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Corporate Social Responsibility & Market Volatility: Relationship and Trading Opportunities

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Abstract

This article examines the relationship between corporate social responsibility performance (CSR.P) and market trading volatility (MTV) provoking by the release of the non-farm employment payment-reports (NFP) the first Friday each month in the USA. It also discusses the trading opportunities involved in such as volatile environments. Actually, we consider the interaction between the social performance (for environment, employment and community activities) and the financial and trading performance than would be the case for an accumulated functionality in NFP releases. In general, social performance returns are negatively related to trading returns; so, the relatively poor financial and market trading reward (profit), offered by socially responsible *ethical* ETFs trading the NFP reports, is in accordance to their good social performance regarding employment and environmental aspects. This could be changed if these *ethical* ETFs incorporate into their arsenal of trading tools a number of CSR.mtv functions (utilities) discussed in this article. Impressively, we find also that considerable bizarre returns are obtained by funds, holding a portfolio of socially least *unethical* ETFs, involved in short-term or intraday speculations. In this domain, the complex relationship between social, financial and market trading performance, during the NFP “*psychological time*”, offers great trading opportunities.

Keywords: corporate social responsibility, ethical investing, non-farm employment report, market volatility

JEL Classifications: G10, G14, G18, M14, M20

1. Introduction

There are now a large and growing number of *ethical* mutual funds in the US, Canada, Australia, and Europe investing through ETFs (Note 1). According to the United States Social Investment Forum (US.SIF), over 12% of all ETF, mutual funds, forex, and equity investments are currently managed under Socially Responsible Investment (SRI) guidelines. The concept SRI is related to the *Corporate Social Responsibility* (CSR) (Note 2), and the former often involves a fund or institutions following “*ethical rules*” and implementing “*socially responsible functionalities*” to obey the US.SIF guidelines in order to ensure that it does not invest in ETFs, mutual funds, and companies that have bad or poor performance in the latter. On the other hand the non-farm employment payment-reports (NFP), released on first Friday each month (US government data), is known that creates great market volatility which fuel the momentum in equity, futures and Forex markets offering trading opportunities.

The NFP release timing could be characterized as a Jesse Livermore’s “*psychological time*” in trading (Mercer, 2016). For more discussion about the “*psychological time*” please see Livermore (1940/2001) and Lefèvre, (1923/2010). Finally, many large ETFs, mutual and pension funds, institutions, and swing traders now include “*ethical CSR criteria*” in their stock and ETF selection search engines; and recently there are some evidences that contemporary market analysts have a tendency to produce portfolio research based on SRI ethical issues as well (Note 3).

In this domain, this article introduce the concept “*CSR market trading volatility, CSR.mtv*” to describe the ethical criteria and trading functionalities, as a psychological timing function, for corporate conscience responsible trading of volatile situations like the NFP release reports.

1.1 Problem Introduction

A great number of research reports and papers for CSR has been published in recent years, but it is not clear and well documented whether an investment in socially responsible stocks, ETFs or mutual funds is advantageous to profits (returns). From a theoretical point of view, arguments associated with the *Efficient Markets Hypothesis* (Note 4) would suggest the merit, quality, and integrity of the SRI investments. On the other hand, from a different perspective (speculative traders) the demerit, the worthlessness, and the disadvantage of the socially responsible ethical ETFs are obvious in intraday and short-term trading.

We consider that, at the *firm-level*, under some assumptions concerning the existence of markets and well-defined property and ethical rights; product recognition (marketing), brand awareness, stability and serenity should be achieved after investments on socially responsible activities despite the fact that the marginal profitability would be zero. Also, at the *financial portfolio-level*, by selling-out and isolating stocks, industries, sectors, or even whole countries, on ethical and social responsibility matters, will reduce portfolio functionality, variety, diversification, and efficiency.

So, a good practice is to maintain a portfolio with a well-diversified spread of assets, some of them with social consciences (moral sense), i.e. the ethical part of the portfolio (long-term investment); while the remaining assets of the portfolio would be leveraged non-ethical non-morally right ETFs, ideal for intraday trading market volatile situations like the NFP reports releases.

So, a firm (equity) or an ETF with well organized corporate social responsibility activities should enjoy ethical brand awareness and enhanced returns (profit); relative examples are outlined in Tables 2, 3, and 5 (Section 4). Hence, the point (desideratum) for a strategy for increasing efficiency is to improve firm's operating performance and ETF's trading plan, which improvements may feed through the "*psychological time*" and the "*CSR.mtv*" trading parameters and activities respectively.

We believe that it is possible to give reason for a positive, operative, and functioning relationship between social, financial, and trading performances particularly in leveraged ETFs; and actually, this is the case and the target of this article.

1.2 Literature Review

The European Union promotes a pan-European framework for CSR as: "*a concept whereby companies integrate social and environmental concerns in their business plans and operations, as well as in their interaction with stakeholders on a voluntary basis*" (European Commission, 2001). In this domain, it is important to recognize that the Corporate Socially Responsible Performance (CSR.P) concept is a multi-dimensional function; and hence by paying attention on the wrong aspect it may results in inaccurate and incorporate conclusions. Obviously, having a socially responsible corporate conscience (moral sense), it may enhance an ETF's or firm's profitability by helping to satisfy its stakeholders (institutions, swing traders, intraday speculators, employees, altruistic shareholders, consumers, government, etc.). Brammer, Brooks, and Pavelin (2006) show that a strong CSR.P may enhance or damage an ETF's reputation depending upon how important that particular type of activity is to the stakeholders (Hovakimian & Hu, 2016) and institutional investors as well (Edelen, Ince, & Kadlec, 2015; Chen, Harford, & Li, 2007).

An ETF's level of corporate social responsibility may be measured along a number of different dimensions, including market trading volatility (Bali & Cakici, 2008), asset price volatility (Nickerson, 2016), philanthropic activities (National Philanthropic Trust, 2017), social responsibility and industry (Melo & Garrido-Morgado, 2012), reduction of adverse environmental impacts (Martinuzzi, Kudlak, Faber, & Wiman, 2011), good treatment of employees and equity returns (Yan & Zhang, 2009; Lou, Polk, & Skouras, 2016), temporal trading functionalities (Basdekidou & Styliadou, 2017). According to our knowledge, no single study has yet examined the differential impacts of each of these aspects of CSR and CSR.P on stock and ETF returns in market volatile situations like those at the announcements of the NFP reports.

Another three CSR dimensions related to market trading volatility are the market timing, the market dynamics and the leveraged ETF. For market timing context and functionality the Hovakimian and Hu (2016) and the Cesari et al. (2012) articles are great reference texts. Market dynamics (returns, functionalities, efficiency, etc.) has been examined in detail by Basdekidou (2015), while the leveraged ETF intraday trading has been discussed by Basdekidou and Styliadou (2017).

Although CSR and CSR.P have, traditionally, been associated with big enterprises, firms and business; the SME business Sector (Note 5) is also a significant Sector in terms of the economic, environmental and social impact it makes worldwide. So, recently, the attention has been turned to discussion and analysis of functions, principles

and practice of CSR and CSR.P in small and medium size businesses as well (Kechiche & Soparnot, 2012). Finally, CSR and CSR.mtv are obviously related on to the global financial crises (Nguyen & Tran, 2016) and should contribute to the national agenda in emerging economies (Chatterjee & Mitra, 2017).

1.3 Paper's Motivation

The current paper aims to contribute to the corporate finance literature by: (i) the introduction, definition and documentation of the innovative term “*CSR market trading volatility (CSR.mtv)*” as a temporal psychological timing function for corporate conscience responsible leveraged ETF trading in volatile situations like the NFP release reports; (ii) the combination of the binary options with the CSR functions; and (iii) the application of *CSR.mtv* functionalities in volatile markets.

For our research we back-tested data both at the *firm-level* and at the *ETF-level*, which we argue is highly desirable particularly for the 3x leveraged ETFs who perform better in volatile markets (e.g. NFP psychological time). To summarise in brief, this paper states that a 3x leveraged ETF under a management, following strictly a plan with both “*ethical criteria*” in long-term investments and “*trading criteria*” in volatile intraday trading, performs better, consistently, and reliably. This is the case of the *CSR.mtv* leveraged ETFs, that is to say socially responsible ethical ETFs ready as well to exploit market trading volatility.

1.4 Paper's Structure

The rest of this article continuous as follows. Section 2 discusses the existing evidence on the relationship between CSR and NFP financial trading performance, while the data and the research methodology are described and examined in Section 3. Following, Section 4 contains the analysis and the relative results. Finally, Section 5 offers some concluding remarks, discussion and suggestions for further research.

2. Corporate Social Responsibility, NFPs, and Financial Returns

In this Section, we review the existing evidence concerning the links and functions between CSR, CSR.P, and NFP market financial performance (Mercer, 2016; Ang et al., 2006). Since our concern lies within the emotional effect of social responsibility on institutions, investors, and traders upon whom accounting-based measures have only an indirect impression; we concentrate upon the studies concerning ETFs and firms (equities) trading returns during the NFP report release *psychological time*.

The literature that we review consists of two dominant classes: (a) evidence and back-testing data (proofs) at the *firm-level*, concerning the assessments of firm's reputation and its stock performance for SRI and non-SRI firms; and (b) evidence and back-testing data (proofs) at the *ETF-level*, regarding the relationship between social performance and the leveraged ETF's returns.

In this domain, many articles have investigated the connection between a firm's or ETF's degree of corporate social responsibility and its reputation and respectability. Enhanced corporate social performance may lead to improved returns either directly through the classical “cost reduction” and “productivity improvement” functions, or indirectly through a renovation and upgrade in firm's or ETF's overall standing and outlook, that makes market analysts and securities advisers more compliant to recommend the particular equity or ETF and the institutions and investors more willing to hold it, regardless of the dividends, profit shares and revenues (*firm-level*) or the NAV and ETF management cost (*ETF-level*).

Gail Mercer (2016), a volume analyst and divergences-based trading expert from North Carolina, examines the average movement of indexes, futures, commodities, equities, mutual funds, ETFs, binary options, and Forex pairs for the 2015 year just after the NFP releases (12 NFP reports). Mercer's study considers the NFP “market volatility”, as well as payroll/financial remunerations and other issues. Then, immediate price reactions (on NFP announcement) and long-term *buy-and-hold* abnormal returns are examined in her article. Also, Mercer (2017) discusses the binary options (see Section 4: CSR and Binary Options) as trading opportunities suitable for volatile market conditions.

Several studies examine the relationship between CSR, financial and trading performances using theoretical rather than empirical models (Brammer, Brooks, & Pavelin, 2006). These theoretical models are strongly related to well-known Merton's (1987) model of capital markets functionality, equilibrium, operation and segmentation. Also, Angel and Rivoli (1997) consider the issue of SRI from a different perspective and examine the impression and impact of environmentally behavior on firm's costs and equity capital. They argued that socially responsible investors will not invest in companies and ETFs whose environmental policies are questionable, and therefore any demand for the shares of such as firms will come only from “neutral” or short-term institutions and investors, i.e. from those who built-up portfolios without a social conscience and moral sense. Obviously, this lack of demand will force up the cost of capital for polluting, corrupt morally, firms and ETFs as opposed to green *ethical* firms and ETFs.

Finally, there is no a documented analysis of the impact of social responsibility on stock returns at the *firm-level*, aside from some initial studies by Derwall et al. (2004). They focus mainly on the environmental aspect of CSR and suggest that firms who are able to improve their environmental performance can reduce their “betas” (i.e. more risk-free investments), attract socially responsible (mutual) funds and finally raise their stock prices by up to 4%. Derwall et al. (2004) employ data from the “*Innovest*” rating database having records of “eco-efficiency” performances (environmental issues) for the period 1995-2003. Actually, they rank their sample of companies with some eco-efficiency variables and indicators and categorised them into two portfolios (the highest and the lowest *ethical* scoring companies).

3. The Data and the Research Methodology

For the current paper, the shareholding information, the changes in insider holdings & some sample profit/losses trading data (2000-2016) -used in this paper as the shareholding & profit variables- came from many resources: The Barron’s information databases and sources, a Wall Street Journal affiliate (Barron’s, 2016); The StockCharts.com initiative; and The Securities & Exchange Commission/SEC notices, releases & announcements. The United States SEC requires that all institutions with a total position greater than \$100 million of securities or equities positions greater than 10,000 shares or positions in individual shares greater than \$200,000, must report their holdings, using the SEC’s Form 13f, quarterly. In this paper, these numbers were used to estimate total corporate holdings and position changes in a sample 2-day period.

The U.S. Ethical Investment Research Service (EIRIS), as a non-profit organization, specialises in the measurement of corporate social performance against an objective set of criteria, principally for use by institutional investors, funds, and traders. The EIRIS actually survey firms concerning their social performance as well as their research in CSR matters. As a result, they are able to provide social performance data and information for firms and ETFs. Also, EIRIS has been engaged in a process of updating their information databases on a continuous basis, making the distribution of the information they provide fairly stable and accurate over time. Each company is examined at least twice annually and significant pieces of information are added to a company’s profile as they happen (real-time knowledge database updating).

Our data were drawn from the EIRIS database in June 2016. The ratings are based on fairly objective, quantifiable criteria (such as the number and size of environmental fines, the proportion of women and disabled persons on firm’s/ETF’s Board, the net investments in *ethical* research, etc.). Although these data are related to many issues regarding employment, environment, community, human rights, and supply chain management; in this article, we restrict our research to the first three of these CSR issues.

Some previous studies of CSR have investigated both short- and long-term stock returns just after the announcements of new CSR data and activities. However, an examination of the short-run price impact is not feasible in our research since the EIRIS data are updated on a continuous rather than a discrete basis and therefore there is no event date as such. Hence, we have to focus on long-term stock returns following the cut-off date at which the data were collected.

After obtained the EIRIS data we examine the returns for various portfolios categorised according to CSR environmental performance as the *key* field in the sorting procedure and thereafter comparing them with the FTSE 100 and FTSE All-Share indexes as benchmarks. The portfolios are all equally weighted (apart from the FTSE benchmarks), and all assume initial investment on 1st January 2000 for a 5-year holding period. This procedure ensures that a reasonable size of portfolio is examined in each case, and that all of the portfolios contain the same number of firms and ETFs to ensure a valid comparison. Next, we run a cross-sectional regression of the stock returns on the composite CSP measure and separately on the three basic indicators (*environment*, *employment*, and *community*). This procedure enables us to separate the effects of the various CSP aspects on returns for more accurate and reliable information.

Also, current paper identifies long- and short-term corporate investors, traders and speculators, based on their average “*NFP release reports turnover*” portfolio, into a 2-day period. The term “*NFP release reports turnover*” is defined, for the purpose of this paper, as a measure of stock liquidity; calculated by dividing the total number of shares traded over this 2-day period by the average number of shares outstanding for that period). Obviously, the higher the “*NFP release reports turnover*” number, the more liquid the trading instrument in the last two days (Yan & Zhang, 2009).

The presented analysis is based on a 2-day period (sample statistics); and the traders involved in trading were sorted into four categories according to their temporal corporate holdings as the percentage of total shares outstanding at the end of each of these two days (Basdekidou, 2016). Therefore, in the first category, the institutions ranked in the bottom fourth after having the lowest “*NFP release reports turnover*” were placed; they

are classified as long-term investors (LT investors). In the second category, the institutions ranked in the top fourth after having the highest “NFP release reports turnover” were placed; they are classified as short-term swing-trading traders (ST₁ traders). Then, the rest domain is divided into two equal categories (third & fourth category). In the third category, the short-term momentary traders were placed (ST₂ short-term speculators); and finally, in the fourth category, the detected intraday individual or institution speculators were placed (ST₃ intraday speculators).

The back-tested statistics for the sample NFP period are presented in the following Table 1, which displays the summary numbers of 3x leveraged ETF NFP trading and Non-ETF NFP trading from 1st January 2000 to 30th June 2016 (ETF data were obtained from SEC). Both categories are referred to socially responsible ethical ETFs and firms (equities) respectively.

Where:

Size – The natural logarithm of Sales, instead of the actual sales number, is used; as the appropriate for the irregular price action chart smoothing transformation. In stock market data statistical analysis, the $\log(\text{sales})$ transformation is preferred instead of other ones like $\text{inverse}(\text{sales})$ and (sales) .

Return - The Stock return measured over the NFP period.

Market-to-Book is (total assets – book equity + market equity) / total assets.

LT – The corporate shareholding with a clear Long-term horizon (Investors). Corporate investors' horizon identification is based on their portfolio “security turnover”.

ST – The momentary corporate ownership with a clear Short-term horizon (Traders and Speculators). The Short-term traders were divided in three categories: ST₁ are the swing Traders; ST₂ are the short-term speculators; and ST₃ are the intraday speculators.

Continuing Shareholding – This term is referred to corporate investors, as shareowners both at the beginning and at the end of the NFP period.

Liquidations – This term is referred to ownership cases where old LT investors and ST traders own shares at the beginning of the NFP period, but liquidate their holdings by the end of this period.

Initiations – This term is referred to cases where new LT investors –i.e. owning no shares at the beginning of the NFP period- establish new positions during this NFP period and continue their shareholding and after this period.

Difference - The difference in Means between leveraged ETF and Non-ETF NFP trading.

Table 1. Socially responsible ethical ETFs & Firms (equities) - Sample Shareholding Statistics

	3x Leveraged CSR ETF NFP Trading				CSR Firms (equities) NFP Trading				Differences
	Obs.	Mean	Median	St. dev.	Obs.	Mean	Median	St. dev.	
A. Shareholding Dynamics Data									
Size	3105	4.44	4.54	1.92	80,005	4.60	4.87	2.05	-0.16*
Return	3105	0.35	0.35	1.24	80,005	0.20	0.04	0.87	0.15*
Market-to-book	3105	2.38	1.89	1.62	80,005	1.70	1.26	1.20	0.68*
Total shareholding									
(1) LT investors	3105	8.45	7.90	7.42	80,005	9.40	8.52	9.67	-0.95**
(2) ST ₁ traders	3105	12.29	11.40	10.51	80,005	10.10	8.11	11.63	2.19**
(3) ST ₂ speculators	3105	14.80	12.48	12.50	80,005	11.35	8.71	12.42	3.45*
(4) ST ₃ speculators	3105	16.68	12.12	17.63	80,005	12.88	9.14	13.71	3.80**
B. Shareholding Dynamics Cases									
	Continuing cases			Liquidation cases			Initiation cases		
Old LT investors	1,095			20			0		
ST ₁ traders	20			85			0		
ST ₂ speculators	0			290			0		
ST ₃ speculators	0			360			0		
New LT investors	0			0			70		

* Changes significantly different from zero at 5% level

** Changes significantly different from zero at 1% level

Source: Author's processing of SEC/SDC market data

The result is a statistically unbalanced panel, covering the sample time period from January 1st 2000 to June 30th 2016, with up to 83,110 observations for 50 *ethical* CSR ETFs and 1,000 *ethical* CSR firms (equities). The sample period starts from 2000 because from this year the data (shareholding, transaction, etc.) are available in a digital format with a relatively low cost.

While weekly data could allow better and more accurate association of the shareholding ETF changes; time shorter (daily) data were used in particular for two reasons. Firstly, because they help to understand better the changes in ETF ownership during the NFP period; and secondly, they provide flexibility in trading leveraged ETFs without serious throwbacks, which are usually occur in time longer (e.g. weekly) data.

4. Leveraged ETFs with Exposure to CSR: Analysis & Results

In this Section the returns of two thematic categories leveraged ETFs, those incorporating CSR (socially responsible *ethical* ETFs) and those non-incorporating CSR functionalities (*unethical* ETFs), are presented in Tables 2 and 3 respectively. These results show that those ETFs incorporated CSR perform better in the long term, while the other ETFs perform better for the short period (e.g. first 30 minutes) after the NFP releases. Also, in all case, the CSR ETFs have significantly higher average returns in the long run than the benchmarks ones.

For instance, investing equally in two GC (Gold) and two CL (American crude oil) ETFs with top employment and clear CSR policy would have yielded a 15% return higher than the relative FTSE benchmark. Despite the fact that this precious metals/GC and energy/CL portfolio is clearly very small, and therefore its returns will be subject to some statistical effects; actually, it is clear that the CSP *ethical* ETFs provide positive returns in the long term. Also, very interesting is that speculative *unethical* (from a social responsibility standpoint) ETFs provide strong trading performances in short-term and intraday market volatile situations like the first 30 minutes period from the NFP release. In this case, a portfolio comprising from six ETFs, related to GC and CL instrument categories, yields a mean positive return of about 28% in a 2-day period (Table 2), outperforming the benchmarks by 13%. Obviously, critical to economy report releases like the NFPs, create market volatility, which can fuel the securities, futures, commodities and Forex markets.

Following, Table 2 summarizes both, (a) the relative average movement for the 2-day period after the NFP release; and (b) the return for the whole 2000-2016 sample time period. For this purpose a number of socially responsible (CSR) *ethical* 3x leveraged ETFs in typical instrument categories, like Gold, Crude Oil, major equity Indexes and Forex pairs is used.

Table 2. CSR 3x leveraged ETFs and Nonfarm Employment Reports: (a) Relative average movement for the 2-day period after the NFP release; and (b) Average Return for the whole sample period: 2000-2016

Instrument Category (3x leveraged ETFs with exposure to CSR)	CSR 3x leveraged ETFs			
	Average Return for the 2-day period just after the NFP	St. Dev.	Average Return for the 2000-2016 sample period	St. Dev.
GC – Gold cfd futures	30 %	2.14	-22 %	2.70
CL – Crude oil cfd futures	26 %	2.10	-49 %	2.87
DAX – Index (Germany)	10 %	2.12	160 %	2.31
YM – Dow Index futures	7 %	2.10	125 %	2.36
ES – S&P 500 Index futures	4 %	2.15	130 %	2.51
NQ – Nasdaq Index	7 %	2.21	101 %	2.70
USD/CAD – Forex pair	20 pips	2.33	16 %	2.71
USD/JPY – Forex pair	17 pips	2.32	-12 %	2.66

Source: Author's processing of SEC/SDC market data

Table 3. Non-CSR 3x leveraged ETFs and Nonfarm Employment Reports: (a) Relative average movement for the 2-day period after the NFP release; and (b) Average Return for the whole sample period: 2000-2016

Instrument Category (3x leveraged ETFs with no exposure to CSR)	Non-CSR Exchange Traded Funds			
	Average Return for the 2-day period just after the NFP	St. Dev.	Average Return for the 2000-2016 sample period	St. Dev.
GC – Gold cfd futures	41 %	2.34	-42 %	2.80
CL – Crude oil cfd futures	35 %	2.20	-69 %	2.97
DAX – Index (Germany)	10 %	2.12	160 %	2.31
YM – Dow Index futures	7 %	2.10	125 %	2.36
ES – S&P 500 Index futures	4 %	2.15	130 %	2.51
NQ – Nasdaq Index	7 %	2.21	101 %	2.70
USD/CAD – Forex pair	20 pips	2.33	16 %	2.71
USD/JPY – Forex pair	17 pips	2.32	-12 %	2.66

Source: Author's processing of SEC/SDC market data

Above Table 3 summarizes both, (a) the relative average movement for the 2-day period after the NFP release; and (b) the return for the whole 2000-2016 sample time period. For this purpose a number of non-socially responsible (non-CSR) *unethical* 3x leveraged ETFs in typical instrument categories is used.

The CSR Market Trading Volatility – *CSR.mtv*

In this paper, the innovative concept “*CSR market trading volatility, CSR.mtv*” is introduced and it is defined as a socially responsible *ethical* indicator (like the technical indicators, e.g. DMI/ADX, RSI) to describe the *ethical* criteria and the trading functionalities (as psychological timing functions) for corporate conscience responsible trading of volatile situations (like, for instance, the NFP release reports). Following, Table 4 presents - apart from the NFP reports (1st Friday each month at 08:30 am EST New York time) - a number of announcements and releases provoking market trading volatility. All these situations incorporate *CSR.mtv* functionality.

Table 4. Company Initiatives, Fed Meetings, Reports & Time-Targets

Fed Meetings, Reports, etc.	Time-Targets (trading)
USD rate hike (cut) trading	Rate hike (cut) announcement & actual time
Day Trading	first/last 5-min in a daily session (09:30-09:35, 15:55-16:00)
Fed/FOMC monetary policy Meetings	Fed/FOMC meetings decision announcement at 02:00 pm EST
Fed/FOMC monetary policy Meetings	Fed/FOMC conferences at 02:30 pm EST
Fed/FOMC monetary policy Meetings	Fed/FOMC meetings minutes announcement at 01:00 pm EST
Fed Members Speeches	at 10:00 am EST; at 01:00 pm EST
Non-Farm Payrolls Reports	first Friday each month at 08:30 am EST
API reports for WTI (USO) inventories	On Tuesdays at 04:30 pm EST
EIA reports for WTI (USO) inventories	On Wednesdays at 10:30 am EST

Source: Author's data

CSR and Binary Options: Relationship in Financial and Social Performances

In 1970, Milton Friedman famously wrote:

"There is one and only one social responsibility of business--to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud."

While that may seem like an extreme view, Friedman does have a point. As the owners of a firm, shareholders hire managers to act as their agents. When managers focus on profit maximization, they also tend to maximize shareholder wealth. If they choose, shareholders can then donate part of that wealth to social causes that are important to them.

To the extent that managers pursue objectives other than profit maximization, they may reduce shareholders' wealth and effectively substitute shareholders' priorities with their own. Profit maximization also tends to promote efficiency and accountability. In the pursuit of their self-interest, firms usually allocate scarce resources to their most productive uses. The trouble is that firms do not always bear the full social costs of their actions. Economists call these phenomena negative externalities. For example, a coal power plant that expels its waste into the atmosphere could increase the prevalence of acid rain and make the surrounding area less desirable to live in, potentially hurting property values. Because, the power generating firm does not directly bear these costs (in the absence of regulation), it may produce more electricity from coal than is socially optimal. So a narrow focus on profit maximization does not always lead to the most efficient social outcome.

There is also an argument that this focus can result in an unfair distribution of resources. Perceptions about fairness are very subjective, but they can have a big impact on a firm's image, and ultimately its profitability. For example, Nike (NKE) faced consumer boycotts in the 1990s for its suppliers' use of sweatshop labor. Even though the suppliers paid market wages in the developing countries where they operated, the conditions those workers toiled in and the compensation they received seemed unfair to many Western consumers, who used their purchasing power to express their discontent.

In order to lessen these potential problems, many firms and ETFs have defined their CSR policy, plans and strategy more broadly than Friedman to include the so called “*taking responsibility*” for their impact on the environment and the social welfare even when there is no legal requirement to do so. While that is certainly worthy of praise, from a social perspective of view, an expansive CSR may also be consistent with long-term profit maximization.

In getting out ahead of environmental and social problems that their operations may create, companies may be able to stave off potentially onerous regulations and reduce political risk. A proactive approach can also reduce

the risk of conflicts with non-government organizations and other advocacy groups that can hurt sales and damage the value of a brand. Mindful of this risk, Starbucks (SBUX) developed standards for ethically sourced coffee in partnership with Conservation International in the early 2000s. In accordance with these standards, it now sources most of its coffee from producers with independently verified environmentally friendly practices.

Incorporating binary options in *CSR.mtv* trading plans has as a result limited risk and reward, as well, on every trade (Mercer, 2017). Traders, on the expenses of \$100, choose their risk on entry and at the end they cannot suffer more loss than they pay on entry. In particular, for the high-volatility NFP trading (“psychological time” at the NFP reports release), binary options are ideal tools by limiting risk on trade entry. Also, traders and speculators can limit their risk, on trading volatile market reports releases, even further by using the more sophisticated *out-of-the-money* (OTM) and *at-the-money* (ATM) binary options. Comparative analysis shows that, for the volatile market report releases, binary options and *CSR.mtv* temporal functionalities apply better to the following four categories of shareowners:

- Long-term investors (“LT Investors”)
- Short-term swing traders (“ST₁ Traders”)
- Short-term momentary traders (“ST₂ Speculators”)
- Intraday traders (“ST₃ Speculators”)

Table 5 uses the data presented in Table 1 and display the returns of the *CSR/binary* options combination in NFP trading for socially responsible *ethical* ETFs and firms (equities) respectively. Actually, the numbers of ETFs (50) and firms (1,000) back-tested are somewhat small (covering actually the US market Sectors: Gold, Energy, Resources, Basic industries, General industrials, Cyclical consumer, Non-cyclical consumer, Cyclical services and Non-cyclical services) and predictably increase the statistical standard errors and therefore negatively affect the statistical significance of the interpretations. It is notable that, surprisingly, there is a very little return difference between these nine (9) Sectors after applying the *CSR.mtv ethical* indicator in turn.

At the 2000-2016 horizon, the environment *CSR.mtv ethical* (indicator) variable negatively affects returns for all these nine Sectors, although only significantly so for two of them (Gold and Energy), while the employment *CSR.mtv ethical* (indicator) variable only negatively and significantly affects returns for the Resources and the Energy Sectors. Also, this parameter/variable is positive for the Basic industries, Non-cyclical consumer, General industrials and Non-cyclical services Sectors, although never significantly so. Finally, the community *CSR.mtv ethical* (indicator) parameter has a positive impact for 8 of the 9 sectors, but again it is never statistically significant.

In NFP *psychological time*, buying the stocks of ETFs with poor social performances yields the most striking benefits in the case of the Gold Sector; while buying *CSR/binary* options ETFs with the lowest environmental performance and the lowest community performance, would lead to average returns 60% and 25% higher respectively than the same ETFs but without the binary option counterpart.

Also, in NFP *psychological time*, buying the stocks of Firms (equities) with poor social performances yields the most striking benefits in the case of the General industrials Sector; while buying *CSR/binary* options Firms (equities) with the lowest environmental performance and the lowest community performance, would lead to average returns 52% and 21% higher respectively than the same Firms but without the binary option counterpart.

Following, Table 5 presents in summary the ownership (no.) and the shareholding position (%), as well as the trading results (profit %) for the four categories of traders discussed in this paper. The numbers resulted from the Table 1 sample statistics data (3x leveraged ETF). As it was expected, the short-term swing traders (ST₁) got the best returns in NFP trading, thanks to temporal *CSR.mtv* functionalities (time-based warning dynamics signals and time-based triggering signals) incorporated in their trading plans and strategies.

The *CSR.mtv* Functions

An array (arsenal) of *CSR.mtv* functions, incorporated as trading tools in *ethical* 3x leveraged ETFs for volatile markets intraday trading, should be:

- (i) The [2-min, time-frame] on-open price action gaps (usually the gap-ups and in some cases and the gap-downs);
- (ii) The [30-min, time-frame] uprising triangles and cups (as bullish price action patterns for the warning dynamics signals);
- (iii) The [2-min, time-frame] time-based pivotal points and pivotal lines breakouts (accompanied by

volume sectional increase); and

- (iv) The morning/noon/evening price action breaks (accompanied by volume increase as well for the triggering signals).

Where:

1,095 = No. of the old LT investors (shareowners) before NFP time;

1,165 = 1,095 (old LT investors) + 70 (new LT investors) (see Table 1); and

1,145 = 1,165 – 20 (old LT investors liquidations) (see Table 1).

Table 5. Socially Responsible Ethical ETFs & Firms with Binary Options

	Ownership (Shareholding Position %)			Return / Profit (%)	
	Before NFP date	@NFP date (time)	After NFP date	Ethical ETFs	Ethical Firms
Long-term Investors (LT Investors)	1,095 (98.2%)	1,165 (75.7%)	1,145 (99.1%)	0%	3%
Short-term Swing Traders (ST ₁ Traders)	20 (1.8%)	85 (5.5%)	10 (0.9%)	+65%	55%
Short-term Momentary Traders (ST ₂ Speculators)	0 (0%)	290 (18.8%)	0 (0%)	-25%	-20%
Intraday Traders (ST ₃ Speculators)	0 (0%)	0 (0%)	0 (0%)	-40%	-38%
Total	1,115	1,540	1,155		

Source: Article-author's processing of data presented in Table 1.

5. Conclusions & Discussion

This paper has studied the relationship between corporate social performance and trading performance for firms (equities) and leveraged ETFs. According to the back-tested data we have used in our research (January 1, 2000 – June 30, 2016) we found that *ethical* firms with higher social performance tend to achieve higher returns in long-term investments but lower returns in short-term trading; while 3x leveraged ETFs with the lowest possible CSR.P, outperform in volatile markets like the NFP employment report releases. Our findings are clearly compatible and relevant to a number of equity and ETF analysts and fund managers as well, suggesting that the introduction of *ethical* rules into their trading plans and strategies will enhance their returns and performance.

Nowadays, within the internet-based trading era, the NFP report releases offer great temporal trading opportunities not only for the *unethical* short-term and intraday traders and speculators, but as well as and for the CSR leveraged ETFs, who could exploit the market volatility during this NFP psychological time. We conclude that, the best way to trade NFP release reports is to incorporate *market trading volatility* (MTV) functionalities and *binary options* in trading plans and strategies, and to use *ethical* 3x leveraged ETF as trading “vehicles” (instruments). Even if an improvement in social performance is rewarded by a share price increase in the short term, in the long run the relationship between social and financial performance may be negative. Future research in the “CSR-leveraged ETF” domain, must be able to spot light on the relative merits of these complementary concepts and may conduct more sophisticated back-tested analysis and studies to examine the temporal time-series context of the impact on its share price after a change in corporate social policy by a respectable firm or ethical ETF in order to exploit the *psychological time* and the trading opportunities involved in volatile markets like the NFP report releases on the first Friday each month.

We know well that *leverage* is a double-edged sword, with a bigger move down being just as possible as a bigger move up. Data analysis shows that even the overnight position in leveraged ETF is risky. Since they use financial derivatives, leveraged ETFs are inherently riskier than their unleveraged counterparts. According to the established perception, leveraged ETFs are not appropriate for long-term socially responsible investors and retirement *ethical* portfolios trying to maintain a low beta coefficient. Hence, incorporating leveraged ETF temporal trading functionalities in socially responsible ethical portfolios is a challenge introduced in this paper but has to be investigated and documented better in the future.

In paper's back-tested sample data for the NFP release reports (Table 5), the long-term investors enjoy no return of their capital. Also, data analysis applied found that short-term swing traders incorporating in their strategies the CSR.mtv functionalities (intraday warning dynamics signals, triggering signal) with binary options are benefit (+65%) at the expense of short-term momentary and intraday speculators. Obviously, this excellent return (+65%) is risky and uncertain and will be much lower if binary options are incorporated for a more safely NFP trading. So, an ethical 3x leveraged ETF armed with CSR.mtv functionalities would perform better in long-term

investments as a respectable fund, as well as in NFP intraday trading (volatile markets).

Paper contributes to corporate finance literature by: (i) the introduction, definition, and documentation of the innovative term “*CSR market trading volatility (CSR.mtv)*” as a (socially responsible) ethical indicator and temporal psychological timing function for corporate conscience responsible leveraged ETF trading in volatile situations, like the employment NFP release reports; (ii) the combination of the binary options with the CSR functions; and (iii) the application of *CSR.mtv* functionalities in volatile markets (long/short trading on normal session: 09:30 am – 04:00 pm EST, swing & intraday time-based trading strategies, etc.) to securities, leveraged ETF, futures, and Forex trading.

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Conflict of Interests

The authors have not declared any conflict of interests.

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Dr. Vasiliki Basdekidou holds a B.Sc. degree in Economics from the Aristotle University of Thessaloniki (Greece, 2002), a two-year master's degree in Economics (major: Financial Economics) from the University of Macedonia (Greece, 2005) and a Ph.D. in Corporate Finance from the Bulgarian Academy of Sciences (BAS) – Economic Research Institute (Sofia, Bulgaria, 2015). Her doctoral in economics dissertation entitled: *Functionality, returns and efficiency, before and after the dept crisis: An empirical study of the Greek stock market*.

