way of finding the optimal investments for VC. Larsson and Roosvall (2000) expanded Fried and Hisrich (1994) model by incorporating the contingency theory in the investment criteria. The contingency theory is based on VCs negotiation, inspection, computation and judgemental strategy.

Hence, various efforts to introduce a new venture capital decision making model came into place. Emphasis was given on the influence of investee's management in decision making process. Gluer (2003) explored VCs decision making capabilities for sequential investments. He interviewed 30 professionals from 21 VC firms and 3 investee companies. His findings suggested a four step decision making process (Table 1). Silva (2004) documents how VCs select early stage investments in small equity market (Portugal). This study uses three approaches, first was a pilot study using participant observation. This technique requires researcher to participate in the context that he observes. Researchers observed the daily routines and carried out informal discussion with analyst and executives of VC firms (include observation of meetings between VCs and business owners). The second approach requires researchers to participate in the decision process by analyzing external and internal information provided by the investee (contractual agreement, internal reports, press release). The third approach was an interview with executives and investment analysts of VC firms. The study reveals that decision making process and criteria used by VCs in small equity markets differ from those used in developed markets. Silva's (2004) findings reveal VCs place greater importance on the business idea, sustainable advantage and growth potential than to financial projections.

Some studies reveal management competency, firm specific criteria and VC factors have more influence on VC decision making process. Mann (2001) documents three such factors, which are strong management team, market opportunity (technology) and business concept of investee companies. Strong

management team include those with industry experience, knowledge and technical expertise. Market opportunities include size of the company’s product and service commercialization, barriers to entry, competitive advantage, profit margin and customer perception. Business concepts include the uniqueness of the product or services, product development risk and proprietary rights. Shepherd, Zacharakis & Baron (2003) highlighted the importance of VCs experience in decision making. The researchers conducted a survey of 66 VCs from 47 VC firms in Australia. The findings reveal that inexperience and highly experienced VCs make less reliable decisions than moderately experience VCs. Therefore they conclude that greater VCs experience may not always result in better decisions. Dimov, Shepherd & Sutcliffe (2007) suggest that investment choices are influenced by investee company’s management expertise and VCs relationship with management team of investee companies.

Fried and Hisrich (1994) document that business concept, expectation of management capabilities and expected outcome plays a significant role in the formulation of decision making model (Table 2). Reid, Terry & Smith (1997) studied the risk management arrangements between venture capital investors and investees as investment criteria in decision making. They interviewed 20 VCs and their corresponding investees in United Kingdom. The findings reveal that both parties are exposed to a significant level of risk. VCs avoid investing in a single sector investment to offset good outcomes from poor ones. Thus they limit any adverse selection, by practicing due diligence and rigorous screening. Findings show only 3% proposal secures VC backing out of 30% being reviewed.

Table 2: Investment Criteria in Classical Venture Capital Decision Making Process

Concept	Management	Returns
Potential for earning growth	Personal integrity	Exit opportunity
Brought to market within two or three years	Strong track record	Potential for high rate of return (%)
Significant competitive advantage	Realistic	Potential for high absolute return (\$)
Reasonable capital requirements	Ability to identify risk	
	Thorough understanding of business	
	Flexibility	
	Leadership	
	General management experience	

Note: Sourced from Fried & Hisrich (1994).

Brander, Amit & Antweiler (2002) suggest the use of risk sharing through syndicated VC investment in the Canadian market. Their findings reveal syndicated investments have higher return compared to stand alone investments. Gupta, Chevalier & Dutta (2003) investigated the importance of risk assessment in decision making. They reviewed the risk assessment process practiced by two VC firms and four investee companies in India. Findings reveal VC firms simultaneously invest in a wide variety of business. Hence risk assessment becomes unique for each case. Their study identified five problems encountered in risk assessment of a project; weak management, poor understanding of market, overpaying, circumstances beyond control, and financial matters. Gupta et al. (2003) also highlighted that decision process for a venture proposals must include four conditions; total score for a proposed venture, ranking of risk factors, expected rate of return and environmental factors. The relationship build between VCs and the investee companies has been noted in past literature as an element which reduces the risk in VC investment (Jones, 2004)

Following the prior research a more recent study explored investment criteria identified earlier and reclassified the criteria into a more meaningful context (Dmitry, 2006). The study suggests the use of 13 different criteria in investment decision making process. However the current study attempts to only replicate the decision making process proposed by Fried & Hisrich (1994) in local a market. We believe this model is the foundation for current decision making processes practiced in other countries. It investigates the importance of each investment stage and criteria in current business environment. The

study also expects to explore new criteria and procedures practiced by Malaysian venture capitalist, using an exploratory case study approach.

METHODOLOGY

The current study adopts a mixed method (quantitative and qualitative approach) by constructing a set of structured and unstructured questionnaires. Researcher uses three approaches of data collection, first is the distribution of structured questionnaires through e-mail to all 56 venture capital management firms registered with Malaysian Securities Commission (SC) as at 31st December 2010. A total of 16 responses were received and they were used to address the issues underlying the current study. The questionnaire consists of four sections. The first section is the VCs profile and the other sections cover the 6-stage decision making process followed by the three investment criteria proposed. The last section covers a set of unstructured question of VCs opinion on decision making. The questionnaire aims to analyse the disparity between Malaysian VCs decision making process and models proposed in past literature (Fried & Hisrich, 1994). The second approach, involves a face to face interview with a former venture capitalist. The third approach, involves gathering information from Malaysian VC blog, Malaysian Venture Capital Association and Private equity (MVCAP) website and Malaysian Venture Capital Development Council (MVCDC) website.

The data compiled via survey is analyzed using descriptive statistics and a non parametric chi square inferential test. The descriptive test, answers the first three issues address in the introduction and the results are presented in the first two sub-sections of findings. The results in these sections are supported with past studies and interview responses. A non parametric chi square test is used in the subsequent sub-sections to answer the last two issues addressed in the introduction. A parametric test is not appropriate for the current study as the sample size is relatively small (Anderson, Sweeney & Williams, 2010).

FINDINGS

Malaysian VCs Experience and Time Frame in Decision-Making Process

The result in table 3 shows the survey response from 16 VCs, on experience and time for making investment decisions. Based on the findings most of VCs have more than 10 years of experience. Past studies claim that reputable VCs should have more than 8 years of experience as in the case of Singapore (Wang *et al.* 2003).

Table 3: VCs Experience and Time Involved in Decision-Making

		No. VCs	Percent (%)
Experience	Less than 3 year	1	6.2
	3-5 year	3	18.8
	6-10 year	4	25
	More than 10 year	8	50
Time Involved in Decision Making Process	Less than 30 days	0	0
	30-80 days	6	37.5
	81-130 days	5	31.2
	131-180 days	3	18.8
	181-280 days	2	12.5

Survey response to single answer questions from 16 VCs indicate that most of the respondents have more than 10 years of experience and they spend more than 30 days to vet an investment deal.

The current findings suggest that Malaysian VCs have sufficient experience and ability to make good decisions. A former VCs asked to explain how experience helps him to make a good decision. He claims the longer the experience the more information and knowledge one could acquire in their field of work.

“...years of service facilitates us with sufficient experience to execute strategies, build extensive networking, and develop critical and tactful mind...” (Source: Interview)

However compared to developed nations, Malaysian VCs lack expertise to pursue value added activities in their investee companies. VCs made the following statement in their blog:

“...unless you find a venture capitalists who wants to work hands and take an active role in building successful companies, you would have just an investor, not a builder.... we are banking on the investee’s owned skills to stay competitive” (Source: VC blog)

Thus, current study summarizes that experience alone is not sufficient in the Malaysian venture capital industry. VCs networking with the investee plays a bigger role in shaping the venture capital decision. Current findings also reveal that despite wide experience, most Malaysian VCs spend considerable time evaluating an investment proposal (between 30 – 130 days). This finding is in contrast to traditional VCs decision-making time, which correlates negatively with their experience. Past studies reveal that VCs spend less than 6 minutes during the initial screening of the business plan (Hall & Hofer, 1993). The former VC asked why more time is required in vetting the business proposal.

“.... most of the business deal received via online without referrals. VCs need time to make decision and to practice due diligence” (Source: interview)

Since most proposals in Malaysia are non-referred unlike the developed countries, Malaysian VCs require more time for information search and reference checking. They also need to practice due diligence in their decision making process, which imposes greater time in vetting an investment proposal.

VCs Preferred Investment Stages and Sectors

The findings in Table 4 reveal that most preferred investment stages among Malaysian VCs are expansion, pre-IPO, and early stages. Investment in seed, management buy in and buyouts are not very popular. These findings are consistent with studies conducted in other Asian countries. Past studies claim that the business climate and culture does not support seed financing in Asia (Naqi & Hettihewa, 2007).

Table 4 also reveals that the most preferred VC investment sector in Malaysia are ICT, life sciences (medical health and biotechnology) and manufacturing. These three sectors arise from adopted technology and not by innovation consistent with the practice in other Asian countries (Naqi & Hettihewa, 2007). Thus, less research and development funding is needed in the seed stage. VCs in Malaysia are attracted to entrepreneur talent and creative ideas in either improving or localizing product, processes, or services.

“..... particularly interested in management/owners with superiority of owned skill sets and/or technology to bring the company through adding value and securing me the exit, so it’s best to have a strategy based on the realities of the environment.....” (Source: VC blog)

A cross tabulation is conducted (Appendix A) to observe the influence of the four elements (experience, fund size, sector and timing) on investment stages. The observations of the experience and investment stage seems to be inconsistent with past studies, where past studies reveal that experience VCs usually undertakes investment at the seed stage (Dmitry, 2006). The current study summarizes that experience does not play an important role in decision making for Malaysian VCs. However, fund size corresponds well with the investment stages where greater fund size is required to support higher investment stage.

Table 4: VCs Preferred Investment Stages and Sectors

		No. Preference	Percent (%)
Investment Stages	Seed Capital	7	12.3
	Start-up Capital	8	14
	Early Stage	10	17.5
	Expansion Growth	14	24.6
	Bridge, Mezzanine, Pre-IPO	11	19.3
	Management Buy-Out	5	8.8
	Management Buy-In	2	3.5
Investment Sectors	ICT	14	27.5
	Manufacturing	7	13.7
	Life Science	8	15.7
	Education	3	5.9
	Agriculture	4	7.8
	Electricity, Power Generation, Gas and Water	4	7.8
	Wholesale, Retail Trade, Restaurants and Hotels	3	5.9
	Financing, Insurance, Real Estate and Business Services	3	5.9
	Transportation, Storage And Communication	5	9.8

Survey response on multiple answer questions from 16 VCs. Results shows that both start up and seed stage are not popular in Malaysia. As compared to later stages and the most appealing investment sector for Malaysian VCs at the time of survey are ICT, Manufacturing, and Life Sciences.

Similarities between Malaysian VCs Decision Making Process and Past Decision Model

Survey responses in Table 5 reveal that Malaysian VCs have their own decision-making procedures. These procedures have similarities to the proposed classical model (Fried & Hisrich, 1994; Larsson & Roosvall, 2000).

Table 5: Descriptive Statistics of Venture Capital Decision Making Stages

Stages	N	Minimum	Maximum	Mean	Std. Deviation
Origination	16	2.20	4.40	3.5375	0.6010
Firm specific	16	3.00	5.00	3.9583	0.5947
Generic	16	2.33	5.00	3.3750	0.8154
1stevaluation	16	3.73	5.00	4.1510	0.3233
2ndevaluation	16	3.00	5.00	4.0625	0.5737
Closing	16	3.00	5.00	4.1875	0.6021

Measured on a scale of least (1) to most important (5) decision making stage. Results shows the last three stage has a mean greater than 4.00 indicating most respondents find this stage to be important in their decision making process.

Evaluation stage and closing stage with a mean greater than 4.00 shows VCs agree their decision making is similar to past practices in developed nations. The origination, firm specific screening and generic (investment criteria) screening stage has a mean below 4.00 shows there are some dissimilarity with past practices in developed nations. Malaysian VCs receive most deals via online access without the need for referral therefore, origination stage is not necessary. Developed nations emphasize the need for origination as most funding comes from private sectors. Unlike in developed nations, in Malaysia almost 40%, funding comes from government sources and 70% expertise comes from foreign stake, thus there is less need for referred deals. The regulative environment of Malaysia requires all VCs to register with Securities Commission, which strengthens VCs credibility and reputation.

Respondents mention that instead of firm specific screening, Malaysian VCs screen business deals for new product, processes (cutting, semi conductors, specialize skills) and services. Though the term “new” is used, most of the processes and products in the deal are already developed. However, the development was not on a large scale, giving room for expansion of ideas in new business deals. Thus, Malaysian VCs focus more on talent driven ideas rather than innovative driven ideas. VCs also skim business deals for

environmental friendly projects. Deals that do not meet the VCs specification or criteria are rejected at this stage.

Investment deals that pass through screening are evaluated further for business plan and management competency. Additional information is compiled from investee companies and external consultants (technical, financial, legal information) to substantiate the business plan. Circumstances where unfavourable estimates are quoted in the business plan the VCs can provide suggestions:

“.....say at times if estimate of financial records are unfavourable “i.e. buy a factory is quoted very high”; we suggest buying from our own networking.” (Source: Interview)

The researchers find that at evaluation stage VCs conduct legal checking on the investee’s profile. Several meetings are held with the management to gather more information. VCs may require management to present and communicate their business plan to learn more about the business and the manager’s talent (Source: VC blog).

We find that due diligence is an important step in the venture capital decision making process. Once they identify their potential investment the due diligence, process takes place. Due diligence is the process of analyzing a business plan in detail. In this process, VCs compile reports from external panels on technical, financial, and legal information. For technical information, VCs obtain reports from scientific consultants (or foreign experts) to access the technology used by their prospects. VCs obtain reports from auditors to check the financial status of their prospect. For legal information, VCs obtain reports from lawyers to review legal agreements and obligations and assess the strength of proprietary (patents) right (if any) of their prospect. The researchers conclude that the decision making process among Malaysia VCs have similarities with classical model proposed in past studies.

Table 6: Comparison of Decision-Making Stages with Classical Model

	Origination	Firm-specific Screen	Generic Screen	First Evaluation	Second Evaluation	Closing
Chi-Square	18.286 ^a	12.742 ^b	8.764 ^c	17.636 ^d	15.420 ^e	29.333 ^f
df	9	6	6	7	4	4
Asymp. Sig.	0.052	0.057	0.187	0.014**	0.004**	0.000**

**Observed and expected frequency tested at 5% significance level.

- a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 5.6
- b. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 8.9
- c. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 7.9.
- d. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 8.3.
- e. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 13.8.
- f. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 13.8.

Results show that the criteria of assessing the an investment deal in the last three stages of decision making significantly similar with past practices as the expected frequency is less than the minimum expected frequency in this stages.

The arguments are further supported by chi-square test results which have p-values less than 0.05 for evaluation stage and closing stage (refer to Table 6). Therefore, it can be concluded that Malaysian VCs have significantly similar decision making stage within the last three stages compared to classical model. There is no significant difference in the criteria for the first three stages (origination, firm specific screening and generic screening).

Preplanned Investment Criteria for Decision Making

We further tested similarity among three main investment criteria (concept, management, outcome) used in classical decision-making process. Survey results in Table 7 shows there are similarities. The

respondents agree that all three criteria are important in their decision making process as shown by a mean of 3 and above.

Table 7: Descriptive Statistics of Venture Capital Investment Criteria

	N	Minimum	Maximum	Mean	Std. Deviation
Concept	16	2.75	4.00	3.3125	0.3594
Management	16	2.88	4.00	3.5078	0.3520
Outcome	16	3.00	4.00	3.6875	0.4298

Note: Measured on a scale of disagree (1) to agree (4) for each criteria. Result shows mean greater than 3 indicating most respondent agree that concept, management, and outcome are important criteria in an investment deal.

Next, we conduct a chi square test to identify the similarity of three investment criteria proposed in classical studies with current practice. Table 8 shows that items under each investment criteria are significantly similar ($p < 0.05$) with VCs practice in Malaysia.

Table 8: Comparison of Venture Capital Investment Criteria

	Concept	Management	Outcome
Chi-Square	25.000 ^a	19.579 ^a	33.138 ^a
Df	5	8	2
Asymp. Sig.	.000**	.012**	.000**

Note: **Observed and expected frequency tested at 5% significance level.
 a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 8.8.
 b. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 6.3.
 c. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 19.3
 Result shows that the each investment criteria as proposed in classical model is significantly similar with current practice.

We tested the importance of specific criteria for each of the three categories as presented in Table 9. The specific observation reveals that Malaysian VCs rank investees management integrity (mean 3.94), leadership (mean 3.81), preplanned exit opportunity (3.75) and high return (3.69) as most crucial criteria in their decision making process. Malaysian VCs consider all the four specific criteria as important however; the degree of importance may differ. For exit criteria, the findings are consistent with past studies. Past finding reveal that preplanned exits is important in investment decisions as it provides several benefits, which include reduce uncertainties in the investment and lead a direction for post investment decisions (Cumming & Johan, 2008). VCs in Malaysia look for clear exit and creation of wealth at the time of exit as their pre investment outcome criteria.

“..... we are looking for a clear exit such as IPO (initial public offer) listing or buy back at par plus interest.” (Source: Interview)

Management integrity scores the highest mean, which supports our earlier contention that Malaysian VCs lack technical expertise, and they rely heavily on investee management integrity, talent, and expertise for the success of their business deal.

“... we expect that owners understand realities of the business environments. Without in-depth knowledge and skills, small business can be taken by surprise. Owner’s skill (talent) is something the VCs can nurture and build on..... many small business fail due to self imposed constrains and resistance to adapt changing business environment”

“..... sometimes owners with good ideas fail to secure venture capital funding due to the “choice of words” used, they must ensure all the groundwork has been done before approaching us” (Source: VC blog)

Table 9: Descriptive Statistic for Specific Investment Criteria

Specific Investment Criteria	Mean
Panel A. Concept	
Potential for earning growth	3.62
Brought to market within 3 to 5 years	3.25
Significant competitive advantage	3.12
Reasonable capital requirement	3.25
Panel B. Management	
Personal integrity	3.94
Strong track record	3.31
Realistic	3.62
Ability to identify risk	3.50
Through understanding of business	3.62
Flexibility	2.94
Leadership	3.81
General management	3.31
Panel C. Outcome	
Exit opportunity	3.75
Potential for high rate of return (%)	3.69
Potential for high absolute return (\$)	3.62

Measured on a scale of disagree (1) to agree (4) for each criteria. Result shows that the most crucial criteria are management integrity, leadership, exit opportunity, and high return. Malaysian VCs consider all criteria as important, but the degree of importance may differ.

From the responses, we conclude that the VCs in Malaysia are more of an investors rather than builders. They lack the abilities to add value to their investee companies. They place higher reliance to outcome criteria (early exit and high return) instead of nurturing the investee company toward continued success even after their exit period. VCs concern is on the ability of business venture meeting VCs desired risk and return during the investment duration.

“.....management should mitigate risk by manoeuvring through tough times, adding value to the company and providing me the planned exit. However, I want to point out that my risk appetite is tapered by how much money I would invest into the company and how I condition the investment structure and terms’ (Source: VC blog).

CONCLUSION

Findings reveal that the practice of classical venture capital decision-making model (Fried & Hisrich, 1994; Larsson & Roosvall, 2000) has some significant similarities with Malaysian VCs decision-making process, however not always visible. The VCs decision-making model is similar at evaluation and closing stage. Origination, firm specific screening, and generic screening are not significantly similar in Malaysian context. The differences are due to the type of investment stage undertaken, motivation to invest, and VCs risk appetite. The origination stage may not be required, as Malaysian VCs claim their reputation in the market is established. New product and process screening replace the firm specific screening stage. Generic criteria (investment criteria) screening coexist with the later stages (evaluation stages).

When VCs receive a proposal, screening for new product/process idea takes place. Uniqueness of product (or technology) and product market becomes important investment criteria at this stage. Next, the due diligence process takes place, where VCs compile more information on proposals that pass through screening stage. VCs agree that they need more time in the due diligence process. All investment criteria proposed in the classical model is significantly similar to the criteria used by VCs in Malaysia. Four most crucial investment criteria at the evaluation stage are management integrity, leadership, early exit, and high return. Results reveal that despite having sufficient experience VCs in Malaysia lack expertise. Therefore, they require management of investee companies to have their own talent. We find that Malaysian VCs are more of an investor rather than a builder in the Malaysian VC market. They place

greater importance to preplanned exit (and return) which mitigates uncertainties (risk), and less importance to business idea.

The current study did not attempt to investigate the effect of decision making on the performance of VC backed firms. Furthermore, the VCs who participated in the survey were not segregated by their characteristics (i.e. Islamic and non-Islamic). Hence, the current study recommends that this area is explored in future research. The current authors identified addition criteria used by VCs in Malaysian context which include management talent (owned skill), uniqueness of product, market acceptability, scalability, ownership of intellectual properties, identifiable divestment strategy, sustainability, potential to be patented. The authors suggest these criteria are included in future research to develop a pre-investment decision-making model that suits local VC market. The overall findings of current study are limited to medium-scaled VC management firms in Malaysia.