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Also, Vasiliki Basdekidou is a member of a number of non-profit organizations (particularly, welfare for needy children and women) and she has been worked as economist in a number of Greek companies from 2002 on now,

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Research Interests

JEL codes classification: G11; G12; G14; G18; G20; G38; K22; Q15; and R21

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Research Interests

JEL codes classification: K22 (Business and Securities Law); K33 (International European Law); K36 (Family and Personal Law); K37 (Immigration Law); and K38 (Human Rights Law)

Notes

Note 1. ETF – *Exchange Traded Fund*. An ETF is a marketable security that tracks an index, a commodity, bonds, or a basket of assets like an index fund. Unlike mutual funds, an ETF trades like a common stock on a stock exchange. ETFs experience price changes throughout the day as they are bought and sold. ETFs typically have higher daily liquidity and lower fees than mutual fund shares, making them an attractive alternative for individual investors. Because it trades like a stock, an ETF does not have its *Net Asset Value* (NAV) calculated once at the end of every day like a mutual fund does.

Note 2. CSR - *Corporate Social Responsibility*. Also called *Corporate Conscience, Corporate Citizenship* or *Responsible Business*, is a form of corporate self-regulation integrated into a business model. CSR policy functions as a self-regulatory mechanism whereby a business monitors and ensures its active compliance with the spirit of the law, ethical standards and national or international norms. Critics questioned the "lofty" and sometimes "unrealistic expectations" in CSR or that CSR is merely window-dressing, or an attempt to pre-empt the role of governments as a watchdog over powerful multinational corporations. Political sociologists became interested in CSR in the context of theories of globalization, neoliberalism and late capitalism. Some sociologists viewed CSR as a form of capitalist legitimacy and in particular point out that what began as a social movement against uninhibited corporate power was transformed by corporations into a 'business model' and a 'risk management' device, often with questionable results. CSR is titled to aid an organization's mission as well as serve as a guide to what the company represents for its consumers. Business ethics is the part of applied ethics that examines ethical principles and moral or ethical problems that can arise in a business environment. ISO 26000 is the recognized international standard for CSR. Public sector organizations (the United Nations for example) adhere to the triple bottom line (TBL). It is widely accepted that CSR adheres to similar principles, but with no formal act of legislation.

Note 3. "*Big investors want SRI research*". Editorial on *Financial Times* Fund Management Supplement, page 1, 18 October 2004, New York.

Note 4. EMH – *Efficient Market Hypothesis*. The efficient market hypothesis is an investment theory that states it is impossible to "beat the market" because stock market efficiency causes existing share prices to always incorporate and reflect all relevant information. According to the EMH, stocks always trade at their fair value on stock exchanges, making it impossible for investors to either purchase undervalued stocks or sell stocks for inflated prices. As such, it should be impossible to outperform the overall market through expert stock selection or market timing, and the only way an investor can possibly obtain higher returns is by purchasing riskier investments.

Note 5. SME – *Small and Midsize Enterprises*. Small and midsize enterprises are businesses that maintain revenues, assets or a number of employees below a certain threshold. Every country and economic organization has its own definition of what is considered a small and medium-sized enterprise. In the United States, there is no distinct way to identify SMEs, but in the European Union, a small-sized enterprise is a company with fewer than 50 employees, while a medium-sized enterprise is one with fewer than 250 employees.

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Obstacles of Financing Small Projects by Jordanian Commercial Banks

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Abstract

The small projects sector suffers from many constraints, especially in terms of the financial side due to weakness in the finance, the problem of the study occurs based on the presence of obstacles in financing small projects by Jordanian Commercial Banks (Banking Obstacles, Small Projects Obstacles, and Governmental Obstacles). Thus, the study seeks to identify those obstacles, and it founded there is a significant statistical impact of the obstacles (Banking obstacles, Small projects Obstacles, Governmental obstacles) on the financing of small projects by Jordanian commercial banks. Also, there is a good statistical relationship between the obstacles (Banking obstacles, Small projects Obstacles, Governmental obstacles) and the financing of small projects by Jordanian commercial bank. The study recommended that the central bank should make laws that force banks to set aside a portion of the loans portfolio to small projects. Also, there is a need for the government to provide support to small projects, specifically in the training of the human resources and in the making of an economic feasibility study.

Keywords: small projects, banking obstacles, small projects obstacles, governmental obstacles, Jordanian commercial bank

1. Introduction

Small projects play an important role in the economy of nations due to its leading role in the provision of varied work opportunities. Thus, it is the best way to foster economic development and social justice throughout the world. It works by creating jobs and solving the problem of unemployment. In addition, the reduction of immigration also increases the gross domestic product. Therefore, SMEs is the backbone of the economy in various countries around the world.

The concept of small projects differs from one country to another according to the different possibilities of economic and social conditions. However, there is an agreement among economists on the importance of this sector. This agreement forms the base of the economy in developed countries. The engine of the economy in developing countries is the sector which employs a large proportion of employment, and the sector which is characterized by economic diversification. Furthermore, it contributes to a good percentage of the gross domestic product.

Subsequently, this sector suffers from many constraints, especially in terms of the financial side due to weakness in the finance. Thus, this sector relies majorly on banks. Also, the holders of small projects mostly do not have creditability. As a result, there is difficulty in obtaining financing. Additionally, received funding can be costly and it can affect the chances of success.

The current target of most banks is the rich, and they focus on the financing of major projects. Also, they turn a blind eye to the financing of small projects because they carry a higher risk

The problem of the study occurs based on the presence of obstacles in financing small projects by commercial banks. Thus, the study seeks to identify those obstacles, the most important solutions to the problems, and aims at making appropriate recommendations.

2. Study Objectives

The objectives of the study can be obtained by answering the following questions:

1. What is the reality of small projects in Jordan?
2. What is the size of finance for small projects in Jordan?
3. What is the importance of small projects in development?
4. What are the obstacles to the financing of small projects by the bank in Jordan?
5. What are the solutions to these obstacles?

3. Study Framework and Hypotheses

To study the Obstacles of financing small projects, the model below was constructed as follows:

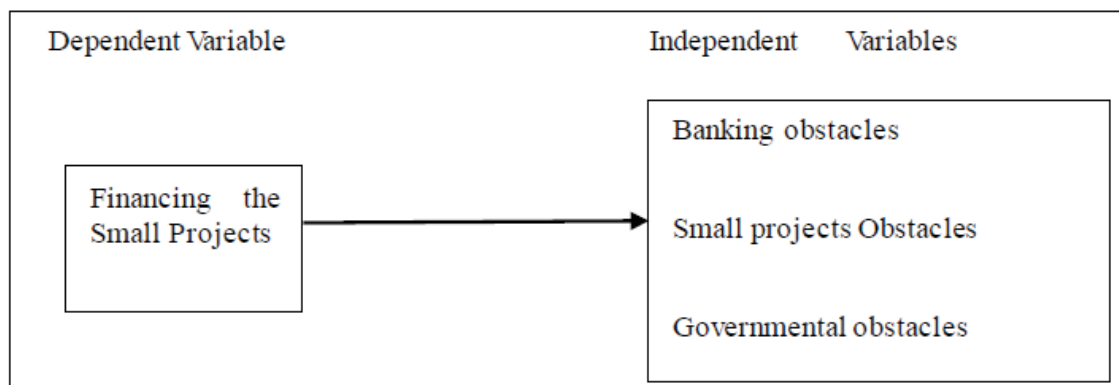


Figure 1. Study framework developed by the researcher

In studying the obstacles of financing small projects in the Jordanian Commercial Banks, the following hypotheses were built:

Ho1 - There is no significant statistical impact of the obstacles (Banking obstacles, small projects obstacles, Governmental obstacles) on the financing of small projects at $p \leq 0.05$.

However, it consists of the followings sub-hypothesis:

Ho1-1 - There is no significant statistical impact of the Banking obstacles on the financing of small projects at $p \leq 0.05$

Ho1-2 There is no significant statistical impact of Small projects Obstacles on the financing of small projects at $p \leq 0.05$

Ho1-3 - There is no significant statistical impact of the Governmental obstacles on the financing of small projects at $p \leq 0.05$

4. The Theoretical Framework

4.1 Concept

The number of banks in Jordan is twenty-six which are distributed as follows: 13 Jordanian commercial banks; 9 foreign commercial banks; 3 Jordanian Islamic banks which include the Islamic International Arab Bank, Jordanian Dubai Islamic Bank, and the Jordanian Islamic Bank; and 1 foreign Islamic bank known as AL-Rajhi Bank (The Annual Report of the Central bank of Jordan, 2015).

The Arab Bank which is one of the oldest banks in Jordan was established in 1930. However, this was followed by the Alahli Bank which started in 1956. Thus, the Jordanian banks provide banking services allowed by law. Furthermore, it also considers the credit facilities of the most important services provided by the banks and which is the most profitable (Abdullah & Trad, 2006).

There are several definitions for small projects which are as follows: They are projects or businesses with fewer than five workers and are approved by the Statistics General Department and the Social Security Corporation in Jordan division. On the other hand, the Ministry of Industry and Trade Jordanian stated that the project which employs a number of workers between 5-19 is a small project. In the United States, a project, which has a number of workers between 5-200, is considered as a small project. In addition, the European agency shows that

a project whose number of workers is between 10-99 workers is considered as a small project.

However, several criteria to classify small projects can be divided into:

1-Quantitative Criteria: These standards are based on the number of employees, capital, the value of assets, and the value of sales; however, the number of employees is regarded as the most common standard.

Subsequently, contrasting the use of these standards for countries is dependent on technological progress and the standard of living and the technological progress.

2. The Quality Standards and the Most Important of these Criteria:

A- Needed finance for the project.

B- Operations are in specific geographic area.

C- The size of institutions is relatively small compared with other institutions in the industrial field

Small Projects Characteristics

1- Centralization: The small-sized organizations are characterized by the existence of a single owner of the institution assisted by some helpers. Thus, most of the decisions and strategic focus is done or carried out by one person.

2- Informality: The prevailing relations inside the small-sized organizations are based on the spirit of friendship and family and informal relationships.

3- Locality: Most operations in small-sized organizations in a particular geographic area, means that its operations centers at a local site.

4- Successful Organizations Rely on Specialization: These organizations adopt and specialize in producing only one product.

5. The Use of the Means of Production is Small and Less Expensive: This means that these organizations do not use sophisticated techniques. They depend on the density unions, and lower production volume reduces storage costs (Najjar& Ali, 2010).

Financing of Small Projects

There are several sources of Financing for small projects, including:

1-Private Funds to the Owner: Any saving money gotten from the private wealth of the employer relies on the ability of the owner to save money depending on the project size.

2- Borrowing from Friends and Family: Here, they lend money on favorable terms and conditions without any problems.

3. Commercial Banks: Banks are lending institution, and the bank demands for interest to be paid for guarantees and warranties to ensure repayment.

4. Specialized Organizations Supporting Small Projects in Jordan: There are many agencies that lend to small projects, such as the Development and Employment Fund, the Agricultural Credit Corporation, National Aid Fund, and the Jordanian company to secure loans (Bernouti, 2005). Table 1 shows the growth in the deposits at banks in Jordan.

Table 1. The growth in the deposits at banks in Jordan

Banking Deposits(m)	Year
11564.100	2004
13119.300	2005
14591.900	2006
15988.100	2007
18102.600	2008
20298.400	2009
22504.800	2010
24377.900	2011
24969.700	2012
29159.92	2013
31942.122	2014

(The Annual Report of the Central Bank of Jordan, 2014)

Importance of small projects:

The small projects play an important role in the economy as follows:

- 1- The small projects create jobs and a lot of studies indicate to about 50% from jobs of economy ,
- 2- Increase the gross domestic product.
- 3- The basis for the big industries and organizations where it need the small projects in a lot of activities.
- 4-The basis for the development of creator and innovations (Read ,abedalsalam,shada &aljaosi,2001).

4.2 Previous Study

There are many studies that addressed the Obstacles of finance of small projects. The most important of these studies are:

1- The Study (Aljuivel, 2013) entitled “The role of Islamic banks in the financing of small and medium-sized projects Jordanian.” The study aimed to identify the role of Islamic banks in the financing of small and medium projects. Thus, the sample used in this study is the Jordan Islamic Bank and the Islamic International Arab Bank. The study shows the role of Islamic banks in the financing of small and medium-sized projects and the presence of obstacles facing banks in the financing of small and medium projects size.

The researcher recommended the establishment of Islamic banks to support the work of economic feasibility studies for projects to be funded. In addition, it provides new funding formulas suitable for small projects.

2- The Study (Buhaisi, 2006) entitled “towards modern methods of financing small projects in the Gaza Strip.” The study aimed to assess the current funding methods of small projects in the Gaza Strip and their ability to keep pace with the needs of these projects. Thus, this are considered to be the backbone of the Palestinian economy. The study found that many of the investors in the Gaza Strip are facing financial problems when implementing their projects. Also, the high Interest of the obtained finance by the banks is the most important obstacles facing small projects. Furthermore, the study suggested the establishment of a fund to finance small projects in the sector.

3- The Study (Almahroug& al Magabla, 2006) entitled “Small projects and medium importance and constraints.” The study aimed to identify the reality of small projects in developing countries, particularly with regard to access to financing. Thus, this is regarded as a big problem for small projects. The study found that an increase in the cost of the finance provides the guarantees required by banks for funding. The study recommended that there is need to provide a mechanism to ensure these loans are provided by banks. Also, the role of specialized lending institutions that provide financing for these projects should be activated.

4-The Study (Omar, Ballmosa, 2013) entitled “Obstacles for small and medium projects in Algeria and ways of developing.” The study aimed to identify the problems and obstacles that are facing small and medium projects in Algeria and ways of support. The study identifies the importance of these institutions in the economic development of the national economy. It also pointed that some of the Asian countries have made tremendous achievements over the past period through its reliance on small projects.

The researcher recommended that there is a need to address the problems faced by these projects and there is the need to provide the needed infrastructure for such projects.

5- The Study (Alsawi, Ali, 2015) entitled “The role of the banks in the sustainability of micro-financing projects to address societal poverty.” The Study aimed to identify the role of the banks in the sustainability of microfinance to alleviate societal poverty. Here lies the problem of the research in the non-exploitation of banks in Sudan to the proportion of 12% set by the Central Bank of Sudan. This was obtained from the portfolio of funding for financing smaller projects. The study found that no banks deal with this ratio's commitment due to low yield and the high cost of finance. The study recommended that there is a need to encourage banks to grant funding for small projects with state support for banks through tax exemptions.

6- The Study (Alsutan, 2007) entitled “the impact of the funding in the efficiency of small projects.” The problem of this study is the lack of capital provided by the founders of small projects to fund operations. In contrast, institution of finance does not lend these projects which had a problem in finance. The study relied on a descriptive approach and analysis of data obtained from different sources. Also, questionnaires on 50 small projects were distributed.

5. Study Method

5.1 Methodology of the Study

In this study, the hypotheses were tested, and an answer to the questions of the study was provided. The study relied on descriptive and analytic method, as well as field study. With regard to the descriptive method, the study

gave an accurate picture of the Obstacles of financing small projects. Through previous studies, as for the side of the field, the study relied on a questionnaire designed to collect the necessary data to test hypotheses.

5.2 The Population of the Study: Scope of the Study

The population of this study represents the Jordanian commercial banks in the Jordan, which offers various banking services to the customers. Here, the study distributed a questionnaire to obtain information about the study. Therefore, the sample of the study is the upper and middle level of employees in the Jordanian Commercial Banks distributed as shown in Table 2 below:

Table 2. Distribution of the Jordanian commercial banks

Bank	Assets	Rank	The ratio of total assets
Arab bank	8726	1	20.16%
Jordan Ahli bank	2120	5	4.9%
Cairo Amman Bank	1885.22	6	4.36%
Bank of Jordan	1859.6	7	4.3%
The housing Bank	6508.6	2	15.04%
Jordan Kuwait Bank	2369	3	5.47%
Arab Jordan investment Bank	1632	9	3.77%
Jordan Commercial bank	1096.41	10	2.53%
Invest bank	788.62	13	1.8%
Arab banking corp./Jordan	1083	11	2.5%
Union bank	2239.69	4	5.17%
Society general bank	867.13	12	2%
Capital bank	1825.47	8	4.22%

(Annual Report of the Association of Banks in Jordan, 2014)

Table 3. Distribution of questionnaire

Bank	No. of questionnaire	No. of obtained questionnaire
Arab bank	50	47
Jordan Ahli bank	15	15
Cairo Amman Bank	13	13
Bank of Jordan	13	13
The housing Bank	40	38
Jordan Kuwait Bank	10	10
Arab Jordan investment Bank	13	13
Jordan Commercial bank	6	6
Invest bank	5	5
Arab banking corp./Jordan	6	6
Union bank	15	13
Society general bank	6	6
Capital bank	13	13

5.3 Tools of the Study

The researcher distributed designed a questionnaire to solicit the views of an employee of Jordanian commercial banks about the study through Likert scale. The study distributed 205 questionnaire, 198 of the questionnaire has been recovered, while the percentage is 96.5%.

5.4 Sincerity and Persistence of the Study Tool

A tool of the study (a questionnaire) has been shown on a group of arbitrators (5 experts). To ensure the veracity of content resolution, good drafting, and representation of the subject accurately, the reliability coefficient of the questionnaire according to the coefficient (Cronbach alpha) is 83%. This was performed through the statistical analysis of the study's sample.

6. The Results of Hypothesis Testing

6.1 Descriptive Statistics

This section which contains the results of the study aimed to know the Obstacles of financing small projects. It also included a description of the personality variables for members of the study sample. In addition, the study used the Statistical Package for Social Sciences software (SPSS) to extract the averages, arithmetic, and standard deviations of the paragraphs of the questionnaire. Thus, the following is a presentation of the demographic variables according to Table 4.

Table 4. Distribution of the study sample according to demographic variables

Variable	Frequency	Percentage %
<u>1- Gender</u>		
Male	149	75.2%
Female	49	24.8%
<u>2- Job site</u>		
Manager department	11	5.4%
Assistant manager of the Department	10	5%
Manager branch	130	65.6%
Head department	47	24%
<u>3-Academic Qualifications</u>		
Graduates (Ph.D. or Master)	35	18%
Bachelor's	139	70%
Diploma or less	24	12%
<u>4-Years of experience</u>		
5 years or less	8	4%
More than 5 to10 years	12	6%
More than 10 to15 years	151	76%
More than 15 years	27	14%

6.2 Results of Testing the Hypotheses

6.2.1 Descriptive Statistics

Table 5. The results of the answers to the questions of the hypothesis

Number	Paragraph	Arithmetic Averages	Standard Deviations
1-	The Commercial Bank apply high-interest rates on loans for the small projects	3.65	.31
2-	The term of loans of small projects is not suitable.	3.22	1.09
3-	The Commercial Bank has required guarantees from the small projects in order to approve the finance.	3.61	.59
4-	The amount of the granted loans from the Commercial Bank to small projects is inadequate	3.15	0.91
5-	The Commercial Bank does not allow the provision of non-funded term on the small projects.	3.13	.75
Total		3.352	

The researcher notes from the previous Table 5 includes paragraphs that test the first hypothesis that the Arithmetic Averages ranged between 3.15-3.65, and the highest average is paragraph No. 1, which states “The Commercial Bank apply high-interest rates on loans for the small projects.” In general, all averages were higher than Class 3, and the overall average of banking obstacles is 3.352.

Table 6. The results of the answers to the questions of the hypothesis

Number	Paragraph	Arithmetic Averages	Standard Deviations
6-	Obstacles of the small projects		
6-	Management of the small projects doesn't have enough experience to manage the project.	3.51	1.16
7-	The small projects don't have administrative human resources that possess the necessary skills.	3.67	0.9
8-	The products produced by small projects had low quality.	3.18	.91
9-	There is a weakness in the marketing of small project's products.	3.30	.78
10-	The products of small projects cannot compete in the market.	3.40	.71
11-	There is a weakness in the ability of small projects to repay their obligations to commercial banks for the lack of sales.	3.41	.59
Total		3.411	

The researcher notes from the previous Table 6, which includes paragraphs that test the first hypothesis that the Arithmetic Averages ranged between 3.18-3.67, and the highest average is paragraph No. 7, which states “The small projects don't have administrative efficiencies that possess the necessary skills.” In general, all averages were higher than Class 3, and the overall average of obstacles of small projects is 3.411.

Table 7. The results of the answers to the questions of the hypothesis

Number	Paragraph Governmental obstacles	Arithmetic Averages	Standard Deviations
12-	Procedures of registration of small projects are long and complex.	3.33	.37
13-	There are no instructions and the laws of the central bank stimulate commercial banks to finance small projects. 13.	3.45	1.01
14-	There is a weakness in government laws that support small projects.	3.88	.57
15-	The government does not provide the necessary support to small projects with regard to the training of human resources.	3.34	.83
16-	The government does not provide the necessary support for small projects regarding the making of the economic feasibility study.	3.31	.37
	Total	3.462	

The researcher notes from the previous table 7, which includes paragraphs that test the first hypothesis that the Arithmetic Averages ranged between 3.31-3.88, and the highest average is paragraph No. 14, which states “There is a weakness in government laws that supports small projects.” In general, all averages were higher than Class 3, and the overall average of the Governmental obstacles is 3.462.

Table 8. The results of answers to the questions of the hypothesis

Number	Paragraph Finance of the commercial bank to small projects	Arithmetic Averages	Standard Deviations
17-	The Commercial banks are reluctant to grant funding for small projects because weak cash flows in small projects.	3.39	.92
18-	The Commercial banks have tightened the application of safeguards because of the poor credit worthiness in small projects.	3.38	.21
19-	The Commercial banks give small projects suitable amounts because of poor creditworthiness.	3.31	.79
20-	Some of the reasons of refusing the commercial banks to lend small projects are poor management and lack of experience.	3.12	.78
21-	Some of the reasons of refusing the commercial banks to lend small projects are weak cash flows and the absence of economic feasibility study.	3.88	.23
	Total	3.416	

The researcher notes from previous Table 8, which includes paragraphs that test the first hypothesis that the Arithmetic Averages ranged between 3.12-3.88, and the highest average is paragraph No. 21, which states “Some of the reasons of refusing the commercial banks to lend small projects are weak cash flows and the absence of economic feasibility study.” In general, all averages were higher than Class 3, and the overall average of the Finance of the commercial bank to small projects is 3.416.

6.2.2 Test of the First Hypotheses

In the section of this study, we present an analysis of the results of the study hypotheses. As mentioned before, in testing Ho1, we also use a sample of an employee of the Jordanian commercial banks. The following subsections provide an analysis of the results of hypotheses testing at the total sample level.

In testing the first hypothesis, multiple linear regression tests was used and the result is as shown in Table 9.

Ho1 - There is no significant statistical impact of the obstacles (Banking obstacles, small projects obstacles, Governmental obstacles) on the financing of small projects at $p \leq 0.05$

Table 9. Result of the multiple linear regression tests

Dependent Variable	Independent Variables	Regression Coefficient B	Value of T calculated	Sig.
Financing of small projects	Banking obstacles	0.151	2.01	0.002
	small projects obstacles	0.107	1.32	0.003
	Governmental obstacles	0.071	1.24	0.001
R=0.88 R2= 0.7744 F=50.11		Sig.=0.000		

From Table 9, there is a significant impact of independent variables on the dependent variable. Thus, this refers to the good relation between Affecting Factors and the financing of small projects, the value of Sig. is less than 0.005, and The value of Pearson correlation (R) =0.88. Thus, this refers to the rejection of the null hypothesis and the acceptance of the alternative hypothesis.

To test the sub-hypothesis no.(1), we used a simple linear regression test and the result is as shown in Table 10. Ho1-1 - There is no significant statistical impact of the Banking obstacles on the financing of small projects at $p \leq 0.05$.

Table 10. Result of the simple linear regression test

Independent Variable	Dependent Variable	Regression Coefficient B	Value of T calculated	Sig.
Financing of small projects	Banking obstacles	0.123	1.70	0.002
R=0.84	R2=0.7056	F=57.1		Sig.=0.002

From the Table 10, there is a significant impact of the independent variable on the dependent variable. Thus, this refers to the good relation between the Banking obstacles and the financing of small projects, the value of Sig. less than 0.05, and the value of Pearson correlation (R)=0.84. This refers to the rejection of the null hypothesis and acceptance of the alternative hypothesis.

To test the sub-hypothesis no (2), we used a simple linear regression test and the result is as shown in Table 11.

Ho1-2. There is no significant statistical impact of the Small Projects obstacles on the financing of small projects at $p \leq 0.05$

Table 11. Result of the simple linear regression test

Independent Variable	Dependent Variable	Regression Coefficient B	Value of T calculated	Sig.
Financing of small projects	small projects obstacles	0.121	2.57	0.001
R=0.81	R2=0.6561	F=44.1		Sig.=0.001

From Table 11, there is a significant impact of the independent variable on the dependent variable. Thus, this refers to the good relation between small projects obstacles on the financing of small projects, the value of Sig. less than 0.05, and the value of Pearson correlation (R) =0.81. This refers to the rejection of the null hypothesis and the acceptance of the alternative hypothesis.

In testing the sub-hypothesis no (3), we used simple linear regression test and the result as shown in Table 12.

Ho1-3 - There is no significant statistical impact of the Governmental obstacles on the financing of small projects at $p \leq 0.05$.

Table 12. Result of the simple linear regression test

Independent Variable	Dependent Variable	Regression Coefficient B	Value of T calculated	Sig.
Financing of small projects	Governmental obstacles	0.144	1.60	.003
R=0.83	R2=0.6889	F=44.1		Sig.=0.003

From the table 12, there is a significant impact of the independent variable on the dependent variable. Thus, this refers to the good relation between Governmental obstacles on the financing of small projects, the value of Sig. less than 0.05, and the value of Pearson correlation (R) =0.83. This refers to the rejection of the null hypothesis and the acceptance of the alternative hypothesis.

7. Summary and Conclusion

This study attempts to investigate the impact of the obstacles (Banking obstacles, small projects obstacles, and Governmental obstacles) on the financing of small projects. Thus the results (findings) show:

- 1 - There is a significant statistical impact of the obstacles (Banking obstacles, small projects obstacles, Governmental obstacles) on the financing of small projects from Jordanian commercial banks.
- 2-The study rejected the null hypotheses and accepted the alternative hypotheses for the main hypotheses.
- 3-The study rejected the null hypothesis and accepted the alternative hypothesis for the three sub-hypothesis.
- 4- There is a good statistical relationship between the obstacles (Banking obstacles, small projects obstacles, Governmental obstacles) and the financing of small projects from Jordanian commercial banks.

8. Recommendations

The study has recommended the following:

1. The Central Bank should make laws that force banks to set aside a portion of the loans portfolio to small projects.
2. There is a need for the government to support to small projects; specifically training of the human resources and the making of an economic feasibility study.
3. There is a need for the government to provide support to small projects with respect to the establishment of institutions to ensure that small projects also obtain financing.

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Perceptions of Consumers in the Airline Industry Using a Qualitative Data Analysis Methodology: An Applied Research under an International Orientation

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Abstract

Greater digital connectivity, improved practical functionalities of internet and website interface, and the wide embrace of the social-media lifestyle, have induced higher level of activism and participation by the consumer class, as evidenced by the more frequent posting of online customers' reviews. The textual and qualitative features of online customer reviews can be effectively reviewed and analyzed through the application of robust qualitative data mining methodology and text statistics. Qualitative Data analysis methodology (QDA) greatly helps with the technical steps for the codification, interpretative analysis, hypothesis testing, and predictive iterations. This research uses this methodology and proceeds with an in-depth analysis of N= 1222 written reviews to explain the most common complaints of passengers under an international and comparative approach of two airlines in Asia. The conclusions and results of the research are in line with other quantitative research done by (Messner & Wolfgang, 2016) stating that Food and Beverages, In-flight entertainment and the quality of the seats in the encounter stage of the service should be the major concerns of today's airlines.

Keywords: customer reviews, airline industry, qualitative data analysis, QDA, CAQDAS, qualitative research, experiential analysis

1. Introduction

1.1 General Introduction

In this study, QDA methodology has been applied in the retrieval, review and in depth analysis of textual data from Verified Reviews on Singapore Airlines (SQ) and Thai Airways (TG), respectively with a total of N=1222 reviews. This study aims to discover negative feelings, sentiments, personal viewpoints and experiences as communicated through the Skytrax Verified Reviews on SQ and TG, in order to derive meaningful insights as to the significant areas of concern of passengers, and the perceived shortcomings in product offerings and service delivery by the respective airlines, which could appropriately be considered by concerned parties for the devising of practical and targeted strategies, and improvement steps to uplift the overall flying experience of passengers.

1.2 Relevant Scholarship

Due to greater digital connectivity, improved user-friendliness and expanded functionalities, customers and consumers have opted more and more to provide their respective comments, inputs, reviews, and complaints, hence, the articulation of positive or negative sentiments and feelings regarding particular products, services, and customers handling, through online channels, may it be through the official websites, chat-rooms, and apps of the concerned corporations and providers or through alternative representations and advocacy and media channels, such as chat-rooms, forums, online surveys, etc. Given the predominantly textual and qualitative nature of such online customer reviews, qualitative data analysis methodology serves as a reliable and effective framework for deciphering the often complex and multifaceted feedbacks and inputs as provided. Qualitative data tend to have cyclical dynamic and potentially be built-upon circular referencing construction, thus, the insights derived thereof would complement the linear positions as typically arisen from the analysis of quantitative data.

This study aims to analyze the applicability and efficacy of qualitative data mining through the application of

CAQDAS (computer assisted qualitative data analysis software) in understanding online customer's reviews and feed-backs in the airline industry. Thus, the premise that, being able to practically decipher and understand the substance and relevance of customers' reviews, using qualitative data analysis methodology, would allow airlines to strategically and tactically implement action steps which would improve the overall level of satisfaction of flying customers.

The rapid increase of digital interconnectedness in recent times coupled with the wide adoption of various social media and peer-to-peer platforms for communications in the cyber space, have inevitably altered the perception of consumers as to the effective and practical formats and channels for: 1. The articulation of one's viewpoints, feed-backs, inputs, and comments, 2. The sharing of relevant experiences, observations, sentiments, and feelings, and 3. The accessing to and targeting of the desired audience and the sphere and extent of potential influence thereof ("virality" in cyber parlance). Invariably such trends of digital communication would have reshaped consumers' and customers' preference as to the avenues and channels best perceived to maximize the impact of the provision of the respective comments, reviews, feed-backs, and complaints regarding a particular product, service, transaction or customer handling. The case in point is the increasing volume and frequency in recent years of customers' reviews as lodged into probably the most important global source, the Skytrax forum, with the accompanying greater extent and depth of reviews and commentaries concerning top-of-mind airlines and airports.

The observable increase in volumes and frequencies of consumers' and customers' comments and reviews as directly and indirectly posted and lodged to the targeted companies' websites and digital channels and/or to the relevant consumers' advocacy organizations and/or to the media organizations and/or to the jurisdictional regulatory bodies, points to the growing importance of the need to effectively understand and respond to such 'online' feed-backs and inputs.

Spradley (1980) defines QDA as the process of gathering, organizing, structuring and manipulating information collected by researchers with the goal to create relations, interpret, and obtain conclusions. Mongay (2016) postulates that, qualitative analysis is effective in analyzing the often hidden aspects of sentiments, personal positions, bias and individual experiences, as manifested in written texts, hence, enabling the exploration on the inherent motivations of the authors of the written reviews or commentaries.

Even in the most quantitatively-oriented and structurally complex world of finance, the application of qualitative data analysis methodology is not a new phenomenon. Gippel in 2013 argued that, approaching finance research deductively through statistical modeling of large-scale numerical data sets is currently considered common practice, hence, the relevance and applicability of quantitative research methods. Nevertheless, there are plentiful of cases supporting the applicability of qualitative research methodology in the very exacting world of finance, one of such applications which has proven to be so monumental is the ground-breaking study of dividend policy by Lintner in 1956, which began as a qualitative research study. The study's conclusions regarding dividend policy still hold true today, over 50 years since he published.

2. Method

The advent of digital interconnectedness and the proliferations of digital and electronic based communication and messaging interface, have not only provided greater access for the widest cross-section of the consumers base to communicate and articulate specific view points, feedbacks, and comments, but have also resulted in the significant increase of the volume and frequencies of such online comments as now could be posted and lodged electronically with significant ease. Accordingly, the traditional manual data mining, coding, and iterations of interpretative analysis as conventionally practiced in qualitative data analysis methodology would no longer be adequate to handle the big volume and high-frequency features of today's online comments. Computer aided qualitative data analysis software (CAQDAS) helps to overcome such technical challenge. Mackensen and Wille (1999) postulated that, *"Computer-aided techniques for the management, coding, retrieval, and analysis of textual data are of increasing importance in social science test research. Computer systems especially designed for text analysis allow the researchers to handle and to systematically organize huge amount of textual data. They provide enhanced coding and retrieval techniques, and include various statistical tools for hypothesis testing."*

The aforementioned viewpoint is further supported by Kaczynski, Salmona, Smith (2012), which strongly vouch for the reliability and practical application of CAQDAS.

QDAS significantly assist the codifications and analysis steps as undertaken by researchers, enabling more robust discovery of important categories of data, analysis potential overlaps, and assessment on the degree of relevance of the textual data, which as appropriately fed into the incorporated statistical functions in the software,

allow for comprehensive analysis and extensive manipulative simulation of the captured texts and associated quantitative observations. It is no surprise that, the corporate world has also been embracing the use of CAQDAS

2.1 The Interests of Airlines in Understanding Customers' Reviews

The research by Buzzell and Gale (1987) indicates that, the market perception of the quality of a company's products or services is the most important factor which affects a company's performance. This is even more profound in the airline sector, given the typically heightened travel experience, as eluded to in the earlier section. Kutulmusoglu et al. (2016) argues that, passengers select preferred airlines based on certain priorities and impact level in considering the expected level of service, and such priorities might differ according to the airline chosen. Accordingly, customers' specific viewpoints about onboard Food and Beverage, (F&B) service, loyalty program, cabin conditions, may in varying degree affect the customers' overall expectations of the flying experience with a particular airline. Hence, being able to somehow measure and interpret such viewpoints as expressed by airline customers brings immense value for the positioning and possible improvement of the core competitive advantage of a particular airline.

Here lies the technical challenge as postulated by Chen and Chang (2005) that, frequently airlines measure their customers' perception of the services provided, without having sufficient knowledge about their customers' expectations. And furthermore Chen and Chang argued that, misreading or misevaluating customer expectations may create serious problems in airlines' resource allocation decisions. Accordingly, there is the impetus for applying a technically robust data mining methodology to understand the feelings and sentiments as expressed by airlines' customers about (i) the product and service as offered, (ii) the context in which a company offers such product and services, and (iii) the infrastructure that enables the transaction to take place, which accordingly to Rayport and Sviokla (1994) are the three basic elements of customer's perception of product and service value.

2.2 Ensuring Effective and Consistent Textual Analysis through Coding Protocols.

1,222 verified customers reviews, 675 on Singapore Airlines (SQ) and 547 on Thai Airways (TG), as lodged with Skytrax, were extracted and analyzed for the purpose of this paper. United Kingdom based airline consultancy firm, Skytrax, runs annual airline and airport reviews and ranking which have become the widely accepted benchmarks in the air travel industry. Its Airport Ranking and Airline Ranking started respectively in 1999 and 2001, and are based on methodical surveys - a updated regularly- and the analysis of customers' reviews as posted on its passenger's forum. Verified customers' reviews have undergone detailed authentication by Skytrax, including the required submission of copies of e-tickets, booking details or boarding passes, hence, evidencing real and actual travel experience as commented upon in the particular customers' reviews.