APPENDIX

Appendix A: Cross Tabulation of Investment Stage with Experience and Fund Size

Investment Stage	Working Experience (years)				Total	Fund Size (million)				Total	Time Involved In Decision (days)					Total
	<3	3-5	6-10	>10		<10	10-30	31-50	>50		30-80	81-130	131-180	181-230	231-280	
Seed Capital	0	2	1	4	7	1	1	1	4	7	2	3	1	0	1	7
Start up Capital	0	1	3	4	8	0	1	2	5	8	2	2	2	1	1	8
Early Stage	0	2	4	4	10	1	1	2	6	10	3	3	2	1	1	10
Expansion Growth	1	2	4	7	14	2	2	2	8	14	6	4	2	1	1	14
Bridge, Mezzanine, Pre-IPO	0	2	3	6	11	1	2	2	6	11	4	3	2	1	1	11
Management Buy-Out	0	1	1	3	5	0	1	1	3	5	3	0	1	1	0	5
Management Buy-In	0	0	1	1	2	0	0	1	1	2	1	0	0	1	0	2
Total	1	3	4	8	16	3	2	2	9	16	6	5	3	1	1	16

Appendix B: Cross Tabulation of Investment Stage and Sectors

Investment Stage	ICT			Life Science			Manufacturing			Others		
	Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
Seed Capital	7	0	7	3	4	7	1	6	7	1	6	7
Start-up Capital	8	0	8	4	4	8	2	6	8	3	5	8
Early Stage	10	0	10	5	5	10	2	8	10	3	7	10
Expansion Growth	12	2	14	6	8	14	6	8	14	7	7	14
Bridge, Mezzanine, Pre-IPO	9	2	11	5	6	11	6	6	11	7	4	11
Management Buy-Out	3	2	5	2	3	5	5	0	5	5	0	5
Management Buy-In	1	1	2	0	2	2	2	0	2	2	0	2
Total	14	2	16	8	8	16	7	9	16	8	8	16

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OPTION PORTFOLIO VALUE AT RISK USING MONTE CARLO SIMULATION UNDER A RISK NEUTRAL STOCHASTIC IMPLIED VOLATILITY MODEL

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ABSTRACT

This paper calculates option portfolio Value at Risk (VaR) using Monte Carlo simulation under a risk neutral stochastic implied volatility model. Compared to benchmark delta-normal method, the model produces more accurate results by taking into account nonlinearity, passage of time, non-normality and changing of implied volatility. Two parameters in the model: the correlation between underlying and the at-the-money implied volatility and the volatility of percentage change of the at-the-money implied volatility, can explain market skew phenomena quite well.

JEL: C63, G13, G17

KEYWORDS: Stochastic Implied Volatility Model, Value at Risk, Market Skew Phenomena

INTRODUCTION

The measurement of financial market risk is of primary importance for senior management and regulators. Value at risk (VaR) summarizes the worst loss of a portfolio over a given period with a given level of confidence (Jorion, 2000). VaR has become widely used by financial institutions, corporations and asset managers (Morgan 1996). The Basle Committee on Banking Supervision (BIS) and other central bank regulators also use VaR as a benchmark risk measure to determine the minimum amount of capital a bank is required to maintain as reserves against market risk (Pallota, Zenti 2000). There are some methods to calculate option portfolio VaR. The most widely used is the Delta normal method. Even though this method is simple and straightforward, it does not take into account option non-linearity, passage of time, changing implied volatility and non-normality of market price distribution (Hull and White 1998).

If the percentage of underlying price change were to follow a normal distribution, then the implied volatilities of all options with different strikes would be equal to each other, and if we draw a graph with implied volatilities as Y-axis, option strikes as X-axis, and then we would get a flat line. However, that is not case in the real world. In option market of equity and equity index instruments, we see a consistent left skew graph pattern. In commodity option markets though, a consistent right skew graph pattern shows up. This is widely known skew phenomena in option market. There are many papers that explain this phenomenon (Derman and Kani, 1994, Rubinstein, 1994, Hull and White, 1987, Heston, 1993, Stein and Stein 1991). Peng He and Stephen Yau followed a relative new stochastic implied volatility framework and made some modification in the model setup. This paper calculates Value at Risk under this model using Monte Carlo simulation, and compares the result with the benchmark, the Delta Normal Method. In addition, this paper examines how the model parameters explain skew phenomena.

The next section gives a detailed literature background about models used to explain skew phenomena, and a review of the stochastic implied volatility model developed by Peng He and Stephen Yau. The following section covers steps to do Monte Carlo simulation under this model, and the benchmark method, delta normal method. The case study and result section compares the simulation result with the benchmark in a case study of two option portfolios. In addition, this section explains market skew

phenomena by using the two parameters in the model and shows the skew graph. The final session concludes.

LITERATURE REVIEW AND BACKGROUND

There is compelling evidence that exchange-traded options prices contain additional volatility information that can not backed out from the price information of the underlying security alone (He and Yau(2007), Christensen and Prabhala(1998), Cao and Chen (2000) etc). Therefore, instead of deriving prices for them, a pricing model should use their prices as input. Schonbucher (1998) and Ledoit and Santa Clara (1999) made this breakthrough and for the first time in the financial literature, the implied volatility is modeled as an input rather than as an output. Hafner (2004) presented a factor-based model of the stochastic evolution of the implied volatility surface. On the other hand, directly modeling the dynamics of implied volatilities is required by the nature of some exotic derivatives based on ATM (At-the-Money) implied volatility of an option written on a reference asset.

In previous paper (He and Yau (2006)), we developed a risk-neutral diffusion model for the stochastic market implied volatility. Unlike Hafner (2004) and Ledoit and Santa Clara (1998), we think modeling the whole implied volatility surface is dangerous because it is very difficult to guarantee no arbitrage between options with different strikes during the diffusion process of the corresponding implied volatilities of those options. Instead, we model one implied volatility only. Our model setup is also different from Schonbucher (1998). We think the percentage movement of implied volatility is better modeled than the implied volatility itself. The reason is the same as why people model the percentage movement of underlying asset price as opposed to underlying asset price itself. Furthermore, this modification can ensure implied volatility is positive during the diffusion process. After the proper setup, we derived the risk-neutral drift term of stochastic implied volatility, which is necessary to be no-arbitrage. We proved that the implied volatility of At-the-Money options mature immediately should converge to underlying volatility at rate of time to maturity, which specifies the stochastic process of underlying volatility. Finally, we developed model as follows:

$$dS_t = rS_t dt + \theta_t S_t dW_t \tag{1}$$

$$\begin{aligned} d\delta_t(\tau, X = 1) = & \left(\frac{\delta_t^3}{24} - r\theta_t\right)dt + \left(r - \frac{\delta_t^2}{2}\right)\beta\rho dt \\ & + \delta_t\beta dZ + \partial_K\delta_t rS_t dt + \partial_K\delta_t\theta_t S_t dW_t \\ & + \frac{1}{2}\partial_K^2\delta_t\theta_t^2 S_t^2 dt + \theta_t S_t\beta\partial_K\delta_t\rho dt + \partial_T\delta_t dt \end{aligned} \tag{2}$$

$$\theta_t = \delta_t(\tau = 0, X = 1) \tag{3}$$

Where θ_t is instantaneous underlying volatility. $\delta_t(\tau, X)$ is the relative implied volatility indexed by time to maturity τ and moneyness $X = K / S_t$, the ratio between strike and underlying price. Therefore, $\delta_t(\tau = 0, X = 1)$ is the implied volatility of ATM option maturing immediately. ρ is the correlation coefficient between one Brownian motion Z and another Brownian motion W . β is the volatility of percentage change of implied volatility.

To simplify the model for use in practice, we assume $\partial_K\delta_t$, $\partial_K^2\delta_t$ and $\partial_T\delta_t$ are zeros. The assumption is reasonable because empirical observations reveal that ATM implied volatilities are typically the same or

change little for small strike (or underlying price) change and small maturity time change. This is in accordance with traders’ “sticky delta rule.”

METHODOLOGY

There are two approaches to compute VaR. The first approach is to use local valuation. Local valuation methods measure risk by valuing the portfolio once, at the initial time 0, and using local derivatives to deduce the possible movements. The second approach uses full valuation. Full valuation methods measure risk by fully re pricing the portfolio over a number of scenarios.

In the local valuation approach, practitioners calculate the VaR of option portfolios most commonly use the delta-normal method. It uses the linear, or delta derivatives and assumes normal distributions. The well-known formula is applied.

$$VaR(\alpha, \phi, T) = c_{N(0,1)}(\alpha)S_0 |D_\phi| \nu_{R_T} \tag{4}$$

Where $c_{N(0,1)}(\alpha)$ is the α -quantile of the standard normal distribution. S_0 is the initial underlying price. $|D_\phi|$ is the absolute delta of the option portfolio. ν_{R_T} is the volatility of return of the underlying during holding period $[0, T]$.

The full valuation approach uses Monte Carlo simulation or historical simulation to generate the probability distribution for portfolio value change ΔV_T . Let ΔV_T^j denote the change in portfolio value over $[0, T]$ in scenarios $j = 1, \dots, J$. Then the distribution function $F_{\Delta V_T}(x)$ of ΔV_T is approximated by:

$$\hat{F}_{\Delta V_T}(x) = \sum_{\substack{j=1, \dots, J \\ \Delta V_T^j \leq x}} \frac{1}{J} \tag{5}$$

I completed Monte Carlo simulation on the model, as followings. Given a proper initial ATM implied volatility $\delta_0(0, X = 1)$ or underlying volatility θ_t , underlying price S_0 , interest rate r and two model parameters β, ρ , this dynamic system can be simulated from time 0 to time T as following:

1. Suppose at any time $t, 0 < t \leq T$, we have got S_t, θ_t (or $\delta_t(t, X = 1)$) and now we want to simulate $S_{t+\Delta t}$ and $\theta_{t+\Delta t}$ at time $t + \Delta t$, which $t + \Delta t \leq T$. The short time interval $\Delta t = (T - 0) / N$.
2. At time t , generate the random next increment $\Delta W_t, \Delta Z_t$ of Brownian motion for use over the current time interval $[t, t + \Delta t]$. Since $\Delta W_t, \Delta Z_t$ are correlated, we set

$$\Delta W_t = \varepsilon_{1,t} \sqrt{\Delta t} \tag{6}$$

$$\Delta Z_t = \varepsilon_{1,t} \rho \sqrt{\Delta t} + \varepsilon_{2,t} \sqrt{1 - \rho^2} \sqrt{\Delta t} \tag{7}$$

Where $\varepsilon_{1,t}, \varepsilon_{2,t}$ are two independent random numbers from standard normal distribution.

3. Approximate the solution of SDE equation for the underlying price by

$$\ln S_{t+\Delta t} = \ln S_t + \left(r - \frac{\theta_t^2}{2}\right)\Delta t + \theta_t \Delta W_t \tag{8}$$

The simulation equation for the underlying volatility is based on Euler approximation, and here it is:

$$\theta_{t+\Delta t} = \theta_t + \left(\frac{\theta_t^3}{24} - r\theta_t\right)\Delta t + \left(r - \frac{\theta_t^2}{2}\right)\beta\rho\Delta t + \theta_t\beta dZ \tag{9}$$

With $S_{t+\Delta t}$, $\theta_{t+\Delta t}$, now start to compute parameters at time $t + \Delta t$, return to Step 1, reset t to $t + \Delta t$ and iterate until time T generate trajectories of S_t and θ_t .

RESULTS

The paper provides a case study to show difference between the delta-normal method and Monte Carlo simulation approaches. Consider two option portfolios. Suppose the underlying price is 100 and risk free interest rate is zero. The two portfolios consist of the following instruments. 1. Portfolio 1 (PF1): A long position in 100 call option with strike $K = 100$ and maturity date is 42 days away and 2. Portfolio 2 (PF2): A long position in 100 ATM straddles (long position in both call and put option with same strike and same maturity) with strike $K = 100$ and maturity date is 42 days away.

At time zero, the portfolio values $V_0^{PF_i}$, $i = 1, 2$, are:

$$V_0^{PF_1} = 100 * C_0(S_0 = 100, K = 100, r = 0, \sigma = 0.4, 42 / 365) = 541.90 \tag{10}$$

$$V_0^{PF_2} = 100 * (C_0(S_0 = 100, K = 100, r = 0, \sigma = 0.4, 42 / 365) + P_0(S_0 = 100, K = 100, r = 0, \sigma = 0.4, 42 / 365)) = 1081.80 \tag{11}$$

The objective of the following analysis is to compute the VaR for both portfolios over one business and ten business days. The confidence level is set to 95%. First consider the delta normal method. The Black Scholes deltas for the above call and put option are 0.5270, -0.4730 respectively, so the portfolio deltas are:

$$D_{PF_1} = \frac{\partial V_0^{PF_1}}{\partial S} = 100 * 0.5270 = 52.70 \tag{12}$$

$$D_{PF_2} = \frac{\partial V_0^{PF_2}}{\partial S} = 100 * (0.5270 - 0.4730) = 5.41 \tag{13}$$

Using $C_{N(0,1)}(5\%) = 1.645$, and volatility 0.4, the VaR for each portfolio and each holding period is computed according to the formulas. Table 1 column, Delta-normal, lists the result.

Now consider Monte Carlo simulation. The parameters, chosen are $\theta_0 = 0.4$, $\rho = -0.5$, $\beta = 1$. Following the procedure described as above, we generate 10,000 scenarios of S, σ over the time horizon $[0, T]$, where T equals 1 business day or 10 business days, respectively. For each scenario, we compute the portfolio value and the change in portfolio value. This provides us with a simulated distribution

function $\hat{F}_{\Delta V_T}(\mathbf{x})$. Given $\hat{F}_{\Delta V_T}(\mathbf{x})$, VaR is easily computed as the negative α – quantile of ΔV_T . Table 1 column “Paper Monte Carlo” lists the result.

As shown in Table 1, the VaR computed under delta normal method is quite different from that computed under the paper Monte Carlo simulation. For portfolio 2, under the delta-normal method, the VaR is lower than the VaR under paper Monte Carlo simulation, whereas for portfolio 1 it is opposite. This can be explained as follows: Since the straddle position is almost delta neutral, the VaR is very small under the delta-normal method. This, however, indicates one disadvantage of the delta-normal method. The delta-normal method is a linear approximation, which cannot capture the nonlinearity of options. In this case, the straddle position is exposed to relative big Gamma risk and Gamma is the quadratic part. On the other hand, considering portfolio 1, the delta-normal method produces higher VaR than it should. The obvious example is that 10-day holding period VaR for portfolio 1 under Delta normal method is 694 Dollar. The maximum amount of money one can lose when holding that call option, Portfolio 1 over 10 days (or any day) is the initial option premium, i.e. 541.90 Dollar. The reason the delta normal method produces too high a VaR for portfolio 1 is that the delta normal method does not account for the time decay of option prices.

In fact, besides nonlinearity and passage of time, there are two other effects, non-normality and implied volatility variations, which the delta normal method fails to catch. The delta normal method assumes the underlying return R_T is normally distributed. However convincing empirical studies have shown that underlying return tend to exhibit fat-tailed distributions. In other words, extremely low and high returns have greater probability than assigned by the normal distribution. The kurtosis of the log Terminal Price distribution for the above parameter set is 4.06, which explains fat-tailed distribution. In addition, the delta normal method assumes a constant underlying volatility, and thus constant implied volatilities. In fact, implied volatilities change over time. In contrast, the paper Monte Carlo simulation captures all the effects mentioned in the above. It is a much better method to compute VaR. The only disadvantage of the paper Monte Carlo simulation is computation time. However using today’s more and more powerful computers, the computation runs increasingly fast.

Table1 Delta-normal VaR and Paper Monte Carlo simulation VaR for a confidence level of 95%

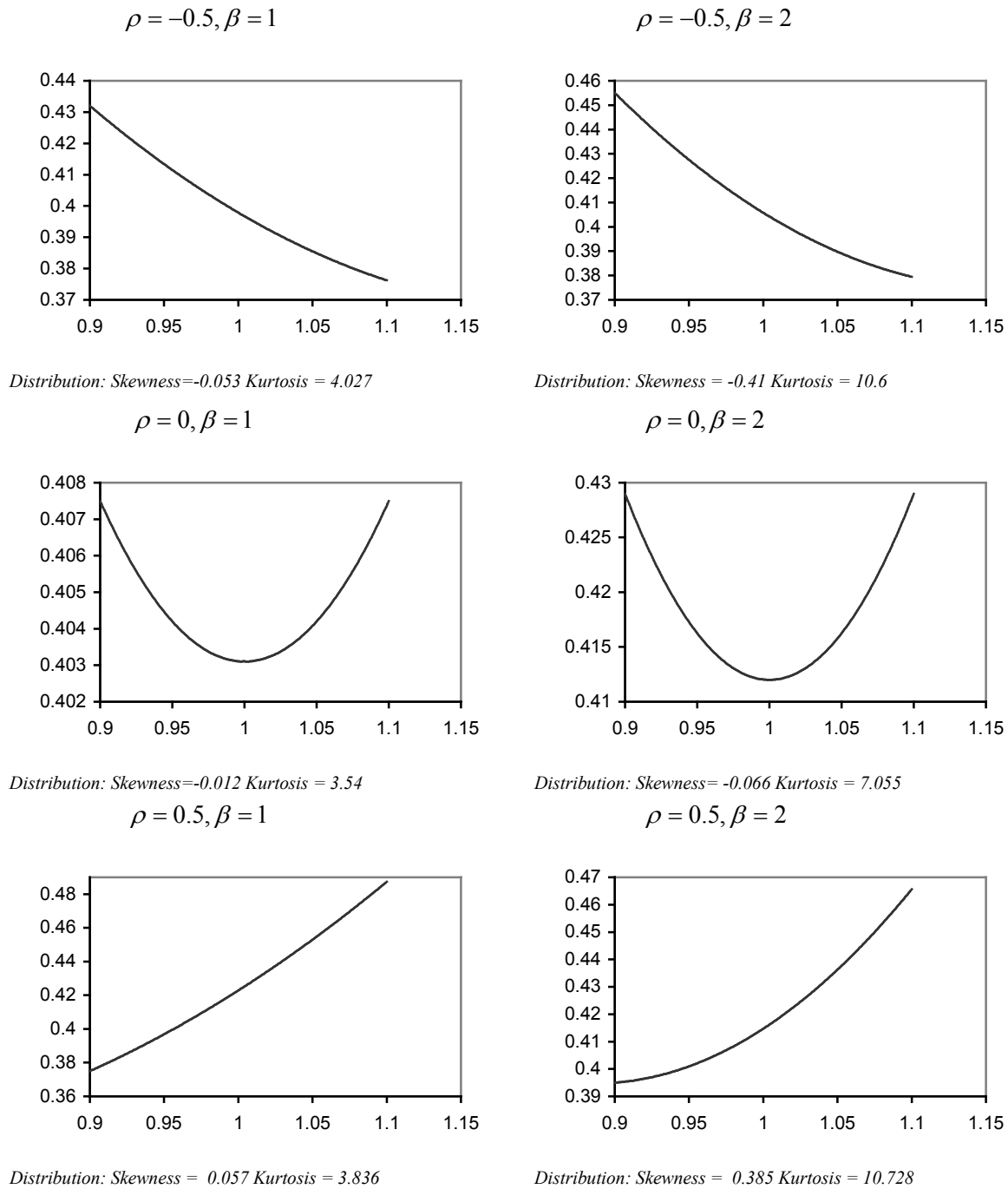
Holding Period	Delta-normal		Paper Monte Carlo	
	1 Day VaR	10 Day VaR	1 Day VaR	10 Day VaR
Portfolio 1	219	694	207	497
Portfolio 2	23	71	109	373

This table shows the delta-normal VaR and Paper Monte Carlo Simulation. Results are in U.S. Dollars.

Next we study how VaR changes with parameters in the paper model, namely β and ρ . Those two parameters can explain market skew phenomena quite well. For zero correlation between the underlying and volatility ($\rho = 0$), the implied volatility curve is symmetric and skewness is around zero. Smile-shape volatility curves are commonly observed for options on a foreign currency as shown in Figure 1. Our analysis is consistent with the empirical study (Bates 1996), which show the correlation between implied volatilities and the exchange rate is close to zero. For negative correlation ($\rho < 0$), the implied volatility curve skews to left and skewness is negative. Skew-shape volatility curves are commonly observed for options on equities and equity indices. Our analysis is consistent with the empirical study (Christie 1982), which show the volatility of an equity price tend to be negatively correlated with the equity price. For positive correlation ($\rho > 0$), the implied volatility curve skews to right and the skewness is positive. The bigger the absolute value of ρ , the more skewed of the curve and the bigger

the absolute value of the skewness. On the other hand, the volatility of percentage change of implied volatility β has an effect on the curvature of implied volatility curves. With other parameter held fixed, the larger the β , the larger the curvature of the implied volatility curve, the larger the kurtosis.

Figure1 Implied volatility Curve and The moments of Log Terminal Underlying Price Distribution



Note: Simulated Implied Volatility Curves for options with maturity of 42 days. The initial underlying volatility θ_0 is 0.4 and interest rate r is zero. The moments (Skewness and Kurtosis) are the moments of log terminal underlying price distribution.

VaR of the two option portfolios for different β and ρ are calculated and the results are presented in the Table 2. The higher the skewness and kurtosis of the log terminal underlying distribution ($\ln S_T$), the higher VaR value of both option portfolios.

Table 2 Paper Monte Carlo simulation VaR of two option portfolios for different β and ρ for a confidence level of 95%

β	ρ	Skewness	Kurtosis	Portfolio 1		Portfolio 2	
				1 Day VaR	10 Day VaR	1 Day VaR	10 Day VaR
1	-0.5	-0.053	4.027	207	497	109	373
1	0	-0.012	3.54	206	492	113	393
1	0.5	0.057	3.836	206	497	109	369
2	-0.5	-0.409	10.578	224	514	203	537
2	0	-0.066	7.055	225	512	213	573
2	0.5	0.385	10.728	226	513	202	546

This table shows paper monte carlo simulation VaR of two option portfolios. Results are in U.S. Dollars.

CONCLUDING COMMENTS

There are some limitations in the benchmark method for option portfolio VaR calculation. In a related note, skew phenomena are widely known in the option market and there are many research papers to explain this. This paper calculates VaR under a stochastic implied volatility using Monte Carlo Simulation, and compares the results with the benchmark, Delta normal method.

The VaR calculation is more accurate because it considers nonlinearity, passage of time, non-normality, changing of implied volatility. In addition, two parameters in the model, the correlation between underlying and the at-the-money implied volatility and the volatility of percentage change of the at-the-money implied volatility, can explain market skew phenomena quite well. The ultimate goal of this study is to develop a method, which we can use in the real world. Therefore, the limitation of this paper comes from two aspects. The first aspect is that we need develop a simple way to calibrate the model using real market data. In this paper, when I do Monte Carlo simulation, I assume parameters, θ_0, ρ, β . It would be better if we can retrieve those parameters by calibrating to model to real market data. The second aspect is that the computation of VaR can somehow be simpler and quicker, than the benchmark method. Therefore, future studies can either somehow increase the calculation speed or somehow find an approximate analytical solution to the model, so that the computation would be quicker.

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CORPORATE SOCIAL RESPONSIBILITY DISCLOSURE: EVIDENCE FROM LIBYAN MANAGERS

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ABSTRACT

This paper explains the importance and benefits for Libyan companies of engaging in corporate social responsibility disclosure (CSR/D). Libya, as a developing country, was chosen by the researchers as it has undergone many changes over a short period of time in terms of economic, environmental and social changes. Both quantitative and qualitative methods were used to collect data relating to CSR/D in Libyan companies. Perceptions of financial managers interviewed as part of the study reveal that CSR/D is important for company performance. The paper reveals that CSR/D in the annual reports is very important in terms of attaining company objectives to: satisfy the interests of stakeholders; protect employees' interests; clarify the extent of contribution of the company in both CSR activities and CSR/D; and assisting investors to make appropriate investment decisions. The perceived primary benefits of CSR/D were enhanced company reputation, and increased financial performance. It also improves ability to attract foreign investors, and results in higher consumer satisfaction leading to commercial benefits. Secondary benefits include demonstration of compliance with the law and improved employee commitment.

JEL: M14, M41, L11, K21

KEYWORDS: Corporate Social Responsibility (CSR); Corporate Social Responsibility Disclosure (CSR/D); Financial Performance; Corporate Reputation.

INTRODUCTION

The institutional context of the emerging economy of Libya has experienced dynamic change over the last ten years (Mateos 2005). The main influential factor that leads to and regulates the attitude and behaviour of Arab societies, including Libya, is the Islamic religion. According to Ali (1996) the Islamic religion organises the social life in family and other social organisations and maintain their endurance and influence. Changes in regulatory environment may have an impact on companies in terms of their disclosures. The level of CSR disclosure in Libya has increased since 2000 (Pratten & Mashat 2009) due to pressures from stakeholders. This has led to development of the concept of CSR/D.

The development of the concept of CSR/D has passed through different stages; the first stage is the period 1970-1980. Empirical studies were focussed on developing methods to measure the incidence of information disclosure by firms which was voluntary. Most frequently disclosed was information about employees and products. At that time, managers, accountants, and the majority of their observers were not interested in environmental concerns, because it was invisible. Some empirical studies were used three environmental categories out of twenty seven (Ernst and Ernst, 1978 as cited in Mathews 1997). The second stage is the period 1980-1990. Many changes have appeared due to the focus of the social and environmental accounting literature, with increasing signs of specialization since 1980. For instance, value-added statements attracted a separate group of adherents and employee reports (Burchell et al., 1985). Environmental disclosure has become of greater concern than social disclosure, as firms consider alternative means of reducing environmental damage. Legally enforceable accounting standards, Means of conceptual frameworks, and legislation are features of this period that contribute to the increase in regulation of accounting disclosures. Empirical studies in this period were more analytical and less descriptive. The final stage is the period 1991-now. This stage has focussed on environmental issues

within accounting on a broad front, including interest from managers as well as accountants. (Gray et al. 1995) argue that this stage has been characterized by the almost complete domination of environmental accounting with research on broader social reporting (including employee and ethical disclosures).

This research presents evidence from interviews with 24 financial managers and 7 information managers on the importance and the benefits of CSR in Libya. The motivations for this research are that some companies consider CSR activities and its disclosure may bring a competitive advantage and external pressures may lead other companies to engage in CSR activities and its disclosure (Branco & Rodrigues 2008). This research contributes to our knowledge about the importance of disclosure of CSR activities information for stakeholders and what the potential benefits of disseminating CSR to Libyan organisations. There are few quantitative studies that focus on these questions; Further, this research is the first study that depends on both quantitative and qualitative study to explain the importance and the benefits of CSR in Libya and provide a richer understanding of the issues through the interviews. Generally, this research expands the evidence that exists about both the importance and the benefits of CSR. The majority of interviewees felt that CSR helps Libyan companies to achieve their objectives, such as enhancing image and reputation; supporting financial performance; improving employee commitment, etc. The remainder of this paper is organised as follows. The next section provides a brief outline of the prior literature related to corporate social responsibility disclosure (CSR). The research method is then clarified. The results are then outlined and discussed. Finally, the paper concludes with limitations and direction for future research.

LITERATURE REVIEW

CSR has found an increasing amount of attention in both academic and business arenas. Such disclosure includes the provision of information on human resource aspects, products and services, involvement in community activities and environmental reporting. Gray et al. (1995) state that "... It is not restricted necessarily by reference to selected information recipients, and the information deemed to be CSR may, ultimately, embrace any subject ...". Many quarters have recognized this view of CSR as a broad concept. The European Commission (2001 as cited in Hartman, LP et al. 2007) considers that a cleaner environment and a better society are good examples regarding CSR as a concept whereby companies decide voluntarily. The World Business Council for Sustainable Development (WBCSD) (1998) defines CSR as "the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as the local community and society at large" (Holme and Watts, 2000). Currently, making profits and elements of CSR and accountability are considered the main objectives of business organizations in order to maintain corporate reputation and appropriate performance whereas in the previous years, the main objective of business organizations is making profits (Ghazali 2007).

A growth in nonfinancial reporting (disclosure) has relied on the evolution of the concept of CSR. This means, the company is responsible for its actions. Indeed, stakeholders are asking companies to disclose both social and environmental activities and their ability to improve the corporate process through nonfinancial reporting. In this regard, identifying, monitoring, and reporting all social, environmental, and economic effects of its operation on society at large are concrete evidence that companies are committed to continual, long-term improvement, if they want to gain their stakeholders' trust and build a good reputation in the market (Brammer & Pavelin 2004).

Responsibilities of companies differ between their stakeholders regarding economic, legal, and social issues in order to improve organisational performance in terms of financial performance, employee commitment, and corporate reputation. In addition, the strategy of Corporate social responsibility is important (policy, programme or process) when it yields substantial business-related benefits to the firm, in particular by supporting core business activities and thus contributing to the firm's effectiveness in

accomplishing its mission (Burke & Logsdon 1996). The blending of these responsibilities into complete corporate policy without losing sight of any of its commitment is the main challenge for the company. Additionally, in the long-term, the commitment of the company toward its stakeholders often leads to improved organisational performance. In other words, while the economic responsibility of the company might conflict with its social responsibility in the short-term, at the same time, they can work together to improve the company's image. Thus, this does not mean that a socially responsible company cannot be as profitable as others. Currently, the common concept of CSR involves companies voluntarily disclosing social and environmental concerns in their operations to stakeholders. It includes some complex issues such as environmental protection, human resources management, health and safety at work, relations with local communities, and relations with suppliers and consumers. In addition, Friedman (2002) presented the most famous definition of CSR as the economic concept of market value maximization that has support from shareholders. He asserts that the profit demands of the owners or shareholders and the basic regulations of society are consistent with the responsibility of a company.

As evidence of adherence by companies to CSR and sustainable development concepts, there is a growth in numbers of multinational corporations, as well as small- and medium-sized companies, adopting social and environmental reporting practices. In a similar vein, the right way towards an overall comprehension of what practitioners consider efficient and appropriate socially responsible behaviour is represented by reporting-based analyses (David 2005).

A company should disclose both the positive and negative impacts of its business operations on labour standards, the environment, economic development, and human rights by CSR reporting. Furthermore, as a result of a general growth of the overall number of companies producing CSR reporting, currently there is an expansion of CSR reporting to include a broad focus on social, economic, and governance issues although reporting was focused almost entirely on occupational health and safety and environmental issues (O'Rourke 2004). This means that most companies focuses on some categories such as environmental, employees and consumers issues and disregards community involvement issues. CSRD has several roles that include: Assessing the impacts of CSR activities; measuring the effectiveness of CSR programs; Reporting on CSR; and External and internal information systems allowing the comprehensive assessment of all corporate resources and sustainability impacts (Jenkins & Yakovleva 2006 Gray 2001; Gray et al. 1997; Mathews 1997).

Two different types of motivation can lead companies to engage in CSR activities and disclosure. The first motivation is that some companies consider CSR activities and disclosure may bring a competitive advantage. For example, they think that having good relations with their stakeholders will result in good financial performance, employee commitment, and corporate reputation by assisting in developing valuable intangible assets. External pressures (government, shareholders, consumers, etc.) are considered the second motivation which causes other companies to engage in CSR activities and disclosure (Branco & Rodrigues 2008). These companies think that not doing CSR activities and disclosure will result in loss of profitability, reputation and must be addressed to mitigate the effects. Social responsibility activities and disclosure constitute mainly a legitimacy instrument used by a company to demonstrate its adherence toward stakeholders in order to increase or maintain their financial performance, their image and their relationship with their stakeholders.

METHODOLOGY

This research method used both quantitative and qualitative methods. The quantitative approach was employed to examine and collate data from the annual reports of the period of 2007 and 2009. The qualitative approach was to gather information from face to face semi-structured interviews (see Table 1). Participants in the study were financial managers and information managers of the firms in Libya Details about the interviewees are included in Table 1.

Table 1: Profiles of Interviewees

Sector Type		Manufacturing	Services	Banks And Insurance	Mining	Total And Percent
Number of financial managers		8	11	4	1	24 (77%)
Number of information managers		4	1	2	0	7 (23%)
Total managers		12	12	6	1	12 (100%)
Gender of the managers	Male	10	8	5	1	24 (77%)
	Female	2	4	1	0	7 (23%)
Age of the managers	Less than 35 years	1	3	0	0	4 (13%)
	Less than 50 years	9	8	5	0	22 (71%)
	Less than 65 years	2	1	1	1	5 (16%)
Age of the company	Less than 30 years	8	6	2	1	17 (55%)
	Less than 50 years	2	3	3	0	8 (26%)
	Less than 80 years	2	3	1	0	6 (19%)

Table 2 showed the profiles of interviewees related to financial managers and information managers in the four industries. In addition, this table presented the background information about the interviewees in terms of their industry, gender of the managers, age of the managers and age of their firms. Seventy seven percent was from financial managers, while twenty three percent was information managers in the four industries. Eight of financial managers and four of information managers were interviewed to express their perceptions about CSRD in the Libyan manufacturing industry. Eleven of financial managers and one of information managers supplied the researchers about CSRD in the services industry. Five of the financial managers as well as two of the information managers explained the importance and the benefits of CSRD in the banks, insurance and mining industry.

Data gathered from interviews was recorded by tape recorders and notes made by the researchers. The interviews took place between October 2010 and February 2011. Interviews lasted between twenty minutes to one and a half hours. The meetings were held in the manager’s office. The interviews were designed to explain issues in depth (Denzin & Lincoln 2000). In addition, knowledge gathered from consulting with other researchers in CSRD and literature reviews enabled the researchers to design an interview guide with common questions to ask the interviewees.

THE FINDINGS AND DISCUSSION

The Importance Of CsrD: In order to obtain a deeper understanding of this phenomenon, the following question was initially asked of interviewees ‘what is the extent of the importance of CSR disclosure activities in their annual reports for stakeholders?’. Interviewees were also asked their personal opinions about CSRD. All interviewees confirmed that CSR activities and information play an important role in enabling their companies to achieve both social and economic benefits in society. The majority of interviewees emphasised that their companies attempt to achieve economic objectives through increasing profit, revenues and sales, as well as social objectives. Two PhD theses provide the same findings about the responsibilities of businesses toward society, and the roles of their business in society to be both socially and economically responsible (Momin, 2006; Aribi, 2009). Aribi (2009) also mentioned that corporate policies for disclosing CSR information are determined very much by the profit objective. In this regard, Abdulhamid et al.(2005) demonstrate that disclosure about social and environmental activities in the Libyan annual reports leads to some social and economic benefits which are reflected at the macro level. The interviewees in this research believe that their companies should achieve both objectives, when their companies invest their money in any project. One of the information managers states that:

One of the most important goals in the Development Bank is to reject investment in projects that do not take into consideration the adverse impact of the project on the environment and hence this bank obligates the customer to get the agreement of the environmental management in order to obtain the requested loan.

One of the financial managers states that:

Management of the Company, when investing in any project, looks at economic goals but it does not disregard the benefits which will be obtained by this project to the community such as participation in addressing the problem of unemployment, employee training, etc., as the

company is part of the community and should contribute in social activities for the development of society as a whole.

All interviewees confirmed that the importance of CSR information in the annual reports is not less important than CSR activities; both of them can play a significant role in gaining the company objectives. Abdulhamid et al. (2005) illustrate that information about CSR activities should reflect the interaction between the society and the management and should recognise the rights of different stakeholders. The management should also inform all stakeholders about CSR information. They revealed that CSR information in the Libyan context is directed and limited to interest from stakeholders such as the General Assembly, the management (the company's Administration Board) and, the central Authorities (such as the security of Economy, the security of finance, the security of Industry, the Central Bank of Libya and the watchdogs bodies which include the Public Control Office and the Tax Office). However, all interviewees believe that CSR information clarifies the extent of commitment by their companies to CSR activities and stakeholders. The interviews revealed stakeholders use CSR information differently e.g. few employees use annual reports to help their companies to protect their interests; shareholders use annual reports to know how to use their funds; investors use annual reports to help them to make investment decisions; Management uses annual reports to evaluate the company and to address the problems and correct negative deviations in the company, as shown in the following quotations by some financial managers:

The management in this company supports full disclosure for the transparency cause and we review all activities in the annual report, you can apply this to everything when it is related to social activities.

We are preparing the annual report in order to show the real situation of the company either financially or socially, as we know that there are many parties that benefit from using this information to assess the situation of the company and know what the company achieved and its evidences during the year.

On the other hand, Ahmad, N.S.M. (2004) found that the Libyan companies did not inform employees about CSR information due to a lack of importance placed on this information by their employees. Some interviewees illustrated that while CSR information is important to management, investors and shareholders, there is a lack of ability to comprehend CSR information by employees that in turn, may lead to their disregarding information included in annual reports. This view is obviously stated in the next quotations by some financial managers:

I believe that the information about the activities of social responsibility affects the decisions of management and shareholders and investors... But unfortunately, many employees were not aware of the importance of social activities, only a few employees know the importance of social activities and disclosure of them and their effects on the company.

Some interviewees believe that some Libyan companies are still under privatized. These government companies have limited stakeholders e.g. government, management, customers, employee and creditors. These stakeholders, except for the government, cannot affect the policy of the company as the Libyan government possess all shares in these companies, while non-government companies which are listed in the Libyan stock market have all stakeholders such as investors, shareholders, customers, creditors who can influence the policy of disclosure. For example:

Ownership base of the bank has a negative impact on the importance of this information for stakeholders and the financial benefits expected by providing this information.

Abdulhamid et al.(2005) also revealed that stakeholders of the Private companies in the Libyan context see the main benefit of disclosure of CSR information on the environment, in manufacturing companies, whilst service companies may perceive little influence of CSR information on the environment.

The importance of CSR information differs from one category to another. Most interviewees in the banks and insurance sector and the services sector considered employee information and customer information in annual reports to be more important than other information. In this regard all interviewees in manufacturing and mining sectors confirmed that there is greater importance for employee information, environmental information and customers' information than community involvement information to all stakeholders excepting society. Some financial manager stated in the following quotation:

Service companies such as ours are interested in social activities and information about the employees, and information relating to customers, considering that this information helps the company's decision-making that in turn, is reflected in the improved financial performance for the company and hence these companies disclose this information more.

Another interviewee supported this view in the following quotation:

I believe that the industrial companies such as this company take into account the environmental impacts that may affect their workers and the community, particularly the places that surround it as, it cares about workers and the quality of the product because these activities and these information affect the performance of the organization.

This is general information about the importance of CSR and CSRD for the Libyan companies and the extent of the importance of CSR activities and information to achieve the company objectives.

In summary, the main reasons for CSR activities and information is the interests of stakeholders. CSR activities and information in annual reports explain the contribution of the company's CSR activities towards society to stakeholders; assist the company to protect the employees' interests; supports investment decisions, and helps determine how management uses their funds.

Benefits of CSRD

A number of theories in the accounting literature have presented some justifications for disclosing CSR information in annual reports and hence stakeholder theory was used in this study to answer the question regarding what motivates companies to disclose social information. Some benefits were mentioned in the accounting literature for companies disclosing CSR information in developed countries; however, the benefits of CSRD in developing countries are still ignored and ambiguous due to few studies in the accounting literature. Interviewees clarified different causes and benefits as shown in Table 2.

The benefits and causes in table 2 motivate the company to disclose CSR information in its annual reports. This is also evident in the following comment:

This company does not prepare annual reports for nothing; it has some reasons and benefits for emerging social activities.

Most interviewees mentioned that there are two types of benefits for disclosing CSR information in annual reports. The main benefits include an increase in the company profitability, an enhancement of the company's image, information to make better decisions, more informed stakeholders about the company's contribution to community service, and greater transparency. Thirteen of interviewees (42%) believe that providing positive CSR information in annual reports helps a company to support its financial

performance. Further, financial support flows by encouraging and attracting stakeholders such as investors and consumers. In addition, twelve (39%) see that the growth of social and environmental awareness of Libyan management has provided more impetus for disclosing CSR information in annual reports, because such practices helps Libyan companies to make appropriate decisions.

Table 2: Perception of Interviewees on Causes and benefits for Disclosing CSR information

Number of Interviewees	The Percents of Interviewee	Causes and Benefits of Discloser
13 out of 31	42%	Improving Financial Performance:
12 out of 31	39%	Encourage and attract investors and customers
12 out of 31	39%	Supporting the organisation profit
6 out of 31	19%	Making-decision
1 out of 31	3%	Competition
		Improving productivity
		Regulation and Management:
3 out of 31	10%	Requirements of stock market
3 out of 31	10%	International Accounting Standards
5 out of 31	16%	Environmental law
3 out of 31	10%	Management
19 out of 31	61%	Enhancement / creation of the company's image/reputation
16 out of 31	52%	Informing their stakeholders about the company's contribution to community service
14 out of 31	45%	Transparency
2 out of 31	6%	Improving employee commitment

Table 2 shows the perception of interviewees about the six primary causes and benefits for disclosing CSR information in Libya. The first benefit was improving financial performance which included five items (encourage and attract investors and customers, supporting the organisation profit, making-decision, competition and improving productivity). The second benefit and cause was regulation and management. This benefit encompassed four items which are requirements of stock market, International Accounting Standards, environmental law and management. Other primary benefits and causes were Enhancement, creation of the company's image or reputation, informing their stakeholders about the company's contribution to community service, transparency and improving employee commitment.