This research aims at effectively decoding and better understanding the negative feelings and sentiments as articulated by SQ's and TG's passengers in their respective customers' reviews with Skytrax. Ziethaml et al. (1996) states that, service managers should listen to their customers' feedback early in the transaction process, and should effectively and accurately respond to their identified needs. Any deeper understanding of the expression and articulations of feelings, sentiments and personal viewpoints which underpinned the customers' reviews, would provide enhanced insights as to the significant areas of concern of passengers, and the perceived shortcomings in product offerings and service delivery by the respective airlines. Hence, potentially contributing to the devising of practical and targeted strategies, and improvement steps to uplift the overall flying experience of passengers. Understanding customers attitudes and loyalties helps the devising of effective strategies for the acquisition and retention of customers. In this study we do not intend to investigate the foundational behavioral, demographic, socio-economic, and physiographic dimensions which may have impacted on the contextual constructions of the customers' reviews. The coding protocols are applied under an inductive approach.

2.3 The Coding Process and List of Codes Obtained through the Inductive Approach

The codes resulting from the QDA research applied in the reviews comments are as the following ones:

Ticketing & Reservation

- Code 1. Quality of Call-Center's service
- Code 2. Quality & ease-of-use of on-line platform
- Code 3. Ease for making payment & completing transaction
- Code 4. Ease for making seat reservation
- Code 5. Ease for amending reservations

- Code 6. Options for booking menu
- Code 7. Options for special requests/assistance

Check-in & Airport Handling

- Code 8. Meet & greet hospitality
- Code 9. Quality & standard of Check-in procedures
- Code 10. Efficiency of Check-in procedures
- Code 11. Helpfulness & Attentiveness
- Code 12. Clear articulation of important logistics & schedules

Pre-Boarding

Code 13. Quality & Comfort of Airline Lounge Dedicated Lounge for Frequent Flyers. (Dedicated Lounge for Business Class, Dedicated Lounge for First Class, Quality of F&B, Quality of Service by lounge staff, Quality of amenities & reading materials, Quality of ambience & cleanliness, Standard & design of seating area).

Code 14. Quality & comfort of Waiting Area (Gate-Front is more of a function of the overall standard of the Airport, not so much of the airline)

Code 15. Clarity of Pre-Boarding announcement

Code 16. Clarity of Boarding announcement

Code 17. Sequence of boarding

Code 18. Attentiveness on special assistance requirements

Code 19. On-time Departure

Boarding

Code 20. Greetings & direction to seat

Code 21. Assistance with cabin luggage

Code 22. Pre-flight PA. (Flight-deck Crew, Cabin Crew)

Code 23. Safety PA & Demonstration

In-flight Service

Code 24. Quality of service. (Friendliness, Helpfulness, Professional delivery of services)

Code 25. Responsiveness. (Attentiveness to special requests, Response time, Proactiveness in ensuring greater passengers comfort).

Code 26. Quality of F&B Service. (Cabin crews' F&B serving attire, Method of serving, Service attitude).

Code 27. Quality of F&B. (Quality of ingredients, Presentation, Tastefulness & flavors. Serving temperature, Selection and quality of food, Appetizers, Main course, Desserts, Cheese & Fruits, Snacks & Condiments, Options for special dietary requirements, Selection and quality of beverages, Welcome drinks, Alcoholic, Non-alcoholic, Chilled & fresh, Hot beverages).

In-flight Comfort

Code 28. Overall quality of aircraft

Code 29. Cleanliness of cabin. (Cabin, Galley, Toilets, Overhead compartments).

Code 30. Lighting & ambience setting. (Reading light, Ambience lighting)

Code 31. Pressurization & humidification

Code 32. Quality of Seat. (Design & overall quality of materials, Seat width, Seat pitch, Recline angle, Fully lie-flat bed seat).

Code 33. Seating configuration. (Aisle access, Legroom, Privacy).

Code 34. Storage Compartments

Code 35. Charging Ports

In-flight Amenities

Code 36. Quality of in-flight kits by travel class

Code 37. Head support, pillows and duvets/blankets

Code 38. Reading materials

Code 39. In-flight entertainment IFE. (Audio and Video- AVOD Library & Selection, Quality of head phones & control panel, In-flight media publication).

Code 40. Toilet amenities.

Code 41. In-flight shopping. (Selection of products, Quality of in-flight sales service).

Arrival Preparation

Code 42. PA upon Aircraft Descent. (Flight-deck crew, Cabin crew)

Code 43. Cabin Preparation

Code 44. Safety Check & PA

Disembarkation

Code 45. Arrival PA. (Airport information, Connecting flights information)

Code 46. Disembarkation Sequence & Procedures

Code 47. Attentiveness to special/assistance requirements

Code 48. Hand-over to Ground crews Procedures

Arrival Services & Ground-handling

Code 49. Ground-handling assistance

Code 50. Luggage collection assistance

Code 51. Lost & Found assistance

Code 52. Others.

Throughout the coding process, the researchers discovered textual references which are unclear and not specific, hence, the difficulty in coding them into the established categories. Accordingly, a generic code labeled "Others" is created to accommodate these miscellaneous categories. Given the very low frequency of codes under this category, this approach was considered not likely to cause statistical significance bias.

Upon the second phase analysis of the results of the initial Coding of TG and SQ Customers' Reviews, the team of researchers observed potential overlaps of certain codes. Thus, further analysis and discussion among the authors ensued to determine the contextual justifications and practical considerations for the amalgamation of certain codes. Such codes merging exercise lead to the final 36 (thirty six) coding names.

3. Results

The findings show that complaints in the reviews relate to a total of 36 codes stated in the appendix 1 and 2. It is important to state that the codes which appear more often are very similar in both companies, suggesting that customers pay attention to the same issues when they travel, despite the airline they use, or at least when comparing similar standard of airlines.

This section is presenting the Top 7 most important codes identified in both companies, due to the fact that the rest of the codes retrieved are highly fragmented. The research presents a concentration index of C_7^{62} in the case of Singapore Airlines, meaning that the top 7 most important complaints represent 62% of the total text retrieved when complaining in the reviews. In the study of Thai Airways, a concentration index of C_7^{58} appears stating that the top 7 complaints cover 58% of the total.

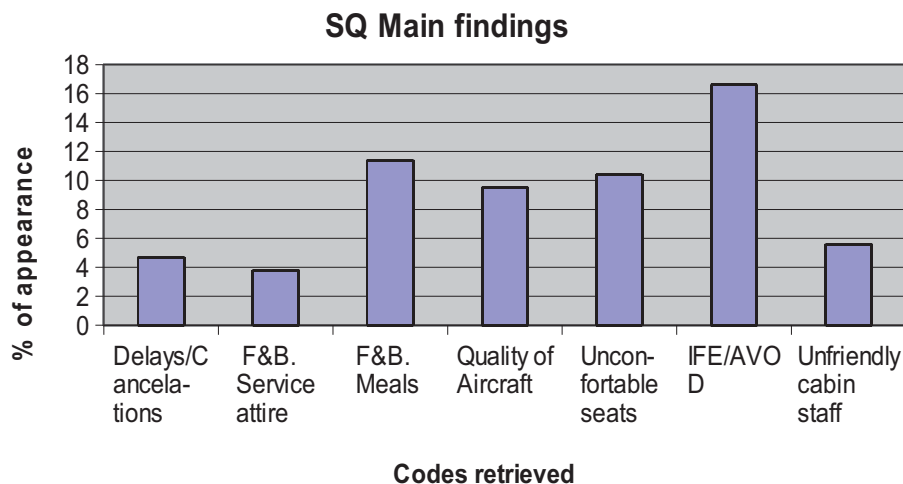


Figure 1. Results derived from main SQ findings

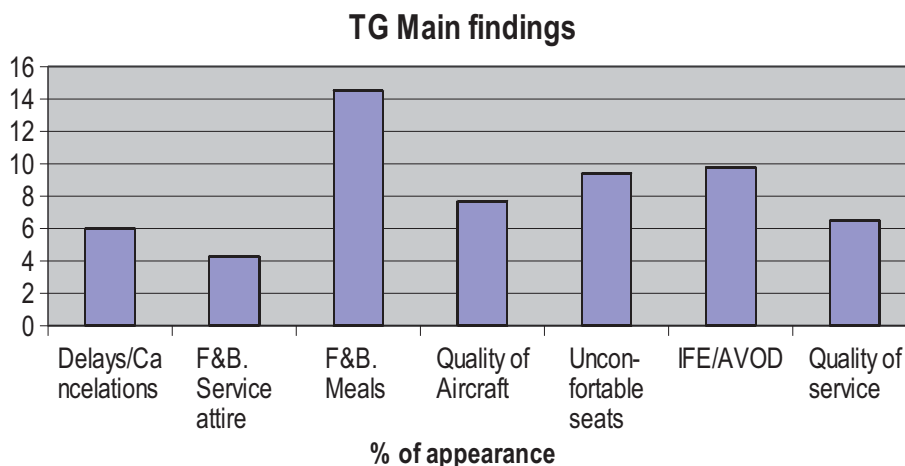


Figure 2. TG main findings

Table 1. Summary of main complaints expressed and retrieved using QDA methodology

Concept	Thai Airways (TG)	Singapore Airlines (SQ)
Food and Beverages (F&B). Meals	14.5%	11.40%
Food and Beverages (F&B). Service attire.	4.3%	3.8%
Delays and cancellations	6%	4.7%
Quality of aircraft	7.7%	9.5%
Uncomfortable seats	9.4%	10.4%
IFE (In flight Entertainment) AVOD	9.8%	16%
Unfriendly Staff in Cabin	-----	5.6%
Quality of Service	6.5%	-----

4. Discussion on limitations of the research

The research explores in depth a total of 1222 reviews of complains from consumer’s perspectives. Authors believe that this research can be improved by adding a bigger number of airlines and related them to a geographic area. This step would help make the sample more reliable and would extent the research to other airlines making the comparative process more comprehensive. The written reviews appear in an internet portal which is really valuable in order to understand honesty in relation to feelings due that spontaneous comments are very valuable, according to the findings of Berg (2004) from a qualitative point of view. Still it is really difficult to guarantee or demonstrate that these are common problems to all airlines worldwide. No research has been applied comparing low cost with regular airlines, being these last two the target of this research. In the future, it would be required a wider perspective of this research and to extend the same research protocols to other companies in order to go beyond this particular case study in Thai Airways and Singapore Airlines.

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Appendix A: Results Derived from Thai Airways Analysis

Category	Code	Count	% Codes	% Cases		
Advertisement	Misleading Advertising	1	0.10%	14.30%		
Reservation	Seats Reservation Problem	5	0.50%	42.90%		
Payment	Difficulties for Making Payment & Completing Transaction	1	0.10%	14.30%		
Payment	Less Value for Money	12	1.30%	71.40%		
Payment	Poor Compensation for Bad Service	2	0.20%	14.30%		
Check-in	Check-in Issues	16	1.70%	85.70%		
Check-in	Unhelpful and Inattentive Check-In Staffs	12	1.30%	71.40%		
Lounge	Below Expectation for Airline Lounge	25	2.70%	71.40%		
Boarding	Problems with Boarding	8	0.90%	57.10%		

Appendix B: Results Derived from Singapore Airlines Analysis

Category	Code	Count	% Codes	Cases	% Cases	
Ticketing & Reservation	Difficulties for making payment & completing transaction	2	0.30%	1	14.30%	
Ticketing & Reservation	Seat Reservation Problem	8	1.00%	5	71.40%	
Check-in & Airport Handling	Check in Issues	5	0.60%	3	42.90%	
Check-in & Airport Handling	UnHelpful & InAttentive Check-in Staffs	4	0.50%	3	42.90%	
Pre-boarding	Below Expectation for Airline Lounge	7	0.90%	4	57.10%	
Pre-boarding	Problems with Boarding	5	0.60%	3	42.90%	
Pre-boarding	Delayed and Canceled Flights Problems	37	4.70%	7	100.00%	
In-flight Service	Quality of service is under expectation	3	0.40%	3	42.90%	
In-flight Service	Quality of F&B Service is under expectation	30	3.80%	7	100.00%	

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Retention and Task Shifting in Human Resources for Health through Data Mining

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Abstract

Human resources for health (HRH) are the backbone of the healthcare system, but a shortage of medical manpower and the misdistribution of human resources are critical problems in the rural areas of many countries till 2017. The shortage of medical manpower is a big issue between 2004 and 2013. Data mining of bibliometrics is a good tool to find the solutions for shortage of medical manpower. By analyzing 118,092 citations in 2,000 articles published in the SSCI and SCI databases addressing HRH from 2004 to 2013, we plotted the networks among authors in the field. We combine quantitative bibliometrics and a qualitative literature review to determine the important articles and to realize the relationships between important topics in this field. We find that retention and task shifting are the hot topics in HRH field between 2004 and 2013, and find out the solutions for these issues through literature review in later papers. The solution to the HRH shortage is to determine the motivations of health workers and to provide incentives to maintain their retention. Task shifting is another solution to the HRH crisis.

Keywords: human resources, task shifting, motivation, retention, health system

1. Introduction

There is a broad consensus that shows qualified, accessible, and responsive human resources for health (HRH) can make a major impact on the health of the people. At the same time, there is widespread recognition that human resources for health (HRH) crises particularly in low- and middle-income countries (LMICs) impede the achievement of better health outcomes/targets (Lassi et al., 2016). The proposals for re-defining the roles Africa's health workforce have centred on basing the continent's healthcare delivery on non-physician clinicians (NPCs) who can be quickly trained and widely distributed to treat majority of the common diseases (Olapade-Olaopa, Sewankambo, & Iputo, 2017). The shortage of medical manpower is a big issue between 2004 and 2013. Data mining of bibliometrics is a good tool to find the solutions for shortage of medical manpower.

The shortage of medical manpower and the misdistribution of human resources are critical problems in the rural areas of many countries till 2017. Quality health care depends on policies to ensure that health workers are available in sufficient numbers (World Health Organization, 2006). The health workforce is the backbone of every health system (Anyangwe & Mtonga, 2007). The workforce utilization of human resources for health (HRH) is a key component of effective health service delivery (Suter et al., 2014). Challenges related to human resources for health (HRH) are important in low- and middle-income countries. These challenges include shortages of staff, shortages of health workers in remote rural districts, staff absenteeism and poor motivation. These problems are likely caused by low pay, poor supervision and support, and unsatisfactory working conditions (Chopra, Munro, Lavis, Vist, & Bennett, 2008). A higher density of health workers and nurses increases the availability of vaccination services, and a shortage of HRH can significantly constrain vaccination coverage in developing countries. The density of HRH is important to the rates of maternal mortality, infant mortality, and mortality under five years of age (Anand & Bärnighausen, 2004).

In order to achieve the Sustainable Development Goals (SDGs), equitable access to a skilled and motivated health worker within a performing health system is need to be ensured (Lassi et al., 2016). The recruitment and retention of health professionals in remote and rural areas is challenging; a lack of health professionals correlates

with the poorer health status of remote and rural residents (Campbell, McAllister, & Eley, 2012). Motivation is 'an individual's degree of willingness to exert and maintain effort towards organizational goals' (Franco, Bennett, & Kanfer, 2002). Health worker retention is critical for health system performance. The key is determining how to motivate and retain health workers; both financial and non-financial incentives affect motivation and retention (Willis-Shattuck et al., 2008).

In Africa, task shifting offers high-quality, cost-effective care to more patients than a physician-centered model. The primary challenges regarding implementation include adequate and sustainable training, support and pay for staff in new roles, integrating new members in the medical team, and compliance with regulatory bodies (Callaghan, Ford, & Schneider, 2010). Substitute health workers assume some of the functions and roles reserved for health professionals, such as doctors, nurses and pharmacists. However, substitute health workers likely receive less medical training and possess fewer qualifications (Dovlo, 2004).

In this study, a bibliometric analysis of popular articles was adopted. Wagstaff and Culyer used bibliometrics to examine the last forty years of health economics. They used bibliographic "metadata" from EconLit supplemented by citation data from Google Scholar to report the development of health economics (Wagstaff & Culyer, 2012). Social networking posits that each person is part of a sub-set of familiar people. This network can be represented as a set of points (or vertices) joined in pairs by the lines (or edges) that meet. One could, in principle, build a social network for a company, firm, school, university, other community or the entire world (Newman, 2001). A famous early empirical study of the structure of social networks was conducted by Stanley Milgram (Milgram, 1967). We used a co-citation analysis method to create a virtual social network among scholars.

After the bibliometric analysis, we found that the hot issue in many HRH papers was the shortage of health workers and how to retain them. Many authors provided methods to improve health workers' motivation. As the health worker shortage continues, how to use task shifting to achieve high performance for health care was also a concern. This study determined the popular topics and then depicted the social HRH networks among researchers. This study then went further and explored how to use health workers to maintain and improve the quality of health care.

2. Method

In this study, the well-recognized high-quality databases Science Citation Index (SCI) and Social Sciences Citation Index (SSCI) were adopted. First, we used bibliometric method to determine the quantity of popular journal papers, popular authors and popular keywords. Second, we adopted social network analysis to identify eight popular issues in the HRH field. Finally, a qualitative literature review was performed. The goal of this study is to provide virtual social HRH networks and thereby understand the relationships between the authors on these topics. This study also attempts to identify the authors' contributions in the field. On this basis, this study used citation data from the literature regarding HRH from 2004 to 2013. We searched the terms "human resources" and "health" in journals listed in the SSCI and the SCI. We selected the top-ranking 1,000 papers (times-cited ranking, highly cited ranking) in each five-year period (2004–2008, 2009–2013). Finally, we analyzed 118,092 citations of 2,000 articles from 2004–2013. The citation data used in this study include journal articles, authors, keywords, and cited references.

The structure of scientific collaboration networks was studied by Newman (2001). Two scientists are considered to be connected if they have authored a paper together, and explicit networks of these connections are constructed by using data obtained from many databases (Newman, 2001). The networks mentioned by Newman were the "real" social networks. We attempted to define a "virtual" social network. One paper that cited two different authors at the same time was called a "co-citation": there was some relationship between these two different authors. Therefore, these two authors produce a link in the virtual social network. Co-citation analysis is a bibliometric technique that scientists use to map the intellectual structure of an academic field and involves counting documents from paired or co-cited documents. The analysis compiles co-citation counts in a matrix form and statistically scales them to capture a snapshot at a distinct point of the knowledge structure (Small, 1993).

Citation and co-citation analysis are the primary methods used in this study. First, the databases were identified as the sources of HRH publications. Then, data collection and analysis techniques were designed to collect information regarding topics and authors in HRH research. The collected data were analyzed and systematized by sorting, screening, summing, sub-totaling, and ranking. The data were run through the UCINET software (Borgatti, Everett, & Freeman, 2002). After a series of operations, key nodes were identified in the invisible network of HRH knowledge. Finally, co-citation analysis was used, and it revealed the virtual social HRH network. The networks were mapped to describe "author factions" in the field of HRH.

3. Results

After analyzing the 118,092 citations from 2,000 HRH articles published in the SSCI and SCI journals from 2004 to 2013, a timeline of the most cited authors and papers was developed. The detailed data included 56,087 citations of 1,000 articles from 2004 to 2008 and 62,005 citations of 1,000 articles from 2009 to 2013.

3.1 Citation Analysis and Development of the Timeline

Table 1 shows the historical timeline for HRH issues in the database. The frequency of citation (times cited) indicates the importance of the article. The most influential article is assumed to be the most frequently cited.

Table 1. Timeline of human resources for health articles (citations from SSCI and SCI articles, 2009–2013)

Year	Frequency /times cited	B/J*	Author	Year			
2004	39	J	Chen L	2004	Lancet	V364	P1984
2004	18	J	Dovlo D	2004	Hum Resour Health	V2	P7
2004	17	J	Hongoro C	2004	Lancet	V364	P1451
2004	13	J	Kober K	2004	Lancet	V364	P103
2004	11	J	Anand S	2004	Lancet	V364	P1603
2006	39	B	World Health Organization	2006	World Hlth Rep 2006		
2006	13	J	Stringer Jsa	2006	Jama-J Am Med Assoc	V296	P782
2006	12	J	Braitstein P	2006	Lancet	V367	P817
2006	12	J	Van Damme W	2006	Aids	V20	P653
2006	12	J	Gilks Cf	2006	Lancet	V368	P505
2006	11	J	Schneider H	2006	Reprod Health Matter	V14	P12
2006	10	J	Gandhi Nr	2006	Lancet	V368	P1575
2006	10	B	World Health Organization (Who)	2006	Ant Ther Hiv Inf Ad		
2006	10	B	World Health Organization	2006	Work Tog Hlth World		
2007	23	J	Samb B	2007	New Engl J Med	V357	P2510
2007	14	J	Mullan F	2007	Lancet	V370	P2158
2007	12	J	Rosen S	2007	Plos Med	V4	P1691
2007	11	B	World Health Organization	2007	Ev Bus Strength Hlth		
2008	15	J	Philips M	2008	Lancet	V371	P682
2008	11	J	Van Damme W	2008	Soc Sci Med	V66	P2108
2008	10	B	Who	2008	Task Shift Rat Red T		
2008	9	J	Lawn Sd	2008	Aids	V22	P1897
2008	9	J	Lehmann U	2008	Bmc Health Serv Res	V8	
2008	9	J	Chopra M	2008	Lancet	V371	P668
2008	8	B	World Health Organization	2008	Whohtmtb2008393		
2008	8	J	Weiser Tg	2008	Lancet	V372	P139
2008	8	J	Ooms G	2008	Globalization Health	V4	
2008	8	B	Who	2008	Glob Burd Dis 2004 U		
2008	8	J	Collins Fs	2008	Science	V319	P906
2008	8	J	Jones Ke	2008	Nature	V451	P990
2009	14	J	Granich Rm	2009	Lancet	V373	P48
2009	10	J	Sankaranarayanan R	2009	New Engl J Med	V360	P1385
2010	9	J	Callaghan M	2010	Hum Resour Health	V8	
2010	8	B	World Health Organization	2010	Ant Ther Hiv Inf Ad		

B/J: B:Book, J:Journal

3.2 Keyword Analysis Reveals Research Trends

Table 2 shows the keyword analysis of 2,000 articles published in the SSCI and SCI journals. We compared the keywords between the two five-year periods (2004–2008 and 2009–2013). Most of the keywords focused on HRH in Africa and HIV (human immunodeficiency virus) care.

Table 2. Analysis of keywords of 2,000 articles between the two five-year periods

2004-2008	Frequency	2009-2013	Frequency
human-immunodeficiency-virus	82	health	77
health	82	human-immunodeficiency-virus	61
care	59	care	55
united-states	56	united-states	52
mortality	39	sub-saharan africa	42
developing-countries	39	south-africa	40
management	38	mortality	40
children	32	impact	37
randomized controlled-trial	29	developing-countries	34
health-care	28	randomized controlled-trial	34
prevalence	28	management	34
human-resources	27	human-resources	33
impact	27	countries	32
infection	27	health-care	32
active antiretroviral therapy	24	risk	30
risk	24	africa	29
south-africa	23	model	28
sub-saharan africa	23	therapy	28
transmission	22	outcomes	27
aids	22	antiretroviral therapy	27

3.3 Co-Citation Analysis

If one paper cited two different authors at the same time, it was called a "co-citation": there was some relationship between these two authors. The first five-year virtual social network diagram (Figure 1) for 2004–2008 was different from the second diagram (Figure 2) for 2009–2013.



Figure 1. Key research themes of authors in human resources for health (2004–2008): virtual social network diagram

We adopted a factor analysis to distinguish the groups of authors into different factions. Virtual social network analysis techniques were used to plot the relationships in the co-citation matrix. We identified the strongest connections and the important authors. Figures 1 and 2 show the research themes of the authors in HRH studies. Different node shapes appeared after performing a "faction study" of these authors (Wang, McLee, & Kuo, 2011). This method groups elements in a network based on the sharing of common connections to one another. The few scholars in Figures 1 and 2 with the most links (co-citation) are the important persons in HRH research. For these scholars, there were heavy and dense links, and these core authors occupied advantageous positions in health care research; their publications and research revealed the research development trend in this field.

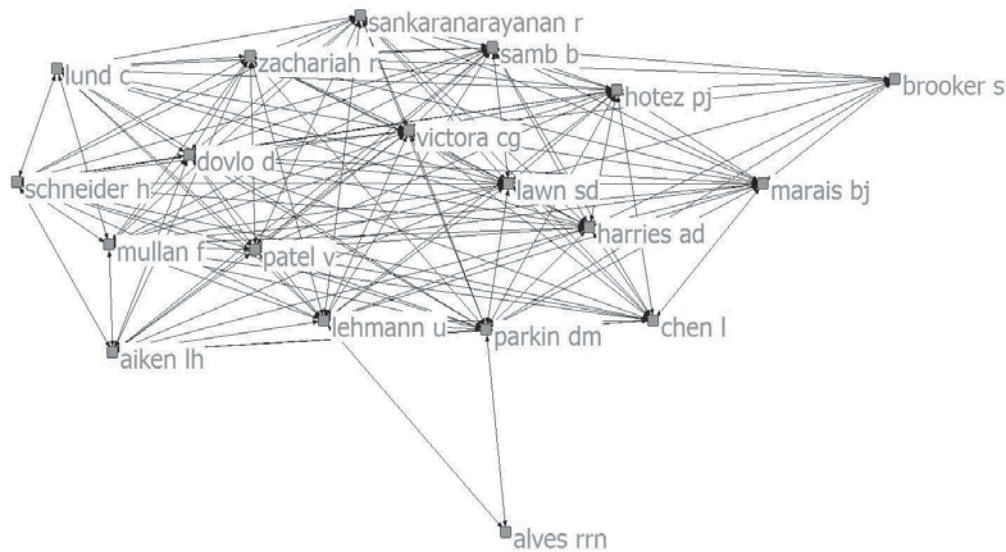


Figure 2. Key research themes of authors in human resources for health (2009–2013): virtual social network diagram

Although the diagrams in Figures 1 and 2 provide a clear picture, they focus on only the core areas. The important authors are the core of the network. Figure 1 represents the first five-year interval, and Figure 2 represents the next five-year interval. We compared the cores of both networks and located the paradigm shift in the authors between the two periods.

By using the co-citation matrix and factor analysis, the correlations among the authors were analyzed. When the authors are grouped together, there are common elements among them. According to this analysis, the closeness of these authors revealed their algorithmic similarities as perceived by the citers (Wang et al., 2011). The co-citation correlation matrix was factor analyzed with varimax rotation, a common procedure that attempts to fit (or load) the maximum number of authors with the minimum number of factors (McCain, 1990).

Table 3. Author factor loadings: 2009-2013

2009-2013		Name of group		Name of group	
factor1	variance	HIV care and task shifting	factor2	variance	Staffing and education
Samb B	0.957		Mullan F	0.965	
Marais Bj	0.871		Aiken Lh	0.909	
Lawn Sd	0.853				
Zachariah R	0.816				
Schneider H	0.773				
Harries Ad	0.603				
factor3	variance	Cancer survival	factor4	variance	Low- and middle-income countries
Alves Rrn	0.903		Lund C	0.842	
Sankaranarayanan R	0.802		Chen L	0.792	
factor5	variance	Maternal and child health	factor6	variance	Infection
Brooker S	0.876		Patel V	0.77	
Victora Cg	0.63		Hotez Pj	0.705	
factor7	variance	Sub-Saharan Africa	factor8	variance	Cancer mortality
Dovlo D	0.9		Parkin Dm	0.915	

Eight factors were extracted from the data from 2009 to 2013; together, they explained over 78.6% of the variance in the correlation matrix. Table 3 lists the 8 most important factors and the authors that had a factor loading of at least 0.5. As is usual in this type of analysis, authors with less than a 0.5 loading were dropped from the results (White & Griffith, 1981). We tentatively assigned names to the factors on the basis of our own interpretation of the authors with high loadings. Our interpretation of the results is that HRH research from

2009-2013 comprises at least the following 8 different sub-fields: HIV care, staffing and education, cancer survival, low and middle income countries, maternal and child health, infection, Sub-Saharan Africa and cancer mortality (see Table 3). We made no attempt to interpret the remaining factors because of their small eigenvalues.

4. Discussion

4.1 *The Findings from the Timeline, the Keyword Analysis and the Co-Citation Analysis*

We find the hot topics are retention and task shifting in HRH field. Chen, shown with 39 citations in Table 1, indicated that nearly all countries are challenged by worker shortages, skill-mix imbalances, misdistribution, poor work environments, and weak knowledge training. Especially in the poorest countries, the workforce is affected by HIV/AIDS, out-migration, and inadequate investment (Chen et al., 2004). Lehmann, shown with 9 citations in Table 1, focused on staffing remote rural areas in middle- and low-income countries. Concerning the attraction and retention of health workers, there is a strong argument for interventions that include attention to living and working environments and conditions and to development opportunities (Lehmann, Dieleman, & Martineau, 2008). Chopra, shown with 9 citations in Table 1, examined the effects of policy options for HRH. There were several important issues for human resources, such as substitution, shifting tasks between different types of health workers, or extending their roles. Performance-enhancing strategies drew researchers' attention, such as quality improvement, continuing education strategies, promotion of teamwork, and changes to workflows (Chopra et al., 2008). Callaghan, shown with 9 citations in Table 1, focused on task shifting for HIV treatment and care in Africa. Task shifting is a viable and rapid response to Sub-Saharan Africa's human resource crisis in HIV care (Callaghan et al., 2010).

The keywords arranged in front were important themes. After a critical qualitative literature review, a subjective selection of popular keywords was performed. We chose the hot keywords, such as human immunodeficiency virus, Sub-Saharan Africa, developing countries and antiretroviral therapy. Most of the important keywords revealed that task shifting to assist with HIV care in Africa is valuable.

The social networks of the co-citation analysis revealed that from 2009 to 2013, Samb b, Sankaranarayanan r, Zachariah r, Hotez pj, Lawn sd, Mullan f and Lehmann u appeared in the core network with Victora cg, Dovlo d, Parkin dm, Patel v and Chen l. The paradigm shift in HRH research revealed that Samb b, Sankaranarayanan r, Zachariah r, Hotez pj, Lawn sd, Mullan f and Lehmann u joined the evolving trend in this field. Lehmann u focused on task shifting for the human resource crisis in Africa. Mullan f examined the metrics of physician brain drain. Lawn sd studied promoting the retention of antiretroviral treatment services in South Africa. Hotez pj assessed infectious diseases in Africa. Zachariah r investigated task shifting in HIV/AIDS in Sub-Saharan Africa. Sankaranarayanan r examined cryotherapy by nurses in cervical cancer. Samb b focused on task shifting in HIV care in terms of nurse-centered community-based care.

4.2 *Migration and Brain Drain*

International migration is widely blamed for the shortage of health workers, and certainly, many health workers are moving to developed countries (Hongoro & Normand, 2006). Currently, many hospitals in middle- and low-income countries suffer from staff shortages and/or the misdistribution of health workers (Lehmann et al., 2008). The migration of doctors and nurses resembles a carousel of multiple entry and exit paths from low- to high-income regions and countries (Chen et al., 2004). In most developing countries, the health workforce is concentrated in larger cities and capitals, whereas rural areas attract few doctors and nurses (Anyangwe & Mtonga, 2007). Brain drain has also weakened the workforce of doctors in many poor countries and limits the ability of these countries to respond to HIV infections, AIDS, and other pressing needs (Mullan, 2005).

Many health workers seek a better life and more rewarding work by departing for wealthier countries (Chen et al., 2004). Low wages, poor working conditions, and a lack of supervision, equipment and infrastructure contribute to the flight of health workers from remote areas (Lehmann et al., 2008). Nurse migration has been shown to be motivated by the need for professional development, better quality of life and personal safety (Kingma, 2001). Female health workers tend to avoid rural and remote areas (Dussault & Franceschini, 2006). Doctors and nurses are reluctant to relocate to remote areas with poor communication with the rest of the country and a less comfortable environment for health professionals and their families (Dussault & Franceschini, 2006). A 'medical carousel' whereby health workers move to wealthy countries leaves the poorest countries with limited resources. Staff shortages increase the workloads and stress levels of remaining staff. To manage an increased workload, staff must sometimes lower the quality of care (Willis-Shattuck et al., 2008).

Regarding the migration of health workers, there is internal migration within a country and international

migration to other countries. Internal migration always occurs from rural areas to cities. International migration always occurs from poor to rich countries. Low job satisfaction and a lack of incentives affect the performance of health workers and cause them to leave. Therefore, good policy decisions must be made to prevent health workers from migrating. A sufficient number of health workers must remain to maintain the quality of health care.

4.3 Retention of Health Workers

The following motivational themes for health workers were identified: financial rewards, career development, continuing education, hospital infrastructure, resource availability, hospital management, recognition and appreciation. There was some evidence that initiatives to improve motivation have been effective in maintaining retention. Financial incentives, career development and management issues are core factors (Willis-Shattuck et al., 2008). Low salaries and unsatisfactory working conditions are reasons for not practicing in rural and remote areas (Dussault & Franceschini, 2006). Several incentives were found to be effective in retaining staff in rural areas. These incentives included providing housing and transportation, agreeing to the number of years that would be spent in the rural location, offering medical training, and offering financial incentives (Stilwell et al., 2004). Continuing professional development improves professional job satisfaction and may support rural recruitment and the retention of doctors and health workers (Wilson et al., 2009). Improving the social and professional recognition of health professionals in remote areas was another method of motivation (Dussault & Franceschini, 2006).

The way to retain health workers is to discover their motivations and provide them with incentives. These strategies include increasing salaries, providing continuous medical training and career development programs, maintaining good relationships among medical team members, improving the infrastructure and equipment in hospitals, and providing sufficient medication and materials.

4.4 Task Shifting

Since the 2006 World Health Report advocated increased community participation and the systematic delegation of tasks to less-specialized personnel, there have been many debates regarding the efficacy, modalities and expediency of task shifting (Lehmann, Van Damme, Barten, & Sanders, 2009). The opportunities from task shifting include increasing access to health care, expanding the workforce skills mix, improving health-system efficiency, enhancing the role of the community, and reducing costs, attrition and international 'brain drain'. The challenges of task shifting include maintaining medical quality and patient safety, addressing professional and institutional resistance, sustaining motivation and performance, and preventing the deaths of health workers from infectious diseases (Zachariah et al., 2009).

The delegation of medical tasks from one cadre to another has been used for many decades to enhance quality and reduce costs, especially in understaffed rural areas (Lehmann et al., 2009). In Africa, non-physician clinicians have been trained to fill various roles. Good health outcomes can be achieved by shifting tasks to nurses and community health workers (Callaghan et al., 2010). Non-physician clinicians (NPCs) are not trained as physicians but assume many of the diagnostic and clinical functions of medical doctors. All NPCs performed basic diagnosis and medical treatment. Many NPCs were recruited from rural and poor areas and worked in these regions. Low training costs, short training durations, and success in rural placements suggest that NPCs can play a substantial role in the expansion of health workforces in African countries in terms of HIV/AIDS care (Mullan & Frehywot, 2008).

The potential for task shifting in HIV care was elaborated by the World Health Organization, which suggested that nurses and health workers could be trained to provide primary care to HIV patients (Callaghan et al., 2010). Nurse-managed antiretroviral therapy (ART) for HIV infections was not inferior to doctor-managed ART in Africa: both treatment services had similar outcomes for viral suppression, adherence, toxicity and death (Sanne et al., 2010). Delegating tasks can improve the coverage and quality of and access to health services (Lehmann et al., 2009). Efforts at improving Africa's health systems can only succeed if the necessary socio-economic, educational, and technological infrastructure are in place (Olapade-Olaopa et al., 2017).

Task shifting is recognized as a valuable method to solve the HRH crisis. Non-physician clinicians (NPCs) are also more likely to remain in their rural communities and provide primary care. The government must promote the implementation of related policies regarding task shifting when an HRH shortage occurs. Good leadership from a regulatory framework is indispensable. The continuous medical training of NPCs ensures that there are adequate, qualified HRH. Task shifting can provide sustainable contributions from cost-effective and equitable health care, but there are several risks, such as misdiagnosis and administering the wrong medicine and treatment. Therefore, the government must oversee task shifting to ensure adherence to regulations and appropriate training and financing.

We find that retention and task shifting are the hot topics in HRH field between 2004 and 2013, and find out the solutions for these issues through literature review in later papers.

4.5 Contributions to Scholarship

This study analyzed the citation data for various papers addressing HRH, identified similar themes across various researchers, and determined the hot topics being discussed through a qualitative method. We adopted bibliometric methods to generate quantitative data and then identified important HRH issues using subjective judgment. Finally, we adopted a qualitative literature review to explore the important issues. This study is a mixed method of quantitative and qualitative research. The qualitative literature review of frequently cited papers provokes critical thinking regarding HRH.

Our interpretation of the results is that HRH research from 2009-2013 comprises at least the following 8 different sub-fields: HIV care; staffing and education; cancer survival; low- and middle-income countries; maternal and child health; infection; Sub-Saharan Africa; and cancer mortality. Therefore, we discussed motivations, incentives, retention and task shifting in HRH.

The improvement of many health outcomes cannot be achieved if vulnerable populations do not have access to skilled medical personnel (Dussault & Franceschini, 2006). High-income countries have shown that increased numbers of nursing staff were associated with improved inpatient outcomes. Reduced workflow or workload can increase efficiency in high-income countries. Teamwork, defined as interventions to improve the collaboration between doctors and nurses, was shown to be a promising intervention, with the potential to reduce costs and positively affect practitioners and patients (Chopra et al., 2008). Policy options in HRH include training, regulations, financing, organizational mechanisms, macro policies and mechanisms in other sectors (Chopra et al., 2008).

4.6 Applied Implications

HRH are the core component of medical systems. To resolve the shortage in health care personnel, policy makers may consider the following options: recruiting health workers to practice in rural areas; improving their working and living conditions; providing incentives; requiring compulsory service; changing or discontinuing services; improving hospital infrastructure and equipment; changing workflows; developing alternative service delivery systems and using substitute personnel (task shifting).

In countries around the world, the lack of medical personnel, uneven distribution of medical personnel and medical brain drain were significant problems. These problems will increase maternal and infant mortality, cancer mortality, infection rates, HIV prevalence and mortality, etc. Therefore, the development of strategies to solve the HRH crisis is an important issue. Beyond the role of government and the private sector, every organization must confront the shortage of medical personnel. After a qualitative literature review, we discovered several possible responses. The solution for HRH is to discover the motivations of health workers and to provide incentives to maintain their retention. Task shifting is another solution to the HRH crisis.

4.7 Limitations and Future Research Directions

The citations used in this study are the voting behaviors of many authors. However, the citations are from old articles. Citation analysis can find the previous paradigm and paradigm shift, but some authors are too new to be cited. Thus, we cannot identify the important authors in the future, but we can find the research trends.

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A Conceptual Model of Forces Driving the Introduction of a Sustainability Report in SMEs: Evidence from a Case Study

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Abstract

The paper aims to depict the forces responsible for an effective introduction of a sustainability report within SMEs. The paper's aim is addressed employing the case study methodology. In detail an Italian SME considered a best practice in introducing sustainability innovations has been selected and analyzed. The main outcome of the paper is to use the case study evidence to construct a conceptual model highlighting the forces that drive companies to introduce innovative sustainable management tools. The conceptual model emphasizes as driving forces the capability of the firm to engage with its stakeholders, together with some relevant managerial and organizational features. The adoption of sustainable management tools is the outcome of a strategic alignment of corporate and sustainable strategy, and of the organizational capability to carry on effectively social and environmental responsibility (SER) activities based on the firm's SER critical dimensions.

Keywords: sustainability, conceptual model, sustainability report, SMEs, case study evidence

1. Introduction

Whilst the general research focus of social and environmental responsibility (SER) has remained on large or even multinational companies (Jenkins, 2009; Witjes et al., 2016), a more recent literature stream focused the research on Small and Medium Enterprises (SMEs), opposing the view that SMEs are homogenous entities and 'little big companies' for which the same corporate social responsibility (CSR) tools provided for large companies are valuable (Wilkinson, 1999; Tilley, 2000) (note 1). Instead, SMEs are a fragmented, far from homogeneous sector, operating in numerous and diverse economic sphere, characterized by different managerial styles and ownership structures (Jenkins, 2009). In the same way, the cultural differences due to diverse ownership structures, strategic direction, owner-manager characteristics and geographic location of SMEs with respect large corporations can bring to different relationship of SMES with SER issues (Jenkins, 2004).

SMEs have specific characteristics that can affect the nature and extent to which they can implement SER (Aragón et al., 2016), and the research should take into consideration the specificities of SMEs and how they reflect on SER, also for the absolute relevance of SMEs, which encompass at least 95% of private sector companies and employ more than two thirds of the workers (Lejárraga et al., 2014).

The main aim of the paper is to depict the forces responsible for an effective introduction of a sustainability report within SMEs.

We choose to employ the case study methodology to address the main research aim. In detail for the case study an Italian SME was selected, owing to its best practices in SER management and reporting.

The main finding of the paper is the development of a new conceptual model able to highlight the factors driving companies towards effective introduction of sustainability management tools and the process followed/to follow in introducing a sustainable report within organizations.

In this new model lies the main originality of the paper. Moreover, to the best of our knowledge, the paper is the

first in depth analysis of an exemplar SER-oriented family SME operating in Italian territory, a SMEs- and family-featured territory.

The paper contributes to the SER literature by adding knowledge on the way in which SMEs, in detail a single SME sustainability oriented, deal with sustainability and how they grasp the opportunity provided by SER to develop innovative sustainability management tools, focusing in particular on the innovative tool of sustainability report (note 2). The paper also address the calls for a more practical research in social and environmental practices (Adams and Larrinaga-Gonzalez, 2007; Lodhia and Jacobs, 2013) and for more research in a family SMEs belonging to an eco-friendly sector and to a specific location, Italy, to prove the business case for CSR providing relevant case study evidences (Jenkins, 2006) (note 1).

The paper is structured as follows. In the next section, the literature covering SER, in detail within SMEs, is briefly reviewed, together with a literature focused on the internal factors affecting the SMEs' attitude towards CSR. The third section illustrates the methodology. The fourth section is devoted to present the case study object of the analysis. The fifth illustrates the implementation of the semi-structured interviews. The sixth section analyzes the main factors that drove the introduction of the sustainability report within the investigated SME. Seventh section illustrates the case evidence which conducted to the conceptual model that drove the investigated SME to introduce a sustainability report. Finally, a concluding section is provided.

2. Literature Review

Among the accounting information provided by organizations, the social and environmental accounting (SEA) is becoming increasingly relevant for organizations, by SEA is intended "all forms of 'accounts which go beyond the economic' and for all the different labels under which it appears" (Gray, 2002, p. 687).

Despite of numerous models existing claiming to manage and disclose non-financial corporate information, understanding how sustainability management models operate in practice remains a challenge.

Until now, there have been few empirical designs and implementations of sustainability management tools within firms, and thus, there seems to be a relevant gap between the development of sustainability management models in theory and the application of these models in practice (Adams, 2002; Adams and Larrinaga-Gonzalez, 2007; Riccaboni and Leone 2010; Lodhia and Jacobs, 2013), which is the main reason why we decided to start with our research work.

The section will briefly analyze two kinds of literatures: a literature dealing with the management and reporting of SEA within SMEs and the use of sustainability management tools and a literature focused on the internal factors considered to affect the attitude of SMEs towards the introduction of innovative sustainable management tools.

2.1 A Literature Review of Studies on the Management and Reporting of SEA within SMEs

The general research focus has remained on large or even multinational corporations (Witjes et al., 2016), and few are, within SER literature, the studies specifically analyzing the management and reporting of SEA in small and medium enterprises (SMEs) and in family firms (Campopiano et al., 2012; Uhlner et al., 2004; Massa et al., 2015).

In literature, there are two competing views: the first contends that SMEs are socially responsible by nature, while the second argues that a smaller firm size imposes barriers on SMEs that constrain their ability to take responsible action (Lepoutre and Heene, 2006). Empirical studies provided mixed findings: Vives et al. (2005) and the European Commission report (2003) provided evidence of a negative relationship between firm size and CSR, while Jenkins (2006, 2009), studying a sample of 24 SMEs exemplar in adopting CSR, provided evidence of the opportunities offered by CSR in SMEs, f.i. in introducing sustainable innovations.

If we turn the attention to the sustainability management tools implemented within SMEs, we should highlight that a recent research (Johnson and Schaltegger, 2016), analyzing two decades of sustainability management tools for SMEs, reveals that many of these tools are perceived to have little to no implementation in SMEs and that only a small set of experimenter firms use these tools. Johnson, in its research on German SMEs (Johnson, 2015), found that the rate of awareness and implementation of the sustainability management of managers is lacking.

A recent research within Italian territory shows that sustainability accounting is in an early phase of development (Passetti et al., 2014). Another research exploring the CSR among SMEs within Italian territory found that Italian SMEs practiced CSR mainly through informal, internally oriented and relational methods with very little, if any, managerial and strategic approach (Coppa and Sriramesh, 2013).

On the other hand, in literature there are also studies highlighting the use of sustainability tools by SMEs in order to innovate and create corporate value (Jenkins, 2006, 2009; Spitzbeck et al., 2013), also within Italian context (Longo et al., 2005; Perrini, 2006).

2.2 A Literature Review on the Internal Factors Affecting SMEs' Attitude towards CSR

In the section, we intend to examine studies on CSR and SMEs from an internal point of view, with the aim to enucleate the main internal factors that, combined with what emerges from the semi-structured interviews to the management of the selected Italian SME, allow us to build a conceptual model able to summarize the driving forces that may explain why a particular SME is more likely to adopt innovative sustainability management tools.

Recently, the literature started to focus on internal factors, better able to capture the distinctive sustainable characteristics of a specific firm (Lodhia and Jacobs, 2013) (note 3). In detail, the managerial features that the literature presumes to be related to the introduction of sustainability management tools are: 1) the top management SER orientation (Iturrioz et al., 2009); 2) the top managers' perception of the economic benefits from the implementation of sustainability management tools (Halila, 2007); 3) the managers' awareness of these tools (Bradford and Fraser, 2008); 4) the support provided by top managers to the implementation of such tools (Hsu and Cheng, 2012).

As regards the top management SER orientation, consistently with Iturrioz et al. (2009), we believe that an ethical SER approach, and not a merely legal, economic or cosmetic conception of it, is a key factor to enhance business competitiveness and firm value. Some recent papers focused on CEOs as social entrepreneurs, highlight that innovative and socially conscious CEOs are those with strong visions of socially responsive business, able to succeed in instilling SER values in the organization and even to use these core values as a management control (Roper and Cheney, 2005; Jollands et al., 2015).

Among internal factors, the literature considers also relevant organizational features (note 4), namely a shared methodology and infrastructure needed to measure and interpret sustainability data (Gond et al., 2012), and the involvement of all the organizational functions in measuring, managing and reporting sustainability issues (Ditillo and Lisi, 2016). Recent papers have thus related the level of engagement and involvement from multiple functional areas of the enterprise to the effectiveness of implementation of sustainability innovative tools (Johnson, 2015; Ditillo and Lisi, 2016).

Another relevant feature that the literature believes to affect the organizational SER is the relevant role played by stakeholders (Rahbek et al., 2013). As regards the role played by stakeholders in affecting the social and environmental corporate practices, according to the stakeholder theory literature (Waddock, 2002), there are three levels of stakeholder involvement: stakeholder mapping (first level), in which the corporation maps its stakeholders, if possible distinguishing between primary and secondary; stakeholder management (second level), in which the corporations tries to manage stakeholders' expectations, balancing different positions; and stakeholder engagement (third level), in which corporations involve their stakeholders in decision-making processes, sharing information, having dialogue with them and creating a model of mutual responsibility (Agudo-Valiente et al., 2013). Certainly, the third level is indicative of a decisive role given by the firm to the stakeholders, able to decide topics to be discussed and parts to be reported in the sustainability report, and the capability of the firm to involve its stakeholders is directly related to the corporate social performance (Adams and Frost, 2008).

The internal factors derived from the literature review will be complemented and measured for the selected firm, deriving data both from documents (i.e. the sustainability report) and from semi-structured interviews to the management.

3. Methodology

The research was carried out using a qualitative approach (Parker, 2012). In detail, a case study methodology has been used to investigate the issue of how entrepreneurs create sustainable innovation in organization. A case study approach is appropriate when a researcher needs to conduct a holistic and in-depth analysis of a complex phenomenon in its real-life context. Moreover, the case study methodology offers the possibility of investigating accounts from a practical rather than from a theoretical perspective, through the exploration of a phenomena in a specific context. The use of case study also allows researchers to use different methods of collecting data, thereby giving them a rich source of data from real settings, with the aim to deepen the understanding of the investigated phenomenon (Yin, 2003). As such, this method is particularly suitable for exploring sustainability practices, which are complex, context-dependent and firm-dependent by nature (Parker, 2012). Therefore, the

case study research method fits very well with the purpose of this paper, i.e. understanding the sustainability accounting practices at an organizational level. For these reasons, the article analyzes a single in-depth case study of a private Italian organization that could be included within the firms pursuing sustainable innovations for a long time. has been doing accounting bookkeeping since the late nineteenth century. Using a longitudinal case study to address the research question is considered appropriate since sustainable accounting is a social object and, in order to be understood, it has to be “contextualized,” that is, put into the specific time, space and minds in which it develops (Battaglia et al., 2016).

The case study employed is an explorative case study (Scapens, 2004), as it intends to explore how the firm’s managers pursued sustainable innovations, how they implement the process of issuing a social report, and whether the sustainability issue are integrated within the management control systems and the firm strategy. Explorative case studies are carried out to acquire useful indications on an area not (or partially not) explored. The findings of an explorative case study constitute just preliminary interpretations of a phenomenon.

In using a case study, we address the call to researchers in social (Gray, 2002; Adams and Larrinaga-Gonzales, 2007; Owen, 2008) and environmental literature (Lodhia and Jacobs, 2014; Henri and Journeault, 2008) to give a practice turn to their study “dirtying their hands” with practical case studies. From this point of view, the case studies offer the possibility of understanding the nature of accounting in practice, both in terms of techniques, procedures, systems which are used and the way in which they are used (Scapens, 2004). Adams and Larrinaga-Gonzalez (2007, p. 333) found that “extant literature on sustainability accounting and reporting, in contrast to management accounting and management, has largely ignored practice within organisations”. Moreover, Owen (2008, p. 248) argued that fieldwork studies have great potential in going beyond the analysis of the contents of official statements and reports, as well as in understanding organizational process and managerial motivations underpinning reporting initiatives and evaluating their effectiveness in promoting organizational transparency and accountability.

The theoretical paradigm underlying our research is the interpretive model. In the light of interpretivism, sociological phenomena cannot simply be observed but must also be interpreted by the researcher. This means that there is not one absolute reality, but rather different possibilities are generated by the perspective adopted to interpret the facts (Ryan *et al.*, 2002).

For addressing the issue object of the study, an southern-Italian family firm, namely GTS Group, operating in the transport industry, has been selected.

Two qualitative tools have been employed: document analysis and semi-structured interview, in order to address the triangulation issue (Hoque *et al.*, 2014).

Owing to the nature of the paper, document analysis (Bowen, 2009) was the main tool to collect the accounting data (*primary sources*) needed to provide evidence of the research question. The other tool used to collect qualitative data, and also to solve doubts emerged from the analysis of accounting documents were the semi-structured interviews with the managers of the selected SME. We choose to use the semi-structured interview because of its high degree of flexibility and because it offers the opportunity to address themes that may come to light during the semi-structured interviews (Qu and Dumay, 2011).

4. The GTS Group: an Overview

Understanding how SMEs conceive and practice SER is essential for SMEs, and Italy is a good country to study the issue, as the OECD (2006) stated that 99,9% of corporations in Italy are SMEs. Other articles focused on case studies in Italy (Borga et al., 2009; Del Baldo, 2012), but no study investigated the approach towards SER of a champion Italian SME with the aim to build a model based on the literature and the case study evidence.

We have selected the GTS Group as it is a SME and family firm, located at Bari (Apulia, South of Italy), which characterizes itself to be a best practice in SER.

The GTS Group operates in the European market of railway transport, in the sector of intermodal transport. The Group’s sectors of interest are the following (GTS Sustainability Report 2014):

- Freight transport services on behalf of third parties in the main European countries;
- Terminal to terminal transport services
- Arrangement and management of transport and logistics services on behalf of third parties;
- Rail traction services in the Italian and Swiss territory;
- Services of training, management and maintenance of competences in the railway sector;

- Constructions and management of properties.

The GTS' structure is composed by seven entities operating in complementary sectors, but as regards the turnover, it is achieved by the two subsidiaries General Transport Services and GTS Rail SpA, which respectively deal with intermodal transport and traction services in the freight and passengers sector. The GTS Group, founded in 1977, is in a growth and change phase: it is underway a generational managerial succession (from the father to the son) and the Group is working in order to be listed to the Italian Stock Exchange (Borsa Italiana) within the next three years. The Group has in fact be selected and included in the Borsa Italiana program named "Elite" addressed to support the best Italian companies which aims to compete in international markets by empowering their industrial, financial and organizing competencies.

Being a SME and a family firm, the GTS Group fully represents the typology of company we would like to investigate in relation to its practices of SEA management and reporting. Moreover, nonetheless the sustainability is an issue increasingly relevant in the sector in which GTS operates, that is the intermodal transport, it also represent an example of good practice as there is a scarce evidence of good practices in the SEA management and reporting within the firms belonging to the same industry.

5. Implementing the Semi-structured Interviews

Four managers of the main organizational areas of the GTS group involved within the SEA management and reporting have been interviewed, specifically the owner and founder (and also President of the Board of Directors); the CEO, in the person of its son, who will succeed to the guide of the Group, the General Director and the Chief Financial Officer (CFO), responsible for coordinating administration, finance and control.

The semi-structured interviews have been carried out within the month of March 2015 (note 5). Each manager has been interviewed individually. Interviews, which lasted separately one hour, have been conducted following a trace prepared by the researchers. The main areas investigated through the semi-structured interviews have been the following: the factors that pushed towards the adoption of good of SEA management and reporting good practices, the management of the process of stakeholder engagement, the activities carried out and the investments afforded for the SEA management and reporting, the expected returns, the tools used to measure/evaluate the financial and economical returns of the activities undertaken (note 3). In order to maintain spontaneity, we let them know the general aim of the research, without disclosing specific questions, to avoid the interviewees pre-preparing answers. At the first interview, in order to establish a good relationship with the interviewees, the researchers introduced ourselves and their research before following a semi-structured interview questions theme. The subsequent interviews started following the pre-prepared questions but soon diverged. It was a precise choice of the interviewers: instead of consisting of questions and predetermined answers, the script was used as a guideline for interactions. The choice of open-ended questions was intended to allow for the interviewees to provide as much information as possible, with the interviewer intervening as little as possible in their answers. It is important to highlight that, before interviewing GTS Group's manager, the script was pretested to identify ambiguous, unclear, and unnecessary questions, then was reformulated by clarifying some questions and rewriting others. Before closing each interview, we ensured that all the interview question themes were addressed. The interviews were recorded and transcribed and were supported by notes taken during the interview. The interview data was then broken down and analyzed according to the interview question themes. A qualitative data analysis was applied to the interview data. This allowed researchers to focus on the answers delivered by the respondent in terms of their meaning, while also maintaining sensitivity to the context. A further opportunity to debate on the findings emerged from the qualitative analysis happened during the presentation by the GTS Group of its first sustainability report in the month of April 2015.

Aiming at internal validity, results of the analyses were also triangulated with other sources of evidence, to give validity to the data analyzed (Hoque *et al.*, 2014). Triangulation involved the analysis of booklets and other pieces of information on GTS Group on web pages, on the company's homepage, on the organizational reports, on the specific normative provided by the GTS managers and by other information, financial and not-financial, retrieved by and large on the media.

6. Analyzing the Main Factors Driving the Introduction of Sustainability Management Tools in GTS

In the GTS group, from the semi-structured interviews a big impulse to push on sustainability and consequently to define a sustainability plan for the group is to be ascribed to the vision of the CEO of the GTS group, the son of the group founder. Only when he became CEO the openness of GTS towards sustainability issues, which before it was implicit, became manifest. From the interviews it emerges that the training path of the CEO and the experiences gained abroad heavily contributed to the process of approaching sustainability issue, a path that has its roots in the personal convictions and values of the CEO. The CEO also organizes numerous seminars on SER

issues, both in the associations to which he is a member (the logistics section of Confindustria – Italian Industrial Federation and Fercargo association- association of the Italian firms operating in the rail transport) and in the Apulian universities.

Therefore, as regards the managerial features of the GTS group’s CEO we can retrieve all the features highlighted by the literature: the GTS CEO has a genuine approach towards sustainability, he is aware of the sustainability management tools (the implementation of a sustainability report in 2014 and a reflection on costs of SEA is due to his determination) and he supports the implementation of these tools in a practical way.

As regards the organizational features, in the GTS group we found a shared methodological approach towards sustainability and a strong level of engagement of the multiple areas of the firm: for the drafting of the GTS 2014 sustainability report, an internal work team was created, composed of the Sales Manager, the Operation Manager, the General Manager, the Chief Financial Officer, the Railway operation Manager, also in charge of the work team, and the Cost Controller (GTS sustainability report, 2014).

Finally, the approach of GTS towards its stakeholders is identifiable as stakeholder engagement, and this is another factor differentiating GTS from other SMEs. In 2014, considered as the year of implementation of the stakeholder engagement process, GTS identified and classified its stakeholders and the issues that can be attributed to them, following what is provided for by AA1000SES guidelines and applying the materiality principle set forth in GRI-G4 guidelines (Calabrese et al., 2015). To identify material topics, first of all, GTS carried out an internal reconnaissance on potential themes deemed as significant (internal analysis), followed by a comparative analysis on other potential topics deemed as significant by competitors operating in the intermodal transport sector (external analysis). Once the topics were identified, the Sole Administrator, the General Manager and the Management Control area selected some considered as having overriding interest, considering the impact they could have on medium and long-term performances. Finally, a sample composed of more than 100 stakeholders was chosen among the corporate stakeholders previously mapped by GTS: clients, suppliers, employees, regulatory entities, banks and trade associations. Stakeholders included in the materiality analysis were selected according to the influence (namely their ability to influence the Group’s decision-making processes), strategic significance (key stakeholders for the company strategic choices) and proximity (they established durable relationships with the Group) criteria. Data were collected by means of a questionnaire administered to stakeholders, who were asked to comment on topics to be discussed, parts to be reported in the sustainability report and dialogue tools to be used.

A matrix of materiality has been depicted, crossing the level of importance that stakeholders attached to each topic with the relevance of the same topic for the company (fig. 1).

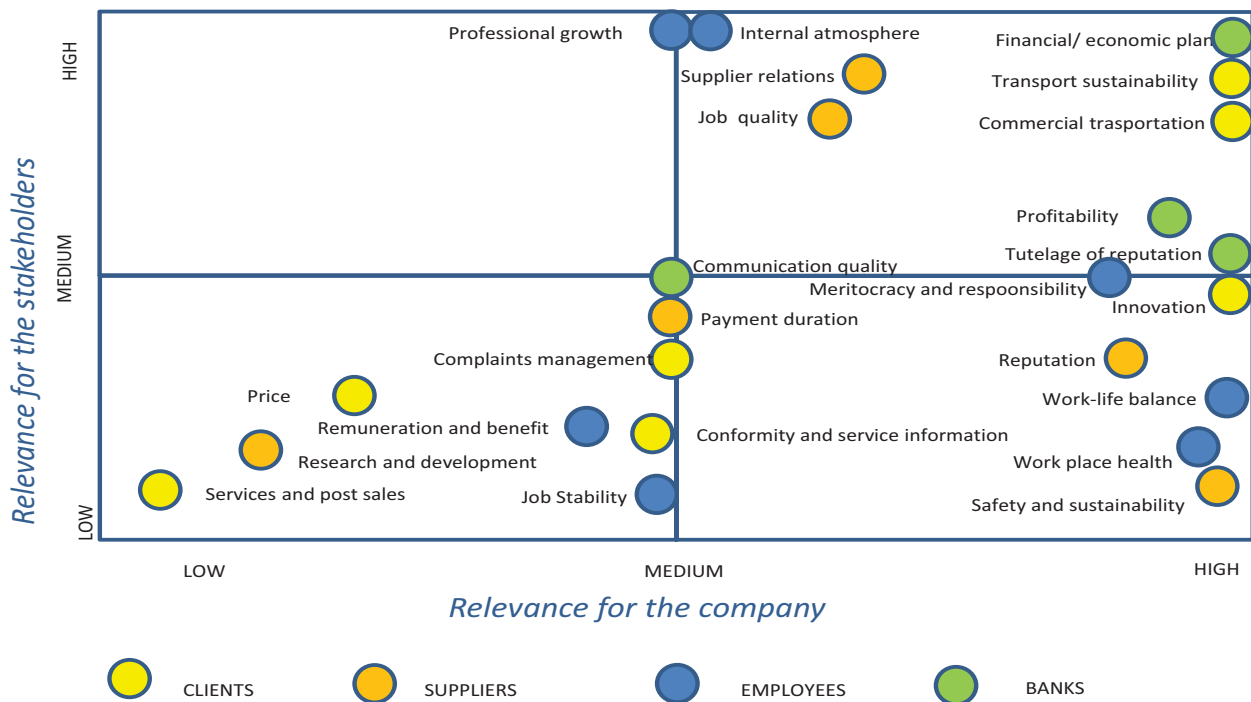


Figure 1. The GTS matrix of materiality

The feedback received from the GTS stakeholders also allowed the highlighting of the actual and expected benefits deriving from the GTS sustainability approach, essentially connected to the improvement of corporate reputation, the strengthening of competitive advantage, the increment of the relational capital and the consolidation of human capital.

7. The (Implicit) Process that Drove GTS to Introduce a Sustainability Report

The above section highlighted the internal factors that drove the implementation of the sustainability report in the GTS Group, anyway the literature underlines that SMEs are more likely to introduce innovative sustainability management tools if they derive from an SER strategy that is affected by the internal factors and aligned with the corporate business strategy. From the literature it derives in fact that, for profiting the opportunities presented by SER, it is important to develop a business strategy that aligns the company's business goals with a strong commitment to SER values and principles (Jenkins, 2006).

In the GTS Group we can say that both managerial and organizational internal characteristics, together with the key role given to the corporate stakeholders in determining goals, priorities and potential uses of management sustainability tools, affect the corporate GTS' SER strategy, which in turn is aligned with the corporate business strategy.

The realization of an alignment of SER and corporate strategy implies a rethinking of the mission and the involvement of the entrepreneur in social and environmental issues, which in turn favor the adoption of virtuous behaviors integrated with the firm's strategy.

In the GTS group we find this alignment: in the GTS 2014 sustainability report we can read that "the management of sustainability is based on the full integration between the economic dimension and the social and environmental one". The company mission has always consisted in aiming to provide the best "green" transport solution to clients, through a business model based on high technological standards and fully respectful of the environment and over the years, the GTS Group's effort has always focused on developing eco- and socially-friendly transport systems, in the constant pursuit of virtuous processes to turn the negative externalities of road transport into efficiency and value in rail transport, also considering that In comparison with road transport, intermodal transport allows to save up to 75% in terms of CO2 emissions in the environment. In its sustainability report, the GTS Group expressly declare that it intends to pursue technologically advanced solutions to meet the needs of an increasingly demanding clientele by grounding its work in values such as eco-sustainability, safety, innovation, respect for people, cooperation, ethics and transparency.

In turn the SR actions carried out need to be aligned with the business strategy, to prevent SER activities to be merely an aggregation of uncoordinated actions not effective neither for the most relevant business stakeholders nor for the business competitiveness (Iturrioz et al., 2009). The activities carried out by a firm adopting a sustainable approach need to focus on critical dimensions of SER for SMEs, therefore they could not just be limited to the satisfaction of their strictly internal stakeholders, the employees, but also to the satisfaction of all the stakeholders of the firm, that is clients, suppliers, local community, that constitutes their external value chain.

In GTS we can verify how this issue is satisfied: with the materiality analysis GTS aims to monitor levels of satisfaction of all stakeholders and the SER activities carried out focus on the relationship with suppliers and clients, the management of human resources, the external communication towards stakeholders. In other words, GTS practically realizes the shift from a sustainable firm to a sustainable enterprise promoted by Searcy (2016), meaning with this term a more complex framework, including beyond the focal firm also suppliers, distributors, forward and reverse supply chain, sustainability contest and key stakeholders, all with a long term orientation.

In detail, the SER activities carried out by GTS are the following:

- the definition of ethics code and an organizational model in accordance with the Decree. 231/01, OHSAS 18001, ISO 14001, SA 8000;
- the allocation of legality ratings;
- internal and external dissemination of environmental policy introduced in 2011;
- the definition of a system of delegations regarding sustainability and a special committee of independent entities;
- the definition of a risk assessment system and KPI processing;
- the improvement of the channel of information to customers through the enhancement of the mechanism on the CO2 saving saved and the formalization of a more efficient claims management system;

- the establishment of a list of suppliers and definition of a partner selection process (environment, safety and human rights);
- the drafting of a first sustainability report and the simultaneous initiation of standardization of a CSR reporting process;
- the initiation of a web-based communication platform designed to disseminate non-financial information content.

All the forces that drove the GTS group to introduce a sustainability report for the first time in 2014 can be graphically represented in a conceptual model (figure 2):

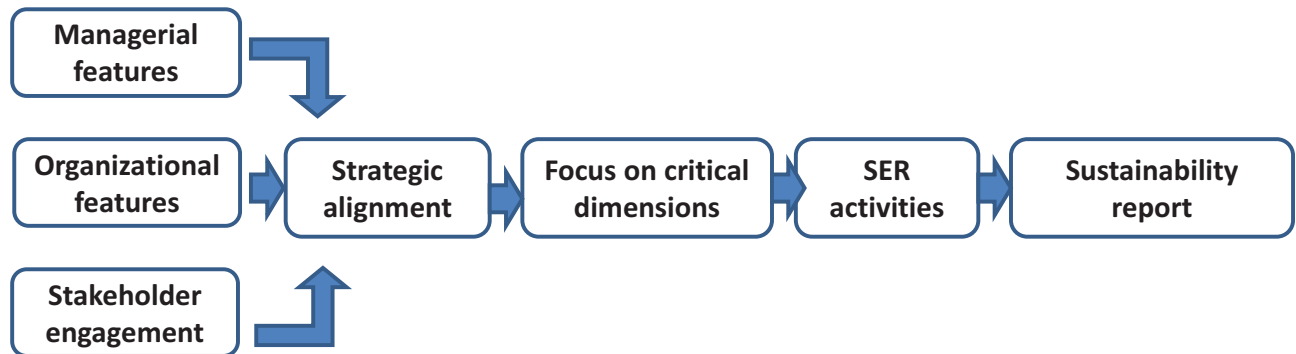


Figure 2. The conceptual model that drove GTS to introduce a sustainability report

It should be underlined that, in GTS, the attention is not just on the sustainability report as document but as well on the implementation process, which had a key role in the process of integrated management of the economic, social and environmental dimensions. From the interviews with the GTS CEO, it emerges that the process that drove to the implementation to the corporate sustainability report was a gradual process, that is ongoing.

8. Considering Conclusions

This study is motivated by a strong call from the CSR literature for a practical turn in social and environmental researches. The few existent studies on SER accounting, management and reporting from a practical point of view are mainly based on large companies and are dominated by a focus on the report-document, that is, on the analysis of the external document without considering the internal process followed by the organization to implement a sustainability report.

This “external” focus on sustainability reports has often been criticized for not highlighting the integration of sustainability issues into day-to-day management activities, and for not advancing knowledge on sustainability issues.

This paper intends to address the call for a practical turn in SER, analyzing the implementation process followed by an Italian SME, selected as example of best practice in dealing with sustainability issues, in introducing a sustainability report.

The aim of the article was to identify the driving forces that can explain why a particular SME is more likely to adopt sustainability management tools.

There are three main internal forces that drove GTS to implement a sustainability report: the role of stakeholders in influencing corporate strategies; the pivotal role played by the CEO in committing the company to start the journey of sustainability reporting, and organizational features such as the shared methodology and infrastructure to measure and interpret sustainability data and the active involvement of all company functions devoted to the drafting of the sustainability report.

These three factors proved to be central to the GTS's drive towards sustainability as they allowed the alignment of corporate strategy on SER values, from which in turn GTS derived the critical dimensions the company should focus on and on which to carry out SER activities, measured by a sustainability report.

From the analyses of the case data, including in-depth interviews and documentary evidence, this paper concludes that it is possible to operationalize the implicit model followed by the organisation chosen as a case study. The case analysis evidence thus provided several insights and allowed to derive a general model for SMEs dealing with SER issues.

The study provides several managerial implications. It provides accountants and other practitioners with insights on the process followed by an SME to draft and disclose an effective sustainability report. These insights are particularly valuable considering the paucity of empirical evidence on the topic within SMEs and the increasing pressures that all companies are facing with respect to the sustainability agenda.

In particular, by highlighting the importance of the company's ability (and willingness) to engage with key stakeholders and of organizational features, our model reveals that the mobilization of the sustainability issue by top managers may not be enough to deploy a sustainability strategy. Moreover, the process underlined reveals that the internal factors alone are not sufficient as they have to inform an SER strategy, aligned with a corporate strategy, from which to derive SER activities and to end up in a sustainability management tool such as the sustainability report.

In addition, the selection of an SME which can be considered a best practice in sustainability accounting management and reporting, and the deep explanation of all the factors that play an active role in framing an excellent attitude of the enterprise towards sustainability, also give to other SMEs, thinking about introducing a sustainability approach within the firm, the opportunity to progress their understanding of both the limitations and opportunities for CSR in SMEs.

Finally, there are several limitations related to this research. Firstly, 2014 was the initial year during which the sustainability report was disclosed, and this limited in-depth discussions. Another limitation is that the analysis refers only to one SER best-practice Italian SME, thus other SMEs' best practices in sustainability innovations could have highlighted different drivers.

Future research directions could focus on investigating the indicators and margins used by GTS to measure the efficiency and effectiveness of SER activities and on the use of the social and environmental accounting for decision-making purposes. Moreover, a future research direction could explore how the external factors affect the SMEs' decisions to introduce sustainability management tools, combining both internal and external factors as explaining driving factors.

Notes

Note 1. The concepts of corporate social responsibility (CSR) and corporate sustainability have developed in parallel. Although they are conceptually different (Montiel, 2008), the constructs consequently have converged over the years (Hahn and Kühnen, 2013). Nowadays, businesses use the terms interchangeably. In this study 'sustainability reporting' is preferred over 'CSR reporting' because of it comprehends also environmental issues.

Note 2. Several are the innovative sustainability management tools that a SME could adopt. For a review, see Passetti et al., 2014; Johnson, 2015; Johnson and Schaltegger, 2016.

Note 3. In literature, the firms' motives to engage in sustainability are briefly ascribed to two kind of factors: external factors and internal factors (Thijssens et al., 2016). Historically, the majority of studies focused on relations between sustainability reporting and external factors are explained from various theoretical points of view (Hahn and Kühnen, 2013): external pressures, as put forward by legitimacy and stakeholder theory; institutional forces, as proposed by institutional theory; reduction of information asymmetry between management and investors in order to lower the costs of capital, as suggested by signaling and agency theory.