Six of interviewees (19%) see that the competition is a factor in improving a company performance. Furthermore, sixteen (52%) mentioned that Libyan companies use CSR information to inform their stakeholders about the company's contribution to community service. Moreover, fourteen of the interviewees (45%) believe that transparency is considered as one of the most important motivations for disclosure of social and environmental information. More specifically, Armitage and Marston (2008) revealed that transparency in emerging CSR information may lead to: promoting integrity within the company and in its dealings with stakeholders; promoting confidence on the part of shareholders and other stakeholders; being part of what is expected of a good corporate citizen; helping non-executive directors to understand the business. Aribi, Z. A. (2009, p. 180) indicated that ‘disclosing social responsibility information for the reason of transparency might be considered as a form of motivation for the top management to reveal such information’. Momin (2006) also revealed that companies in Bangladesh have a social obligation, and ‘CSR practices are driven by the altruistic motivation of discharging such obligation by providing information to society, accepting that stakeholders have the right to know about the corporation in more detail’. In addition, he indicates that the increase of CSR of awareness has given encouragement to managers to use CSR information. Nineteen of interviewees (61%) that CSR practices could enhance/create the company reputation and the company image, and thus the company works to make strong communication with stakeholders, in particular its external stakeholders whom are important for the continued operation of the company. They think that creating or enhancing reputation and profitability regardless of whether in the long or short term is a good public relation exercise, in terms of paying attention to investors and consumers. Thus, the effect of CSRD on society has been referred to as tactics that possibly enable the companies to affect this perception (Deegan 2002). Momin (2006) and Aribi, Z.A. (2009) suggest that emerging CSR activities in annual reports allow the company to enhance its reputation and its image through focus on its stakeholders or a marketing attention-grabber that is aimed at attracting consumers and investors and this has given benefits in the long and short term. Graham et al. (2005) suggest that the main motivation for disclosure is reputation

enhancement for transparency. In the same way, Eccles and Mavrinac (1995) stated that the main benefit of disclosure improvement is increased management credibility in enhancing disclosure of quality. Lundholm & Van Winkle (2006) emphasize the importance of obtaining shareholder confidence to achieve the purpose of disclosure that lead to increasing the share price through reducing scepticism about the company's future. The following comments by financial managers support the perceptions in table 2 and the views contained in the literature:

We believe that the company focuses on achieving some goals more than others, when it discloses information about social activities conducted in their annual reports. For example, the company focuses on enhancing the company's image, improving its financial performance and transparency, ...making the right decision... publicizing the company and its activities to all stakeholders....through conveying what has been done during the year to stakeholders such as owners, shareholders, investors and other... and the benefits are greater if the management of the company is convinced of the importance of disclosure of this information.

The secondary benefits that help the management to achieve some objectives are regulation and improving employee commitment. In this regard, Momin (2006) indicates that companies that are not responsive will not be able to survive and therefore companies will comply with regulations and standards. Three of the interviewees (10%) stated that Libyan companies which are listed in the Libyan stock market are obligated to disclose CSR information through the requirements of the stock market, while another three said that a company uses international Accounting standards which are considered as one of the main reasons for disclosing CSR information in its annual reports. Five (16%) confirmed that for a manufacturing company disclosing CSR information about compliance with the environmental laws is beneficial. Regarding employee commitment, two (6%) see that disclosing CSR information might be considered beneficial for management. The following comments by financial managers support these perceptions:

In fact, we believe that the dissemination of this information in the annual report will have a role in supporting the commitment of the employee and, also takes into account the application of law, but the commitment of employees is not non-core with most companies.

On the other hand, interviewees who are working in the manufacturing companies which are listed on the stock market believe that the company is committed to preparing annual reports according to regulations, in particular environmental laws and the requirements of the stock market because if the company did not apply these laws, this will be costly. Therefore, applying these laws can be effective as the most important factor for disclosing CSR information. Some financial managers stated in the following quotation:

Industrial companies such as steel and cement industry specifically committed to the application of laws that are interested in social activities in general and in particular environmental activities , hence it tries to show in the annual reports to avoid negative effects on the share price and reduce the profitability of the investor in the company.

SUMMARY AND CONCLUSION

The purpose of this paper is to explain the importance and the benefits of CSRD in the annual reports of the Libyan context, as perceived by financial managers and information managers of the four sectors (manufacturing sector, banks and insurance sector, the services sector and mining sector), using a theoretical framework which combines stakeholder theory. This framework shows that the importance of CSR disclosure related to four categories (environmental activities, consumer activities, community activities and employee activities) to stakeholders. The focus on this topic is motivated by the emphasis in the prior accounting literature review on the reasons for disclosing CSR information as a primary motivation by which disclosure policy can influence company performance. Managers and employees increasingly require considering SRD as a signal of improved CSR conduct in those fields because

disclosure affects the business performance such as a company's reputation. CSR disclosure also leads to important results in the creation or deletion of other fundamentally intangible resources, and may help build a positive image with employees and managers. By demonstrating that a company does disclose CSR activities enhances organisational performance, whereas non-disclosure of CSR can destroy organisational performance for a company. Hence stakeholders require their companies to disclose CSR activities in their annual reports.

Furthermore, this paper presents some details about the effects of some factors on CSRD in the Libyan environment context. Social, cultural, political, economic and legal factors are considered the main factors affecting business performance and accounting through CSRD.

This paper provides evidence from financial and information managers about the importance and the benefits of CSR information for the company. The most important results are consistent with prior accounting research conducted in both developed and developing countries. Our experience with CSRD in Libya suggests that CSRD are often unimportant at being unable to prove the worth of CSR information. The results of this paper should help address concerns often expressed by stakeholders about the importance of dissemination CSR information in the annual reports. In particular, the results of this paper should be of value to managers concerned with the company performance as a whole. The companies can reap major benefits from disclosing CSR information such as improving its financial performance through attracting investors and consumers, improving its competition in the Libyan market, supporting company profit and decision making and improving productivity. They are also able to obtain tangible benefits such as enhancing the company image/reputation, improving employee commitment. The results explain some reasons for disclosing CSR information in the annual reports such as requirements of the stock market, applying international accounting standards, environmental laws, the growth of social and environmental awareness of the Libyan management and transparency.

However, this paper has a number of limitations. First, this paper focuses on only CSRD in annual reports, although these companies use other mass communication mechanisms. Further research should use other communication channels such as internet. Second, this paper indicates the primary benefits and causes of CSRD. The authors suggest that further research should explain the effect of CSRD on a company's reputation and financial performance. Third, internal stakeholders are considered as the only source of data in this paper. Further research should utilize external stakeholders to express their perceptions about CSRD.

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A CONCEPTUAL FRAMEWORK OF CORPORATE SOCIAL RESPONSIBILITY AND INNOVATION

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ABSTRACT

Innovation and sustainable development are major contemporary issues. Innovation represents an important tool for achieving corporate social responsibility while sustainable development is a challenge for business and emphasises the direction that innovation activities can take. The objective of this contribution is to specify innovation and social responsibility outlines and to propose a conceptual framework of their complementarity in a small and medium enterprise perspective. This approach enables us to reflect on the role of innovation in responsible entrepreneurship by illustrating a scheme which brings together these concepts in an integrated approach.

JEL: M10, M14, O32

KEYWORDS: Sustainability, CSR, Innovation, Small business

INTRODUCTION

The problem of sustainable development is not new. In 1987, the Commission of the United Nations, chaired by Gro Harlem Brundtland, redefined the concept of ecocodevelopment, now called sustainable development (Mathieu, 2005). Sustainable development has proved to be a way of responding to socio-economic and ecological crises of development in economies and society as well as to new needs that may arise. The problem of sustainable development was integrated into the microeconomics sphere and has been associated with smaller organizations such as enterprises (Mathieu, 2005). After large enterprises, SMEs became more aware of the impact their activities could have on sustainable development (CIDD, 2006; Spence et al., 2007). Many scientific and public communications on corporate social responsibility show interest in sustainable development and highlight the benefits of sustainable strategies (Quairel and Auberger, 2005).

On the other hand, companies also became aware of the utility of good innovation management which can allow them to strengthen their position in their market (Thouvenin, 2002; Tidd et al., 2006). Many managers are confronted with the necessity of developing new technologies, new products or new organizations. By being innovative, these businesses would be more suitable to meet the needs of new competitiveness (Carrier and Garand, 1996; Hoffman et al., 1998).

Having recognized the benefits of innovation for the business, it seems the innovation approach can be associated with that of corporate social responsibility (CSR). These two problems can be complementary in an organization. Thus, sustainable development can offer business opportunities and numerous occasions to innovate (EC, 2007; CST, 2001). Furthermore, sustainable development can introduce numerous improvements in the modes of consumption, production and organization (CST, 2001).

The literature on innovation, sustainable development and CSR is abundant and varied, underlining the interest they have excited over several years (Carrier et Garand, 1996; Laville, 2009). Regarding the complementarity of innovation and CSR activities, there is little work on their interaction, on how innovation can support CSR, in particular, far as SMEs are concerned (Mendibil et al., 2007).

This contribution thus has as its objective to suggest a first review of the literature in order to highlight the complementarity of research issues on CSR and innovation. It also aims at identifying their main characteristics in a context of the SME. We present a conceptual framework adapted to considerations of this double issue.

To begin, we define the small and medium-sized enterprise and shall precisely identify its specifics. We analyse the field of CSR and the stakeholder theory. We also show the central role of the manager in an SME as well as its sustainable commitment through the theory of planned behavior. Next, we develop the concept of innovation and the conditions in which it can facilitate and promote CSR. On this basis, we introduce a conceptual framework based on some theoretical and empirical research that will help us understand the role of innovation in responsible entrepreneurship as well as its implementation better. These various concepts will be shown diagrammatically in an integrated approach.

LITERATURE REVIEW

In Europe and in many countries of the world, small and medium enterprises (SMEs) represent an important economic element. These SMEs may represent more than 95% of enterprises (Fillion, 2007). There are no less than twenty million SMEs in Europe, which represent a crucial social component by creating jobs, the production of products and services to society, and the contribution of these companies to fiscal receipts (EC, 2004; Fillion, 2007). SMEs are particular firms. They differ from large enterprises mainly, but not only, by their governance and their structure.

Specificities and Definitions of SMEs

The specificities of SMEs were widely studied by Torrès (2007). Torrès uses the concept of proximity to explain specific behaviors of small business managers. He argued the SME can be considered as “a mix of proximity which creates the necessary conditions for action and reflection in a small organization” (Torres, 2007, p. 24). These proximities include hierarchical proximity, functional proximity, information systems of proximity, temporal proximity, marketing proximity, etc.

According to Torres (2007, p. 25), there is a more important hierarchical proximity in SMEs than in large enterprises. “The greater centralization of power in the hands of the owner-manager can only take place under conditions of close proximity, and in a relatively compact structure”. Moreover, function by function analysis is often inappropriate in the case of SMEs. Owner-managers are usually very flexible and can support multiple functions (Torres, 2007). In SMEs, there is usually simple, internal communication and little structure because managers opt for more informal, primarily oral communications (Torres, 2007). In addition, SMEs usually consider a short-term perspective. Strategic behavior is reactive rather than anticipative (Torres, 2007). Lastly, small business trading areas covers a limited space on a local or regional scale. This limited scope encourages closer contacts and links between managers and their stakeholders. This proximity allows managers to meet the needs of their customers more easily and to implement custom marketing (Torres, 2007).

When we speak about small and medium-sized enterprises, it is not obvious which kind of firm we are referring to. Indeed, in an empirical review of authors, we see that authors do not consider all SMEs in the same way. Most authors define SMEs which they analyze according to the quantitative criteria of the number of workers in the enterprise. According to Faber (1999), this quantitative approach makes it possible to identify the notion of SME more quickly and easily. Other authors, such as Witterwulghe (1998), propose a definition of the SME by complementing a quantitative approach and qualitative criteria. We retain two definitions which are references within the scientific community. We privilege the quantitative and qualitative approaches by taking into account the definition of the European

Commission (EC, 2006) on the one hand and the definition (2004) of Research Group in Economy and Business of SMEs, Groupe de Recherche en économie et gestion des PME (GREPME) on the other hand.

The European definition is based on quantitative criteria. This definition distinguishes three categories of enterprises and takes into account three criteria: enrolment, annual turnover, and the annual balance sheet. Small business is then defined as an enterprise which employs fewer than 250 persons and whose annual turnover does not exceed 50 million euro or whose total balance sheet does not exceed 43 million euros (EC, 2006).

The definition of the GREPME (1994) takes into account additional more qualitative criteria. This qualitative approach puts the human factor first. According to this definition, an enterprise is an SME if it meets the criteria of small, centralized management, low specialization (Executive and staff), simple or scarcely organized systems of internal and external information and intuitive or little formalized strategy.

From Sustainable Development to Corporate Social Responsibility

Sustainable development is a vague notion which corresponds to the concept: development meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland, 1987). It is based on three poles of activities, also theoretically named as a triple bottom line: results of the firm in terms of planet (respect for the environment), people (respect for employees, customers, suppliers, stakeholders and society) and profit (profitability and growth of the enterprise and growth of the economy) (CIDD, 2006; Labelle, 2008; Laville, 2009; Spence, 2007).

An extension of sustainable development involves the concept of responsible entrepreneurship which means strategies voluntarily adopted by companies to contribute to sustainable development (EC, 2004, p. 5). This definition meets the concept of corporate social responsibility (CSR) which represents, according to the CIDD (2006, p. 7), “an improvement process in which companies incorporate voluntarily, systematically and consistently social, environmental and economic considerations into their management in consultation with their stakeholders”.

In a similar sense, CSR requires a long term perspective without neglecting short-term requirements (CIDD, 2006). In this perspective, it refers to companies that incorporate their corporate social responsibility in their strategy and their management (CIDD, 2006).

According to many authors, the three profitabilities (social, environmental and economic) related to CSR should not be considered in isolation. These three dimensions need to be invested in simultaneously and consistently by the company. It must try to harmonise these three dimensions that may be complementary or in opposition (CIDD, 2006; Dion et al. 2008). However, in our approach, we consider that an enterprise does not necessarily consider the three pillars of CSR in the same way. We believe that responsible investment may vary from one company to another. Indeed, a firm will generally aim primarily to meet its financial interests. The economic pillar should therefore usually precede the other two pillars (social and environmental). While respecting its profitability requirements, the company can therefore choose to invest in the social and/or environmental. It is only by long-term commitment to the three pillars that one can then talk of corporate social responsibility.

In addition, the managers of SMEs' initiatives may be motivated by internal and external factors, that is to say positive pressure from stakeholders to get involved in more responsible behavior (CIDD, 2006; Dejean and Gond, 2004; Spence et al., 2007). Indeed, to be more efficient at three dimensions of sustainable profitability, a company must be attentive to the needs and wishes of stakeholders and to the community in which it is established (CIDD, 2006). These internal and external pressures come from

different actors such as consumers, staff of the enterprise, local communities, suppliers, NGOs, etc. (EC, 2004; Spence et al. 2007).

First, the responsible manager must pay attention to the wishes of consumers (EC, 2004; Dejean and Gond, 2004). These can be sensitised by NGOs and the media about the manufacturing conditions of products and their more environmentally friendly production (CIDD, 2006; Dejean and Gond, 2004). On the other hand, the manager must motivate and involve staff in business development and innovation activities with training and personal development opportunities. Therefore, an enterprise should worry about health, safety and general well-being of employees (EC, 2004).

The responsible manager must also meet the needs of its customers, business partners and competitors in fairness and honesty (EC, 2004). In addition, the corporate procurement policy is also concerned by sustainable development. The companies have got to choose good suppliers (local vendors) (Spence, 2007). The relations with their subcontractors enable them to condition their purchases to social, environmental and economic criteria. In addition, some large non-governmental organizations regularly communicate information about methods of governance of companies in order to solicit and mobilise the enterprises to many societal requirements (Dejean and Gond, 2004). However, these positive pressures complement also negative pressures that can be linked to companies's irresponsible social behavior, like for example environmental scandals or child labor. These negative pressures can therefore also be the source of the implementation of responsible practices (CIDD, 2006).

Willingness of the Manager and the Theory of Planned Behavior

Sustainable development strategies are generally implemented by SMEs conducted by visionary and determined entrepreneurs (CIDD, 2006; Spence, 2007). It should be noted that initiatives of a visionary entrepreneur do not aim just to comply with the regulatory measures in force, but rather voluntarily to go beyond the minimum requirements imposed by law (EC, 2004; CIDD, 2006). The values, beliefs and personal ethical convictions of these managers, passed on to their organization's employees, are essential in steps taken by SMEs and have resulted in the development of these responsible practices (CIDD, 2006; Spence, 2007). This logic invests employees in a mission of corporate citizenship. In addition, although the primary objective is not necessarily the performance, small business benefits from the positive effect on employee morale and motivation (CBSR, 2003; Spence, 2007)).

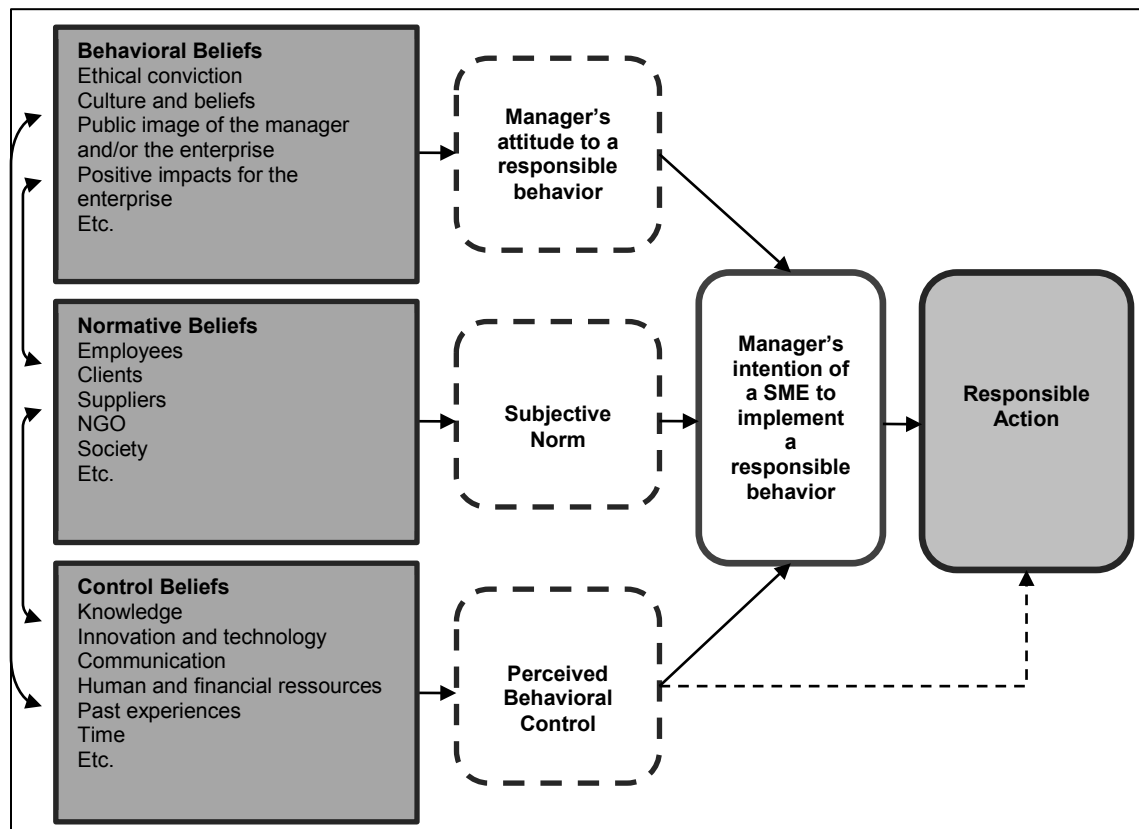
Among other theories of behavior and intentions, the theory of reasoned action (TRA) and the theory of planned behavior (TPB) have been widely applied in areas such as consumer choice, ethical trade, the protection of the environment, etc. (Ajzen, 1991; Ajzen and driver, 1992). Models of these theories can explain the intentions of managers to engage in practices of CSR (Wu, Auld and Lloyd, 2008). They are seeking to explain both informational and motivational influences on the behavior (Conner and Armitage, 1998) as well as to predict and understand individual behavior.

According to the TRA, people usually behave in accordance with their intentions (Ajzen and driver, 1992, Boulanger, 2008; Conner and Armitage, 1998). These intentions are also based on two major factors: an individual factor and a social factor (Boulanger, 2008). The attitude of the person (personal factor) is one of the dictators of intentions of a given behavior (behavioral beliefs), which is the positive or negative assessment this person attaches to this behavior (Ajzen and Driver, 1992, Boulanger, 2008; Conner and Armitage, 1998). The TRA also specifies subjective norms as a determinant of behavioral intentions. These subjective norms represent the social factor (Ajzen and driver, 1992, Boulanger, 2008; Conner and Armitage, 1998). These subjective norms correspond to our perception of what people think of the achievement of such behavior.

TPB (Ajzen, 1991) is an extension of the TRA in which a supplementary determinant has been added. Indeed, the TPB incorporates additional perceived behavioral control and its impact on intentions and actions (Ajzen and driver, 1992, Boulanger, 2008; Conner and Armitage, 1998). Perceived behavioral control corresponds to the person’s perception as to how easy or difficult it would be to accomplish a particular (time, money, skills, etc.). According to this theory, perceived control as well as intention of action can be directly used to predict outcome of the behavior (Ajzen and driver, 1992). In addition, the direct link between perceived behavioral control and the outcome of behavior can also be explained by the fact that the perceived behavioral control can often be used as a substitute for the current control measure (Ajzen and driver, 1992).