Note 4. In line with Adams' (2002) literature review, studies on internal determinants of sustainability performance can be broadly divided into studies focusing on the influence of managerial features and studies focusing on organizational structures and processes.

Note 5. For the sake of brevity, the traces of the semi-structured interviews are not included in the paper, nonetheless they are available on request.

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The Conformity Level of Income Tax Accounting In Jordan with the Requirements of the International Accounting Standard IAS (12) in Terms of Taxable Temporary Differences' Recognition

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Abstract

The present study aimed to measuring the conformity level of income tax accounting in Jordan with the requirements of ISA (12), and because of increasing to apply the international standards by local and foreign companies in Jordan and Jordanian legislations it's appear gap between the accounting profit and the tax profit caused Taxable temporary and permanent differences. The study seeks to achieve set of goals represented by studying and analyzing the compatibility level of income tax accounting by a questionnaire was distributed to 100 income and sales auditors working in the senior and moderate Taxpayers, directorates 85 questionnaires were retrieved and eighty were valid for the study's purposes, the major results that is the study found the income tax accounting in Jordan does not adhere to the requirements of most of the international accounting standards as there were no presentation to the financial statements, and There was no recognition of Taxable temporary differences and deductible temporary differences (the differences between accounting profit and taxable profit) in the income tax accounting in Jordan.

Keywords: income tax accounting, ISA (12) requirements, taxable temporary differences

1. Introduction

The concept of tax has been developed as a result of the political, social and economic developments and it is no longer limited to the process of providing the treasury with money that was spent on the country's needs and requirements but it aimed to achieve justice among the people. The taxes which were imposed according to the people's financial capacity seek to reduce the gap between the society's layers. Accordingly, the temporary Income Tax Law Number 34 of 2014 was issued to reduce Tax rates on the companies and increase the individuals' ratio of exemptions to help them face economic circumstances. Significance of the study that there is a need to set specific procedures to treat the mechanism of the tax accounting on income in Jordan through developing the tax accounting on income in Jordan according to the international accounting standards requirements so as to reduce the gap between the accounting profit and taxable profit and to enhance trust between taxable management and taxpayers.

1.1 Problem of the Study

As a result of the increase in the companies that followed the international accounting standards in Jordan, and more foreign companies applied these standards in addition to calculation of the tax profit according to the Jordanian tax legislations, there was a great gap between the accounting profit and the tax profit caused Taxable temporary and permanent differences which were treated according to the international accounting standard (12) requirements. This study seeks to answer the following questions:

1. What is the conformity level of income tax accounting in Jordan with the requirements of the international accounting standards?
2. What is the conformity level of income tax accounting in Jordan with the requirements of the international accounting standards?

2. Objectives of the Study

This study seeks to achieve set of goals represented by studying and analyzing the compatibility level of income tax accounting in Jordan and the requirements of the International Accounting Standard (IAS) and the compatibility level of income tax accounting in Jordan and the requirements of the International Accounting Standard IAS (12) in terms of recognition of Taxable temporary differences.

3. Limitations of the Study

This study is limited to the senior and moderate taxpayer's directorates because most of the companies applied international accounting standards are under the responsibility of these directorates. Also this study was not applied on the firms' financial managers because they were not aware enough of the temporary tax income law (No.34) for the year 2014 which has been effective since 1-1-2015.

4. Previous Studies

1. *Peculiarities of the Application of Income Tax Standards by the Subsidiary Company in the Russian Accounting Practice.* (Ermakova & Gudshatullaeva, 2016)

The study aimed to analyze the application practice of the local tax standard in Russia on accounting of settlements on income tax" (AR 18/02) and the standard's compatibility with the standards of International Accounting Standards (IAS) 12 "Income taxes" when preparing the consolidated statements. Many methods of logical-semantic analysis and synthesis were used to collect data. Results revealed parallel problems in the application of the Russian and international accounting standards. The study recommended the necessity of providing unified financial statements suit the local and the international standard in addition to reform the Russian local accounting system.

2. *The adoption of 'International Accounting Standard (IAS) 12 Income Taxes': Convergence or divergence with local accounting standards in selected ASEAN countries?* (Yapa & others, 2015)

This study investigated socio-economic impact of the application of International Financial Reporting Standards (IFRS) with the national standards in some chosen countries. The study was applied in two stages: The first stage examined the impact of the IFRS standards on Singapore and Malaysia. The first stage's results showed the respondents' reservations about adopting IFRS which include increases of foreign investment and equity cost reductions. While in the second stage, many studies were conducted about the possibility of applying IAS12 Income Taxes as these taxes are considered the starting point of tax conformity and the major component of the financial statement. A questionnaire was prepared and distributed to the respondents to identify and investigate the challenges facing practitioners that apply this international standard in Australia. No results were stated because the instrument was distributed to those who are specialized in tax and who are not.

3. *Harmonizing Corporate Income Taxes in the European Community: Rationale and Implications.* (McLure & Charles, 2008)

The article discussed tools of taxation system in European Community, which depend on varied accounting system and arm's length pricing, the features appear in integration and formula distribution like that used by United States and (and some provinces in Canada), the favorable features of such a system, the complexity because of income flows in and out from European Countries, and the inclusion of harmonization, for both members of European Countries and non- European Countries members, the results indicate that all of European Countries have harmonized system (like Canada), there will be greater consolidation of government taxes on corporate income in the United States and, such as some other countries taxes but various of Canada's system. The study concluded that adopting all the aspects of the tax procedures requires the agreement of all the members of EU but few of these countries can harmonies in the application process of this standard.

5. Hypotheses of the Study

1. There were no differences between the conformity levels of income tax accounting in Jordan with the requirements of the International Accounting Standard (IAS).

2. There were no differences between the conformity levels of income tax accounting in Jordan with the requirements of the International Accounting Standard IAS (12) in terms of recognition of Taxable temporary differences.

6. Literature Review

6.1 Tax System in Jordan

The tax- system differs from one country to another as a result to the political, social and economic situations but

the major goal of any tax-system is to achieve the social and economic systems' goals which are changing from time to time to suit the country's developments. The tax system in Jordan passed by the following stages (Noor & others, 2008, pp. 39-42)

The first Jordanian income law was issued in the first of April in 1933 and it was limited to the income of the public and private sectors of the salaries. Later, the Ministry of Finance established an income section to implement the income law provisions and more developments continue till the present.

6.1.1 The Differences and Similarities between the Financial Accounting and the Taxable Accounting

The financial accounting is the profit organization's preparation of the financial reports for the benefit of the firms' managers, investors, creditors, and tax authorities. While the taxable accounting aims at preparing the financial reports and identifying the firm's income to determine the tax amount that should be paid according to the country's tax laws. It is true that both financial accounting and the taxable accounting share some similarities in the general frame as financial statements preparation, book-keeping and in the fields of expenses and revenues. At the same time, they are inconsistent with identifying the concept on income as it is illustrated later in the study of (Abo-Nasar, 2012, pp. 30-31).

6.1.2 Differences between Net Income and Taxable Income

Net income represents the income after all revenues and expenses for the period are considered. (Kieso & others, 2016, p. 154) income defined as growing in economic benefits through the financial period by inflows or improvements in assets or a decrease in liabilities leads to an increase in owner equity (Kieso & others, 2016, p. 146). Expenses defined as Reduction in economic benefits through the financial period by outflows or lowering of assets or increases in liabilities leads to a decreases in owner equity (Kieso & others, 2016, p. 46). Depend on the previous definitions the net income can define as the different between total revenues and total assets of the company. The definition of tax income varies in different legislations but the comprehensive definition is: "the income is every cash purchasing power flows periodically during a specific period of time". This definition may extend to include capital and accidental gains which are known as: theory of budget or enrichment (Bdewi, 2005, p. 14)

The Jordanian income tax law, article 2 defined the taxable income as everything remains of the gross income after the minus of all allowable expenses and deductions in addition to the carried forward losses from previous tax periods and personal exemptions plus donations respectively (Income Tax Law, 2014, p. 55). The income before income tax is defined as: "Income before income tax compute by deducting interest expense (often referred to as financial cost) from income from operations (Kieso & others, 2016, p. 154)

6.2 *The International Accounting Standards Relevant To the Study*

6.2.1 IAS (1) Presentation of Financial Statements

This Standard describes the basis for presentation of general purpose financial statements, to ensure comparability both with the financial statements of entities for previous periods and with the financial statements of other entities. (IFRS/red book, 2017, p. 562) Through the field study, the researcher seeks to identify the extent to which tax accounting on income in Jordan is committed to the requirements of the international accounting standard (1) concerning financial statements presentation and disclosure of the notes with these statements.

6.2.2 IAS (2) Inventory

The objective of this Standard is to describe the accounting treatment for inventories. The essential issue in accounting for inventories is the amount of recognized cost as an asset and carried forward until the related revenues are recognized (IFRS/red book, 2017, p. 615).

This standard requires the inventory to be measured at net realizable value and thus the conformity of the tax accounting on income in Jordan with the requirements of the international accounting standard 2 will be identified or it will be treated according to another basis.

6.2.3 IAS (8) Accounting Policies, Changes in Accounting Estimates and Errors

This Standard describe the criterions for selecting and changing accounting policies, together with the accounting treatment and disclosure of changes in accounting policies, accounting estimates and corrections of errors.

This standard (8): requires recognition, measurement and presentation of the changes in the accounting policies. Accordingly, the conformity of the tax accounting on income in Jordan with recognition, treatment and

disclosure of changes in the policies is a necessity (IFRS/red book, 2017, p. 659).

6.2.4 IAS (16) Property, Plant and Equipment

This Standard is related to the accounting treatment for property, plant and equipment so that users of the financial statements can discern information about an entity's investment in its property, plant and equipment and the changes in such investment.

The international accounting standard 16 requires the recognition of the assets, the determination of their carrying amounts and the depreciation charges and impairment losses to be recognized in relation to them.

This standard requires the recognition of the profits of fixed assets sale as the difference between the values of the received receipt whether they were in cash or in kind with the fair value and the assets book value in tax accounting on income according to the international accounting standard (16) (IFRS/red book, 2017, p. 826)

6.2.5 ISA (18) Revenue

The objective of this Standard is to prescribe the accounting treatment of revenue arising from certain types of transactions and events. This standard requires the recognition of the revenue of selling the goods when they are sold in addition to the agreement with the buyer not to gain its value unless they were sold by the buyer to other parties. The study seeks to identify the conformity of the income tax accounting in Jordan with this standard's requirements (IFRS/red book, 2017, p. 888)

6.2.6 ISA (19) Employee Benefits

The objective of this Standard is to prescribe the accounting and disclosure for employee benefits. This standard allows reduction of the retirement expenses according to a specified benefits plan. And this study aims to identify if income tax accounting in Jordan allows reduction of the retirement expenses according to a specified benefits plan or if it requires payment of these expenses before being approved (IFRS/red book, 2017, p. 912)

6.3 International Accounting Standard IAS (12): Income Taxes

The differences between the financial accounting and the taxable legislations in treating revenues and expenses are divided in two categories:

6.3.1 Temporary Differences

There are timing differences in the recognition of revenues and expenses between taxes and the tax legislations. For example, the revenue of a leased property which is subjected to income tax in 2014 has to be recognized in 2015 according to the standards of accounting and financial reporting. In some countries, revenue is subjected to income tax when its value is received cash whereas this revenue is recognized according to the international accounting and financial reporting standards based on revenue recognition.

6.3.2 Permanent Differences

They are the permanent differences between the financial accounting and tax legislations in recognizing some revenues and expenses. Some of these expenses, for instance, are not recognized in some countries at all; they are dispensed from the income tax permanently, either for social or economic reasons whereas these expenses should be decreased and the income represents revenue that should be recognized according to the financial accounting (Abo-Nasar, 2012, p. 210)

6.3.3 Objective

The objective of this Standard is to prescribe the accounting treatment for income taxes. The principal issue in accounting for income taxes is how to account for the current and future tax consequences of:

1. The future recovery (settlement) of the carrying amount of assets (liabilities) that are recognized in an entity's balance sheet; and
2. Transactions and other events of the current period that are recognized in an entity's financial statements (IFRS/red book, 2017, p.729)

6.3.4 Scope

This Standard shall be applied in accounting for income taxes. Income taxes include all domestic and foreign taxes which are based on taxable profits. Income taxes also include taxes, such as withholding taxes, which are payable by a subsidiary, associate or joint venture on distributions to the reporting entity.

This Standard does not deal with the methods of accounting for government grants (IAS 20 *Accounting for Government Grants and Disclosure of Government Assistance*) or investment tax credits. However, this Standard

does deal with the accounting for temporary differences that may arise from such grants or investment tax credits (IFRS/red book, 2017, p.729)

6.3.5 Definitions

These terms are used in ISA (12) with specified meanings:

Accounting profit are profit or loss for accounting period before subtract taxes expenses.

Taxable profits (tax loss) are profits (losses) for accounting period, which specified accordance to the regulations set by taxation authorities, when income taxes are recoverable.

Tax expense (tax income) the total amount used to determine the profits or losses for accounting period in all aspects of current tax and deferred tax.

Current tax amount of income taxes recoverable (payable) to all aspects of the taxable profits (losses) for accounting period.

Deferred tax liabilities: the total amounts of income taxes payable in next accounting periods to all aspects of taxable temporary differences.

Deferred tax assets are the total amounts of income taxes recoverable in next accounting periods to all of the following aspects:

- (a) Deductible temporary differences;
- (b) Not used tax losses; and
- (c) Not used tax credits.

Temporary differences Temporary differences: the differences between the adjusted carrying amount of the asset or liability shown in the statement of financial position and the tax basis used to calculate it, these differences may be:

- (a) Taxable temporary differences, are temporary differences that will result in taxable amounts when determining the taxable profit (tax loss) for the next financial periods when the recoverable or adjusted amount of the carrying amount of the asset or liability; or
- (b) Deductible temporary differences, these are temporary differences that will result in deductible amounts when determining the taxable profit (tax loss) for future periods when the carrying amount of the asset or liability.

The tax base the tax base of an assets or liability: Is the amount attributed to that asset or liability for tax purposes (deductible), so the tax base of a particular asset is the amount to be deducted for tax purposes against any taxable economic benefits that will flow to the enterprise when the adjusted carrying amount is recovered. If the economic benefits are not taxable, Tax rate is equal to its adjusted carrying amount (carrying amount), in case of receiving revenue in advance the tax base of the liability is the carrying amount, deducted any revenues will not be taxable in next accounting periods (IFRS/red book, 2017, p. 730)

6.4 Tax Expense (Tax Income) Comprises Current Tax Expense (Current Tax Income) and Deferred Tax Expense (Deferred Tax Income)

6.4.1 Accounting Treatments Accordance to ISA (12)

1. Recognition of current Tax Liabilities and current Tax Assets

If the amount paid or payable to the Income Tax Department for current and previous income tax is less than the income tax calculated, the difference should be recognized as a liability. If the amount paid or payable for the current period and prior periods is greater than the calculated income tax, The increase is recognized as an asset.

2. Recognition of Deferred Tax Liabilities and Deferred Tax Assets (Taxable Temporary Differences)

Tax liabilities should be recognized for all temporary tax differences, but the Standard except to several cases of recognition of temporary differences as liabilities:

- (a) The primary goodwill recognition; or
- (b) Unamortized goodwill for tax purposes; or
- (c) The primary recognition in transaction for an asset or liability which:
 - (i) Is not a business combination; and
 - (ii) At the transaction time, do not affect the accounting or taxable profit (loss). However, for taxable temporary

differences related to investments in branches, subsidiaries, and shares in jointly controlled entities are to be recognized as deferred tax liabilities (IFRS/red book, 2017, pp. 733-734)

3. Calculation and Measurement of Deferred Tax Assets and Liabilities

The procedure to calculate the gross deferred tax provision (i.e., before determines whether the probability of realizing the deferred tax asset) after identified exempt temporary differences and non-use of tax losses and tax credits, the procedure is as follows:

- a. Separate the temporary differences into two types taxable and deductible. This step is important because accordance to IAS 12 only recognized deferred tax assets which probable of being realized, vice versa all deferred tax liabilities must full recognition.
- b. Collect information about the deductible temporary differences, especially the net losses, and credit carry forwards that have expiration dates.
- c. Measure the accumulated taxable temporary differences effect by applying the proper expected tax rates.
- d. Finally, measure the deductible temporary differences tax effects, including net losses carryforwards (IFRS/Wiley, 2015, p.784)

7. Methodology & Procedures

7.1 Population & Sample of the Study

The population of the study which consisted of 250 income and sales auditors working in the Senior and moderate Taxpayers directorates is the best category that is capable to answer the study's questions since they are expert in the field of auditing and accounting.

A random sample representing 40% of the population of the study was chosen. A questionnaire was built by the researcher and distributed to 100 respondents .Eighty five questionnaires were retrieved and eighty were valid for the study's purposes.

7.2 Instruments of the Study

The researcher collects data relying on the following resources:

- Secondary resources: the income Law, the international accounting standards, textbooks, Periodicals, researches and other related studies to this study's subject.
- Primary resources: a questionnaire was prepared by the researcher to collect data so as to testify the hypotheses.
- Data which were collected using questionnaire were analyzed statistically using SPSS to test the study's hypothesis.

7.3 Design of the Study & Statistical Treatment

The descriptive analytic approach was used. The researcher, theoretically, addressed relevant aspects concerning the income legislations and the international accounting standards. Furthermore, a questionnaire was prepared, distributed and analyzed statistically. Results were concluded and recommendations were proposed. The following statistical methods were used:

- Internal Consistency Coefficient (cronbach's alpha)
- Means
- Standard deviations
- T-test

7.4 The Instrument's Reliability

To verify the instrument's reliability, the internal consistency coefficient using Cronbach Alpha was used as it is illustrated below.

Table 1. Internal Consistency Coefficient (Cronbach Alpha)

Field	Internal Consistency Coefficient
The conformity level of tax accounting with international accounting standards	%78
Recognition of the deffered tax differences	%74
Recognition of the temproray tax differences	%71
Recognition of the assets and the deferred tax liabiles	%72
Mesurment of assets and the deffered tax liabilites Instrument	%84

The internal consistency coefficient of the instrument 84% which indicates a high degree of the respondents' responses. Accordingly, the results can be generalized

Table 2. Demographic description of the sample of the study

Age		
Less than 30	15	18.80%
31-less than 40	39	48.80%
40-less than 50	20	25.00%
50- less than 60	6	7.40%
Total	80	100%
Gender		
Male	65	81.30%
Female	15	18.70%
Total	80	100%
Job title		
Dierectorate manager	3	3.80%
Estimation unit managers	4	5.00%
Auditor	58	72.40%
Group supervisor	15	18.80%
Total	80	100%
Scientific qualification		
Bachelor	53	66.30%
Master	24	30.00%
Phd	3	3.70%
Total	80	100%
Specialization		
Accounting	64	80.00%
Business managemnt	4	5.00%
Economy	5	6.30%
Law	7	8.70%
Total	80	100%
Years of experience		
Less than 3	5	6.30%
3- less than 6	11	13.70%
6-less than 10	24	30.00%
More than 10	40	50.00%
Total	80	100%

7.5 Data Analysis

To develop the tax accounting on the income in Jordan according to the international accounting standards' requirements, a questionnaire was prepared and distributed to the sample to collect data which were analyzed statistically. Fifth -Lickert scale was adopted: strongly agree (5), agree (4), neutral (3), disagree (2), strongly disagree (1) to correct the students' responses. The highest grade was (160) and lowest was (32).

For the lack of standard distribution, the questionnaire items' means were classified as follows:

- 1- Less than 2.5 (low)
- 2- Less than 3.5 (moderate)
- 3- Between 3.5- 5 (high)

7.6 Testing Hypotheses of the Study

7.6.1 First Hypothesis

"There were no differences between the compatibility of income tax accounting in Jordan and the international accounting standards' requirements"

To verify the validity of this hypothesis, the means and standard deviations of the items concerning the commitment of income tax accounting in Jordan to the international accounting standards' requirements as it is illustrated in the following table

Table 3. Means and standard deviations of the items concerning the commitment of income tax accounting in Jordan to the international accounting standards' requirements

Rank	N	Items	M	Std	Sig.
1	5	Recognition of calculating fixed assets with fair value according to international accounting standard (16) in income tax accounting .	2.29	.56	Low
2	4	The income tax accounting in recognition, measurement and presentation of the change in the accounting policies are consistent retrospectively with the requirements of the international accounting standard(8)	2.14	.63	Low
3	2	Tax accounting on income requires notes' attachment to the financial statements according to the international financial accounting statement (1)	2.10	.41	Low
3	6	In income tax accounting, there is no recognition of the revenue of selling the goods when they are sold in addition to the agreement with the buyer not to gain the goods value unless they are sold by the buyer to other parties according to international accounting standard 18.	2.10	.52	Low
4	1	Income Tax accounting requires presentation of financial statements according to international accounting standard (1)	2.09	.48	Low
5	8	Income tax accounting allows reduction of retirement's expenses following specified benefits plan according to international accounting standard 19	2.05	.57	Low
6	3	There is compatibility between income tax accounting and the requirements of the international accounting standard(2) in terms of valuation of inventory by Net Realizable Value	2.01	.44	Low
7	7	Recognition of the profits of fixed assets sale as the difference between the value of the received receipt whether they were in cash or in kind with the fair value and the assets book value in tax accounting on income according to the international accounting standard (16)	1.91	.51	Low
		The conformity Level of income tax accounting in Jordan with the requirements with the international accounting standards	2.08	.35	Low

The previous table showed that the means ranged from 1.91 to 2.29.item (5): "recognition of fixed assets with fair value according to the international accounting standard 16" came first with a mean (2.29) while item(7): "recognition of profits of fixed assets purchase in the difference between the values received whether it was cash or not with fair value and the assets book value in the income tax-accounting according to the international accounting standard (16)" came last with a mean (1.91) and the mean of the conformity level of the income tax accounting in Jordan with the international accounting standards' requirements was (2.08).

a. Testing First Hypothesis

The mean was compared with the assumed mean (3) using t-test as it is illustrated below.

Table 4. Testing the first hypothesis using t-test

	M	Std	T	Sig.
Conformity of income tax accounting in Jordan with the requirements of the international accounting standards	2.08	.35	18.649	.000

The previous table showed that the mean (2.05) was less than the standard mean (3) with a standard deviation (0.35). The t-value which was (18.649) was considered statistically significant at ($\alpha \leq 0.05$) and therefore the null hypothesis was rejected and the alternative one was accepted: "there were differences between the conformity of income tax accounting in Jordan with the requirements of the international accounting standards.

Second hypothesis : " there were no differences between the conformity level of income tax accounting in Jordan with the requirements of the international accounting standard in terms of permanent and temporary differences",

To verify the validity of this hypothesis, the means and standard deviations of the relevant items to recognition of the temporary and permanent differences according to international accounting standard(12) were calculated as it is illustrated below.

Table 5. Means and standard deviations of the relevant items to recognition of the temporary and permanent differences according to international accounting standard (12)

Rank	N	Items	M	Std	Sig.
1	7	Recognitipon of the Deductible temporary differences	2.19	.55	Low
2	1	Difference between the depreciation expense in the financial statements and the tax deductible expenses causes taxable temporary differences	2.09	.46	Low
2	6	Recognition of amount of taxable temporary differences	2.09	.56	Low
3	5	Bad debt causes temporary taxable differences	2.04	.54	Low
4	2	Differences between the book value of the doubtful debt and received value tax cause temporary taxable differences	2.01	.46	Low
4	3	Amounts withheld for the end service benefits' provision which were delayed for taxable purposes till the employee's end of service cause temporary taxable differences	2.01	.49	Low
5	4	Stagnant inventory which were listed in the financial statements but they were not approved, cause temporary taxable differences	1.97	.48	Low
		Recognition of permanent and temproray differences according to the internatioanl accounting standard(12)	2.05	.16	Low

The means as illustered in the previous table ranged (1.97 -2.19) as item(7): " recognitipon of the Deductible temporary differences" came first with the highest mean(2.19) while item(4): " Stagnant inventory which were listed in the financial statements but they were not approved, cause temporary taxable differences" come last with the least mean (1.97). Additionally, the recognition of the permanent and temproray taxable differences according to the international accoutning standard(12) was 2.05.

b. Testing Second Hypothesis

The mean was compared with the assumed mean (3) using t-test as it is illustrated below.

Table 6. Testing second hypothesis using t-test

	M	Std	T	Sig.
Recognitipon of temprorary and perminant differences according to requirements of international accounting standard12	2.05	.16	53.876	.000

The previous table showed that the mean (2.05) was less than the standard mean (3) with a standard deviation (0.16). The t-value which was (53.876) was considered statistically significant at ($\alpha \leq 0.05$) and therefore the null hypothesis was rejected and the alternative one was accepted: "there were differences between the compatibility of income tax accounting in Jordan and the requirements of the international accounting standard12 in terms of Recognitipon of temprorary and perminant differences.

8. Results & Recommendations

8.1 Results

Based on the previous discussion, we note that the income tax accounting in Jordan does not commit to the international accounting standards' requirements with an exception some of them. Accordingly, there were temporary tax differences in auditing the companies that are committed to international accounting standards knowing that these companies were not charged of tax evasion and this will make a big gap between these companies and the Income and Sales Tax Department. The performance of Income and Sales Tax Department will be affected negatively and the firms feel confused because of the tax differences' treatment which resulted from the application of tax accounting on these firms' incomes. Based on the field study, the researcher came up with the following results:

The income tax accounting in Jordan does not adhere to the requirements of most of the international accounting standards as there were no presentation to the financial statements and any attached notes with them according to the requirements of the international accounting standard (1): presentation of financial statements.

Income tax accounting in Jordan requires evaluating inventory with cost or market value but not as stated in international accounting standard (2) where inventory is evaluated by net realizable value.

The income tax accounting in Jordan requires recognition of fixed assets and does not allow reevaluation of the assets with fair value according to the international accounting standard (16): property, plant and equipment.

There was no recognition of Taxable temporary differences and deductible temporary differences (the differences between accounting profit and taxable profit)t in the income tax accounting in Jordan according to the international accounting standard (12):income taxes.

8.2 Recommendations

Depending on the previous results, the researcher recommended the following:

The income tax accounting in Jordan should commit to the requirements of the international accounting standard (8) " the criteria for selecting and changing accounting policies, with the accounting treatment and disclosure of changes in accounting policies, changes in accounting estimates and errors corrections ".

The income tax accounting in Jordan should adhere to the requirements of the international accounting standard (1): Presentation of Financial Statement in terms of presenting financial statements and attaching notes with them.

The income tax accounting in Jordan should adhere to the requirements of the international accounting standard (2): Inventories in terms of evaluating the inventory based on net realizable value.

The income tax accounting in Jordan' recognition of the temporary tax differences according to international accounting standard 12: income taxes.

The income tax accounting in Jordan commits to international accounting standard 16: property, plant and equipment in terms of recognition of sale fixed assets' profits as the difference between the values of the received receipt whether they were in cash or in kind with the fair value and the book value of the asset.

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The Influence of External Channel Environment on Channel Governance

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Abstract

External environment has a vital impact on channel operation, but it remains unclear how task and institutional environment influence channel members' governance behavior. With data collected from distributors of a large-scale petrochemical enterprise, this study builds a structural equation model to analyze the influence of channel institutional and task environment on channel members' governance behavior. The empirical results suggest that, both task and institutional environments are influential to channel governance: when the environment is dynamic and complex, channel partners tend to use relational governance mechanism. When the regulatory environment is influential, contractual mechanism is widely used, while relational mechanism is preferred when cognitive environment is sufficiently powerful. This paper provides new insights into research of channel environment, and also provides practical guidance for channel members.

Keywords: channel task environment, channel institutional channel, contractual governance, relational governance, channel satisfaction

1. Introduction

Gordon Moore, the founder of Intel once said, technology of silicon chip involves every 18 months. And in 2015, fifty years after the prediction, Nature proclaimed that in semiconductor industry, the Moore Law may appear invalid, but the generalized Moore Law is working almost in every industry, especially in developing countries such as China, where economy develops rapidly, industrial revolution and upgrading take place frequently, which make the channel task environment more dynamic and complex.

Task environmental change is not the only change companies are facing, institutional environment is also involving rapidly. As business and economic laws come into effect, the legal system has enforced huge influence on corporation management. Besides, regulators, such as industrial and commercial bureau, are also keeping an eye on business operation. Meanwhile, special cultures, norms and customs in China, such as "Guanxi", are also having invisible while important impact on channel management.

However, in the field of channel behavior, researchers paid more attention to intra-channel antecedent factors such as power balances (Frazier, 1983), dependency (Heide, 1994) and dyadic sentiment (Dwyer et al., 1987), and overlooked the influence of channel environment on members' behavior (Stern & El-Ansary, 1992; Weitz & Jap, 1995; Geyskens, Steenkamp & Kumar, 1999; Grewal & Dharwadkar, 2002). The few papers which noticed the influence of channel environment, focused on one task environment variable "Uncertainty" (Dess & Beard, 1984; Boyd, 1990, 1995; Bluedorn, 1993; Carpenter & Fredrickson, 2001), and still neglect other dimensions of task environment and institutional environment (Grewal & Dharwadkar, 2002). Therefore, a systematic analysis of how task and institutional channel environment influence channel behavior is necessary.

This study explores the relationship of channel environment, channel governance behavior and channel satisfaction, which is composed of two parts: channel environment → channel governance behavior → channel relational quality. This study attempts to answer the following three questions: first, how does task environment influence channel members' governance behavior? Secondly, how does institutional environment influence channel members' governance behavior? Thirdly, how does the channel members' governance behavior affect channel satisfaction?

The rest of the paper first discuss relevant literature, summarize and analyze the relationship of the variables, and put forward the conceptual framework, and theoretical hypotheses. Secondly state the empirical methodology,

including questionnaire design, data collection, reliability and validity test. Thirdly, summarize the results of empirical analysis. Last, evaluate and interpret the implications, draw inferences and conclusions from the results.

2. Relevant Literature and Theoretical Framework

2.1 Relevant Research

Etgar (1977) proposed that internal behavior, relationship and structure within a channel are affected by the environmental characteristics and factors. Channel members have to adjust channel behavior according to external environment, and develop a more appropriate strategy, so as to adapt to the environment, which is vital for survival and development in specific environment. However, channel researchers pay more attention to internal factors, such as the distribution of economic and social resources between channel members (Frazier & Summers, 1984; Gundlach & Carotte, 1994; Payan & McFarland, 2003), power structure and status (Frazier et al., 1989; Frazier & Summers, 1984), transaction specific investment (Joshi & Stump, 1999; Frazier, Sawhney & Shevani, 1999), channel relational quality, such as channel trust commitment (Dwyer, Schurr & Oh, 1987), channel relationship the strength, such as the degree of intimacy and mutuality (Stanko, Bonner & Clantone, 2007; Gilliland & Bello, 2002), channel state (Anderson & Narus, 1990; Mohr & Nevin, 1990), etc.. However, the influence of channel environment on channel operation process and results has been largely neglected and underestimated (Etgar, 1977; Anchrol et al., 1983; Grewal & Dharwadkar, 2002).

Kotler (2000) put forward that channel environment is composed of all factors that has direct or indirect, explicit or invisible influence on channel operation, which can be divided into macro and micro environment. The macro environment includes political, economic, technological, cultural and natural factors, which indirectly affect channel operation. While micro environment refers to the sum of supplier, distributor, customer and competitor, which have a direct influence on channel members. Although the definition and deconstruction are comprehensive and systematic, it's hard to measure and assess. Therefore, relevant empirical studies rarely take this perspective.

Empirical studies of channel environment extract measurable dimensions, such as environmental uncertainty, which refers to environment volatility and unpredictability of environmental changes. Environmental uncertainty has been taken as an important antecedent of channel behavior (Anchrol et al., 1983; Boyd, et al., 1990, 1995; Bluedorn, 1993; Carpenter & Fredrickson, 2001; Grewal & Dharwadkar, 2002; Zhou & Poppo, 2010; Sheng et al., 2011). In a highly uncertain environment, it's impossible to obtain sufficient information to assess the relationship between environmental factors and their results (Child, 1972), which leads to high level of information asymmetry, opportunistic and operational risk (Williamson, 1989; Heide & Steenkamp, 1994). Channel members rely on frequent use of interactive communication to obtain more information, conduct informal coordination to flexibly adjust to environmental (Meyer & Rowan, 1977; Scott, 1987). Etgar (1977) used four dimensions to describe channel environment: growth of demand, stability of demand, complexity of operation, and competition intensity. His study pointed out that when demand is growing rapidly or unstable, channel members would employ flexible control mechanism to stay creative and quick responsive, while centralization is preferred when demand slows down or stable (Guiltinan & Joseph, 1974; Guiltinan & Joseph, 1974). In an environment where operation involves few factors and elements, channel members tend to use standardization and procedural control method, while flexible control mechanism is preferred in a complex operation environment. In a highly competitive environment, channel members pursue maximum efficiency, thus centralization and high level of control would be often employed. Aldrich (1974) described a framework of six organizational environmental dimensions: environmental capacity, environmental homogeneity, environmental stability, environmental stability, environmental concentration, environmental turbulence, and domain consensus. Achrol, Reve and Stern (1983) modified Aldrich's framework, put forward a seven-dimension framework, and applied it to channel scenario, including environmental capacity, environmental homogeneity, environmental stability, environmental stability, environmental concentration, environmental turbulence, environmental dependency and environmental conflict. Wu (2006) explored the relationship of the seven environmental dimension and channel conflict as well as channel cooperation, and found out that environmental capacity decreases channel conflict and promote cooperation, environmental dependency leads to channel conflict, while channel dynamism enhances channel cooperation. However, these studies only take task environment into consideration and neglect the impact of institutional environment.

As new institution theory rise, institutional analysis paradigm has become an important perspective of organizational research (Zuker, 1983; DiMaggio, 1988; Scott, 1987, 1994). Grewal and Dharwadkar (2002) proposed that the institutional environment consists of three dimensions, regulatory environment, normative and

cognitive environment, which influence channel members' behavior respectively through government agencies, industry associations and cultural traditions. Yang, Su and Fam (2012) used a Chinese sample of manufacturers that export product to various foreign markets through local distributors, developed and tested a model that bridges the effects of institutional environments and governance strategy on channel performance, and found that firms can use two governance strategies, contract customization and relational governance, to deal with both legitimacy and efficiency issues and to safeguard channel performance. Jia and Wang (2013) explored the relationship of institutional environment on government Guanxi, interfirm Guanxi and interpersonal Guanxi, developed a set of propositions focusing on issues such as Guanxi, trust and dependence from an institutional perspective. Guo (2013) pointed out that relational governance method, such as co-planning and co-solving problems are influenced by task and institutional environment characteristics.

Previous studies about channel environment only focused on one perspective, either task environment or institutional environment, and didn't combine those two views to systematically analyze the influence of channel environment. Besides, the relationship of channel environment and governance strategies, such as contractual and relational governance still remains unclear.

2.2 Conceptual Background

Channel environment: Marketing channel is "a set of interdependent organizations participating in the process of making a product or service available for use or consumption" (Kotler, 2000). In the most common scenario, marketing channel refers to the system composed of manufacturer and distributors (El-Ansary et al., 2000), and channel environment exists outside of the boundary of the binary relationship (Zhangchuang, 2007). Economics theories point out that channel environment is composed of all factors directly influential to goal setting and attainment (Dill, 1958; Penrose, 1959). However, sociology perspective takes into consideration more macro factors into this concept, such as political, social and cultural environment (Scott, 1992). Daft (1998) combined two perspectives and put forward that external factors existing outside the channel boundary and having direct or indirect impact on organization, are all environmental factors. Empirical research has found that having appropriate strategies for managing the marketing channels has long-term positive impacts on business profitability, customer satisfaction, and market share (Ansari & Riasi, 2016; Riasi, 2015).

Channel environment can be divided into two dimensions, task environment and institutional environment (DiMaggio and Powell, 1983), corresponding to the two perspectives of economics and sociology. Channel members pursue two goals: economic and social goals. Economic goals stress the significance of task environment, and underscore economic efficiency, while social goals emphasize the importance of institutional environment, and pursue legitimacy (Scott, 1987; Oliver, 1991). Table 1 shows the difference between the two types of environments.

Most previous empirical research of organizations focused on task environment, which has been recognized as the environment that directly influences organizations (Scott 1983), specifically, Scott (1981) points out that task environments can be reduced to major groups of actors: customers of the output, suppliers of the input, and competitors. Most organizational theories acknowledge that the task environment can be divided into multiple dimensions (Boyd, 1995), and the most acknowledged dimensions are dynamism, complexity and munificence (Castrogiovanni, 1991; Bluedorn, 1993; Carpenter & Fredrickson, 2001). Dynamism refers to the unpredictability of environmental change (Dess & Beard, 1984) and the degree of interconnection between different elements (Aldrich, 1979). Complexity suggests whether the environment is concentrated or disperse, and describes the heterogeneity and the range of the organizations activities in the task environment (Keats & Hitt, 1988). Castrogiovanni (1991) defines munificence as the abundance of needed resources that companies could get from the environment. Thus, munificence refers to the capacity and ability of environments for organizations to grow (Aldrich, 1979). Researches proved that dimensions of task environment are all influential factors to organization behaviors (Koberg, 1987; Irwin et al., 1998; Zyglidopoulos & Stelios C, 2007).

However, economic efficiency perspective has ignored the impact of macro-environment and social context, unlike the task environment approach, institutional approach focuses on organizational legitimacy of social stakeholders (Granovetter, 1985).

Institutional environment consists of three dimensions from the perspective of legitimacy sources (DiMaggio & Powell, 1983; Suchman, 1995). Regulatory environment uses political or legal system and mechanism to force channel members to behave in certain ways. Regulatory environment includes government, law system and other regulatory mechanism, and emphasizes pragmatic legitimacy concerns (Kelman, 1987). Normative environment refers to trade associations, professional agencies and other industrial traditions and customs. Normative institutions stresses procedural legitimacy concerns (Selznick 1984). Cognitive environment includes social

values, beliefs and norms that exert subtle, invisible yet vital influence on channel behaviors, which are associated with cognitive legitimacy concerns (Berger & Luckmann, 1967).

Compared to developed countries, developing countries' institutional environment is more important (Farashahi, Mehdi, Hafsi, et al., 2005), especially in China, where special political, economic and cultural environment is more influential. Therefore, institutional environment may play a more important role in China (Renxingyao et al., 2010).

Table 1. Institutional VS. Task environment perspectives

	Task environment	Institutional environment
Channel character	Economic system	Social system
Environmental context	Market	Social, political and cultural
Demand factor	Resources	Legitimacy
Pressure	Competitive	Coercive, mimetic, normative
Constituents	Agencies, associations and norms	Source of needed factors
Mechanism of control	Rules, regulations, inspections	Exchange dependencies
Success factor	Conformity to rules and norms	Control of critical resources

Christine Oliver. The Influence of Institutional & Task Environment Relationship on Organizational Performance. The Canadian Construction Industry, 1997, 34(1): 99-110

Channel governance: Channel governance is behavior of initiation, maintenance and termination of exchange relationship with channel partners, and accordingly, channel governance mechanisms are tools used to implement these behaviors (Heide, 1994). Transaction cost economics suggests channel members to craft and enforce complex contract, which specify processes and stipulate rules (Williamson, 1985). However, many researchers argued that relational mechanism is a less costly and more effective substitute for complex and explicit contracts (Hill, 1990; Uzzi, 1997). Two widely acknowledged mechanisms, contractual and relational governance are defined from these two perspectives.

Formal contractual governance represents obligations and promises to behave in particular ways (Macneil, 1978). Channel members manage channel relationship by developing and complying a set of formalized and legally binding agreement (Gergen et al., 1992). Formal contracts specify obligations, roles and rights for channel members, detail procedures and schedules of cooperation, determine outputs and outcomes, and elaborate on rewards for compliance and penalties for noncompliance (Joskow, 1988; Moorman et al., 1993). On the opposite, relational governance structure and manage exchange relationship on the basis of informal agreement and flexible adjustments (Hakansson & Snehota, 1995). Relational governance involves significant relationship-specific asset, mutuality, flexibility and solidarity (Zaheer & Venkatraman, 1995). A mutual orientation develops which leads to a common language (Heide & Miner, 1992), shared expectations and values, implicit principles and norms (Johanson & Mattsson, 1987).

Channel satisfaction: Channel members' satisfaction is defined as a positive affective state because of behaviors, relationships with their counterparts (Frazier et al., 1989). Channel satisfaction is a fundamental concept of channel relationships (Ruekert & Churchill, 1984).

Satisfaction constitutes of two dimensions: economic and non-economic satisfaction (Gassenheimer et al., 1994). Economic satisfaction refers to the positive state resulting from financial rewards benefited from the channel relationship, such as revenue, sales volume (Dwyer & Gassenheimer, 1992). While non-economic satisfaction is because of psychosocial reasons in the interaction with his channel partner, such as gratifying and fulfilling (Mohr et al., 1996)

2.4 Research Hypothesis

Our conceptual framework, summarized in Figure 1, is a two-part model aimed at understanding the following relationships: channel environment → channel members' governance behavior → channel relational quality. H1-H6 describe the relationships of the first part of our model, which analyze the influence of each factor of channel environment on use of power. H7-H10 elaborate on the second part of our model, which focus on the influence of channel members' governance behavior on channel satisfaction.

As stated by Buchko (1994), in dynamic and complex environments, firms try to adopt more flexible and informal processes, in order to minimize the risk and negative influence brought by information asymmetry (Ouchi, 1980). The lack of information calls for frequent interactive communication and information exchange (Meyer & Rowan, 1977). Koberg (1987) suggested that frequency of information exchange is related to the perceived environmental uncertainty. Tushman and Romanelli (1985) also found that management style of companies in uncertain environment tend to be more flexible and loose. Brown and Eisenhardt (1997) also

proved that companies exchange information more frequently and freely in velocity environment. Besides, the difficult situation enhances a sense of solidarity as a community, which helps establish common vision and values. The emotional bond encourages reciprocal and informal behaviors (Beckman et al., 2004).

H1: Channel members tend to use relational governance mechanism in a dynamic environment.

H2: Channel members tend to use relational governance mechanism in a complex environment.

Merchant (1990) found that companies conduct flexible and convenient practices in lean environment in order to reduce cost. Besides, channels in lean environment seek to change the adverse situation, which results in innovation, flexibility and solidarity (Ezzamel, 1990). In the contrary, in a munificent environment, it's much easier for channel members to seek and obtain vital resources, which leads to less dependency on channel partners, lower cost of losing them and greater likelihood to find new ones (Goll .I & Rasheed A., 2004). Thus, there's no pressure and motivation for channel members to establish mutual orientation and long-term cooperation.

H3: Channel members tend to use contractual governance mechanism in a munificent environment.

In an environment where regulatory systems and institutions are sufficiently powerful to impose constraints and orders, the use of contracts is guaranteed with its power (Joskow, 1985). On the contrary, if regulatory institutions are not influential, they are unable to provide valued impact on channel partners, and contracts and legal agreements would be difficult to implement without strong legal support (Williamson, 1991).

H4: Channel members tend to use contractual governance mechanism when the regulatory environment is influential.

Influential normative environment comes with a greater presence of authorization mechanisms, such as industrial associations, companies tend to exchange ideas about channel management practices more frequently, which leads to high level of participation, consensus building (Dwyer et al., 1987; Meyer & Scott, 1992), and homogenized standards in an industry (DiMaggio & Powell 1983; Scott et al., 1987). Therefore, normative environment establishes foundation for relational governance, and encourages relational control within channels.

H5: Channel members tend to use relational governance mechanism when the normative environment is influential.

Cognitive environment promote informal mechanism as a substitute for formal coordination and control behaviors, which contribute to long-term cooperation and bonding (Ouchi 1980). As a result, members would not resort to formal contracts to solve problems and come to an agreement (Gundlach and Cadotte 1994). Therefore, powerful cognitive institution encourages relational governance (Kumar et al., 1995).

H6: Channel members tend to use relational governance mechanism when the cognitive environment is influential.

Hill (1990) argued that formal contracts define complex items for exchange and cooperation, and specify detailed procedures for solving problems, which takes time and effort to develop a set of regulation. Moreover, when environment changes, contracts have to be adjusted and revised. Therefore, contractual mechanism is inefficient and costly (Uzzi, 1997). Besides, the rigidity and lack of flexibility of formal contracts lead to outdated and unsuitable strategy, which influence channel financial performance.

H7: The use of contractual governance mechanism is negatively related to channel economic satisfaction.

Formal contracts signal distrust (Ghoshal & Moran, 1996; Fehr & Gächter, 2000) and intention of manipulation (Provan & Skinner, 1989) of channel partners, which lead to psychological reactance and revolt, even retaliation and opportunism (Venkatesh et al., 1995).

H8: The use of contractual governance mechanism is negatively related to channel non-economic satisfaction.

The use of relational governance mechanism offers a higher value for channel partners through joint plan developing and joint problem solving (Gaski, 1984), which promote the welfare of channel partners, and help members get out of an adverse situation or obtain competition advantage (Raven & Kurglanski, 1970; Kasulis & Speckman, 1980). Especially in a dynamic environment, the flexibility of relational governance helps channel swiftly adjusting to current situation (Angelmar & Stern, 1978). Therefore, economic satisfaction is effectively promoted.

H9: The use of relational governance mechanism is positively related to channel economic satisfaction.

Use of relational governance mechanism promotes mutuality, solidarity and flexibility (Heide & Miner, 1992), which result in common language, shared expectation and values, and improve the level of channel satisfaction (Bhatnagar, 1993).

H10: The use of relational governance mechanism is positively related to channel non-economic satisfaction.

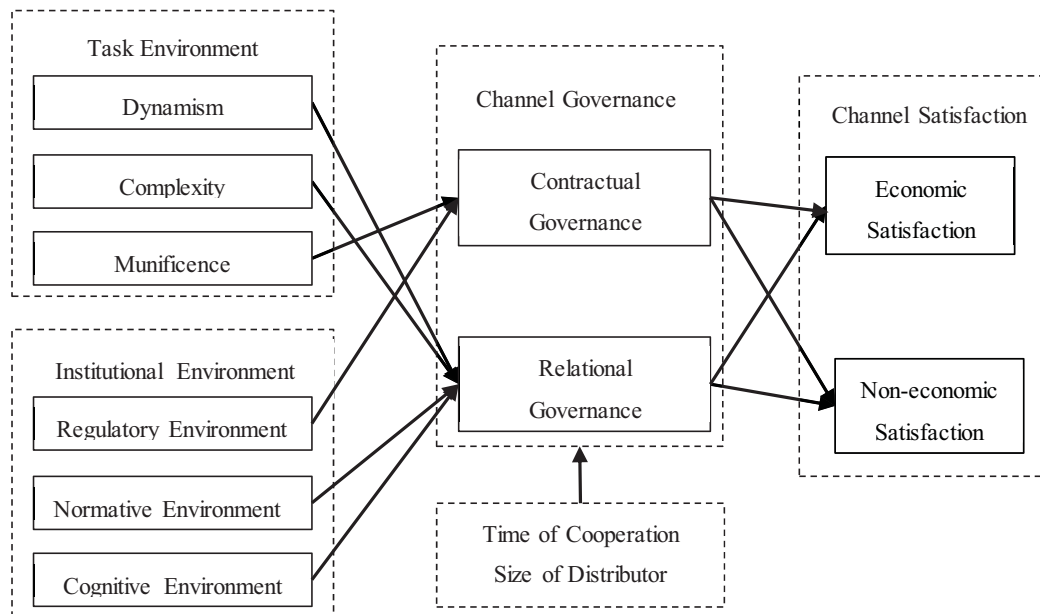


Figure 1. Theoretical Framework

3. Method

3.1 Data Collection

We test the hypotheses using a sample of distributors of a large-scale petrochemical enterprise. We choose respondents in petrochemical industry for two reasons: firstly, this industry is strictly regulated and influenced deeply by industry associations and norms, which is suitable for our research to analyze the impact of institutional environment. Secondly, this industry is going through big changes because of the technological revolution of automobiles, such as electric vehicles, therefore the influence of task environment is significant.

Before sending out formal questionnaires, we communicated with managers of Sinopec, and set a standard for stratified sampling to balance numbers of distributors of different sizes, provinces and organization forms. According to Benter and Chou (1987), in empirical study using factor analysis, the minimum sample size is three times the number of relevant parameters. Taking research requirements and actual situation into consideration, we picked 400 gas stations as respondents, and communicated with them about the objectives instructions of this survey, and mailed out questionnaires. Out of the 400 respondents, 259 sent back their answers, and 221 validated questionnaires are collected overall, the validated response rate of 55.3%.

Of all the respondents, 71% are general managers of gas stations, and 15% are operational managers; 77% have worked in gas stations for at least 3 years, which suggest that the respondents know well about the cooperation and relationship with Sinopec. Of all the sample gas station, 48% are in Jiangsu Province, 25% are in Hunan Province, and the ones in Hebei and Guagndong Provinces both take up for more than 12%; 25% have been cooperated with Sinopec for at least 10 years, 43% for 5 to 10 years, and 32% for less for 5 years, which suggest that the sample is highly diversified and not biased.

3.2 Measures

Questionnaire was designed to collect data from Sinopec distributors (gas stations). First, we established research framework and constructs, and developed a set of measure on the basis of literature. Secondly, we communicated with representatives of distributors, and revised the measure according to the industrial context. Then, we made modification after a pilot study.

The questionnaire was designed in Likert five-point scale. Respondents were asked to pick and answer from “1” (totally disagree) to “5” (totally agree) with respect to the statements. Measures of related constructs are as below:

Dynamism: In local market, technology updates rapidly; consumer demands and preferences constantly change; changes in the environment are difficult to predict (Dess&Beard, 1984).

Complexity: In local market, the marketing environment is very complex; consumer demand is influenced by many factors; sales are influenced by many factors (Dess&Beard, 1984).

Munificence: Oil is in great demand; there are few competitors; the overall sales situation is satisfactory (Dess&Beard, 1984).

Regulatory environment: local government severely punishes violations of laws and regulations; government protects the interests of market players through strict law enforcement; government drives companies to abide by laws and regulations; government responds swiftly to regulation violation (Grewal & Dharwadkar, 2002; Zhang, 2003).

Normative environment: companies learn industry standards from professional associations; companies abide by industrial norms; whether to abide by the industrial norm has strong influence on enterprise operation; the public appreciate that stakeholders are treated well (Grewal & Dharwadkar, 2002; Hyun, 2001).

Cognitive environment: local culture influences channel construction and management; local values and unwritten norms influence channel management; companies comply with local conventions and traditions; local traditions and customs influence channel management (Grewal & Dharwadkar, 2002; Mcfarland, 2003).

Contractual governance: We have a very specific and detailed contract; our contract stipulates obligations and responsibilities for both sides; our contract specifies the process of cooperation and coping strategies for unplanned events (Lusch & Brown, 1996; Ferguson et al., 2005).

Relational governance: We make plans together; we solve problems together; we share with each other long-term development strategy; it's our common responsibility to cooperate and fulfill tasks together (Gundlach, 1995; Claro, 2003).

Economic satisfaction: we are satisfied with achievements of sales; with return on investment; with sales growth (Cannon & Perreault, 1999; Mayo et al., 1998)

Non-economic satisfaction: we are satisfied with credibility and reliability of the supplier; with service attitude of the supplier; with effective communication and timely response; with the ability of solving problems (Ruekert & Churchill, 1984; Geyskens & Steenkamp, 2000)

3.3 Reliability and Validity Tests

A reliability analysis using Cronbach's alpha and composite reliability index were performed to ensure the internal consistency of the items that constituted each construct, the results are as shown in Table 3 (Cronbach, 1951; Fornell & Larcker, 1981). The table shows the values of Cronbach's alpha and CR for each of constructs all exceed 0.7, indicating a good internal consistency and reliability of the constructs.

Then, we used explanatory factor analysis to identify a possible underlying factor structure. The factor solutions confirmed our expectations, that all items had factor loadings that exceeded the recommended level of 0.5 (Hair et al., 1998), and none of the items cross-loaded on multiple factors. We can safely conclude that constructs are dissimilar constructs.

In addition, we analyzed all measures in a single confirmatory factor analysis model, and all items loaded significantly on their corresponding latent factors, with coefficients above 0.5, indicating good convergent validity.

Furthermore, we ran a test to assess the discriminatory validity. As we can see from Table 2, average variance extracted (AVE) values, are all above 0.5, indicating good discriminatory validity.

Table 2. Reliability and validity tests

Constructs	CR	Cronbach's alpha	AVE	Factor loading
Dynamism	0.9674	0.954	0.8	0.939
				0.935
				0.748
Complexity	0.8652	0.845	0.6	0.883
				0.821
				0.77
Munificence	0.9186	0.906	0.7	0.842
				0.876
				0.894
Regulatory environment (RE)	0.9425	0.938	0.88	0.883
				0.909
				0.912
				0.882
Normative environment (NE)	0.9198	0.920	0.68	0.921
				0.857
				0.788
				0.839
Cognitive environment (CE)	0.9316	0.935	0.7	0.86
				0.864
				0.847
				0.808
Contractual governance (CG)	0.7706	0.753	0.559	0.635
				0.777
				0.764
				0.819
Relational governance (RG)	0.7758	0.759	0.567	0.669
				0.703
				0.792
				0.819
Economic satisfaction (ES)	0.8723	0.839	0.78	0.882
				0.612
				0.846
				0.858
Non-economic satisfaction (NES)	0.8912	0.901	0.7	0.77
				0.864
				0.847
				0.847

3.4 Model Estimation Method

This study builds a structural equation model (SEM) to estimate the theoretical model and test the research hypotheses. Structural equation modeling is a multivariate statistical framework that is used to model complex relationships between directly and indirectly observed (latent) variables. SEM involves simultaneously systems of equations and encompasses other techniques such as regression, factor analysis, path analysis and latent growth curve modeling.

Since the method of collecting data with questionnaire attempt to get respondents' overall opinion of each latent variable (constructs) with several relevant observed variables (items), the method of SEM is the most suitable method for model estimation with data collected via questionnaire survey. In social science domain, the method of SEM is widely used to bridge causal hypotheses and survey data, to reveal relationship of all latent variables (constructs) from an overall perspective.

In this study, we use statistical software R and its package SEM and LAVAAN to estimate the theoretical model.

4. Empirical Results

The fitness of this structural equation model is good, as we can see from Table, 3, $\chi^2/df=1.48$, below the recommended level of 5, CFI and TLI index are all below the recommended level of 0.9 (Bentler, 1987), RMSEA and SRMR are separately below their recommended level of 0.1 and 0.08 (Steiger, 1990).

Table 3. Empirical results

	Hypotheses	Relationships	Coefficients	T value	Results
Task environment	H1	Dynamism-> RG	0.448***	4.155	+
	H2	Complexity-> RG	0.166*	1.956	+
	H3	Munificence-> CG	-0.032	-1.256	n.s.
Institutional environment	H4	RE -> CG	0.284**	3.11	+
	H5	NE-> RG	0.101	0.912	n.s.
	H6	CE-> RG	0.277**	2.98	+
Governance Behavior	H7	CG->ES	-0.052	-0.355	n.s.
	H8	CG ->NES	-0.408**	-3.431	-
	H9	RG->ES	0.047	0.841	n.s.
	H10	RG->NES	0.491***	4.187	+
Control variables		Time of cooperation>RG	0.196*	2.436	
		Size of distributor ->CG	0.056	0.751	
Model fitness		χ^2	563.218		
		df	378		
		χ^2/df	1.48		
		CFI	0.977		
		TLI	0.963		
		RMSEA	0.048		
		SRMR	0.061		

***: Significant at the 0.001 level; **: Significant at the 0.01 level; *: Significant at the 0.05 level.

As we can see from Table 3, H1, H2, H4, H6, H8 and H10 are all supported by the empirical results.

Task environmental dynamism and complexity are influential to channel governance mechanism. Due to risk brought by information asymmetry, channel partners tend to develop strategy of more flexibility and less formality, and use relational governance mechanism in a dynamic and complex environment.

Institutional environment also has a huge impact on channel governance, especially in regulatory and cognitive environment. Since regulatory environment provides a fundamental system for channel members to develop and enforce formal contracts, channel partners tend to use contractual governance mechanism when the regulatory environment is influential. Besides, as cognitive environment facilitates the evolution of shared values and common language, informal relational mechanism are widely used when the cognitive environment is influential.

In addition, this study also analyzes the relation between governance mechanism and channel satisfaction. We find that the different mechanism has distinct influences on non-economic satisfaction: contractual mechanism is associated with lower satisfaction while relational mechanism improves satisfaction.

5. Conclusion and Discussion

This study builds a structural equation model to explore the relationship of channel environment, governance behavior and channel satisfaction, which is composed of two parts: channel environment → channel members' governance behavior → channel relational quality.

This study successfully answers the three questions stated in the beginning: first, about the corresponding reaction to specific task environment: suppliers tend to use relational governance strategy in a dynamic and complex environment; secondly, about the corresponding reaction to specific institutional environment: suppliers tend to use contractual governance strategy when the regulatory environment is influential and tend to use relational governance strategy when the cognitive environment is influential; thirdly, about the influence of channel members' governance behavior on the level of channel satisfaction: the use of contractual governance strategy is negatively related to channel non-economic satisfaction, while the use of relational governance strategy is positively related to non-economic satisfaction.

This study systematically analyzes the relation between external channel environment and channel governance behavior. And empirical research with data collected from Sinopec distributors suggests that, both task and institutional environment are influential to channel governance. When the environment is dynamic and complex, channel partners tend to use relational governance mechanism. When the regulatory environment is influential, contractual mechanism is widely used, while relational mechanism is preferred when cognitive environment is sufficiently powerful.

Theoretical contributions: this study contribute to the marketing channel research in three ways: first, this paper proves that the overlooked concept, channel environment, has a huge impact on behaviors of channel members; second, this paper takes every dimension of external environment into consideration, specifically, and systematically analyzes their influence; third, this paper combined theories from different domains, such as

institutional theory from organizational sociology, task environment from economics, and governance from economic transaction cost economics.

Managerial implications: this study offers multiple implications to marketing practice: first, channel decision makers should take a contingency perspective to adjust strategy along with the change of channel external environment; second, environment is composed of both task and institutional environment, which can be further divided into more specific dimensions, and the different dimensions influence channel behavior in different ways, channel members should scan every aspect of environment and pay attention to the influential ones; third, contractual governance mechanism deteriorates channel relation while relational mechanism improves relationship quality. If channel members aim to maintain a good relationship with distributors, the use of relational governance is strongly recommended.

Limitations and future study: first, data was collected from one side of the dyadic relation, which may lead to bias, future studies may consider collecting data from both suppliers and manufactures; second, this study explores correlations in channel of petroleum industry, future studies may consider diversifying the data sources and collect data from multiple industries.

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Analyzing Cloud-based Startups: Evidence from a Case Study in Italy

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Abstract

The aim of this study is to analyze the reasons behind the adoption of cloud computing and its implementation process in startup firms as well as to verify the advantages and disadvantages deriving from the adoption of this tool and how it could increase entrepreneurial activities. We applied a research framework developed by previous scholars on cloud adoption within SMEs in an attempt to adapt it to startup firms. In particular, we conducted a case study in an Italian technological startup.

Our results show that cloud technology supports and facilitates entrepreneurial activity, especially reducing several entry barriers for new entrepreneurs. This study contributes to the existing literature on cloud computing, and it has several managerial implications. First, it shows that setting up the organizational model on cloud computing allows entrepreneurs to reduce organizational efforts and ICT investments. Furthermore, this technology can reduce diversification costs by eliminating entry barriers, thus opening new markets and opportunities for entrepreneurs.

Keywords: cloud computing, startup, SMEs, case study, Italy

1. Introduction

Cloud computing has totally revolutionized the Information & Communication Technology (ICT) market, and it has been considered a suitable tool for solving common problems related to ICT (Gartner, 2010).

According to Sultan and Van de Bunt-Kokhuis (2012), cloud computing, as defined by Christensen (Christensen and Raynor, 2003; Christensen et al., 2004), presents an innovation, as it allows firms to benefit from different kinds of services (hard memories, storage, computer network management, operating systems, applications, sensitive data management, etc.) at low prices and with great flexibility and scalability (Ibrahim et al., 2011; Buyya et al., 2008; Marston et al., 2011; Sultan, 2011; Kaiserswerth et al., 2012; Lee e Mautz, 2012). Cloud computing allows firms to then manage ICT requirements in an innovative and completely different way (Ibrahim et al., 2011) by changing market dynamics both from the demand as well as offer point of view (Buyya et al., 2008; Eto, 2009).

Microsoft (2012) and Nuvolaitaliana (2013) have shown an increasing adoption of cloud computing in startup firms. Recently, several authors have focused their studies on these kinds of firms (Sultan, 2014; Ross and Blumenstein, 2015), with a particular emphasis on advantages and new opportunities related to the adoption of cloud computing (Sultan, 2011; Ross and Blumenstein, 2012, 2013; daSilva et al., 2014): this new technology, in fact, has generated a new global market thanks to the increasing adoption of devices such as smartphone and tablets. This, in turn, has led to the birth of a new generation of startup firms (Ross and Blumenstein, 2015) strongly oriented toward product innovation (Sultan, 2011) and sales strategies (Armbroust et al., 2010).

Gagliardi (2013) highlights that these firms are totally designed on new technologies based on the Internet (such as cloud computing), thus changing the old paradigm according to which ICT structure is influenced by the organization model (Laudon, 1985; King et al., 1994) into a paradigm where the organizational model is influenced by the ICT structure adopted (Laudon and Laudon, 1996).

Actually, the academic literature has not investigated into the reasons as to why startup firms adopt cloud computing, into implementation issues, and into the real contribution of this instrument in startups. This paper aims to fill this gap examining the use of cloud computing by a technological startup and verifying how this tool supports business growth. To reach this aim a case study on an Italian hi-tech startup was proposed. We choose the

Italian setting because of the technological backwardness of the country (Bank of Italy, 2012), which has created strong entry barriers to the market of technology services for small and medium-sized enterprises (SME). Indeed, just in recent years, Italy has been facing a technological revolution based on cloud technologies (Politecnico di Milano, 2014) and, as a result, there have been an increasing number of new cloud-based startups (Politecnico di Milano, 2013; 2014) thanks to the cloud's ability to partially reduce economic and technological entry barriers. Italy is characterized by an increasing number of startups and by several programs that emphasize the importance of new technology introductions supporting their dissemination (NuvolaItaliana, 2014). Also, there is a strong attention on the topic given by Italian Government and practitioners (Bank of Italy, 2009; Caldarelli et al., 2017).

This paper is organized as follows. Section 2 analyzes the literature on the advantages and disadvantages related to the adoption of cloud computing. Section 3 identifies the theoretical framework. Section 4 outlines the research design. Section 5 presents the results of the case study, and section 6 provides some concluding remarks.

2. Cloud Computing and Startups

Several studies have highlighted how ICT is able to support businesses' and firms' growth. In particular, our work focuses on those studies that have shown how firms are able to improve their performance and processes through the use of innovative technologies. Cloud computing seems to be one of the best tools to achieve this result and to revolutionize markets (Sultan, 2013). Cloud technologies, in fact, offer a twofold possibility: on one hand, they grant product innovation, thus allowing firms to focus on new product development and sales within global markets (Buyya et al., 2009; Armbroust, 2010); on the other hand, firms have the possibility to innovate processes in a leaner, faster, and more efficient way (Etro, 2009; Qian et al., 2009). Cloud services also appear to be useful in reducing costs and increasing profitability (Ibrahim et al., 2011; Marston et al., 2011).

Several authors have contributed to the existing literature by focusing on the implementation of cloud computing. In particular, some authors, focusing on SMEs, have shown that the major benefits from the adoption were closely associated with firm size (Lawler et al., 2012; Brender and Markov, 2013; Gupta et al., 2013; Mahmood et al., 2014; Oliveira et al., 2014; Son et al., 2014), while others have shown greater benefits from the implementation of cloud computing in emerging markets (Kshetri, 2013; Subramanian et al., 2014), in the banking sector (Brender and Markov, 2013; Choudhary and Vithayathil, 2013), in the public sector (Kundra, 2011; Singh and Veralakshmi, 2012; Mu and Stern, 2015), in the healthcare sector (Kshetri, 2010; Rosenthal et al., 2010; Lian et al., 2014; Sultan, 2014; Chen and Chen, 2015), and in other relevant sectors (Hsu et al., 2012; Chong et al., 2014; Son et al., 2014).

These studies have highlighted the three main aspects deriving from the introduction of cloud computing in going-concern firms: the improvement of business processes, the reduction of ICT costs, and the difficulties related to the migration phase.

Rosenthal et al. (2009), for example, empirically analyzed the benefits generated by cloud computing in "*biomedical informatics (BMI) community*," highlighting how the introduction of this technology has sped up business processes (thanks to the information available in real time on the platform) and lowered the operating costs of ICT infrastructure. Sultan (2011) analyzed the economic and organizational benefits generated by the introduction of the instrument in an English IT company. The author shows the strong reduction of ICT costs (about 80%) and the relocation of some ICT employees within other departments.

Khajeh-Hosseini et al. (2010) analyzed the advantages and disadvantages deriving from the migration to a cloud system within an SME in the energy sector, highlighting the reduction of 37% of ICT costs and 21% of maintenance operations; but at same time, they evidenced a several problems. First of all, there was a loss of trust by SME customers that manifested the fear of service interruption. Secondly, there was loss of control over data so, in those days were the internet connection service was interrupted, employees were not able to work. This is the main reason on the basis of the considerable employees' resistance.

Velte et al. (2009) provided a detailed guide on the migration to cloud systems, highlighting the reasons for the adoption, the difficulties of implementation, and the related risks. What should be noted is that all these authors have focused on the implementation of cloud computing in going-concern firms without analyzing what could be the contribution of this technology for startup firms. In fact, the benefits evidenced by the literature are likely to be partially weakened when the adoption of the cloud occurs at an intermediate stage of the business life cycle: the transition from a traditional ICT structure to a cloud system involves a critical and complex process of change (Dahbur et al., 2011) to be carefully managed (Ibrahim et al., 2011; Ross and Blumenstein, 2015). The main cause of this negative effect is to be found in the fact that, in going-concern firms, the new information system is influenced by and has to be adapted to the pre-existing organizational model (Kling and Dutton, 1982;

Laudon, 1985; King et al., 1994).

According to Sultan (2011) cloud computing is a tool not suitable for all firms as its convenience strongly depends on the size of the ICT structure, on the structural costs already incurred, on the security costs the firm will have to bear, and on the degree of risk the firm is willing to accept.

On this basis, seems possible to imagine that greater advantage could result from the adoption of cloud computing in a startup firm. Few authors have considered cloud computing as a tool able to bring benefits to companies in the startup phase, where the design of the ICT structure takes place together with that of the organizational structure. This kind of analysis allows the researcher to highlight the full potential and benefits deriving from this technology. In fact, cloud adoption influences both information systems and organizational structure, thus enabling the building of a flexible organization as early as in the startup phase (Khajeh-Hosseini et al., 2010). The rationale for this assertion is twofold in nature. First, cloud computing allows new entrepreneurs to enter those markets with entry barriers such as large investments in ICT; this facilitates startup firms to enter into markets where the expected return on investments (ROI) seems negative or too low, and to eliminate technological constraints and thus obtain a quality of service equal to their main competitors (Marston et al., 2011). Then, the choice to adopt cloud computing in the startup phase allows the firm to achieve relevant organizational advantages. In fact, in a cloud-based startup, it is possible to improve organizational learning, to accelerate product development, and to increase the ICT department's degree of flexibility. These benefits result in less of a need to outsource the production of new knowledge (Ross and Blumenstein, 2015).

On this basis, due to the lack of studies addressing the combination of the above-cited issues, it appears interesting to analyze the main reasons why new entrepreneurs choose the adoption of cloud computing in their startup firms, linking this issue to the different stages of the adoption (the identification of problems that cloud computing is called to solve, the intermediate stages, and the final measurement of the benefits).

3. Theoretical Framework and Justifications

The present study attempts to adapt the framework by Ross and Blumenstein (2015) to analyze cloud adoption in startup firms. Figure 1 summarizes the model and its characteristics.

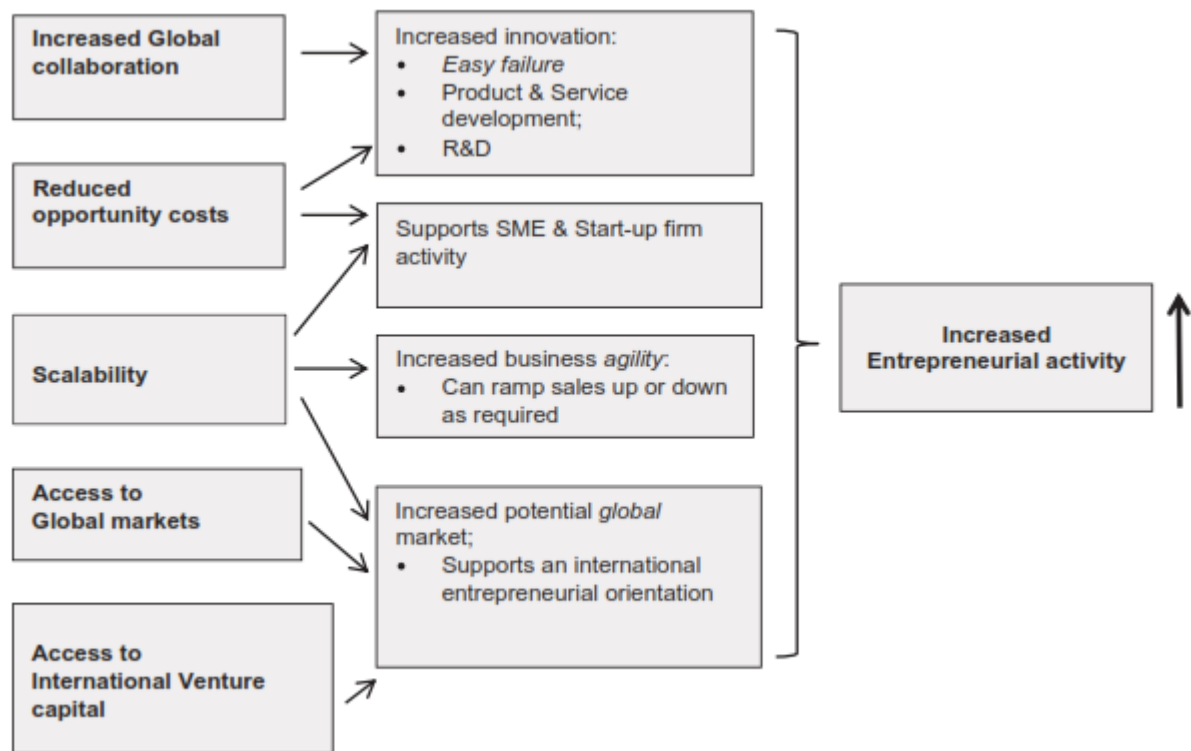


Figure 1. Research framework (Ross and Blumenstein, 2015)

According to this framework, cloud computing is a tool that is able to sustain firms' growth by enabling several interactions among typical factors in modern business. The framework is based on five main aspects: increased

global collaboration, reduced opportunity costs, scalability, access to the global market, and access to international venture capital.