In this way, behavioral intentions depend on three direct determinants: attitudes, subjective norms and the perception of behavioral control. In Figure 1, we show that beliefs concerning sustainable behavior by a small business manager produce a favourable or unfavourable attitude towards this behavior. Normative beliefs result from perception of social pressures or subjective norms. These normative beliefs correspond to the stakeholders’s perception of responsible behavior of a small business manager. Control beliefs depend on the perceived behavioral control. Perception of a manager’s control refers to the perception of his capacity (human and financial resources, time, etc.) to implement responsible behavior. Finally, by giving adequate current behavior control, the manager expects to carry out his intention when opportunity arises. Attitudes towards behavior, subjective norms, and perceived behavioral control, lead to formation of behavioral intentions. Thus the intention immediately precedes the behavior. Nevertheless, many behaviors imply difficult implementations, and therefore can limit their own control. It is therefore useful to consider the perceived control with the intention.

Figure 1: TPB Adapted from Ajzen (1991) and Wu et al. (2008)



This figure provides potential indicators for three levels of belief. It shows how the manager’s attitude to a responsible behavior, the subjective norm and his perceived behavioral control lead to intention and to implementation of a responsible action.

Place of Innovation in the Implementation of CSR

Innovation is a complex phenomenon which can be apprehended in various forms (Halilem and St-Jean, 2007). It is useful to clarify the outlines of the concept of innovation because many ambiguities exist as to its definition (Carrier and Garand, 1996). However, innovation can usually be defined as "the implementation of a product (good or service) or a new or significantly improved process, a new method of marketing or a new organizational method in the business, the workplace organization or the external relations" (OECD, 2005, p. 54).

The definition of innovation, from the latest edition of the Oslo Manual (OECD, 2005), clarifies that it includes innovative activity because it refers to "implementation" of creativity, and not creativity itself. Carrier and Garand (1996) pointed out confusion that may exist between creativity and innovation. Moreover, this distinction has often been questioned, notably by Mansfield (1968), Pierce and Delbecq (1977) or Schumaan (1982). According to these authors, creativity (or invention) corresponds to the initial discovery of new ideas which can cause a process of innovation. It is therefore necessary to distinguish between creativity and innovation, considering them as two distinct phases of an enchainement which creativity is the starting point and innovation the completion.

In addition, it is not always easy to distinguish between change and innovation. Indeed, the implementation of innovation (linked to the introduction of new) systematically brings about a change for the enterprise while the company can achieve an organisational change without necessarily implying innovation (Carrier and Garand, 1996; Halilem and St-Jean, 2007). Carrier and Garand (1996) emphasize the fact that, in literature, we find different ways of assessing innovation: the relative perception of the adopter, objective novelty, the degree of intensity and the nature and extent of induced change. In this paper, we distinguish between innovation and change in an enterprise by taking into account the relative perception of the enterprise. Thus, the change in the organization is considered an innovation if it is seen as new by the enterprise actors.

Innovation and CSR are two major contemporary issues (Labelle, 2008). They "can and should be mutually reinforcing" because the future economy is based on their complementarity (CST, 2001, p. 1). In combining both, we note that governance oriented to sustainable development favors innovation (Labelle, 2008). Innovation therefore represents an indispensable tool to the implementation of CSR while sustainable development is a challenge for the enterprise and highlights the direction that innovative activities can take (CST, 2001). Nevertheless, according to CST (2001), innovation and sustainable development were not always considered complementary realities. While innovation has always represented an indispensable tool for enterprises looking for growth, sustainable development perception has not always been positive and represented for some people an obstacle to economic growth. However, today, there is no question of opposition between these two approaches because businesses are regularly becoming more open-minded towards sustainable development.

Increasingly, studies explore the link between innovation and CSR (CST, 2001; Labelle, 2008; MacGregor et al., 2007a; MacGregor et al., 2007b). In addition, some authors are interested in the direction of innovation - sustainable development trajectory (EC, 2007; MacGregor et al., 2007b). In the framework of the European Commission's *Response project* (EC, 2007) the objective of which is to persuade SMEs to implement corporate social responsibility in the enterprise through the use of innovation activities, MacGregor and al. (2007b) highlight the dual direction that innovation and corporate social responsibility can take. Two trajectories have thus been put forward. First, in some firms a CSR, innovation trajectory, has been found which is explained by the fact that enterprises are driven primarily by values. These firms take into account the significant impact of their activities on the environment and the community. This does not mean, however, these companies lose sight of profit. On the other hand, the innovation CSR trajectory is present in enterprises conducted mainly by the creation of

value. They develop their labor force, their production chain, and their customers, and continually invest in them to create added value (EC, 2007). The CST (2001) also highlights this dual trajectory. For the CST (2001), science and innovation constitute an essential lever to sustainable development, but sustainable development can also stimulate innovation, and thereby promote social progress and economic growth.

Thus, the entrepreneur, as Schumpeter suggested in 1934, is an innovator. Sustainable development provides the responsible entrepreneur with opportunities to innovate and meet the considerations of the various parties concerned by improvements of consumption, production and current organizational modes (CST, 2001; MacGregor et al., 2007b; Spence, 2007). Nowadays, an innovative SME must take into account the social and environmental impact of its processes of production, in stimulating the creativity of employees and by collaborating with customers and other business partners (MacGregor et al., 2007a).

SMEs can then expect added value from their sustainable innovative activities which is not only centered on financial performance (MacGregor et al., 2007b). The most innovative and proactive firms are the most capable at incorporating sustainable development's activities in their growth strategies (EC, 2002; Spence, 2007). Like innovation, a proactive approach is also beneficial to the establishment of a CSR policy that can bring value to the enterprise (EC, 2002; MacGregor et al., 2007a; MacGregor et al., 2007b). Indeed, although a reactive approach of CSR (responses to pressures) can lead to short-term profits, a proactive approach (integration in business strategy) may cause more sustainable innovations (Mendibil et al., 2007). Proactive SMEs do not wait for pressure from stakeholders to demonstrate their corporate social responsibility; they work continuously for more responsible solutions (Quairel and Auberger, 2005; MacGregor et al., 2007a). It appears the relationship between CSR and innovation is most marked in enterprises where CSR is an integral part of the company's strategy (Mendibil et al. 2007).

CONCEPTUALIZATION OF COMPLEMENTARITY BETWEEN CSR AND INNOVATION

The literature review suggests there remains a lack of understanding about how CSR initiatives can be based on innovation processes by improving the performance of SMEs. The purpose of this contribution is to better understand the links that might exist between innovation and CSR practices in the context of SMEs and highlight the added value that can benefit business interaction.

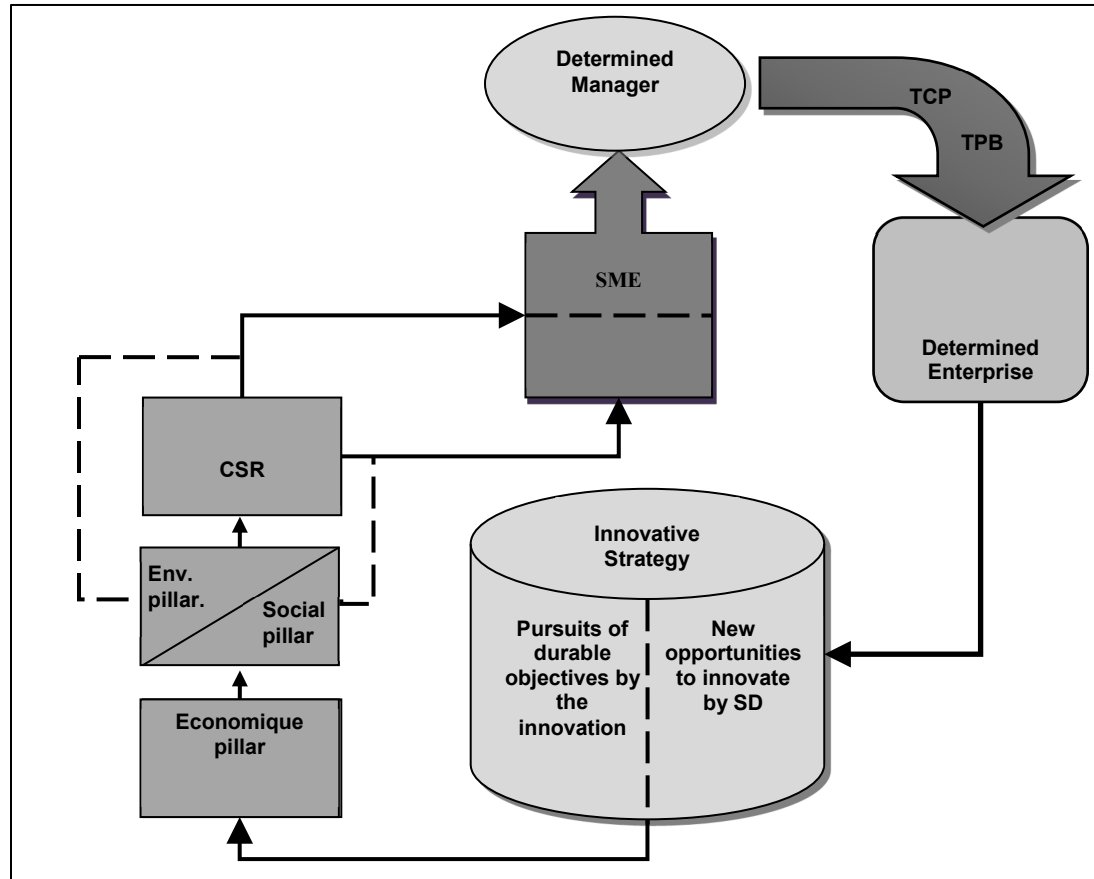
On the basis of key determinants put forward in this approach and connections between them, we propose a hypothetical conceptual framework, represented in the form of a figure, which allows clearer understanding of the link between innovation and CSR. Figure 2 answers the question of complementarity: does innovation bring about CSR? Or on the contrary, is it societal commitment that leads to an innovation process? Do they become so innovative in order to achieve their goals of sustainability?

This rotary figure can be analysed according to two trajectories which differ by the nature of the SME concerned (innovative or not). Both of these two trajectories lead to integration of the three axes of profitability (Planet, Profit and People) on which CSR is based. They are distinguished, however, on the basis of their innovative strategy.

For the first trajectory, we take the starting-point of our process to be an ordinary (non-innovative) SME. At the head of this enterprise, there is the will of the manager. That is, a manager aware of sustainable development issues and concerned about integrating the three poles of profitability to make the company aware of its responsibilities. This is due to pressure from some stakeholders (PS) on the manager and on the firm that the manager wants to engage in sustainability. These durable intentions (which are explained by our approach by the theory of planned behavior (TPB)) are manifested at the level of the determined

enterprise. To pursue these sustainable goals, the SME implements innovative activities which may enable it to become more responsible. The innovation process is considered a necessary business tool to integrate CSR. Nevertheless, we consider a certain hierarchy in the integration of the three pillars of CSR. The SME, while meeting its requirements of profitability, will choose to invest in environmental and/or social actions. In familiarizing themselves with innovation activities, small businesses will also become innovative businesses. It is possible however that the enterprise may repeat this cycle several times to fully integrate the three pillars of sustainable development (SD) and really have an overall approach to CSR.

Figure 2: CSR and Innovation - Conceptual Figure of Their Complementarity



This figure represents a hypothetical conceptual framework of the complementarity between CSR and Innovation. It shows two trajectories leading to the integration of the three axes of profitability on which CSR is based. These two trajectories are distinguished on the basis of their innovative strategy.

The second trajectory considers initially an innovative SME, a firm which has already invested over a long period, in a continuous process of improvements and innovations. The innovative manager and his SME are also under pressure from stakeholders. The manager is committed then voluntarily (theory of planned behavior) in the way of sustainable development (SD). It is in this way the manager finds new opportunities for innovation that can bring added value to his enterprise and especially enable it to become a responsible SME. Integration of the three pillars of sustainable development respects the same hierarchy seen in the first trajectory and may also require several cycles of the process.

CONCLUSION

This exploratory approach investigates the issue of the CSR and the innovation in the particular context of the SMEs. The review of the literature allowed us to better specify the definition of SMEs. The paper then concentrates on the corporate social responsibility of enterprises. The literature suggests that corporate social responsibility corresponds to the balance of three pillars: economic, environmental and social. However, we think enterprise consideration of these three pillars could result in a hierarchical organization. We are also interested in the theory of planned behavior which we adapted to the CSR issue to explain the intention of the SME's manager to invest into the corporate social responsibility of his firm and the actions implemented to this end. Finally, we investigated the complementarity between CSR and innovation. This review of the literature allowed us to propose a rotary conceptual framework.

The hypothetical conceptual framework proposed shows that, regardless of the trajectory, there are SMEs which implement in a complementary way innovative activities and an approach to CSR with the aim of becoming socially responsible enterprises. However, this figure was intended to introduce a first reflection on their complementarity. Indeed, this contribution underlines key determinants involved at the CSR and innovation level in the context of SMEs.

Due to the exploratory character of the study, certain limits can be inevitably associated with our research. Nevertheless, we think that an exploratory study of this type allows generally understanding better a little studied issue while trying to promote new avenues for future research. It would then be interesting to investigate in greater detail some aspects of this double issue which remain little explored, especially in the field of SMEs. Many questions still remain. A field study will therefore constitute the next step of this work. We hope it will enable us to further refine the conceptual framework proposed. In addition, the proposal of a rotary integrator figure involves a certain partial character, because the demarcation of the object of research is necessarily limited to the chosen subjects. Other subjects could also be integrated into the analysis.

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WHAT IS PROPELLING THE AMERICAN WORKER TO GO THE WAY OF THE HORSE?

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ABSTRACT

In today's increasingly dynamic global economy, many industrialized nations are developing comparative advantages that are derived from human effort rather than natural status in their export industries. This is evidenced by a global pattern of shifting man-made comparative advantages over time. Empirical evidence seems to lend support to Wassily Leontief's findings that would later contradict the previously accepted predictions of the factor endowment theory, which suggested that nations traded internationally based on their resource dispensations (Leontief, 1954). This study is a preliminary effort aimed at identifying meaningful factors that propel the development of human-based comparative advantages, and exploration of a testable theoretical framework that will aid a better understanding of the disposition of such factors for the United States exporting firms. Five intellectual property-intensive sectors are sampled. Primary findings indicate that the degree of economic freedom, patents enforcements and domestic lending rates may be important factors that help shape human-based advantages that lead to gains in export market share.

JEL: F1; L1; E0

KEY WORDS: exports, innovation, workforce anatomy, transformation, comparative advantage

INTRODUCTION

The utility of the horse during earlier times in human history is undeniable. Horses were used in service for man to ease burdensome tasks such as plowing fields and transportation, among several other practical uses. As society and economy evolved during the renaissance and industrial revolution periods, civilization became more advanced. Changes in society's interests and mechanism became inescapable. Horsemanship gradually transformed into an art form with the purpose of enhancing the horse's natural strength and beauty. Horses increasingly became specialized for artistic purposes as their use for practical ends was steadily replaced by Man's own growing usefulness to himself as he developed new mechanisms of accomplishing his work. Society's quest for improvement and advancement has been unrelenting throughout history. Human labor transition patterns that are comparable to those of the horse are evident around the world. The impact on the comparative advantages that nations hold is both dramatic and meaningful in international trade.

The findings of Leontief (Leontief, 1953), which are commonly referred to as "The Leontief Paradox" offer insights into the transformational changes that are unfolding in labor resources and the resulting influences on patterns of international trading among exporting nations. This study pays particular attention to United States (U.S.) export sector. In his study of U.S. export patterns, Leontief recognized that the U.S. seemed to have been endowed with more capital per worker than any other country in the world then. Thus, it was accepted that the US exports would have required more capital per worker than U.S. imports (Ohlin, 1933). However, Leontief's findings seemed to indicate a different outcome. U.S. imports were 30% more capital-intensive than U.S. exports. Subsequent investigations would reaffirm the findings (Leontief, 1956 and Robert Baldwin, 1971).

Leontief himself suggested an explanation for his own paradox. He argued that U.S. workers may be more efficient than foreign workers. Assuming that Countries around the world have identical

technologies, Leontief attributed the superior efficiency of American labor to superior economic organization and economic incentives. The U.S. workforce anatomy, similar to other advanced economies around the world, is trending in a steady shift in demand away from a less skilled toward a more skill-intensive workforce (Bound and Johnson, 1992; Katz and Murphy 1992). Remarkable technological advances are shaping the way production is accomplished. It follows that the level of skill that many jobs now require is technology based. While full obsolescent is doubtful, human labor independent of skills is becoming less useful compared to previous periods. Knowledge and skills are much more important in production today. This trend has produced dramatic changes in workforce anatomy and consequently comparative advantages held by nations. United States is among several advanced economies that are abundant in human capital (highly educated and trained workers) and export human capital intensive products.

The rest of the study proceeds with a review of literature, followed by an explanation and formulation of the model design, a discussion of data and analysis results, a statement of limitations and future research plans.

LITERATURE REVIEW

A Discussion of Explanatory Factors

If in fact the superiority of the U.S. workforce is the outcome of maturity in economic organization and growing incentives as suggested by Leontief and several more scholars, then it is granted that such status could be retained, improved, or lost, over time. Also then, the ability to achieve and retain a superior status would depend on the ability to affect the required and appropriate measures, and implement the needed economic policy actions. If the Leontief paradox sustains, it follows that the anatomy of the U.S. export industry workforce, and consequently export products will adjust to reflect changes in superiority status.

Considering the global environment in which trade is taking place, it is reasonable that dramatic changes occur in the demand for labor, especially in developed countries (Wood, 1994; Anderton and Brenton, 1999). For example, the demand for unskilled workers in the U.S. continues to decline. A similar trend is observed in other industrialized countries. This trend is expected to continue as employers of unskilled workers continue to face strong competition from other parts of the world, in particular, from the newly industrialized countries (NICs). The result is that greater skill is generated in the labor force.

Changes in production processes ultimately drive many of the trends that are observable in the labor forces across industries that are competing internationally. Most people will agree on the significant role of knowledge-based initiatives by firms. De la Mothe *et al* (2000) argue that this in itself is not a revolutionary insight. The idea of the impact of knowledge on processes and productivity dates back to Adam Smith's *Wealth of Nations* (1776), whose theory of the division of labor was essentially an economic and organizational theory of knowledge. Hulten (2000) points out that Marxian and neoclassical theories of growth also assign the greatest weight to productivity improvements driven by advances in the technology and organization of production. He adds that the New Growth Theory and the theory of capital and investment, another branch of neoclassical economics, both attach primary significance to the increase in investments in human capital, knowledge, and fixed capital. Knowledge accumulation may mean either new knowledge, greater access to existing knowledge, or a combination of both. These two components of knowledge contribute to changes in the way production is processed, and ultimately in the type of workers that are demanded (Schiff and Wang, 2000).

As an attribute, new knowledge is assumed to be value-adding. Such value originates from the human intellect which results from human ingenuity and inventiveness. Its orderly use, exchange or sharing

amongst various types of business partners in a complex network of strategic relationships that generally work harmoniously during the reorganization of production is what ultimately ends in improved processes and products in domestic and export markets. Therefore, we can assume that intellectual property is a reasonable indicator of knowledge dispensations. This form of thinking also lends itself to the well recognized ideas of Joseph Schumpeter.

Schumpeter (1949) wrote on *The Theory on Economic Development*, in which he emphasized the key role of entrepreneurship as an engine for development. While the focus of his work was the process of economic development, the ideas are applicable to processes that lead to change and development in industries. He recognized the dynamic nature of processes that drive change. He stated that capitalism is by nature, a form or method of economic change that can never be stationary. In his *Capitalism, Socialism, and Democracy*, Schumpeter (1976) argues that in order for development to occur, the capitalist engine must be kept in motion by the introduction of ‘new combinations’ (new consumer goods, new methods of production or transportation, new markets, new forms of industrial organization and so on) that a capitalist enterprise creates. The essence of development is a ‘continuous disturbance’ of the (economic) system through a process referred to as ‘creative destruction.’ This disturbance essentially takes the form of innovation, which, is a source of superior performance in firms. Reduction in competition can be realized when innovation allows a firm to significantly lower its costs, or differentiate its product (Aghion et. al 2001, 2005).

Nam Pham’s (2010) study on intellectual property-intensive (IP intensive) industries in the U.S.—such as life sciences, software, and aerospace shows that IP-intensive industries succeed globally, drive innovation, and invest heavily in research and development. This, in turn, grows the economy by creating jobs and driving exports in a variety of different careers and trades, both blue collar and white collar (Pham, 2010). U.S. Census Bureau statistics indicate that over the period 2000-2008 approximately 60% of jobs in U.S. export industry were in IP-intensive industries, which are a type of human capital-intensive industry. The study also pointed out the role of IP-intensive industries in creation of new tradable products and services for the U.S. IP-intensive industries made up nearly half of output and sales of all 27 U.S. tradable industries and employed more than 30% of American workers in these industries. More important, IP-intensive industries accounted for approximately 60% of total U.S. exports—rising from \$665 billion in 2000 to \$910 billion in 2007. During this time period, American firms exported an annual average \$405.5 billion of IP-intensive products versus \$278.1 billion of non-IP-intensive products. Overall, while IP-intensive industries have not been immune from the unemployment trends since 2001, they also performed better than the non-IP intensive industries.