Referring to *increased global collaboration*, we may say that cloud technologies allow collaboration among different areas not characterized by a geographical proximity, thus enabling an international entrepreneurial orientation (Ross and Blumenstein, 2015). This aspect, within startups, has to be considered relative to the opportunities cloud computing may create for new firms, to the openness of markets, and to the opportunity to enter into business networks able to generate greater innovation and to allow the firm's growth. In fact, cloud technologies enable synergies with other actors within the context in which the firms operate or in similar markets, also reducing high investments in R&D.

Reduced opportunity cost refers to the cloud's ability to reduce investments and barriers to entering new markets, thus increasing possible business opportunities. The "pay-on-demand" formula often adopted in cloud services represents a valid support enterprise and allows a drastic reduction of the financial requirements needed to create new products or to start a new business (Etro, 2009). Thanks to the huge warehouses supplied by cloud providers, it is possible to benefit from scale economies (Mudge, 2010), with a consequent reduction of the marginal cost of the service as the usage by customers increases. This aspect evidences how this instrument is able to support firms in the startup phase by reducing research and development costs and initial investment in ICT as well as the risks typically related to innovative activities (Casson, 2003; Parker, 2009).

The third aspect to consider is *scalability*. Cloud computing allows firms to manage the service demand in a flexible way (Misra and Mondal, 2010): each cloud user has the possibility to use a larger amount of service to manage critical moments, thus eliminating delays related to the required adjustment time. This flexible structure enables the firm to have an always-appropriate service, avoiding the risk of oversizing the ICT function. Thus, scalability results in a reduction of the investments required, in a service appropriate to customers' demand, and in a faster internationalization process.

Another aspect is *access to the global market*. As already mentioned, cloud computing facilitates the possibility to easily access international markets, thanks to their particular characteristic of being delocalized. This aspect revolutionizes the previous conception of internationalization, according to which a firm, before going international, tried to first grow in their local market and then acquire more information and knowledge about the specific market to enter (Johanson and Vahlne, 2009).

The last aspect is *access to international venture capital*. This aspect is particularly critical for startup firms, which often try to find funds through operations such as venture capital and business angels. In addition, this aspect is directly linked to the cloud's ability to allow access to the global market. In fact, cloud technologies enable SMEs and startups to find easier international partners or potential investors, thanks mainly to the existence of crowdfunding platforms created to promote business based on this type of technology (e.g., CloudCUBE) (Falcon, 2013; Nisen, 2012).

This framework is supported by the fact that several authors (Etro, 2009; Misra and Mondal, 2010) have indicated cloud computing to be a particularly suitable technology for startups, as it allows them to increase their entrepreneurial ability (Ross and Blumenstein, 2015) and to reduce several entry barriers to markets. On this point, the rapid growth of the "Apps" global market provides a good example of how startup firms can easily sell their products to global customers through cloud-based platforms (Ross and Blumenstein, 2015). Knight and Cavusgil (2004), on this point, talk about the emergence of "born global" firms, defined as organizations that begin selling goods and services in several countries right from their creation or shortly after being born (Gabrielsson and Kirpalani, 2012). In fact, startups have the advantage of adopting cloud technology as early as their creation, thus avoiding risks typically related to a change of ICT systems (abandonment of old technologies, change, and consequent new learning) and to the integration of cloud technologies within previous ICT systems (Ross and Blumenstein, 2015).

4. Research Methodology

To better analyze why startup firms choose to adopt cloud technologies upon their birth, we conducted a case study of cloud adoption by an Italian technological startup firm.

The use of this method has been widely applied in the field of ICT (Benbasat et al., 1987; Lee, 1989; Mumford et al., 1985; Smith, 1990; Lee, 1991;) although, initially, its application was strictly quantitative (Gable, 1994). Case study research is often performed to aid in understanding a complex issue or phenomenon in which hypotheses are difficult to identify or define before collecting research data (Yin, 1984). This method allows an investigation of the reasons behind individual behaviors and decisions by reducing the lack of information and

highlighting issues that would be lost with other methods (Yin, 1984). What should be noted is that this method is largely used in information technology research (Yang and Tate, 2012). Some authors have shown that case studies allow researchers to study information systems on-site, highlighting the practical aspects (Benbasat et al., 1987) to enhance the replication of a framework (Yin, 1984), to reduce the lack of information, and to enrich a particular field of study (Santos et al., 2004).

The firm chosen for the analysis was selected from the population of cloud-based technology startups recently initiated in Italy. This selection followed certain criteria. First, the firm should have the attributes of scalability and rapid growth (Blank, 2010). Then, the startup investigated should be based in Italy and founded within the last five years; this because in the last five years in Italy, there has been a strong growth of cloud-based technology startups (NuvolaItaliana, 2014). Finally, the founders of the target firm should be new entrepreneurs in order to better analyze the difficulties in creating a new business and to focus on how cloud technologies allow the entrepreneurs to overcome these.

Once the criteria were established, we opted for a firm that appeared to have enough information to facilitate theoretical inference (Santos et al., 2004).

Following the approach by Carroll et al. (2011), in order to better understand the reasons behind the adoption of cloud computing in a startup, we considered as main sources for our analysis the interviews with the three founders of the startup. We then interviewed the cloud provider consultants (as external actors) who assisted the implementation and structure definition process. Finally, to ensure a more complete analysis, we also interviewed some employees as end users of the instrument. The choice of the subjects interviewed allowed us to better analyze the ICT design process using cloud technologies. In some cases, it was possible to interview representatives of the cloud provider to verify the effective exchange of information among the various actors involved in the process. In addition, the analysis takes into account both endogenous and exogenous variables, as we considered both internal (interviews with managers and internal documents) and external sources (reports published by the company, newspaper articles).

The interviews were conducted on the basis of a semi-structured questionnaire built on the framework we chose. The purpose in the preliminary analysis was to obtain information regarding what led enterprises to choose cloud computing: the motivations behind, the expected benefits, the degree of outsourcing, and safety considerations. The questions represent a kind of guideline, as they provided a number of key issues to be discussed during the interviews, rather than representing binding questions to ask the interviewees. The interviews were recorded and then transcribed for analysis. In cases where some issues raised and have been not completely addressed or some interviews resulted partly incomplete, we requested follow-up interviews by telephone.

In order to avoid individual researcher biases potentially influencing and thus altering the results of the study, the interviews were conducted by a team of four researchers, after the key criteria for the interviews had been defined. At least two members of the group were involved in each interview.

During the interviews, several internal documents relating to the ICT function were consulted as well as specific data that may help the researchers recognize the relevance and the cost of the function in order to support and confirm the respondents' answers. Immediately after the interviews, recordings were transcribed by each researcher. Next, the transcriptions were chronologically organized and then discussed by researchers, thus building a summary of the data and opinions regarding the expected benefits, motivations behind the adoption, and actual benefits derived by the adoption of cloud computing.

5. A Case Study of an Italian Technological Startup

Aiming to better understand the business model adopted along with the adoption of cloud computing in the startup phase of a business, we interviewed the three founders of AlphaGame, a startup enterprise in the IT industry. AlphaGame is a startup established in Italy during 2013 with the intent of building up a game aggregator. For a purpose of clarity, a game aggregator is a system that collects games and other kind of gaming software. This system stores games on a website (as a sort of database) and provides to their customers the possibility to use them in every moment.

In few years, AlphaGame has been able to attract a growing community of videogame developers that is increasingly more willing to publish their games on AlphaGame channels. AlphaGame offers a complete, simple, and high-end product both to companies wanting to engage and monetize their user-base and to HTML5 game developers. AlphaGame's database offers more than 15,000 games to more than 250,000 users from 190 different countries, who wish to challenge each other online in different kinds of games, including arcades, sports, puzzles, action, strategic, etc. Within a "win-win" relationship, the system adopted by AlphaGame also allows the

developers to profit by selling their games' licenses or sharing with AlphaGame the earnings coming from advertising.

The following table lists the main business factors characterizing AlphaGame.

Table 1. AlphaGame's main characteristics (source: adapted from DaSilva et al., 2013)

Customer value creation	Free access to a huge numbers of games
Earnings logic	The system allows developers and publishers to share with AlphaGame the earnings coming from advertising
Value network	Developers and publishers as partners (they share earnings without paying fees to develop and upload games and applications)
Resources & capabilities	Scalability, fewer financial resources required
Strategic decisions	The strategic decision, as a startup, has been to choose cloud technology as a business model from the early stages

What should be noted is that the company was founded with less than 20,000 € through the crowdfunding tool. After the first two years, the average growth of the company's total assets was about 63.33%. This high growth rate attracted two of the most important European ICT capital ventures, and this has allowed AlphaGame to increase its investments, consolidating its position in the market.

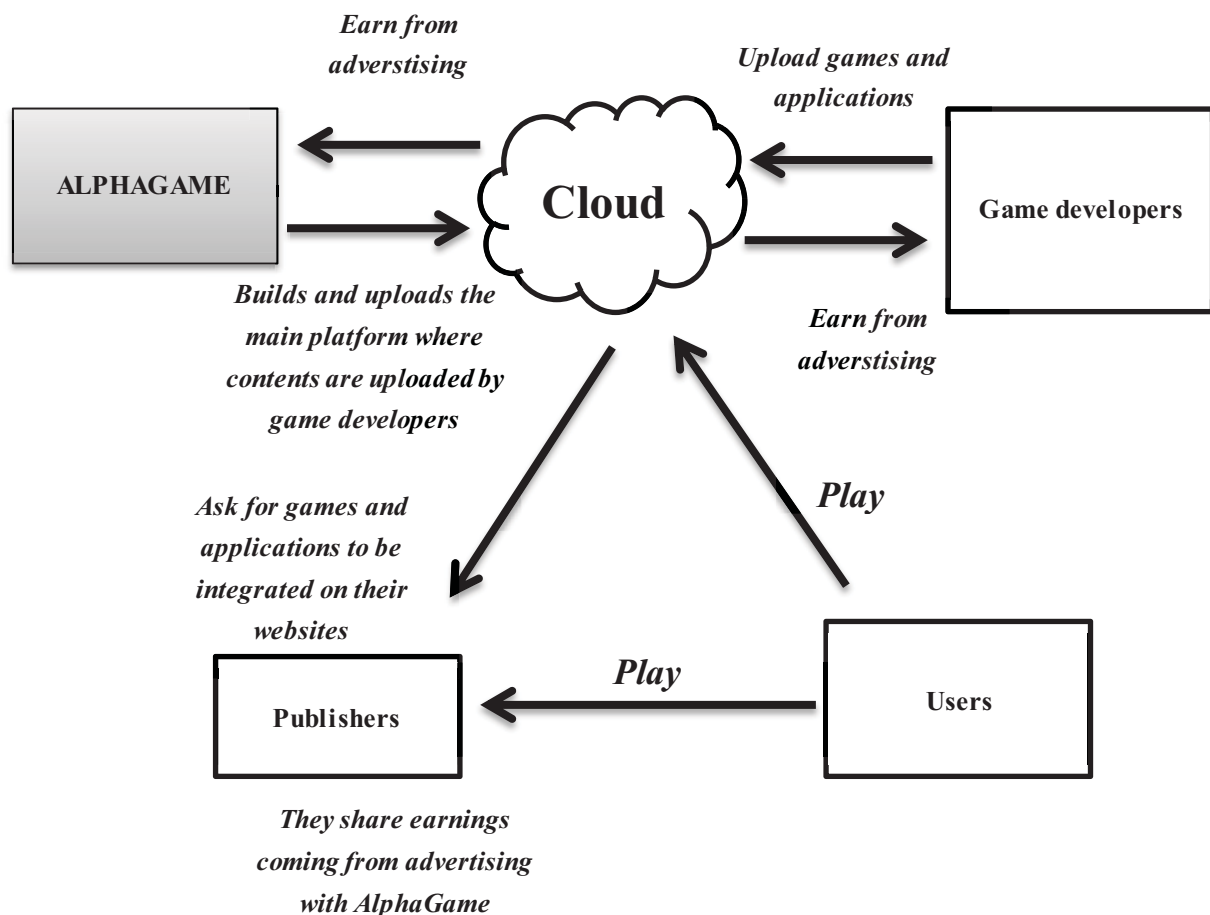


Figure 2. AlphaGame's business model

The founders had had this business idea several years before implementation, but it was not economically feasible due to the high costs of the ICT structure. One of the founders said:

"This market was hidden by the higher costs [...] we needed a big ICT structure but we did not have enough money"

With the introduction of cloud technology, the "rules of the game changed completely". Indeed, after considering the benefits and costs related to the creation of a cloud-based startup, the founders decided to found the base of the new firm on this technology. As first, they ask to different ICT consultant a complete report about benefits provided by this technology to their firm startup. Two reports concluded that the benefits (not only economical

benefits) were greater than the costs, so the management chose to create a cloud structure and built the entire business system on it.

By using the cloud services provided by one of the most important European service provider to develop the main platform on which the contents (games and apps) are uploaded, AlphaGame has been able to support scalability all over the world, and it is estimated that its users will increase by more than 350,000 over the next few years (Microsoft, 2013).

Fundamentally, the developers and users do not care about the fact that the service by AlphaGame is provided through cloud technology. In fact, the developers are interested in earning profit from their games and applications, while the users are interested in playing for free. Moreover, the publishers are interested in the earnings from advertising and also even in seeing an increment of web traffic-stats on their websites/blogs, thanks to the integration of games and applications provided by AlphaGame.

This context allows AlphaGame to solve problems of cost (less investment in ICT), space (less space to dedicate to servers and other instruments) and time (to be ready to operate on the market) (Ross and Blumenstein, 2015). Indeed, generally to perform this kind of activity, firms like AlphaGame require a large space for storage, continuous software updates, and powerful servers to be able to respond to its large audience. Moreover, to satisfy all these needs, firms generally need great financial resources (in addition to a well-detailed, multi-year investment plan), which is often not compatible with the means of a startup.

The company is positioned in a niche market with incredible potential but that has been unexplored until now. During the first interview, one of the founders said that, up to that time, the ratio between expected income and the investments necessary for the company's creation was very low. Therefore, this market was not considered feasible by the founders due to the huge investment. The introduction of cloud technologies changed the market rules, creating something completely new. Indeed, until that time the company's foundation was constrained by a limited availability of capital and by a lack of future profitability. With the introduction of cloud computing, a feasible opportunity emerged. Due to technological progress and the feasibility for investment, the only risk highlighted by the founders was to remain isolated from the cloud provider.

"Being isolated from the cloud provider would mean not having the opportunity to work and to conduct our business."

Despite this risk, the founders decided to implement cloud computing right from the first day of activity, because they had great expectations regarding the perceived benefits coming from its adoption.

"To choose the best cloud provider, we considered different factors like the duration of activity in the sector, the size of the provider, and the compatibility of the software provided with those already known by the employees."

After this analysis, the founders opted for the adoption of Cloud Azure. The time period between the signing of the service contract and the service activation was just a few working days (three or four in total). What should be noted is that the implementation phase did not required considerable effort. In a new work environment, one that is inclined to learning and with no set routine, the implementation of an innovative tool is usually simple.

With reference to Ross and Blumenstein's framework (2015), we will discuss each attribute.

The first attribute to discuss is *"increased global collaboration."* Introducing cloud computing right from the early stage of the startup provided a strong degree of technological innovation and high-quality service. In fact, thanks to the rapidity in exchanging data, AlphaGame is able to provide its service to a great number of customers, especially thanks to cloud servers that support a strong demand. As a result, some of the major market players (such as Nokia and Kaspersky Lab) started a collaboration with the startup.

The second attribute to discuss is the *"reduction of the opportunity cost."* The CEO of the company revealed that cloud computing was not only chosen for lack of initial capital but also for the possibility of creating scales of economy. This factor is one of the main benefits resulting from the adoption of this technology. In fact, it is extensively discussed in the literature about SMEs (Buyya et al., 2008; Armbroust et al., 2009; Marston et al., 2011), but it is not analyzed in the literature about startups (Ross and Blumenstein, 2015). To support our statement, the following quote expresses the opinion of one of the founders:

"We needed scalability and ease of use [...] because we cannot change servers every month, and we cannot spend a large amount of money on hiring and training. [...] Also, we did not have to migrate from our servers to cloud servers, because we used the Cloud right from the first day. We saved the money that we would have to spend for a technical department."

In the startup company, the main disadvantage identified by the founder was not a problem, because there was no

routine to recreate or activities to be redrawn. This statement shows that the main perceived risk arising from the adoption of cloud computing (ICT organizational change) (ENISA, 2009; Khajeh-Hosseini et al. 2010; Dahbur and Tarakji 2011; COSO 2012; Caldarelli et al. 2016) has no any importance within startups. Another aspect to highlight is that the main expected benefit coming from the adoption of cloud computing was the saving of financial resources. Regarding this issue, the founders stated that, in a startup company, low investments in infrastructure provide more flexibility and agility and help the founders to focus on the core business. In fact, the CEO had the possibility of shifting the financial and human resources from the ICT infrastructure management to the core business saving money and improving the efficiency. Moreover, costs were constantly monitored thanks to the cloud management panel provided by Cloud Azure. What should be noted is that the cost savings mainly concern the costs of employees and of server management, because these activities are outsourced to the cloud provider. All the interviewed subjects stated that the investments in infrastructure to provide the same level of basic service would have been the equivalent of about five years of subscription to a cloud computing service.

The third aspect to discuss is "scalability". Using cloud services for Azure Server to develop the videogame distribution platform, AlphaGame had a server system that guaranteed scalability worldwide and the capacity for more than 200,000 users. The company negotiated with the provider a clause that guarantees the continuous updating of the cloud platform in order to automatically handle a sudden increase of users. These service updates occur according to customer requests. In this regard, one of the consultants said:

"The business was set from the beginning to the cloud, this guaranteed agility and eliminated all the typical problems of the migration process."

From the interviews with the founders it became clear that the service scalability allowed the firm to operate in full business continuity in the early years of its life without having to worry about changing servers or storage.

"In the early stages of our business, we saw the service demand growing rapidly in just a few months [...] if we had implemented a traditional ICT structure, we would have had to change it or upgrade it after only a few months, and this would have created an economic and financial imbalance. In addition, we would not have had the time to train the personnel [...] training or recruitment would have required us to shift the focus from the core business to the ICT function."

The fourth aspect to discuss is "access to the global market." The success of AlphaGame is due to the foresight of its founders, which identified the need to expand the business activities outside the Italian market. In fact, the three founders knew well that this particular business could easily be adapted to an international target. Great effort was devoted to creating a flexible structure that could provide an appropriate service level for worldwide customers. Right from the early stage, cloud technologies allowed the use of servers with a guaranteed connectivity of up to two Gbit/s to support an average monthly traffic of one million customers, ensuring the same quality of service to foreign users.

Finally, the last attribute to analyze is "access to international venture capital." This attribute can be critical for startup firms, especially in those countries (such as Italy) where forms of financing such as venture capital or crowdfunding are scarcely used. However, it should be noted that the use of cloud computing allows companies a greater level of visibility. AlphaGame managed to secure considerable funding through crowdfunding and scale-up platforms, through which it has been able to raise the necessary capital to first survive and then to make the firm grow. One of the venture capitalists stated

"From this point of view to operate in the cloud is like a business card [...] We have a guarantee regarding the innovation and quality of the online service in every field of business."

The introduction of cloud technologies led to a simplification of contract related to the drastic reduction in the costs of starting new companies in technology sectors.

6. Discussion and Conclusion

The aim of this paper was to understand the economic and organizational contribution that cloud computing provides to startup firms. To do this, we developed a case study by analyzing a technology startup. The work was built on the theoretical framework by Ross and Blumenstein (2015), which identified five main effects of cloud computing: increased opportunity, reduced opportunity costs, scalability, access to global markets, and access to international venture capital.

This study enriches the literature on cloud computing, and it has some managerial implications.

The results show that without cloud technology, the firm's founders would not have had the possibility of starting the business activities because of scarce initial financial resources to invest.

This allows us to highlight two key points. First, in accordance with the framework by Ross and Blumenstein (2015), cloud computing is a tool that can increase business opportunities by eliminating several entry barriers in different markets. This allows firms to be “born global” and to develop high growth rates. Second, our results confirm what the findings of Etro (2009), Sultan (2011), and Lawler et al. (2012) regarding organizational and economic improvement. In fact, cloud technologies can significantly improve the organizational and economic efficiency of enterprises, reducing the costs of employees and investments in servers and thus increasing the flexibility and agility of the business. Moreover, thanks to the high degree of scalability, cost savings, and reduced opportunity costs, cloud computing made the possibility of expensive servers affordable, confirming what has been claimed by many authors (e.g., Armbrust et al., 2010; Khajeh-Hosseini et al., 2010). Besides low investments in hardware and software, cloud computing has several other advantages for startup firms, such as scalability, ease of use, and flexibility. This is partially in agreement with what has been evidenced by certain authors in other SME fields (Lawler et al., 2012; Brender and Markov, 2013; Gupta et al., 2013), with the difference that, within startup firms, some advantages are amplified because of adoption right from the early stage. Despite the multitude of the interviewed subjects, the main perceived benefits coming from cloud adoption are the same regardless of the interviewee’s level of education, experience, and position in the company.

Our results also show that building the business model entirely on cloud technologies could simplify and reduce the growth period for startup firms. Thus, this paper illustrates how cloud computing can help startup firms solve some of the typical organizational problems related to ICT implementation in SMEs. In addition, our results show that a cloud-based startup, thanks to the flexibility guaranteed by this tool, has more possibilities to access new funding forms, such as venture capital or angel investors. Finally, our paper highlights that the introduction of this technology in startup firms represents a process completely different than that in going-concern firms. In fact, a new company does not yet have internal dynamics that need to be taken into account during the implementation steps; thus, there will not be resistance to a change in the business routing. Therefore, building up the organizational structure on cloud technologies makes both the first organizational design phase and the subsequent implementation process go smoother.

As with any new technology, cloud computing has a dark side: as previous literature has highlighted, several issues can arise from cloud implementation (e.g., loss of governance, loss of sensitive information, and increase in risk control and all the typical risks related to outsourcing and sharing). In addition, what should be highlighted in terms of startup firms is that the main perceived disadvantage is the isolation from cloud providers. The rationality behind this perception can be found in how cloud computing works: because this technology only works when connected to the Internet, an organizational model entirely based on this technology, such as a cloud-based startup, will always be connected to the risk of isolation from the Internet and from the provider, which, in turn, would create the impossibility to operate.

This study has several implications for practitioners and academics. With reference to practitioners, the results of this study shed into light some important issues related to cloud usage by technological startups that have not been addressed by previous studies. First of all, we found that cloud computing helps startup in opening new market opportunities. This implies that the main benefit provided by this technology to firms is not (only) the economical one (i.e. money savings) but it also allow to take new market opportunities, to gain a competitive advantage or to shift attention on others activities. For example, using cloud-computing startupper can focus on firm promotion, on customers’ activities, or on organization development. This finding is particularly important for ICT managers or for CEOs as they decide how to allocate resources. This study suggests that cloud computing can be an important ally for startup strategy definition. Secondly, we put into light the decisional process about cloud implementation and which are the main issues/motivations of startups. This finding can help cloud providers in understanding startup needs in order to focus the offer of service.

With reference to the contribution for academics, to the best of our knowledge, this research provides a more in-depth study of a startup firm and its use of cloud technologies than other study to date. The Ross and Blumenstein model (2015) has been theorized and empirically used in this work.

However, this study is affected by the typical limitations of case studies (Yin, 1984). Our work is limited to a single firm and therefore cannot be generalized to all startup firms. With this kind of study, we can only took a snapshot of a firm. However, a quantitative analysis could be employed collecting results from questionnaire or by using a longitudinal study to obtain more generalizable data. In future, using quantitative methodology, we could investigate different effect of cloud adoption on startup firms making comparisons (geographical or dividing firms for different activities) thus providing more insight into the phenomenon of cloud computing adoption for startups.

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Does Community Forest Collective Action Promote Private Tree Planting? Evidence from Ethiopia

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Abstract

In community settings in low-income developing countries better forest management depends on collective action (CA), but if CA really offers better incentives than open access, we should observe behavioral differences across CA levels. In this paper we examine one potential farm-level behavioral effect by trying to isolate and understand the effects of community forest CA on households' incentives to invest in trees located on their own farms. Using a household level analytical model, we find that more stringent forest CA should create incentives for private tree planting as a substitute for overusing community forests. We test this hypothesis using detailed measures of highland Ethiopia forest CA attributes taken directly from the rich CA literature and a variety of empirical specifications. Though we are unable to draw firm conclusions due to the nature of our data, we do find robust evidence across specifications that more effective forest collective action causes households to plant more trees on their farms.

Keywords: collective action, Ethiopia, forest management

(JEL Code: Q23, Q12)

1. Introduction

In most low-income developing countries households depend on trees to provide a variety of products that are essential for daily life, including fuelwood, fodder for animals, and building materials. Furthermore, forests provide important "off-site" benefits, including erosion and flood control, but often forests are "common," which creates interdependencies between community members that may result from open access. With open access, as long as resources have value, they will be used in less than ideal ways and almost certainly will be degraded, often to the point where they end up virtually worthless. As Stavins (2011) noted, the so-called "problem of the commons" is at least as important in 2011 as it was in 1911 when Katherine Coman discussed collective action problems in the lead article to the inaugural issue of the *American Economic Review* (Coman, 1911). Eliminating open access through appropriate institutional arrangements is therefore perhaps the critical prerequisite to enhanced tree cover in many low-income countries.

Most developing country forests are government owned, but typically those governments do not have the capacity to effectively manage and protect forest resources, especially in low-income countries such as Ethiopia. As a result, state owned forests are often effectively open access (Bluffstone, Robinson, & Purdon, 2015b). To try to reduce the open access due to centralized control of forests, since the early 1980s there has been a worldwide trend in developing countries toward devolution of forests to communities. As a result, community ownership and/or administration are about three times more than private sector ownership, and during the period 1997-2008 collective forest area roughly doubled to 250 million hectares. About 25% of developing country forests are now under some type of collective management (World Bank, 2009; Economist, 2010) and over 15% are *de jure* owned by communities (Rights and Resources Initiative [RRI], 2014).

In community settings forest management depends on collective action (CA) and if CA really offers better incentives than open access, we should observe behavioral differences across the two institutional structures. In

this paper we examine one potential farm-level behavioral difference by trying to isolate and understand the effects of community forest CA on households' incentives to invest in trees located on their own farms. Using a household level analytical model, we find that stringent forest CA that eliminates open access should create incentives for private tree planting as a substitute for overusing community forests. We test this hypothesis using detailed measures of highland Ethiopia forest CA attributes taken directly from the rich CA literature and a variety of empirical specifications. Though we are unable to draw firm conclusions due to the nature of our data, we do find robust evidence across specifications that more effective forest collective action causes households to plant more trees on their farms.

The next section discusses the literature related to community forestry CA that we draw on in our empirical analysis and Section 3 overviews deforestation and collective action in Ethiopia. Section 4 presents our analytical framework, which extends that used by Bluffstone, Boscolo, & Molina (2008) and generates testable hypotheses. Section 5 discusses our identification approach and the data we use and Section 6 presents the results. Finally, Section 7 concludes and discusses implications of the findings.

2. Community Forest Collective Action and Household Behavior

In recent years an important literature has emerged that discusses the effects of collective action on economic outcomes in developing countries. In general, this increasingly well-developed literature suggests good things come from such social coordination. For example, Bouma, Bulte, & Soest (2008) combine experimental evidence from a trust game in India with information on households' participation in community management. They find that players that are more cooperative also engage in more pro-social community natural resource management activities. Bluffstone, Dannenberg, Matinsson, Jha, & Bista (2015a) find significant evidence that more cooperative individuals in Nepal – or those who believe their group members cooperate – engage in CA behaviors that support community forests. Gelo & Koch (2014) find that within the context of a program in Ethiopia, better forest CA increases household revenues while reducing dependence on livestock. Gelo & Alemu (2015) find that strengthened community management supports rural livelihoods in Ethiopia. In their work on species diversity in the Tigray region of Ethiopia, Mebrahtu & Gebremedhin (2015) conclude that devolution and collective action increase tree species diversity.

As a small but growing literature is establishing, private tree planting is a potentially important private response to CA (Nepal, Bohara, Berrens, 2007; Bluffstone et al. 2008; Bluffstone et al. 2015b; Mekonnen, 2009). Furthermore, in East Africa as community forests deteriorate, small private plantations are increasingly producing forest products for rural households. In Kenya significant proportions of fuelwood and charcoal come from private lands and in our sample trees planted on households' farms on average make up over 50% of household assets. On-farm trees are a critical part of asset portfolios in highland Ethiopia (Bluffstone, Yusef, Uehara, Bushie & Damite, 2015c).

In recent decades there have been important advances in our understanding of CA and an enormous literature that discusses community member cooperation. This literature suggests that with effective forest CA households must restrict their collections compared with their preferred harvest levels under open access (Baland & Platteau 1999; Bluffstone et al. 2008). A related CA literature discusses desirable aspects of CA and attempts to disaggregate its components. This work suggests that effective CA systems are incentive compatible at the household level when they empower communities, have clear access and extraction rules, fair and graduated sanctions, public participation, clear quotas, and successful monitoring (Ostrom 1990; Agrawal, 2001).

In Ethiopia and indeed in many low-income developing countries CA systems are often subtle, homegrown systems, which may work very well, not at all or anywhere in between. Except for select cases like Nepal, where communities opt into a formal, legal community forestry CA program, CA should therefore be analyzed as a multi-faceted continuum rather than a binomial variable where households do or do not participate (Jodha, 2008; Shyamsundar, 2008; Agarwal, 2010; Bluffstone et al, 2008). This approach represents an important extension of past literature (Edmonds 2002; Heltberg 2001) that viewed CA as dichotomous.

Despite what is an emerging conventional wisdom that CA may in some cases be better than other alternatives, evidence on the effects of community forest CA and its constituents is limited and the subject of empirical research (Ostrom, 2010; Khatri-Chetri, 2008; Adhikari, 2005). The empirical work of Nepal et al. (2007), Bluffstone et al. (2008), Hansen, Luckert, Minae, & Place (2005) and Mekonnen (2009) are directly related to our paper, because of the focus on incentives for planting and managing trees on households' own farms. Nepal et al. (2007) look at a variety of social networks and finds that forest-related institutions spur on-farm tree planting. Other less forest-related groups have limited effects.

Bluffstone et al. (2008) use a methodology similar to that used in this paper to examine whether CA spurs on-farm tree planting in Bolivia. They find that CA at its highest level of aggregation is positively correlated with more and higher quality on-farm trees. Mekonnen (2009) looks at tree planting in Ethiopia and finds that a variety of labor, asset and credit market imperfections affect on-farm tree planting. Hansen et al (2005) highlight the importance of gender and marriage patterns in the tree planting decision. They find that unmarried women are associated with on-farm tree planting in Malawi.

3. Deforestation, Forest Degradation and Collective Action Solutions in Ethiopia

Ethiopia has an estimated closed canopy forest cover of 4.6% compared with an estimated baseline of about 40% in the 16th century (Ethiopian Forestry Action Program [EFAP], 1994; Tumcha, 2004). During the twenty years between 1990 and 2010 the annual deforestation rate averaged 2% per year, with forest area dropping from 15.1 million to 12.3 million hectares (decline of 20%). Above ground forest biomass fell by a much larger 28% during the same period, reflecting not only deforestation, but also degradation of forests (Food and Agriculture Organization [FAO], 2010) by the 83% of 96 million Ethiopians who live in rural areas (Central Intelligence Agency [CIA], 2014).

Causes of deforestation and forest degradation in Ethiopia are the demand for firewood, agricultural land and grazing, pushed by a rapidly growing population. Though in other countries it is common to find companies extracting or destroying forests, in Ethiopia such drivers of forest degradation and loss are less significant relative to other causes. Conversion of forests, woodland and shrub land into agricultural land is the largest driver of deforestation in Ethiopia (Vreugdenhil et al., 2011), but forest loss is greatly aggravated by grazing, fodder collection, and extraction of wood for fuel, charcoal and timber (Bekele, 2011).

Virtually all energy used in Ethiopia is biomass (94%) and almost all rural people depend on firewood, dung, and crop residues to cook and heat. Between 2000¹ and 2010, degradation due to fuelwood consumption claimed an estimated 135 million tons of woody biomass² and it is generally believed that unsustainable consumption of fuelwood prevents forests from regenerating. Virtually all land, and therefore from a legal perspective almost all forests, is owned by the government, but the capacity of federal and regional forestry institutions is very weak. *De facto* management (or lack thereof) often falls to communities.

As a result of these weak institutions there is *de facto* open access in many areas, which likely contributes to degradation and deforestation (Mekonnen & Bluffstone, 2015). Community-based forest CA and associated community forest institutions have therefore recently received significant attention as a potential mechanism to give better incentives for forest management. Legislation, such as the Forest Proclamation of 2007, for example, has made it possible for communities to hold heterogeneous agreements with governments that grant them control over forest areas, as well as various use rights. Rights typically do not include ownership or logging, but focus instead on subsistence products like fuelwood, fodder, and grazing. These agreements are known as participatory forest management (PFM) and have various mechanisms for sharing forest benefits between communities and regional governments. Available evidence suggests that PFM may increase CA, offer improvements in forest management and condition and potentially improve rural livelihoods (Gobeze, Bekele, Lemenih, & Kassa, 2009).

4. Analytical Framework

The purpose of the representative household analytical model presented below is to a) better understand the behavioral processes by which forest CA affects community forest extractions and tree planting effort and b) generate hypotheses related to private, on-farm tree planting that are tested in the remainder of the paper. Consider a representative farming household living in a large village in a low-income country. The village being “large” means that many households access a nearby forest and strategic interactions are not possible. The village is examining the implications of introducing CA regulations that will affect all households. The goal is to curb open access, which is the *status quo*. We assume that once agreed, compliance is perfect.

The household has a unitary decision process and household utility is an increasing concave function of cooked food (F) and other goods (X) that must be purchased (1).

¹Retrieved from

[http://www.moa.gov.et/documents/93087/1110213/Ethiopian_MRV_roadmap_v4+\(1\)%20\(1\).pdf](http://www.moa.gov.et/documents/93087/1110213/Ethiopian_MRV_roadmap_v4+(1)%20(1).pdf)

²Such behavior is sometimes described as “myopic,” but this label does not seem appropriate given the constraints.

$$U = U(F, X) \quad (1)$$

Food is produced by households and is a function of environmental and non-environmental household labor inputs (E_E and E_{NE}), community forest quality (Q) and biomass from trees planted on farms (T) that substitute for community forest products (2).

$$F = F(E_E, E_{NE}, Q, T) \quad (2)$$

Environmental labor includes activities such as fuelwood collection, grazing and cutting of fodder for animals. These activities produce fuel for cooking and feed animals that produce meat and dung, which is the main fertilizer in much of the developing world, including Ethiopia. Non-environmental labor consists of agricultural production, as well as household activities like cooking, cleaning, etc. This function is given in (2).³ Community forest quality (Q) makes environmental labor more productive, i.e.: $\frac{F}{E_E} / Q > 0$

First derivatives are positive and second derivatives negative due to the existence of short-run-fixed factors such as tools, animals, etc. Community forests do not generate these diminishing returns, because households are “small” collectors of forest products. Labor cross-partial derivatives are assumed to be zero, which means marginal products of any E_i are not affected by any E_h . This approach is taken mainly to reduce dimensionality of the problem, but there is also little reason to believe cross-partials would be non-negative.