External Influencing Factors

The context in which firms are operating is momentous. This assertion coincides with what Leontief described as economic organization and incentives that constitute advantages that a nation may enjoy in the products and services it chooses to specialize in. Firms are organized, and compete in a given context which can be influenced by numerous factors. For instance, it cannot be taken for granted that patent protection in itself is a sufficient incentive for innovating firms. Several studies have shown that patent protection alone does not always confer consequential incentives (Levin et al, 1985; Hall and Ziedonis, 2001). It may be that the patent protection is weak for several reasons that originate outside the firm. This study will restrict itself to investigating such external factors that are deemed to be particularly meaningful.

In his attempt to answer the question question why a nation achieves international success in a particular industry, Michael Porter (1990) offers four broad attributes of a nation that shape the environment in which local firms compete. These attributes may either promote or impede the ability for firms to create a competitive advantage. Of particular interest in this study, is the role of conditions in the nation that

govern how firms are created, organized, and managed. His ideas stipulate that the home environment necessarily needs to be dynamic, challenging, and stimulating to firms to upgrade and increase their advantages over time. He points out that the more dynamic the national environment, the higher the likelihood of some firms failing (not all have equal skills and resources or ability to exploit the national environment equally well). It is those that make necessary changes to emerge from such an environment that will prosper in the international market.

Ezeala-Harrison's work on macroeconomic factors that influence competitiveness in firms presents a useful definition of the economy wide or contextual factors. He describes these as generally made up of supportive institutional arrangements and infrastructure facilities. Institutional factors include the variables of government policy actions. Examples are such as tax policy, labor market policy, exchange rate regime adopted, and financial sector regulatory or deregulatory policies, and the existence and adequacy of infrastructure. There also are the availability (or stability) of other institutional parameters such as legal, educational, health and para-medical, and financial infrastructure. The degree of "economic liberalization" provided and allowed by the country's authorities, and existence of adequate institutional framework in a country are crucial factors that influence innovative transformations in the export industries. These factors, however, hang largely on the political and (ideological) leaning of the country's authorities and policy makers. These policies usually remain fairly unchanged over time. These economy wide parameters are considered as qualitative in nature, in the sense that they are given (or constant) over time, and work to provide the ultimate background conditions in which individual firms can respond to incentives that are specific to the industries they occupy (Ezeala-Harrison, 2010).

Ezeala-Harrison elaborates on the meaning and significance of economic liberalization in trade: It is the package of measures designed to direct an economy away from restrictive regulatory and central control, toward a free-market based system which is based on competition, deregulation, and enhanced private-sector. Among the conceivably several major parameters of economic liberalization, two of the most cogent ones are the country's: (i) trade liberalization (or free trade) policy, and (ii) currency exchange rate regime (stable, flexible, and moderate exchange rate level). Other parameters of economic liberalization such as degree of privatization, deregulation, and centralization are equally important, and various indices could be employed to measure their levels to assess the degree of economic liberalization. These two are selected only on the basis of their being relatively easy to keep track of explicitly.

The impact of labor market trends in international trade around the world, and certainly for the U.S. is clear. For the U.S. most of the overall shift in U.S. labor demand in manufacturing since the early 1980s has a lot to do with change in skill demand from less skill-intensive to more skill-intensive as new knowledge is dispensed across industries. It is such transformations that render certain labor forms unnecessary over time, in a similar fashion to the horse as previously explained. Having made this recognition, this study seeks develop a conceptual framework that is useful in the understanding and investigation of organizational and incentive factors that are facilitating the necessary workforce transformations and resultant product changes in international trade.

METHODOLOGY

Model Design

The process through which exporting firms respond to national organizational advantages and incentives to develop dynamic abilities forms a part of the general features of the operational objective. To better understand the role and nature of the organizational advantages and industry incentives, it is necessary to examine the composite model of these processes. In this regard, this paper offers a simple model that can be applied to appropriate data. The model is envisaged to explore suitable specifications that would be ultimately helpful for determining policies towards a sustainable strong export performance.

Conceptually, two broad classifications of factors that influence the export industry workforce anatomy and export product type exist; namely, firm incentives and degree of economic organization. These coincide with industry-specific and economy wide realms respectively. Incentives for exporting firms can also be considered as factors that encourage innovative transformations within exporting firms and consequently in entire industries. Examples of these include profit or compensational gains, increased market share, spill over benefits and reputational benefits (Schmidt, 1997; Aghion et. al, 1999; Davis and Jerome, 2004), strength of copyright and patent legislation, degree of restrictiveness of industrial regulation, level of inter-industry rivalry (Sastry, 2005), strong industry-government research and development partnerships, and adaptability of the labor force. The external factors discussed in the literature review section constitute the context in which transformation takes place. Thus, the proposed model will necessarily seek to capture the influences of both firm incentives and environment context.

To reiterate, the determining factors that influence changes in the composition of the labor force and export product type can be broadly categorized as; existing incentives for exporting firms and the degree of economic organization of the country. Each category can be further decomposed into definitive variables that are specific to the export industry and those that involve the conditioning and supportive institutional arrangements and infrastructure. The basis for a testable formulation of the links between export industry innovative transformation and these determinant factors is a model that assumes similar capital endowments across countries (Leontief, 1953) and involves the level of labor utilization, and efficiency of allocation of resources. Competitive export firms will seek to effectively utilize resources in the most efficient manner relative to rival firms under conditions of equal capital endowment. Thus, a composite magnitude of total labor efficiency growth rate and product value changes over time constitutes the quantitative measure of export strength; it indicates the combined effect of the effectiveness of the firms resource utilization and resultant (export) product value (or product type).

The simplified mathematical depiction is as follows:

$$\text{Comp. } \{ \Delta\alpha(K/L) / \Delta t + \Delta m / \Delta t \} = f(\sum_{k=0}^n \mu_i X + \sum_{k=0}^n \beta_i Z) \tag{1}$$

where,

- $\Delta\alpha$ = Change in the multiplicative factor that estimates the degree of relative worker skill level under the equal capital endowment assumption.
- K = Capital endowment measure
- L = Measure of Labor quantity
- Δm = Change in market share
- Δt = Change in time
- X = Firm incentives parameter
- Z = Organizational parameters
- i = Industry i
- β, μ = Weighting indexes of the degree of respective parameters

The combined development of worker skill set and innovation in the competitive exporting industry is thus shown as a function of the sum of incentives and organizational advantages that exist in that particular industry. This can be further simplified as follows:

$$\Delta \text{comp. } / \Delta t = \sum_{k=0}^n \mu_i X + \sum_{k=0}^n \beta_i Z \tag{2}$$

This simplistic model can be used to investigate how incentives and economic organizational advantages help shape changes in worker skill and innovation.

Data

The sample for the preliminary investigation was created by merging annual statistical data from multiple sources that include U.S government agencies and international sources such as the World Trade organization, World Intellectual Property Organization, the World Bank, and the United Nations Conference on Trade Development. The data represents pharmaceuticals, transportation equipment, chemicals, semiconductors, and communication equipment sectors of the U.S. economy. These sectors have been sampled previously because of their inclination for innovation (see Pham and Shapiro, 2007). Variable estimates include worker skill level, sector global market share, compensational benefits, corporate taxation rates, domestic lending rates, degree of economic freedom, government-industry research partnership, and dollar exchange rate against major global currencies, physical infrastructure, and patents enforcement. A lack of uniformity in data for all variables restricted the observations to the period 1997-2008.

A linear regression analysis was conducted on the organizational and firm-based incentives premised to impact the skill level and product market share composite index for each of the sampled sectors (see equation 2, and also equations in appendix section). Table 1 below is a summary of the analysis.

Table 1: Result Summary

Variable	Pharmaceutical	Communication Eq.	Semi Cond.	Transport. Eq.	Chemicals
(Constant)	-1.999	1.2019	-1,697,000,000	-0.3233	-1.1042
Compensational benefits					
Federal funds rate		*-1.8572	*-2,502,822	*1.5923	-1.2709
Gov. R & D expenditure				6.966	0.006
Degree of economic freedom	*-5.998	-1.6311	*2,907,579	0.0420	-2.6192
Corporate taxation	-2.264	-0.8205	-658,840	-0.1338	-0.3703
Dollar exchange rate index		*1.6524	*-1,921,277		
Physical Infrastructure	-0.5836			*6.2697	
Patents enforcement	0.3047	*181.99	-0.01407	*0.0258	-0.232
Adjusted R-square	0.845	0.789	0.9	0.884	0.844
Durbin-Watson Statistics	2.185	3.725	3.268	2.094	2.471
F-statistic	9.746	14.118	7.172	12.445	31.133
P-value	0.045	0.012	0.04	0.032	0.003

*This table shows the various variables analyzed for each sector and the various statistical outcomes. Missing data indicates that the associated variable was not tested for that sector. Variables that are discussed in the paper but failed to yield meaningful data are omitted from the table. *Significant at 95 percent confidence level*

Discussion of Preliminary Results

The idea behind the analysis conducted in this study is to examine the influence of firm incentives and organizational advantages on the combined outcome of worker skill development and growth on product market share in the international market. The results are generally mixed, and do not offer robust outcomes that could lead to verifiable conclusions. Some possible reasons are discussed in the study limitations section to follow shortly. Nevertheless, preliminary findings give useful insights for future development of the study. In particular, domestic borrowing rates, dollar exchange rate against major global currencies, degree of economic freedom and patent enforcement are found to be significant variables in more than one of the sectors sampled. Strong financial markets that are accessible to innovators are understood as important factors for competing firms in any market (King and Levine, 1993; Levine, Loayza and Beck, 2000). It is also expected that economic freedom and strong patent enforcement will encourage valuable product innovation and skill acquisition in the market place. The dollar exchange rate is a fundamental variable given that trade takes place in a global context.

The R-square values were consistently high in all cases. Caution should be exercised when making conclusions about the of strength of relationship between the dependent and independent variables based

on the values. The unexpectedly high values suggest further investigation for multicollinearity problems among the independent variables. Even though the overall P value is low, individual P values are not all low. A further analysis may identify variables that convey essentially the same information, which could either be eliminated from the analysis or combined with other variables. In addition, results of the communications equipment, semiconductors, and Chemical sector analysis returned high Durbin-Watson values, which may be indicative of autocorrelation problems with the data. The fit of the model for these sectors may need further exploration.

Statement of Limitations and Future Research

Although the study was carefully prepared, there were several unavoidable limitations that restricted its potential to adequately achieve the intended objective. Difficulties in data collection for made it difficult to gather complete datasets for some of the variables. As a result, the sample size was significantly reduced, and in some cases important variable replaced by alternative proxies that did not have a strong theoretical support. In addition, only two variables represented firm incentives in the model equation. Also, given the preliminary stage for this study, the approach was restricted to a significantly small sample of sectors that may be disproportionately skewed towards a limited set of industries. In reality, U.S exports to the rest of the world represent a much broader spectrum of industries. Finally, studies have pointed to some flaws in the Leontief paradox model, whose ideas this study borrows.

Future plans for this research will focus on addressing flaws that have been pointed out in the Leontief paradox in relation to the objectives of the study, and the careful gathering of complete sets of appropriate data. Substantial amount of time will be devoted to identifying key industries that are a good representation of United States exports sectors and the occupation types that dominate such sectors. With a more complete understanding of the determinant incentive and organizational factors that influence the United States export industry workforce and products, the study can offer policy prescriptions for sustainable and meaningful transformations. In a competitive global economy, workforce adaptability with shifting comparative advantages is widely recognized imperative.

APPENDIX

The actual equations that were used in the regression for the respective sectorial analysis are listed in this section. Readers should note that not all the proposed variables yielded sufficient data to allow for the conducting of a uniform set of analysis.

$$\text{Pharma } \Delta \text{comp.} / \Delta t = \sum \mu \text{patent} + \sum \beta_1 \text{freedom} + \beta_2 \text{tax} + \beta_3 \text{finfrast} \quad (3)$$

$$\text{Comm. Equip. } \Delta \text{comp.} / \Delta t = \sum \mu \text{patent} + \sum \beta_1 \text{fed.fund} + \beta_2 \text{freedom} + \beta_3 \text{tax} + \beta_4 \text{forex} \quad (4)$$

$$\text{Semicond. } \Delta \text{comp.} / \Delta t = \sum \mu \text{patent} + \sum \beta_1 \text{fed.fund} + \beta_2 \text{freedom} + \beta_3 \text{tax} + \beta_4 \text{forex} \quad (5)$$

$$\text{Tran.Equip. } \Delta \text{comp.} / \Delta t = \sum \mu \text{patent} + \sum \beta_1 \text{fed.fund} + \beta_2 \text{gov.R\&D} + \beta_3 \text{freedom} + \beta_4 \text{tax} + \beta_5 \text{infrast} \quad (6)$$

$$\text{Chem. } \Delta \text{comp.} / \Delta t = \sum \mu \text{patent} + \sum \beta_1 \text{fed.fund} + \beta_2 \text{gov.R\&D} + \beta_3 \text{freedom} + \beta_4 \text{tax} \quad (7)$$

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COMMON SENSE LEADERSHIP: EVIDENCE FROM SENIOR LEADERS

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ABSTRACT

The purpose of this study is call for further academic conversations into how to recognize common sense leadership as it relates to the 21st century organization. This qualitative study was performed from July 29th through December 7th, 2010, which involved 26 participants from across the United States who were identified as senior leaders in their organization. These executives indicated that common sense leadership is a multi-pronged approach that requires flexibility to address both the needs and desires of the organization in conjunction with those of the members of the organization. Participants concluded that common sense decision making requires a sense of morality that sometimes supersedes organizational performance and profitability. Finally, study participants strongly believe that employee motivation that encompasses goal attainment and decision making, through a sense of morality, are important benchmarks in being a common sense leader.

JEL: M1

KEYWORDS: Leadership, Transformational Leadership, Common Sense

INTRODUCTION

Much like the definition of leadership, there is not one common word or phrase that seems to best describe what common sense is all about, just what attributes are encompassed in that term. With a plethora of human relations theories on better managing one's human assets, the researchers wanted to know why there seemed to be a missing hitch to connect these ideas so actual practice was engaged. Our study sought to find broad categorizations of what common sense can be identified as encompassing among senior leaders across multiple disciplines and various locations across the United States. What we discovered was that most of the senior leaders identified three broad areas where common sense practice appeared most in their organization. Decision Making was the most prominent areas identified with 46% of the comments in that area; Motivation was noted in 29% of the opinions expressed; and Goal Setting concepts came in at a close third at 25% of the classifications.

In the exploration of this study, the researchers discovered that a general conceptual recognition of common sense leadership was held among a diverse and wide-ranging population sample. Although a single clear-cut definitive explanation of common sense leadership is still elusive, a more defined parameter of what it is not was determined. This finding matches what is noted in the current literature where there are disparate opinions on whether common sense exists in the first place and, if so, how one identifies it outside of a cultural context. Our work adds to the existing literature by suggesting common sense decision making requires a sense of morality that sometimes supersedes organizational performance and profitability.

The following summarizes the findings of those who took part in this initial inquiry, which then can be used as a starting point for further dialogue among those who might pioneer this concept. The paper presents a rational approach format, proceeding from a discussion of the research background, followed

by a review of the literature. Data and methodology are then presented, with a discussion of the study's findings and recommendations for future study.

RESEARCH BACKGROUND

The study began with the assumption there must be a common set of terminology that could be used to define common sense as it relates to organizations. After reviewing the literature, conversing with colleagues, and considering the data collected, the researchers discovered this is an impossible task to complete. The one certainty about the definition of common sense leadership is there is no single quantifiable measurement that could tell us how to define the term. Everyone seems to recognize its attributes in practice, much like one could differentiate the famous contour design of the Coca-Cola bottle from one that came from one of its competitors. Common sense leadership follows the same pattern because people can tell you what it is without being able to correlate the term to a single benchmark or paradigm.

Observations were made following leadership conferences in Eastern Europe in the early 21st century that attendees were eager to embrace a Western leadership style but often did not show their comprehension of how such principles could be applied in a practical, organizational setting. Much of this resistance was because of the participants' past experiences in a Communist worldview setting where such an approach was forbidden. Even after democratic reforms were initiated, the old paradigm of leadership could not be easily shaken from emerging organizational leaders who openly stated they wanted to find a new paradigm to do their business but did not know where to begin the process.

Further observations among United States leadership conference attendees, whom had already practiced the skills that the Eastern Europe attendees hoped for, seemed to show a similar pattern of participants wanting to embrace a different style. Yet, barriers seemed to be in place, so the application of new paradigms was hindered. It appeared that while there was a will to make an organizational leadership style change, there was a missing element that did not allow these leaders to take the principles learned from theory into practice. A final consideration was the plethora of styles that are available for leaders to emulate in their organizations: beginning with Taylor and the scientific management movement (1890-1940), followed by Weber's bureaucratic management approach (1930-1950), and then Mayo and Roethlisberger (Hawthorne study), McGregor (Theory X and Theory Y), and other notable researchers' involvement in the human relations movement studies (1930-today).

What seemed to connect these observations to the researchers was the notion of common sense and its ability to serve as the hitching mechanism to connect individuals and their organizations to the desired principle of operations. Without common sense, it seemed the parties could appreciate the appearance of the desired principles from a distance but could not have a full connection to them in order to move the paradigm forward personally or organizationally.

LITERATURE REVIEW

There is a literature gap involving common sense and the areas of leadership and organizational behavior in general. The topic is mostly identified within the context of the political arena and whether someone's actions are appropriate or not. However, since 2000, the notion of common sense leadership as it relates to organizational behavior is almost a quiet topic by theorists in the field.

Fletcher (1984) believed common sense is a component of common understandings about the environment consisting of three points. First, common sense unites underlying presuppositions about the environment (Goodwin, 2009). Second, common sense consists of a group of shared opinions about the

environment (Goodwin). Finally, common sense is a shared “way of thinking” about the environment (Fletcher, 1984, p. 204).

Salter and Highhouse (2009) relate common sense within the context of situational judgment. They note there are eight schools of thought in this area starting with File (1945) and continuing through Brooks and Highhouse (2006); Motowidlo, Hooper, and Jackson (2006); and Stemler and Sternberg (2006). Salter and Highhouse note there is a commonality in how each of these scholars defined situational judgment such that “good judgment does not exist in a vacuum; it usually occurs in the context of other people or situations” (p. 394). The Situational Leadership Model, developed by Hersey and Blanchard, postulated that leaders maximize their opportunity for success by adapting style to the specific situation based on the skills, abilities and desires of the followers (Hersey, Blanchard & Johnson, 2007; Newstrom & Davis, 2007; Pechlivanidis & Katsimpra, 2004). The seminal research seems to point to the notion that there is a connection between common sense and its relationship with familiar experiences of people in a grouping. Salter and Highhouse (2009) further state that situational judgment (what this study calls common sense) is a qualitative determination where factual and procedural knowledge are used to discover how others will respond to various circumstances. This is perhaps why there are differing definitions of what common sense is, given it is not a measure that can be quantified because of its amoebic, ever changing nature. What might be considered common sense by one person now may not be deemed as such by later investigations because of what Polanyi (1966) called *tacit knowledge* or what one learns from past experiences, which are not always quantified or recorded for later review.

Moon (2009) relates the importance of common sense study to change management particulars. He links the need for common sense as a means to “pass stakeholders’ common sense ‘sniff tests’” (p. 518). Moon further notes “stakeholders are less likely to adopt change when their common sense perspectives are violated” (p. 518). Kaler (2006) believes that properly managing stakeholders for any kind of an organization focuses on the ability to address the needs of more than corporate profits and the growth of shareholder wealth. Managing in the 21st century requires a much broader thinking concerning the ramifications that organizational decisions have on the overall environment (Harrison & St. John, 1996). Effective management of a wide range of stakeholders requires leaders to identify each type of stakeholder that could influence the direction of the organization and their specific expectations (Harrison & St. John, 1996). Rigsby and Greco (2003) believe that leaders with a creative and unique vision look beyond the obvious needs of the organization towards an uncharted future. Leaders who fail to recognize the tangible and intangible future of any stakeholder, individual, group or environment creates a detrimental atmosphere where failure becomes a possibility (Wallace, 1995). Thus, common sense becomes a benchmark that is “so clearly self-evident and to think/do otherwise would obviously be folly” (Moon, personal communication, April 28, 2011). In this context, common sense then becomes a group norm that is transformed from what one person thinks to something that is embraced by other members of the organization.

Clawson (2009) believes that one needs to consider common sense from a broader perspective because “managers who are unable to review and adjust their common sense are not likely to be effective managers locally or globally” (p. 470) He notes the reason why leaders cannot come to a firm definition is because “people draw conclusions based on vague values, assumptions, beliefs, and expectations they have about the way the world is or should be” (Clawson, personal communication, April 26, 2011). Clawson also sees common sense as being a local or global perspective rather than something identified by all who understand the term (2011).

Rausch (2009) notes that while there have been myriad leadership publications a general consensus on the meaning of common sense has not been reached among scholars and practitioners. What can be agreed on, though, is there is a positive relationship between common sense and how one is thought to make

sound decisions on any given matter (Rausch). That is accomplished in the organizational setting through the communication of the leader's values.

Zhao (2009) makes an important observation on common leadership when he notes, as others, that it seems common sense is a self-evident concept espoused by practitioners, which then ends further discussion. However, opinions about what the term *common sense* includes are more “about effectiveness, not about science” (Zhao, 2009, p. 449). Zhao goes on to connect those who are proponents of common sense leadership to a “response to arbitrary and bureaucratic management, and useless complicated or dogmatic procedures” (p. 449).

What is interesting in the literature is common sense is recognized as having an imprint on organizational behavior (Goodwin, 2009; Moon, 2009; Rausch, 2009; Salter & Highhouse, 2009; and Zhao, 2009). However, common sense serves as an intangible qualifier that people can see the effects of without being able to hold it in their hands, much like the wind. Yet, common sense is no less important to organizational survival and the ability of managers to make prudent decisions that could lead to success or failure based on how these actions are implemented and grasped by their followers.

DATA AND METHODOLOGY

This qualitative study on recognizing common sense as it relates to the 21st century organization was undertaken from July 29th through December 7th, 2010. It involved 26 participants who were identified as senior leaders in their organizations (Vice-President and higher on the organizational chart). The convenience sample included individuals from both the public and private sector and included leaders from information technology, insurance, investment, legal services, manufacturing, marketing, public utilities, real estate, restaurants, and staffing. Participants were polled from Georgia (50%), Nevada (23%) and other regions of the United States (Alabama, Connecticut, Florida, Maryland, Minnesota, North Carolina, and Pennsylvania); using SurveyMonkey.com as the platform for respondents to record their complete comments (see Appendix A). The participants were asked to respond to two questions for two proposed studies. The following question guided this study: How would you define common sense as it relates to leading a 21st century organization? A future study will address the results of the other question: What are some common sense, best practice leadership examples you could provide from your lived experiences as a senior executive?

FINDINGS

It was not difficult for these senior-level leaders to identify how common sense leadership was recognized, although there was no single broad category that could be used to delineate the meaning of the term. Instead, three predominant groupings were produced from the data, which seemed to guide the participants' perceptions of what common sense leadership means in their organization: (a) goal setting, (b) decision making, and (c) motivation. Figure 1 shows where the participants identified common sense leadership (CSL) showing up within these three broad categories.

Goal Setting

Opinions about common sense as they relate to operational issues fell within three broad groupings: mission, vision, and purpose. Within those areas, participants identified two specific subsets: recognition and getting back to basics.

Figure 1: The Breakdown of Participants’ Definition of Common Sense Leadership

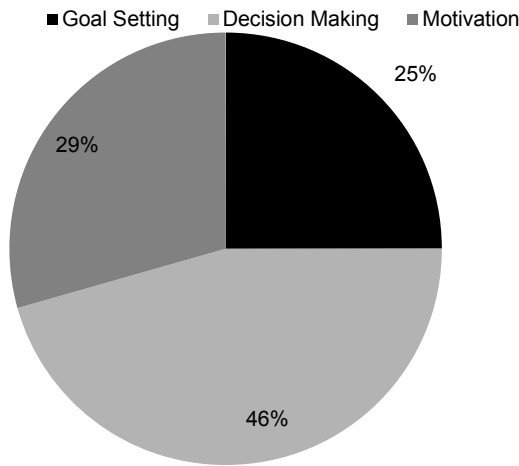


Figure 2: Areas of leadership identification groupings.

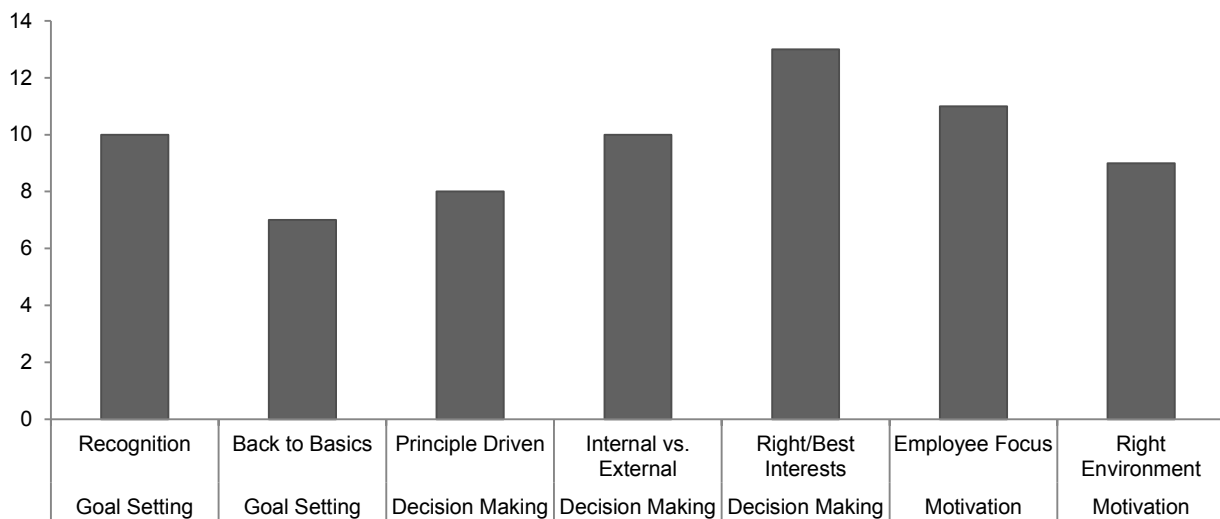


Figure 2 delineates each category into specific groupings, which help leaders define where common sense leadership characteristics appear most in their organization.

Recognition

Participants noted that common sense starts within the proper mindset of what is happening in the organization. CS7 opined that meant the leader needs to have an “innate ability to recognize issues and processes within a business structure and address them accordingly.” That perspective was echoed by CS23 added that commons sense realizes this in the context of “social environments in which a person operates. Common sense includes a personal feel for the operations of a business, knowledge of the external environment in which the business exists, and understanding of the social dynamics that exist within the organization.” In other words, common sense operates within an amoebic kind of environment where all parts are connected, blended together, and flowing together in tandem within the parameters of mission, vision, and purpose. CS13 adds, “Since the state of man is such that he is constantly searching

to find his meaning and purpose, common sense would dictate that a leader be able to provide/communicate, in part, this meaning and purpose to the individual in an organization.”

Other participants in this study noted a similar connection as they saw how common sense relates to “the absolute understanding of your business model and processes” (CS25). CS8 attributed common sense to the leader’s “ability to assess reality.” CS20 viewed the pursuit of using common sense in the context of “vision expressed daily. Efficiency tweaked daily. Productivity measured daily. Relevance to customer needs examined daily.” Common sense then would be bounded by observing what has been done in the past, looking to what the organization is experiencing now, and looking to the realities of the future in almost a simultaneous set of activities by the leader.

The notion of common sense was also framed within the ideal of knowing what tools are available to the leader. CS26 defined this area as “a set of mental tools that guide a person through the decision process to a point where the obstacles have been analyzed, potential solutions have been outlined with different consequences thought through, and then reasoning the way to the best solution.” Instead of describing a situation where one tool fits all leaders, common sense then would seem to relate to the recognition that there are differing ways to use those devices and arrive at varying solutions, which may be beneficial to the organization. At least that is what CS26 seems to indicate when it was opined that leaders in the 21st century “will have to accommodate people in leadership positions who have a different common sense matrix than has been thought of as traditional common sense.” The reason why that may be true is best described by CS13 who posited that “common sense is that set of intuitions, biases, and perceptions which are taken for granted by the one who possesses them.” If one thinks that a leadership tool has only one use then there may be a surprise when that device ends up having different uses by those who do not see common sense leadership within a narrow set of definitions. However, the study of leadership is challenged because CS26 also noted that “what makes it harder is that we now have two generations who have developed a different sort of common sense as a result of a different upbringing.” Intergenerational differences need to be considered when determining what is or is not defined as common sense leadership in the 21st century.

Back to Basics

Aligned with mission, vision, and purpose issues are where participants felt common sense leadership begins in an organization. CS3 sees the genesis of such understanding starting by “getting back to the basics of setting measurable and attainable goals.” Only when the leader knows their true north coordinates will the organization be able to know the clear direction they want to follow without being distracted by alternative opinions from those who are following an outdated map of operations. CS25 added that common sense is more than just the leader knowing where the organization is heading but they also possess “the ability to know that all processes and functions are working properly or improperly. This applies to everything from software to human resources.” When a leader is confident that they have marked a clear path for the rest of the organization to follow behind them and all known and needed resources are in place then the participants believe common sense is being used optimally.

Participants noted that common sense relates to the ability of a leader to offer “the product or service in a way that is easy to understand, purchase, and see the value of the product or service” (CS22). The reason is that, as CS25 noted, “Without understanding how your organization is built and functions you cannot see if something is amiss.” If a leader is able to have such focus then CS3 suggests that one can pursue “those goals without being impacted by noise or emotional drivers. Too often these days, plans are created and decisions are made with drivers that are contrary or not related to success.” That is why the participants may have been focused mostly on mission, vision, and purpose because as CS8 views common sense in leadership, one has to “develop a plan, and present and sell that plan to achieve your objectives.”

Decision-Making

Opinions about common sense as it relates to decision-making fell into broad principle-driven considerations. Common sense, according to the participants, is based on internal drivers rather than outside factors that may affect the leader. CS2 notes common sense is “experienced based decisions that are not driven by politics.” The leader in such cases will look at situations as doing what is right first while looking out for the best interests of the organization. CS14 says this process all begins by knowing your customer and what their expectations may be. CS15 sees common sense as “looking past numbers to do the right thing for employees, customers, and shareholders.” CS11 agrees with that notion and further states that common sense is “acting in a way that positively affects company goals while appearing to stakeholders to be the most appropriate approach.” CS24 added that “common sense as it relates to leading a 21st century organization is best defined as doing the right thing at the right time with resources--time, people, money and information.” Common sense then is formed as CS24 described “a fail-safe, flexible model for action that results in obtaining the key objectives of the organization consistently” while doing the right thing every time. CS10 connected common sense leadership to “doing what is right by leveraging personal and professional experiences” rather than what someone else wants you to do.

Many of the participants equated common sense to moral decision making. CS5 said this relates to “using your moral compass to make decisions and following the ‘do unto others’ principle.” The core question that leaders would then need to answer would be, “Is what you are considering something that you would personally feel right about, and would you be proud to talk about it to others?” (CS17). CS4 notes that leaders should “try to perceive the outcome of their action(s) and determine if they would be happy with that result.” CS19 believes the answer follows one’s practice of “simply doing the right thing even when it is often not the easy thing to do. Lead by example. Practice what you preach.” By setting the right example in their organizations, leaders can show common sense that can be emulated by their followers.

Several participants noted that the benchmark for common sense activity in organizations is “actually a matter of aligning our lives with timeless principles” (CS21). CS7 stated a similar observation that “one’s moral/ethical beliefs play an important part in how these things are addressed.” The end-result according to CS12 is that “common sense and doing what is right is what leaders do to grow their fruit stands into factories.”

Motivation

Opinions about common sense as it relates to motivation fell within two broad groupings: employee focus and the setting up the right environment. Both seem to work in tandem with each other to encourage further common sense practice and application within established organizational norms.

Employee Focus

Another element that participants said would apply to common sense leadership relates to human capital considerations. CS3 believes the starting place for common sense leadership in this area begins with “assembling a team of people with a track record of success.” Common sense then would include the leader knowing who the right people are to move the organization ahead, understanding their availability for hire, and making sure the targeted individuals have gained success within similar areas of operations. Once the human assets are in place, CS1 believes one starts by first having the mindset of caring about the people who are employed by your organization.

At the very base of common sense in leadership is how to motivate your employees so they will maintain a long and productive relationship with your organization. CS9 says it begins with praising and rewarding “employees for the good work they do - take care of the employees and the bottom line will take care of itself.” At the core of commonsense and motivation is what CS13 sees as “an endowment given to all mankind in varying degrees. It is a subjective, non-material object, which can only be measured and defined in relationship with something else. Since organizational leadership is necessarily people-driven, common sense possessed by the leader of any organization will be marked by his seemingly 'natural' ability to understand what motivates people.” CS1 notes that also means knowing that “the employees of the company are people first, employees second.” CS12 puts the onus for that on leaders as they show their “understanding that people work with people, not for people.” The nuance there is one of use as being proactive vs. reactive in how it is approached.

CS18 notes that empowerment is a part of what happens because “common sense consists of understanding the unique ways in which the members of your organization can be enabled to be part of a team effort to achieve worthy goals.” CS6 concurs by noting “common sense is the ability to look at more than one party’s perspective on an issue or subject and make reasonable decisions based on that.” How a leader can reach that level of understand comes by “realizing that people are the base of our services, products, technology, etc... and the only value your company has is the quality of employees” (CS15). CS14 adds that common sense means “treating employees and customers fairly,” which seems to be the hallmark of what the participants said best defined common sense in this area of inquiry.

Setting the Right Environment

Several participants who noted that setting the right environment was a consideration described a smaller area of consideration of what common sense means as it relates to motivation. CS1 noted that getting employees to “ride for the brand” needs to be emphasized. The goal in such work would be to engage employees in activities that would move the brand forward while concurrently recognizing the followers’ individual work in doing so. CS12 believes that means to “try to make all areas ‘win/win’ situations” for leaders and their followers. CS13 posits that “at a basic level, leadership is a function of an individual's ability to intrinsically motivate people to work together to make a vision reality. Organizations exist around a common purpose, and it is the job of the leader to help people in an organization understands and cares about the purpose.” By doing so, the work environment will thrive and survive in whatever challenges it may face from its stakeholders.

CONCLUSIONS

According to Fletcher (1984), common sense leadership focuses on organizational environment. A single answer to define common sense leadership is not possible because senior level management has a number of different points-of-view. Summarizing the results of this study categorize common sense leadership into three areas: (a) goal setting, (b) decision making and (c) employee motivation.

Kinicki and Kreitner (2010) believe that setting goals requires a “clear line of sight” in order to lead a 21st century organization (p. 245). Furthermore, common sense leaders differentiate between performance outcome goals and learning goals (Kinicki & Kreitner). CS3 believed that common sense requires the leader to “set measureable and attainable goals.” The results of this study indicate that leader flexibility adapting to the ever-changing environment is critical to being a common sense leader. According to CS26, leaders in the 21st century “will have to accommodate people in leadership position who have a different common sense matrix than has been thought of as traditional common sense.” Maintaining a flexible view of both the environment and the members of the environment is the first indication of 21st century common sense leadership.

The second of the three areas of common sense leadership concerns the decision making process used by 21st century leaders. It is important that the reader understand that decision making in modern organizations follow one of two directions: (a) rational or (b) nonrational. According to Kinicki and Kreitner (2010), the rational approach to decision making requires the leader to solve problems by following a process that examines all potential alternatives before making a final decision. Participants in the current study indicate that a moral compass in choosing a direction for an organization is an important component of being a common sense leader. The central focus of this moral compass is the ability to inspire. Inspirational leaders expand their credibility by engaging their followers into accepting new responsibilities necessary for goal attainment (Bass & Avolio, 2002; Bass, 2003). CS24 believed that “common sense, as it relates to leading a 21st century organization, is best defined as doing the right thing at the right time with resources, time, people, money and information.” This study concluded that true common sense leadership requires leaders to inspire followers while making directional choices for the organization that ethically satisfy the morality of the overall environment.

The final area of common sense leadership focuses on employee motivation. Motivating people accounts for the influential effectiveness leaders have with their followers (Schermerhorn, Hunt & Osborn, 2004). Motivation theory is divided into three overall categories: (a) reinforcement theories, (b) content theories, and (c) process theories. Reinforcement theories reflect the “process of controlling an individual’s behavior by manipulating its consequences” (Schermerhorn, Hunt & Osborn, 2004, p 85). Content theories focus on the needs of employees. Maslow’s Hierarchy of Needs measures motivation through meeting certain physiological human needs (Newstrom & Davis, 2007). Finally, process theories motivate from a more esoteric approach concentrating on behavioral influences (Schermerhorn, Hunt & Osborn, 2004). CS13 views motivation and common sense leadership as a partnership between focusing on people and determining the direction required for the organization to be successful.

In summary, understanding common sense leadership is not possible from a single point-of-view. Senior level executives indicate that common sense leadership is a multi-pronged approach to 21st century organizational behavior. Common sense leaders must maintain a level of flexibility to address both the needs and desires of the organization in conjunction with those of the members of that organization. Decision making requires a sense of morality that sometimes supersedes organizational performance and profitability. Finally, study participants strongly believe that employee motivation that encompasses the previous two concepts (e.g. goal attainment and decision making) through a sense of morality is the key to being a common sense leader.

The limitations of the study are primarily the size of the sample population, which inherently precludes applying the results to the general population of senior leaders. Additionally, because the key to common sense leadership was indicated as a sense of morality, the values and ethical views of current and future leaders will significantly impact the perceptions of what is common sense leadership in the present and future workplace.

The authors suggest further study with larger and more diverse sample population, and inclusion of a variable addressing the formal business ethics training of the study participants. We also recommend engagement in a global discussion on how common sense is identified in an organizational context. Once such recognition is made, a simultaneous conversation needs to take place on best practices involving common sense leadership within an emerging transformational leadership paradigm.

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APPENDIX

Appendix A – Survey Instrument

Common Sense Leadership

Thank you for taking time to complete this short survey about leadership. The results will assist the researchers in opening an academic dialogue on the subject and how common sense relates to how we might train emerging leaders in our organization.

We appreciate your time and valuable insights.

Please provide the following information so we can properly categorize your answers for this study.

1. Please provide the following information so we can properly categorize your answers for this study

Job Title:

Organization Type:

State:

2. How would you define common sense as it relates to leading a 21st century organization?

3. What are some common sense, best practice leadership examples you could provide from your lived experiences as a senior executive?

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ISSUES WITH INTRODUCING GENERIC OPTIMIZATION MODELS INTO SMEs IN SUB-SAHARAN AFRICA

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ABSTRACT

Small and Medium Enterprise (SMEs) play a vital role in the sustainable industrial development of the Sub-Saharan Africa (SSA). SMEs can benefit from use of productivity and efficiency enhancement optimization models. Even the simplest mathematical model application has the potential to help SMEs promote their competitiveness and sustainable growth. The application of optimization models has a proven supportive role in streamlining strategic and operational planning processes. This paper discusses conceptually the feasibility and problems of applying generic optimization methods in the operational planning of SMEs in the SSA nations. This will increase the awareness of SME entrepreneurs of how simple optimization models can help SMEs' improve their efficiency and effectiveness in scarce resources utilization activities. The paper develops generic optimization models with the topologies of suitable applications' modes operandi. Practical application will be subject to further research.

JEL: 014

KEYWORDS: Small and Medium Enterprises (SMEs), Economic Development Optimization Models, Sub-Saharan Africa, Decision Sciences, Production Planning

INTRODUCTION

Small and Medium Enterprise (SMEs) are major contributors to the sustainable industrial development process of emerging nations. The current accelerated advancement of information and electronic technology has made available a variety of user-friendly quantitative models' application software packages. In fact, SMEs in industrialized nations have continued improving their operational efficiency by applying appropriate mathematical (quantitative) models to planning and decision making processes. SME entrepreneurs in developing nations, like those in the Sub-Saharan Africa (SSA), should also benefit from the appropriate use of vastly available resources and productivity optimizing quantitative tools. Even the simplest mathematical model has potential to contribute towards promoting competitiveness and growth. This is a wake-up call for SMEs' entrepreneurs in SSA nations to help their firms apply at least proven generic optimization models to help them to improve and enhance their strategic and operational planning process. SMEs operating in any environment can achieve competitiveness, sustainable growth and profitability if they engage in continuous improvement of their operational activities. This is a notable contribution to innovation and sustainable industrial development.

This paper presents a simple and application friendly resource optimization model called Production Plan Optimization (PPO). From an economic rationality point of view, the paper discusses the potential benefit of PPO for firm efficiency improvement endeavours. If SMEs in SSA apply appropriate optimization models, they can improve their efficiency and effectiveness in scarce resources utilization. Application of optimization models is a formidable task particularly in nations with a classical developing economy. However, using simple models can contribute to the optimal utilization efforts. Stakeholders need to be aware that even the simplest model can help if it is adapted to the objective realities on the ground. Thanks to the mushrooming of electronic technology, even in remote villages of Africa, special and general purpose computers are widely available in the SSA nations. Therefore, SMEs should use optimization models in their vital operational activities like production planning and scheduling, etc.

LITERATURE REVIEW

Society's need for goods and services has continued to grow, especially in countries where the population growth rate is high. However, economically valuable resources are always scarce, and this scarcity has created the need for efficient use of resources at hand. This is more apparent in developing nations as they suffer from wide spread scarcity of resources. In fact, they are mostly inclined to use resource optimization methods (Eid, 2009; Dutta and Sinha, 1994; Bazaraa and Bouzاهر, 1981; White et al, 2011; Madu, 1999; Bazaraa, and Bouzاهر, 1981; Salaheldin and Eid, 2007; Anderson, Sweeny and Williams, 1998). In the industrialized countries the use of optimization models has become popular particularly among SMEs (Yousef, 2011; White, 2011; Jingura, 2009). This is due to a widespread availability of modern, affordable and user-friendly software packages (Yousef, 2011).

Optimization models have been widely used as supporting tools in industrialized countries. The application level is extensive in both private and public socio-economic sectors such as agriculture, industry, environment, health and energy (Garnett et al, 2011; Verhaeghe, Kfir 2002; Denton and Gupta, 2003; Chattopadhyay, 2001; Hashimoto, Romero and Mantovani, 2003; Piper and Vachon, 2001; Caixeta-Filho, Van Swaay-Neto and De Padua, 2002; Dutta, and Sinha, 1994; Miller, Nemhauser and Savelsbergh, 2003, Stapleton, Hanna and Markussen, 2003; Begen and Puterman, 2003). This phenomenon is apparent in economic success stories of developed and East Asian tiger nations (Aghezzaf, and Artiba, 1998; Schaller, Erenguc and Vakharia, 2000; Buehlmann, Zuo and Thomas, 2004). SMEs have extensively applied optimization models as tools to streamline their operational tasks and make sound decisions. This helped them improve the efficiency and effectiveness of their operational activities (Guillaume et al, 2011; Michael Cesar, 2010; Hodges, 1970; Farashahi, 1974; Kasana, 2003; Hiller, Mark and Gerald, 2001; Hoppe and Spearman, 2001; Altinel, Özcan, Yilmaz, Güneş, 2001).

The application of optimization models in SSA nations is in the embryonic stage despite attempts by some researchers and practitioners to apply optimization models (Cabraal, 1981; Maatman, Schweigman, Ruijs, and van Der Vlerk, M., 2002). The application of most of optimization models' focuses on non-manufacturing sectors (Fong, 1980; Bazaraa, Bouzاهر, 1981; Cabraal, 1981; Gori, 1996; Madu, Christian, 1999; Maatman, Schweigman, Ruijs, and van Der Vlerk, 2002; Gilbert, E., (2003); Kazuhiko, 2003). Optimization model application in SMEs has been nominal and mainly concentrated in branches and subsidiaries of foreign multinational corporations (Naudé, 2010; Fong, 1980; Cabraal, 1981; Caixeta-Filho, et al, 2002). Still there is a perception in SSAs that optimization models can only be applied bigger companies. However, we can adjust model applications and their results to fit in to a particular situation (Yousef, 2011; Naudé, 2010; Zimmermann, 1994, Ignizio and Tom, 1994). SMEs, particularly smaller ones, can be suitable for the application of optimization models as their production processes are simple and traceable and they produce few products. Unfortunately, this is not the case with SMEs in Sub-Saharan African (SSA) nations. They have failed to benefit from the use of optimization models (Bazaraa, and Bouzاهر, 1981). SMEs have a strong representation in SSA nations (Tesfayohannes, 1998). In South Africa, SMEs account for more than 35% of all manufacturing firms (South African Institute Race Relations Report, 1999). They are a prime source of employment generation, innovation and industrial development. Therefore, successful application of optimization models in SMEs is an important contribution to the sustainable industrial development of SSA nations.

METHODOLOGY OF APPLYING OPTIMIZATION MODELS IN PRODUCTION PLANNING

As a supportive precondition for the application of optimization models, I formulated a topological specification system that helps classify and group variables in a given operational planning process (Horngren, Foster, Datar, and Teall, 2000; Chase, Jacobs, and Aquilano, 2004; Heizer, Jay and Render, Barry, 1999). I assume there can be a variety of production variables as inputs. The analysis Starts with

three major inputs in a production process of a typical small manufacturing firm. These major inputs are: Available Machine Hours, Available Labor Hours and Required Direct Materials. The objective is to minimize direct production costs by optimizing the use of these vital inputs in a given production process (Salaheldin and Eid, 2007; Foulds, 1981; Gupta and Mohan, 1989). SMEs can conveniently apply simple optimization model for smoothing production process. I shape the model to suit production system specifications. Accordingly, I formulated typological specifications processes intended to identify operational characteristics and production systems of manufacturing firms. This is to obtain required knowledge about the following important features: the relationship between the production plan and the production process; the objectives and decision variants of production plan; the objective realities and peculiarities of the decision variables for which optimal result is searched; the necessary information for operational planning models and detailed data that should be obtained from a solution of an optimization model. The typological specification process as shown in Table 1 is meant for SMEs engaged in manufacturing activities with obviously limited production lines.

Table 1: Characteristics of Production Processes

1. Basic Forms of production Process	2. Plant Layout System	3. Production Process System	4. Technological Standard	5. Cost Accounting System
A. Extraction Process	A. Layout by Process	A. Continuous Production System	A. Labor Intensive Production System	C. Job order Costing System
B. Conversion Process	B. Layout by product	B. Intermittent Production System	B. Capital Intensive Production System	D. Process Costing System
C. Fabrication (or formation) Process	C. Mixed Layout System			
D. Assembly Process				
E. Hybrid or Mixed Process				

Source: Designed by author

A) Extraction Process indicates the process of raw and basic material extraction (depletion) from natural reserves. B) Conversion Process demonstrates the process of changing chemical contents of materials. For example, changing iron ore into metal sheets, or making ingredients into one combined output. (E.g. chemical processing plants). C) Fabrication (or Formation) Process refers to the process of transforming materials physically that is changing them into some specific forms as desired. For example, furniture plants, textiles, and many others. D) Assembly Process refers to fixing parts together to give them specific formation and function. Examples include assembling a fender to a car, assembling tires to a bicycle. E) Hybrid or Mixed Process referring to using more than one production process systems at the same time.

Layout is the arrangement of production facilities on industrial premises. The three basic types of layout for basic production system are: A) Layout by Process (Functional layout): all operations of a similar nature are grouped together in the same department or production centre of the given factory. For example, there may be separate areas for drilling operations, milling, grinding, and fitting. B) Layout by Product: This means, the arrangement of production facilities in line with the needs of the product and sequence of the operations system that is necessary for engaging in a manufacturing activity. Layout by product is particularly suitable for continuous production system that is used to producing a small range of goods in very large quantities (mass production). C) Mixed Layout System: Some industries use both Lay Out by Process and Lay Out by Product Systems simultaneously. In particular, larger firms that produce varieties of products may find it necessary to arrange their production facilities using both process and product layout systems. There are other layout systems, but for small industries in a developing economy and less technological advancement, these layouts systems are sufficient.

The production process system refers to the firm's production process flow. There are four types of process flows: Job Shop, Batch, Assembly Line, and Continuous. However, they are more or less grouped into two major production process systems: A) Continuous Production System which is suitable for mass production industries such as cement processing, brewery, refinery, etc. Once adopted a continuous production system remains active for a long time. A change in production systems means investing a large capital outlay. The machines available are special purpose machines. B) Intermittent Production System is usually applied in manufacturing industries that produce a variety of products at a time, (or finite number of products in batches to fulfill a customer order).

Technological standard wise, the production process is largely dependent on human labor as labor intensive or hardware technologies such as automated machining, material handling and industrial robots as capital intensive. This technological standard is categorized as labor or capital intensive: (A) Labor Intensive Production Process is usually used by small manufacturing industries that produce simple and mostly consumer goods. In this system, the use of expensive and special purpose machines is low. The role of human labor in the production process is dominant. (B) Capital Intensive Production Process applies to manufacturing industries engaged in mass production activities and use modern, expensive and highly specialized as well as largely automated machines.

The costing system of manufacturing industries is based on the type of production system used. Generally there are two basic costing systems: A) Job Order Costing System is the application of costs to specific jobs in terms of single physical unit or a few similar units (such as a dozen of chairs). Units are identified by individual codes or batches. Job order costing system is applicable in industries like construction, garment factories, furniture manufacturing, metal tools fabricating and printing. B) Process Costing System is used by firms manufacturing standard products for stock in a continuous flow, without reference to specific orders or lots. Emphasis is placed on production for a given period such as a day, a week or a month. A process costing system applies to industries like flourmills, breweries, cement plants, chemical plants, sugar factories, paper factories, textile mills, food processing and others.

Based on the above typological specifications, I characterize the operational activities' framework of a given manufacturing firm. For example, a plant can be characterized as: engaged in material conversion, (1B); arranged according to product layout system (2B); apply a continuous production system, (3A); use capital intensive production process, (5B); apply process costing system (5B).

The typological specification process is a prerequisite for determining the following basic structures of constraints: labor hours constraints based on occupational (or qualification groups) and structural units; material resource constraints based on material type and structural units; machine hours constraints based on types of machines and average operational capacity; minimum allowed production volume (level of demand); and the average standstill and waiting time in production process.

MODEL ESTABLISHMENT PROCESS

I assume that the annual production plan is the base for formulating the optimization model. In line with this approach, I determine the major elements of the production plan to identify and analyze production plan related problems in the production planning process. I may face problems during the process of: identification of the factors of production; determination of the objective function; determination of resources inputs used for production; and determination of the potential constraints that are used in the application of optimization models. The most difficult job is to sort out: machines according to their models, types and operational capacity; materials according to their type and quality; and labor force according to qualification and occupation. In the process of problem analysis, I should be aware of the specific stages (or centers) of production process in which the inspection or a test is performed. I also

ensure that idle periods such as set-up, repair or operators rest time, etc and others are reduced to determine the net daily operational hours.

The general formulation of optimization a model for firms capable of producing more than one product is presented below. Consider a plant that produces product uj , where $j = 1, 2, \dots, n$. u_j is defined as the quantities of product j . The constraints for our model are limited to the direct inputs comprising the major costs of production: *Machine Hours*, *Labor Hours* and *Direct Materials*. Their optimal utilization has a considerable impact on the cost of each product. The maximum projected sales during a given time duration is a constraint. There are other constraints, but as a first attempt, I considered only influential constraints. The decision on constraints for the optimization model related to production planning are based on a specific manufacturing activity for a given firm. I formulated tabular formats for data collection and determination of net available resources. To determine net available machine hours, we deduct all causes of machine idleness. The mathematical presentation is:

$$m_{wj}, \quad w = 1, 2, \dots, z \\ j = 1, 2, \dots, n$$

m_{wj} is the necessary machine time in hours of w^{th} machine group (type) for the j^{th} product. Therefore: M_w is the sum of the net available machine time for w^{th} machine group. The most important task is to

$$\sum_{j=1}^n m_{wj} u_j \leq M_w \quad w = 1, 2, 3, \dots, z$$

collect the necessary data for the computation of the available operational machine time in hours. I designed and made ready formats for use in the data collection purpose.

Our second constraint is direct material. These parts are easily traceable to the finished products in an economically feasible manner. Examples of these are sheet steel for metal industries, wood for furniture industries, cotton for textile, etc. Direct materials do not include indirect materials. Indirect materials are minor items and their tracing cost is excessive and unfeasible. The mathematical presentation is:

$$f_{ij} \quad i = 1, 2, \dots, r \quad \text{and} \quad j = 1, 2, \dots, n$$

f_{ij} is the necessary quantity of i^{th} type of direct material for each product j . Therefore:

$$\sum_{j=1}^n f_{ij} u_j \leq F_i \quad i = 1, 2, \dots, r$$

F_i is the grand total of the available direct material resources of i^{th} type of material. I designed tables that are intended for data collection purpose.

The labor time used in the production process is direct and indirect. Direct labor is all labor that can be identified in an economically feasible manner with the production of finished goods. It is a variable part of the production cost. For example, the labor of machine operators and assemblers is recognized as direct. However, indirect labor is not generally traceable to specific products. I therefore consider the direct labor as our third constraint. The mathematical presentation is:

$$x_{sj}, \quad s = 1, 2, \dots, t \\ J = 1, 2, \dots, n$$

x_{sj} is the necessary direct labor hour(s) of s^{th} qualification (occupational) group to process a unit of j^{th} product.

$$\sum_{j=1}^n x_{sj} u_j \leq X_s \quad s = 1, 2, \dots, t$$

X_s is the grand total of the net available direct labor time in hours for the s^{th} qualification group. I designed tables, for data collection purpose. It is assumed that labor hours and machine hours depend on each other as a machine cannot run without an operator and vice versa.

The maximum level of production for a planned year d_j is determined based on the forecasted level of sales for that year. The minimum production level e_j reflects the *Economic Production Quantity* (EPQ). That is the minimum quantity a plant must produce in order to achieve a reasonable production cost leading to breakeven. If a plant produces lower than the EPQ, the result is higher production cost (due to a higher proportion of fixed cost per unit). This leads to unsustainable business survival.

FORMULATION OF THE OBJECTIVE FUNCTION

Formulating a practical objective function is a challenging task. I selected the relevant objective function as *Maximization of a Contribution Margin*. A contribution margin is the result of *operational sales minus all variable production costs*. Fixed production costs are excluded because they do not vary with the number of units produced. Contribution margin is affected by both sales price and variable production costs. A higher sales price or a lower production cost maximize contribution margin or vice versa. The computation of a contribution margin is presented below. Mathematically I define our objective function for each unit of j^{th} product as follows: mk_j is the direct material cost per unit of j^{th} product; lk_j is direct labor cost per unit of j^{th} product; fk_j is factory overhead cost per unit of j^{th} product; ak_j is variable selling cost per unit of j^{th} product; bk_j is variable managerial cost per unit of j^{th} product. Thus:

$$k_j = mk_j + lk_j + fk_j + ak_j + bk_j$$

k_j is the total variable cost per unit of j^{th} product; c_j is the contribution margin per unit of j^{th} product; p_j is the sales price per unit of j^{th} product. Therefore:

$$c_j = p_j - k_j$$

Based on the above computation I formulate the desired production plan optimization model as:

$$(1-1) \quad \max. \quad z = \sum_{j=1}^n c_j u_j$$

$$(1-2) \quad \sum_{j=1}^n m_{wj} u_j \leq M_w \quad w = 1, 2, \dots, z$$

$$(1-3) \quad \sum_{j=1}^n f_{ij} u_j \leq F_i \quad i = 1, 2, \dots, r$$

Subject to:

The above formulated model contains only the three main direct inputs in a production process.

$$(1-4) \quad e_j \leq u_j \leq d_j \quad j = 1, 2, \dots, n$$

$$(1-5) \quad \sum_{j=1}^n x_{sj} u_j \leq X_s \quad s = 1, 2, \dots, t$$

THE NECESSITY OF A POST OPTIMALITY ANALYSIS

There are many factors that cause changes in coefficients of objective function and constraints. These parametric changes are usually interrelated. For example, some major parametric changes are: changes in the contribution margin per unit of j^{th} product (the coefficient of the objective function i.e., c_j); changes in the amount of operational machine hours of w machine types (groups) necessary to process a unit of product j (m_{wj}); changes in the quantity of i^{th} material type necessary to process a unit of product j (f_{ij}); changes in the amount of direct labour hours of s occupational group (or occupational qualifications) necessary to process a unit of product j (x_{sj}); changes in the total available operational machine time of w machine groups for a planned year (M_w); changes in the total available quantity of i^{th} material art for a planned year (F_i); changes in the total available direct labor hour of s^{th} occupational group (X_s); and changes in the projected level of demand for a given planned year (d_j).

There are many other possible causes for change in the contribution margin. For example, increase or decrease of sales prices or increase or decrease of the elements of variable production costs affects the contribution margin. Sales prices are affected by many factors such as: competitiveness in market price, demand and supply condition, quality of finished goods and many others. In the same manner, if variable production costs decrease, it may be because of improvements in a production process, increased labor productivity, greater efficiency in material's utilization, and efficiency in machine usage or managerial effectiveness. For example, if the productivity of a machine operator improves the amount of direct labor necessary to process a unit of a product decreases, the same logic applies to direct material and machine hour usage rates. These changes directly affect the contribution margin (the objective function in our case). Based on the above analysis we conclude that the changes equally affect both coefficient of the objective function c_j and the coefficients of resources functions Σa_{ij} . That is: $c_j = \Sigma a_{ij}$.

Changes in the sum of available materials, operational machine and labor hours that are generally defined as b_i . The right-handed side constraints affect the once formulated production plan optimization model significantly. There could be many possible reasons for periodical changes in b_i . For instance, changes in the production volume, changes in the kind of material utilization, etc. All factors that affect the production plan directly should be seriously monitored.

APPLICATION'S CASE- ASMARA SWEATER FACTORY

I tested the above formulated optimization model in a small factory in Eritrea (Africa): Asmara Sweater Factory. The factory produces two types of sweaters: heavy and light sweaters for cold and hot seasons respectively. These two types of sweaters are made up of three types of materials: Wool, Acrylic and Lana. The factory is a good example of the type of small industries existing in the SSA nations. Necessary data for the application of optimization model were obtained from factory documents in 2003. The factory has three processing centers: Spinning, Weaving, and Finishing and Packing operating in a three shift system. Heavy sweater and light sweater are identified as u_1 and u_2 respectively. One unit of both products is a dozen sweaters of different sizes packed together. The basic resources used in production process are operational machine hours, operational direct labor hours and direct material (Wool, Acrylic and Lana). The factory applied an intermittent production system. Therefore, operational machines which perform similar processes are grouped together and located in different process centers. Operational workers are also aggregately grouped and assigned into the three processing centers in order to operate the machines available in each processing centre. The factory operated in three shifts per day except in processing center three (Finishing and Packaging) which is two and half shifts as the condition of work allows saving half shift in labor costs. This means machines in processing center three will be idle for one half shift time.

I averaged 1500 available machine hours per machine for each shift during a planned operational year. I assumed that more than one operator can be assigned to a single machine and operators are trained to be multi-skilled and they can be assigned to any machine in the three processing centers. The nature of the production process is also convenient for job rotation. The derived optimal solution is: 7500 units of product 1; 0 units for product 2; total contribution margin is \$450,000. According to the above analysis, the bottleneck is the available operational labor hours in machine group three. Its capacity is completely utilized. However, the others have still unused (idle) resources. To improve the optimal solution and to utilize idle resources, the company should hire additional operators. The maximum operational labor hours we can add is 18,000. Therefore, we have to hire 12 new operators with a capacity of 1500 hours each per year. But as noted earlier, the total cost of hiring additional labor force should be compared with the incremental value of our contribution margin.

WHAT SHOULD BE DONE TO ENHANCE THE IMPLEMENTATION

First, we need to identify problems hindering SMEs in SSA nations from applying helpful optimization models in general. This means we need to evaluate internal capacity of SMEs and their environment. It is not easy in many SSA nations to complement practical application. There are many social, economic, cultural, organizational and other problems encountered by SMEs in the SSA nations. To improve the situation and foster the ability of SMEs to use optimization models successfully, all stakeholders need to take a series of actions. In line with these efforts, I presented the following general recommendations: 1) Each firm must improve its organizational structures and managerial capability in order to create a favorable climate for the application of optimization models. 2) Firms should establish a system of keeping adequate and accurate data that are necessary for the application of relevant optimization models 3) Decision problems should be thoroughly analyzed and formulated. The determination and selection process of a suitable objective function should reflect the peculiar company conditions and characteristics. 4) The application of optimization models is unthinkable without using computers. Therefore, SMEs should acquire and use suitable computers and relevant software programs. 5) Firms need to update those applied models frequently, as they are living in a very dynamic and competitive world. 6) SSA nations need to give emphasis to training and upgrading of the skills of local qualified professionals in decision sciences. This is a good contribution to firms in their endeavors of applying optimization models. 7) Firms should perform the necessary cooperation, experience exchange and joint research with different local and foreign firms and academic institutions. 8) Applications of optimization models should be gradually popularized among the SMEs manager/owners and other senior management personnel via seminars, lectures, short-term courses and by other means of dissemination 9) Colleges and universities in SSA nations should design and offer quantitative oriented courses to their students majoring in business and economics. 10) Governments should help SMEs to import tax-free computers and software packages that are desired for their optimization models application

CONCLUSION

Optimization models have demonstrated their invaluable contribution towards economic efficiency, effectiveness and sustainable industrial development in many countries. Scarce resources need to be optimally utilized. This is a means of survival and prosperity for SSA nations. SMEs are the foundations of industrialization and their further development depends on proper management. The optimization model formulated in this paper is basic in its mathematical background and simple in application approaches. Of course, there will be many unanswered “IFs”, “THENS”, and “HOWs” and “WHYS” situational scenarios. This paper provides a springboard for further research in practical application of optimization models to industrial SSA nation management decisions. The paper contains a foundational framework that is open for further improvement on how SMEs managers can appropriately apply optimization models to enhance efficiency and effectiveness in operational activities of their firms.

The challenge ahead is to integrate the theoretical knowledge with practice. Failure to adapt optimization models to a particular situation and using inaccurate operational data can have detrimental impacts on applications of optimization models (Ashayeri and Selen, 2003). This paper has a limited scope and many questions need to be addressed. They are subject to further research and investigation. Firstly, other, note easily traceable resource constraints are not considered to reduce the model complexity. Secondly, future events are always uncertain and can trigger the unreliability of forecasted demands for a specific period. Firms should take care to ensure that their forecasted demands are reasonable, realistic and with less forecasting errors. Thirdly, the complexity of estimating labor hours, machine hours and other resources as aggregated constraints is an intricate task. It demands that firms should maintain a prudent and efficient operational activities record keeping and cost accounting systems. It was not easy to obtain the desired operational data from the Asmara Sweater Factory. I am aware that the application of optimization models is subject to trial and error. But, even the simplest model is helpful, and serves to disprove the unwarranted perception of non-applicability of mathematical models in developing economies.

There is a wide spread phobia among SMEs' owners/managers for applying mathematical models. Most believe that applying mathematical models is like spending time and resources on abstract theories (Gilbert, 2003, Ashayeri and Selen, 2003). To avoid this misperception, models should be presented in the way SMEs' owner/managers can understand and appreciate their use.

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