Equation 3 is the production function for on-farm tree biomass (T), which is a function of silvicultural and biomass harvesting labor (E_T). This approach focuses attention on labor, which is the main resource allocation issue. E_T includes tree planting, harvesting leaves and wood for fuel, fodder collection, chasing away grazing animals, and guarding against encroachment. The first derivative of $g(E_T)$ is positive and the second derivative negative due to the existence of fixed land. We do not include a land constraint, because households typically plant trees around the perimeters of their agricultural lands and do not devote plots or parts of plots to trees. Tree biomass may also, however, be purchased.

We treat tree biomass as a flow rather than a stock, because eucalyptus is the main tree planted on farms in highland Ethiopia (Bluffstone et al., 2015c). These trees are harvested or coppiced after just 10 years or even earlier, producing valuable products like fuel from oil-rich eucalyptus leaves and branches starting almost immediately.

$$T = g(E_T) \quad (3)$$

Production occurs subject to the time constraint in (4). All activities are included, as well as off-farm wage labor (E_w), which earns incomes used to purchase X and tree biomass (T). Leisure is omitted, because the labor-leisure tradeoff is not germane to our research questions. This margin of decision-making is also probably not relevant, because the literature suggests there exists substantial surplus labor in highland Ethiopia (Tadesse, 2010).

$$E = E_E + E_{NE} + E_T + E_w \quad (4)$$

Cash is earned from wages at rate w and spent on X and tree biomass. Households are price takers. Due to imperfect financial markets (Yesuf & Bluffstone, 2009) there is no borrowing or saving (5). We do not include a food market, because in the study area in 2005 average cash income was only \$86.45 and over 80% of households had total incomes of less than \$1.00 per person per day. Few households buy food except in times of extreme need and even fewer sell food.

$$wE_w = P_T T + P_X X \quad (5)$$

Effective CA by its nature utilizes collective action to restrict household deforesting behavior in the name of forest regeneration and boosting rents. Because households' most important variable factor is labor, similar to the method used by Linde-Rahr (2003) we model restrictions as inequality constraints on forest-related labor

³This parsimonious arrangement, where we particularly abstract from the details of food production, is done in the interest of focusing on our variables of interest.

⁴In settings where longer-lived species are planted, (1), (2) and (3) should be defined as present values.

supply.⁵ Following Heltberg (2001), while forest policies may be group determined, they are given to villagers when they make their day-to-day decisions.

We substitute (3) into (2) and (5). After solving (5) for X we substitute the result into (1) and do the same for (2). The resulting Lagrangian maximized is given in (6). In addition to the time constraint represented by constraint λ_1 , λ_2 and λ_3 represent possible policy-generated restrictions on labor supply. The Kuhn-Tucker conditions are that if the constraints bind, the Lagrange multipliers are positive rather than zero. $\lambda_2 > 0$ therefore says that households are unable to work in the wage labor market as much as they would like. $\lambda_3 > 0$ indicates restrictions on environmental labor supply imposed by CA.

$$L = U[\{F(E_G, E_{NE}, Q, T) + g(E_T)\}, (\frac{wE_w - P_T g(E_T)}{P_X})] + \lambda_1(E - E_E - E_{NE} - E_T - E_w) \tag{6}$$

$$+ \lambda_2(E_w^* - E_w) + \lambda_3(E_E^* - E_E)$$

Though it is easiest to think of these constraints as extraction time limits, Ethiopian CA constraints may be quantitative (e.g. allowable cutting of fuelwood, maximum days grazing, fees for extraction) or qualitative (e.g. households may take what they need but not more, face social sanctions for over-use, allocations must be fair). All these restrictions are mechanisms for imposing labor constraints.

$$a. \frac{\partial L}{\partial E_E} = \frac{\partial U}{\partial F} \frac{\partial F}{\partial E_E}(Q) - \lambda_1 - \lambda_3 = 0$$

$$b. \frac{\partial L}{\partial E_{NE}} = \frac{\partial U}{\partial F} \frac{\partial F}{\partial E_{NE}} - \lambda_1 = 0$$

$$c. \frac{\partial L}{\partial E_T} = \frac{\partial U}{\partial F} \frac{\partial F}{\partial g} \frac{\partial g}{\partial E_T}, - \frac{P_T}{P_X} \frac{\partial g}{\partial E_T} - \lambda_1 = 0$$

$$d. \frac{\partial L}{\partial E_w} = \frac{w}{P_X} - \lambda_2 = 0$$

(7)

To derive comparative static results, an explicit form of 7c must be assumed. In rural Ethiopia because markets are thin, food is virtually always produced on-farm and tends not to be purchased or sold. During normal circumstances of autarky there is therefore close to complete separability between X, the purchased good, and food, which is produced by subsistence agriculture. An additive function captures this separability and is therefore used in 7c. Setting 7a=7b=7c gives (8).

$$\frac{\partial U}{\partial F} \frac{\partial F}{\partial E_E}(Q) - \lambda_3 = \frac{\partial g}{\partial E_T} (\frac{\partial U}{\partial F} \frac{\partial F}{\partial g} - \frac{P_T}{P_X}) = \frac{\partial U}{\partial F} \frac{\partial F}{\partial E_{NE}} \tag{8}$$

Assuming $(\frac{\partial U}{\partial F} \frac{\partial F}{\partial g} - \frac{P_T}{P_X}) > 0$, which says that on the margin households find it in their interest to work on

their own tree biomass rather than spend time on wage labor and buy those products, we allow λ_3 to increase from zero (i.e. open access), which signifies CA constraints that do not bind, to increasingly positive values representing tightened community-imposed environmental labor constraints.⁶ To maintain an optimal labor allocation as λ_3 increases, $\partial g/\partial E_T$ and $\partial g/\partial E_{NE}$ must decline. Given diminishing returns to labor, this adjustment occurs if E_T and E_{NE} increase; labor therefore shifts from labor based on the use of common forests into

⁵This approach is taken merely for convenience. Formulating constraints on forest extractions would be equivalent.

⁶Of course if a household is somehow not subject to the CA regime, we expect to observe the household open access equilibrium.

non-environmental (including agricultural) and on-farm tree biomass labor. This result suggests that community CA forest labor constraints increase on-farm tree biomass labor, production and planting. Labor shifts are larger the tighter the constraint.

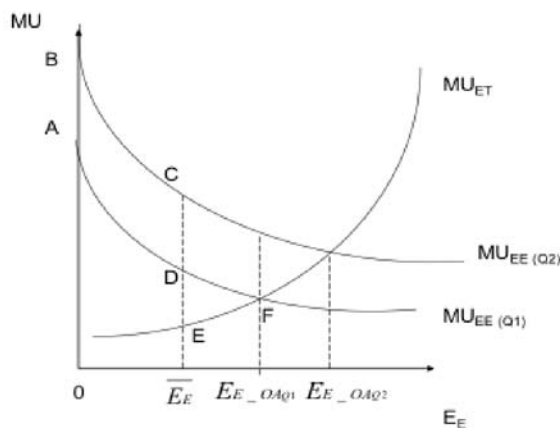


Figure 1. Environmental Labor

Figure 1 presents the situation focusing on E_E and Figure 2 provides the dual with regard to E_T . The horizontal

axis is environmental labor and the vertical axis is marginal utility. Because $\left(\frac{\partial U}{\partial F} \frac{\partial F}{\partial g} - \frac{P_T}{P_X}\right) > 0$,

households trade off environmental labor utilizing community forests against on-farm tree biomass labor and maximize utility as in (8).

We see that without CA restrictions households would choose E_{E_0A1} , which is the open access equilibrium. With binding CA restrictions households are constrained to environmental labor of E_E , which is consistent with a higher MU of environmental labor and lower MU of tree planting labor; with diminishing marginal returns to E_T , tree planting therefore increases due to CA restrictions. Households would like to move labor into forestry activities, but are not permitted to do so; they therefore lose rents of DEF

Over time effective CA allows forests to regenerate and causes community forest quality (Q) to increase. Marginal productivity of E_E increases and MU_{EE} shifts to $MU_{EE(Q2)}$. We see that the desired level of environmental labor increases to E_{E_0A2} . Allowing households to respond to increased Q would degrade forests over time, however, reducing Q and shifting $MU_{EE(Q2)}$ back to $MU_{EE(Q1)}$. E_{E_0A2} is therefore not a bioeconomic equilibrium and long-run labor supply would revert back to E_{E_0A1} .

How then do households benefit from CA? In the short-run households lose rents, but in the long run households earn rents in terms of more forest products per hour. As shown in Figure 1, even at \overline{E}_E households would benefit if $ABCD > DEF$. Households are therefore better off from CA not because they can reallocate labor to forest dependent activities, but because each unit of (constrained) community forest labor is more productive.

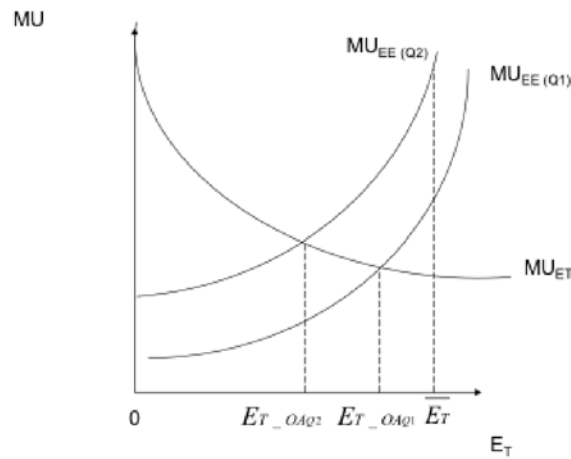


Figure 2. Tree Planting Labor

As shown in Figure 2, a key part of this welfare-improving adjustment comes from changes in E_T . Under open access to common forests, tree-planting labor would be $E_{T_{E-OAQ1}}$. Under CA E_E is restricted and labor shifts into on-farm trees and $E_T = E_{T_{\bar{E}_E}}$. As community forest quality increases, MU_{E_E} increases and households would like to reduce their on-farm tree effort even below $E_{T_{OA1}}$. This level of effort is not an equilibrium, however, because as E_T falls below $E_{T_{\bar{E}_E}}$, Q would decline and create incentives to increase E_T .

Our household analytical model therefore predicts that on-farm tree effort (and tree stocks) is unambiguously increasing in CA stringency. This specific hypothesis is tested in the remainder of the paper. The next section presents our data and identification strategy.

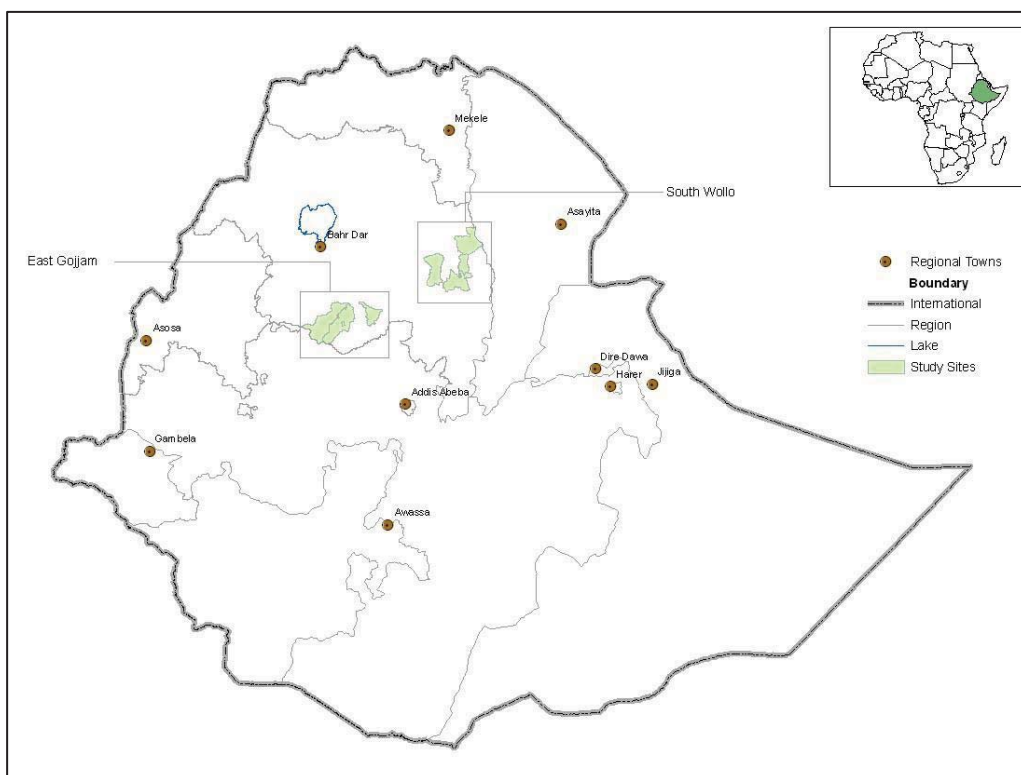


Figure 3. Study Sites in Ethiopia

5. Data and Identification Approach

The key prediction of our analytical model that households experiencing more stringent CA will plant more trees on their farms is tested using cross-section household and community level data collected in 2007. An in-person survey by trained enumerators was conducted in East Gojam and South Wollo zones of the Amhara Regional State. 1167 largely subsistence rural households that rely on mixed crop and livestock farming were surveyed in ten local areas called *kebeles* (often translated as peasant associations). *Kebeles* are chosen to ensure variation in terms of characteristics, such as agro-ecology and tree cover, with households randomly selected within *kebeles*. Figure 3 shows the location of the study sites. Household data are complemented by community information collected from village leaders. Model sample sizes are determined by the need for full-rank matrices.

The identification approach is to estimate econometric models explaining tree growing using a variety of methods to assure robust conclusions, allowing for important econometric issues, including that CA may be endogenous, sample selection may exist, dependent variables are truncated at zero and trees are count data. The three key identification concerns are endogeneity, sample selection and omitted variable bias. Our rich data set collected specifically to analyze such issues allows us to specify first stage selection equations and instrument for potentially endogenous variables when necessary. As discussed below, our context also helps obviate the possibility of serious endogeneity bias. Omitted variables due to unobservables affecting both tree planting and our measures of CA are always a possibility, though our approach to measure CA at the household level helps make such problems less likely.

Table 1. Descriptive Statistics on Tree Growing

Variable label	Mean	Std. Dev.	Min	Max
Grows trees	0.82	0.39	0	1
Grows eucalyptus trees	0.70	0.46	0	1
Number of trees grown	241.38	492.58	0	4011
Number of eucalyptus trees grown	196.95	459.84	0	3950

Table 1 shows that 82 percent of households grow trees and on average households have about 241 trees, with a large variation across households. On-farm trees are key household assets and as Bluffstone et al. (2015c) note, on-farm trees on average can make up over 50% of assets. This percentage is much higher than for livestock and represents a majority of assets, because households do not own the agricultural land they use. The government owns all land, though initiatives to certify use rights are gaining momentum (Mekonnen & Bluffstone, 2008). As shown in table 1, about 70% grow eucalyptus, which is the most important tree species, with an average of 197 eucalyptus trees per household.⁷

We measure CF collective action using data on CA attributes collected from household heads averaged across members of the same *kebele*, because all those within a *kebele* are subject to the same CA.⁸ We go directly to household heads (e.g. rather than village leaders), because in developing countries on-the-ground realities often correspond poorly with policies, if any exist. This could be for a number of reasons, including leader mis-assessments, attempts to portray local CA in positive lights for enumerators or simple difficulties characterizing CA details.

Our questionnaire focuses on a variety of CA attributes that are standard in the economics of collective action literature, applied to the CF context. These attributes include fairness, clarity of access, monitoring quality and appropriate formal and informal sanctions, which are subjective and subtle aspects that households are likely to perceive much more accurately than leaders.

As discussed in detail in Ostrom (1990:2010), and Ostrom & Gardner (1993) community-based social systems – like those related to CFs – are typically complicated, with often very detailed, if implicit, rules and norms. We know from this economic literature that group membership clarity, benefit sharing rules, fairness, public participation and appropriate sanctions are very important for successful CA (Ostrom, 1990; 2000; 2010; Shyamsundar, 2008; Bluffstone et al, 2008; Agrawal, 2001; Agrawal, Chhatre, & Hardin, 2008). We capture these collective action attributes using the 23 statements and questions presented in Table 2.

⁷Surveys in 2000, 2002, and 2005 of the same households showed that eucalyptus trees were the most important trees in terms of number of households growing and trees grown (see Mekonnen, 2009).

⁸Results using unaveraged respondent values are available from the authors and are very similar to the *kebele* averaged results.

Table 2. CA Survey Questions Definitions and Descriptive Statistics of CA Indices and Associated Survey Questions. All indices, $\in [0,1]$ as per (9)

FOREST ACCESS INDEX $\bar{X} = 0.33, \sigma = 0.21$ * Does an identifiable system for fuelwood collection exist? ¹ * Does an identifiable system for grazing and fodder collection exist? ¹ * Is the system that determines who is allowed to gather forest products clear and understandable? ² * Do you pay for the right to collect fuelwood? ¹ * Do you pay for the right to graze or collect fodder? ¹	FORMAL PENALTIES INDEX $\bar{X} = 0.52, \sigma = 0.33$ * If you took more fuelwood from the forest than you were allowed to take would you be penalized? ² * If you took more fodder from the forest than you were allowed to take would you be penalized? ² * Could you lose some or all of your rights to collect forest products if you were caught taking more than your allotment? ²
FAIRNESS INDEX $\bar{X} = 0.43, \sigma = 0.30$ * Do you feel you and others can take the amount of forest products that is needed, but not more? ² * Are you get enough forest products to meet your needs, but not more? ²	MONITORING INDEX $\bar{X} = 0.53, \sigma = 0.34$ * Do village authorities carefully monitor who takes what products? ² * Do villagers generally watch who takes forest products? ² * Are you either formally or informally involved in monitoring community forest lands? ²
PARTICIPATION & DEMOCRACY INDEX $\bar{X} = 0.49, \sigma = 0.29$ * Do you have influence on policies for deciding how much forest products people can take? ² * Do you help decide who are the managers of the forest? ² * Do you expect that in the future you will have the opportunity to manage the community forest? ² Are the managers democratically chosen? ²	LABOR INPUT INDEX $\bar{X} = 0.02, \sigma = 0.05$ * Number of days planting community forests ³ * Number of days watering community forests ³ * Number of days thinning community forests ³ * Number of days fertilizing community forests ³
SOCIAL SANCTION INDEX $\bar{X} = 0.58, \sigma = 0.35$ * Would other villagers be very unhappy with you if they found that you had taken more than your allotment? ² * Would you be embarrassed or feel bad if you took more than your allotment of forest products? ²	QUOTAS INDEX $\bar{X} = 0.21, \sigma = 0.24$ * Are you allocated a fixed allotment of fuelwood per year? ¹ * Are you allocated a fixed allotment of fodder and grazing rights per year? ¹

Survey Question Coding:

1 = Yes/No Binomial Variable

2 = Likert Scale 5=definitely, 1=definitely not

3 = Number of Days During Past Month (0, 1, 2, 3, >3 days)

We choose these particular questions and statements based on the well-established criteria for CA institutions (see immediately previously cited literature) and to reflect the nature and tradeoffs associated with forest CA in Ethiopia. The questions were pre-tested by Ethiopian experts and found to be highly relevant for respondents before implementation in the field by trained and experienced enumerators. These attributes are multi-leveled rather than dichotomous, because forest sector CA attributes in Ethiopia and much of the lower-income developing world runs from excellent to terrible and everywhere in between, and has evolved locally in response to circumstances (Bluffstone et al., 2015b; Agrawal et al., 2008; Jodha, 2008). The CA interpreted and reflected in respondent perceptions listed in Table 2 evolved over time based on community circumstances and histories rather than explicit policy.

The questions/statements evaluated by respondents cover the 7 CA design principles/attributes extensively cited in the literature. The first focuses on *access* to forest resources (i.e. who can be a CF group member) and particularly on whether access rules are clear and fair, which was particularly identified by Ostrom (1990) and elsewhere in the literature. The second set focuses on *fairness* of forest product distribution. We also ask respondents to evaluate the degree of forest *monitoring* by respondents and their assessment of other villagers' monitoring contributions. We do not include government monitoring, because monitoring is only done by villagers; formal forest institutions are very weak. Four questions ask about *democratic processes and participation*, particularly regarding management of community forests. Respondents assess *formal sanctions* and *informal sanctions* for those who transgress harvest limits and quotas. The final groups focus on obligations of households, including *limits* on extraction of fuelwood and fodder/grazing and *labor inputs* for forest management.

We emphasize that there is no community forestry "program" in Ethiopia that has the clarity and legal structure that one would find, for example, in Nepal. In Ethiopia the Forest Proclamation of 2007 made it possible for individuals and communities to control forests, but the form of that control and the nature of the CA are

multi-dimensional, informal, probably continuous in those dimensions (i.e. from terrible to excellent and everything in between) and often idiosyncratic to each location.

This context is important, because we believe it supports – though perhaps does not guarantee - our attempt to identify the effects of CA on private tree planting. It would not be appropriate, for example, to consider such measures as anything resembling policy “treatments.” In Ethiopia there is no sense in which respondents’ CA perceptions would reflect communities that “opted” or selected into CA or are somehow a function of forest quality. It is also very unlikely that respondent CA perceptions and private on-farm tree stocks are simultaneously affected by a common exogenous variable that would confound our results; the Ethiopian CA circumstances, which generally evolved over time, and our choice of CA measure help to obviate such important identification problems.

Responses to many questions are highly collinear, making it impossible to use all 23 responses in regressions. We therefore aggregate response information into higher-level indices, which address multicollinearity and help us understand which responses are closely related to each other. Our first aggregation method uses (9) to aggregate and weight questionnaire responses. This indexing method is the same one used to compute the human development index and is $\in [0,1]$. A_{ij} is the value of index component i for household j and Min_i and Max_i are the minimum and maximum for component i .

$$Index_{ij} = \sum_{i=1}^k (A_{ij} - Min_i) / (Max_i - Min_i) \quad (9)$$

To give a flavor for the stringency of the various CA attributes, Table 2 includes eight indices created using (9), which in general indicate rather loose management. Formal penalties, monitoring and social sanctions have the largest average index values at greater than 0.50. Average *kebele* perceptions of fairness and participation/democracy are similar at over 0.40, but in general forest access details are not well defined, few households have fixed quotas for fuelwood and fodder and almost no households provide regular labor inputs as part of CA.

Taking the average over the 8 *kebele*-level indices presented gives us an equally weighted overall CA index. The mean of this index is 0.39 with standard deviation of 0.20, which suggests rather weak management. This value is similar to that estimated by Bluffstone et al (2008) for the Bolivian Andes (mean overall CA index of 0.31 and standard deviation of 0.15), suggesting possible commonalities across low-income countries.

The second aggregation method uses factor analysis to create linear combinations of CA variables that reconstruct original variables. Resulting factors are orthogonal, which eliminates issues of multicollinearity, and the data dictate which survey responses should be combined and what weights are used. This aggregation method is standard when *a priori* weights are unknown and was used by Chhatre & Agrawal (2009) to aggregate heterogeneous subsistence product extractions into a “forest products” index.

Factor analysis also helps us understand what Ethiopian respondents see as the key components of CA. The equally weighted indices in Table 2 suppose that all 23 questions are equivalent when in fact some may be considered irrelevant by respondents. Factor analysis applies the appropriate weights to responses and creates factors made up of similar responses.

Table A1 in the online appendix presents the factor loadings for the three factors with eigenvalues greater than 1.0, which is a standard criterion for retention (Kabubo-Mariara & Linderhof, 2011). The first factor explains 71% of the total variation, factor two 14% and factor three 10% for a total of 95%. These three orthogonal factors therefore explain virtually all variation in the CA survey responses. Additional details on the factor analysis results are presented in online appendix Table A1.

Our independent variables of interest are the equally-weighted CA index and the three CA factors from the factor analysis. Though we have little reason to suppose that CA is endogenous to the tree planting decision, our observational data do not allow us to explicitly rule it out. We do not assume endogeneity, but instead test using Wu-Hausman F, Durbin X^2 and GMM $C X^2$ tests. When endogeneity may be a problem, we use the fact that CA is mainly determined at the community level, but private on-farm tree planting is strictly a household level

⁹As tree leaves may be an important source of fodder for animals, we test for exogeneity of animal stocks to the tree planting decision. In no models, however, can we reject exogeneity. Animals are therefore treated as exogenous.

decision informed by external circumstances. Indeed, while community variables are likely to be very important for community forest CA, there is little reason to believe they directly affect tree planting on household farms.

We therefore have the potential to identify a class of variables – community level variables – that affect CA, but not on-farm tree planting. If such variables are strongly associated with the potentially endogenous variable (e.g. CA), they can serve as instruments. The specific community variables used as CA instruments in IV models are highly informed by the CA literature and focus on three variables. The first is population density, because more density facilitates interactions and CA, but does not affect tree planting on private plots. The second and third variables come from our survey of community leaders. The first of these is whether forests are actually managed at the local (*Kebele*) level and the second is whether the local forest is identified as a community forest rather than a “government” forest. These variables are valid instruments for CA, because they represent local governance and local ownership, which are two critical aspects of local autonomy that have been identified in the CA literature as critical for CA. To adjust for unobserved local community features that affect local norms and customs, we also include district (i.e. *woreda*) fixed effects.

Our fourth and final excluded exogenous variable takes account that CA is measured at the household level. This variable is the number of years the respondent has lived in the village. It accounts for temporally changing local knowledge and perceptions of CA. Though we recognize that this variable could in principle be correlated with private trees planted, we would argue that we have variables such as respondent age, land area, wealth, etc. that are correlated with stability (i.e. years in village), but much more directly affect private investments in trees.

The IV models are all over-identified. We test over-identification restrictions using Sargan and Basman tests for 2SLS models and Hansen’s J X^2 method for GMM models and confirm all models pass these tests. Weak instruments are tested using F and minimum eigenvalue tests and as shown by the test statistics, it is found that the set of instruments are strong and should not be considered weak.

As was already discussed, though 82% of households plant trees, tree planting is not universal. If this decision process involves sample selection, IV models would lead to bias (Heckman, 1979; Linde-Rahr, 2003). We test for sample selection and find evidence at the 5% significance level. We therefore also report Heckman results, but because results are similar to those from models that do not adjust for sample selection we present them in online appendix Table A2. Probit selection equations are estimated using all exogenous covariates.

Without sample selection the standard IV method when data are left-censored is to use IV Tobit, but this is correct only if the process for deciding whether to plant trees is the same as for choosing the number of trees planted. We test this restriction by comparing the IV Tobit with the model of Cragg (1971), which utilizes a Probit for the first stage followed by a truncated regression model. Using likelihood ratio tests, we cannot reject the Tobit as too restrictive. Because the IV Tobit results are virtually identical to those from all other models, however, we do not present the results. IV Tobit results are available from the authors.

Trees planted on household farms are count data variables. We therefore estimate the models using Poisson regression and find based on goodness-of-fit X^2 tests ($\text{Prob} > X^2 = 0.00$ for all models) that the negative binomial is more appropriate. We therefore present negative binomial results.

6. Results

Table A3 in the online appendix presents descriptive statistics for exogenous covariates and excluded exogenous variables along with expected signs and reasons for including. Conditioning variables reflect that households are planting trees on their own farms and the extensive margin in the study area is largely closed. They also reflect the thin, imperfect or non-existent markets in the study area. Variables representing wealth, labor endowments, human capital, proximity to towns and roads, land tenure and information are included as is appropriate for such settings and as is found in a variety of non-separable household models with highly imperfect markets (Jacoby, 1993). Whereas in areas with highly developed markets prices, interest rates, etc. may be relevant, in rural Ethiopia households must rely mainly on their own endowments.

The excluded instruments are mainly community-level variables. These are used to identify the first stage model of the equally-weighted CA index and the three factors when endogeneity tests suggest they should be treated as endogenous variables. As already noted, the instruments are chosen, because they are correlated with CA indices, uncorrelated with tree planting and in accord with the rich literature on CA formation (Ostrom, 1990; Agrawal, 2001) are believed to affect village norms. Mean and median Spearman correlations between excluded exogenous variables and the number of private trees on respondents’ own farms are 0.06 and 0.08, confirming virtually complete lack of correlation.

About 20% of households use self-identified improved stoves, with the rest relying on three-stone fires.

Households have an average of 1.15 hectares of land, 3.84 tropical livestock units of animals and family size of 5.5. On average households grow a large number of trees on relatively limited land—land that is also used for producing crops. About 17% of household heads in the sample are female and on average household heads are much less educated (0.81 years) than the most educated household members (5.14 years). This difference reflects major education initiatives since 1995.

Table 3. Dependent Variable is Number of Private Trees on Own Land. IV GMM Estimates

	Equally Weighted CA Index Model	Factor Analysis CA Index Model
Endogenous Variables		
Equally Weighted CA Index	875.7*** (251.0)	
CA Factor 1 (All Questions Included. Roughly Equal Weights)		149.3* (78.37)
CA Factor 2		534.5 (416.6)
CA Factor 3		183.4 (122.0)
Exogenous Covariates		
Wealth Endowments – with imperfect credit markets, own wealth finances trees		
Land size in hectares (LANDSIZ)	31.01 (28.59)	-16.25 (49.79)
Corrugated roof (1 if yes) (CRRGTHS)	15.05 (31.09)	9.639 (41.13)
Livestock in TLU (tropical livestock units) (LIVESTOK)	37.79*** (9.850)	38.44*** (10.53)
Gave loan in last year (1 if yes) (GIVENLOAN)	13.79 (66.62)	27.76 (70.86)
Labor Endowments – labor complements trees, but investing in on-farm trees saves labor		
Fraction of boys (6–14 years) (FRACTIONBOYS)	229.1* (137.1)	278.7* (151.6)
Fraction of girls (6–14 years) (FRACTIONGIRLS)	441.0*** (170.8)	429.7** (178.6)
Fraction of female adults (>14 years) (FRACTIONFEMAD)	211.9 (135.5)	337.6* (191.4)
Fraction of male adults (>14 years) (FRACTIONMALAD)	88.49 (141.1)	267.8 (230.1)
Family size (FAMSIZE)	1.726 (13.55)	20.61 (19.37)
Human Capital – education and experience may complement trees		
Max. years of education of household members (MAXEDUCHH)	2.663 (6.144)	-0.554 (6.387)
Gender of head (1 if male) (HEADSEX)	16.05 (42.10)	6.520 (44.90)
Age of head in years (HEADAGE)	0.996 (1.098)	1.056 (1.145)
Years of education of head (HEADEDUC)	9.609 (8.423)	12.22 (8.554)
Market Access – trees may be planted for sale and therefore proximity may increase planting		
Walking distance to town in minutes (DISTOWN)	-0.444 (0.337)	1.025 (1.122)
Walking distance to road in minutes (DISTROAD)	0.484 (0.503)	-1.536 (1.558)
Land Tenure – trees are long-term investments and are therefore promoted by tenure security		
Believes the land belongs to household (OWNSLAND)	26.25 (33.05)	34.87 (40.48)
Expects to lose land in next 5 years (1 if yes) (EXPLNSZ5YRS)	50.93 (41.61)	19.64 (48.57)
Information – tree planting often requires silvicultural and market information to be successful		
TRUSTGOT	23.64 (34.48)	-0.189 (37.72)
NUMDAVISIT	23.73 (16.17)	35.20** (17.94)
FARMERTO FARMER	34.56 (41.09)	55.13 (42.95)
Technological Substitute – improved stove reduces wood consumption and substitutes for trees on-farm		
IMPROVEDSTOVE	45.83 (45.74)	44.15 (46.10)
CONSTANT	-627.6*** (183.8)	-441.6*** (197.1)
Observations	1,080	1,080
Goodness of Fit Tests		
R-squared	0.106	0.106
Wald X^2 (22)	93.55 (p = 0.000)***	97.71 (p = 0.000)***
Exogeneity Tests		
GMM C Statistic X^2 (1)	13.776 (p = 0.000)***	16.5007 (p = 0.0009)***
Overidentifying Restriction Tests		
Hansen's $J X^2$ (4)	3.929 (p = 0.416)	0.994824 (p = 0.6081)
Weak Instrument Tests		
F Test	F(5, 1053) = 165.86 (p = 0.000)***	-
Shea's Partial R^2 Factor 1	-	0.26
Shea's Partial R^2 Factor 2	-	0.03
Shea's Partial R^2 Factor 3	-	0.37

Land is owned by the government and the possibility of land redistribution exists. Indeed, land redistribution occurred in the study area in 1997. Some farmers have been issued certificates confirming rights to use land and we find that 44% of households believe land belongs to them. On the other hand, about 19% expect to lose land due to land redistributions within 5 years. We also find about 17% plant trees to increase land tenure security.

Social capital has been found to be an important feature of investments (e.g. see Nyangena, 2011; Kabubo-Mariara & Linderhof, 2011). As Nepal (2007) notes, social capital has a number of implications for tree

planting and in our study area we believe the primary effect is through information sharing. Whether households report they trust people in their villages is used to capture social capital and in our sample about 67% of respondents say they trust other villagers. Also related to information is agricultural extension and farmer-to-farmer extension. While on average households are visited by an extension agent once per year, about 36% also benefit from farmer-to-farmer extension.

We estimate a baseline OLS model of on-farm tree stocks. Only in the factor analysis model is a CA variable significant (factor 2). In that model factor 2 is positively associated with trees planted. Significant variables across models include endowments like fraction of boys and girls and livestock holdings, with an additional TLU of livestock (e.g. one cow) increasing on-farm trees by about 41 trees. We do not present these results, because when we test for exogeneity of CA variables we find (as presented in table 6) we can reject exogeneity of CA indices at much better than the 1% significance level. Though communities in no way “opt in” to CA, tests suggest reason to believe that OLS estimates are biased. Based on these test results we present our IV model results.

Table 4. Dependent Variable Number of Private Trees on Own Land. Negative Binomial Model

Endogenous Variables (Predicted Values Used)	Equally Weighted CA Index Model	Factor Analysis CA Index Model
EQUALLY WEIGHTED CA INDEX	4.235** (1.992)	-
CA Factor 1 (All Questions Included. Roughly Equal Weights)	-	0.838 (0.623)
CA Factor 2	-	1.923 (2.819)
CA Factor 3	-	0.391 (1.273)
Exogenous Covariates		
LANDSIZ	0.227** (0.0951)	0.00133 (0.235)
CRRGTHS	0.349** (0.171)	0.285* (0.166)
LIVESTOK	0.0678** (0.0286)	0.0682 (0.0435)
GIVENLOAN	-0.459** (0.207)	-0.207 (0.188)
FRACTIONBOYS	1.583** (0.750)	1.822** (0.827)
FRACTIONGIRLS	2.280*** (0.727)	2.608*** (0.763)
FRACTIONFEMAD	1.048 (0.680)	1.523 (0.967)
FRACTIONMALAD	0.704 (0.630)	1.502 (1.102)
FAMSIZE	-0.0300 (0.0333)	0.0194 (0.0515)
MAXEDUCHH	0.0489*** (0.0149)	0.0441** (0.0201)
HEADSEX	0.152 (0.199)	0.303 (0.256)
HEADAGE	0.00910* (0.00519)	0.00611 (0.00579)
HEADEDUC	0.0269 (0.0315)	0.0262 (0.0312)
DISTTOWN	-0.000886 (0.00214)	0.00300 (0.00695)
DISTROAD	0.00146 (0.00261)	-0.00463 (0.00883)
OWNSLAND	-0.153 (0.229)	0.0773 (0.203)
EXPLNSZ5YRS	-0.0880 (0.151)	0.111 (0.146)
TRUSTGOT	0.000385 (0.150)	0.0175 (0.200)
NUMDAVISIT	0.102 (0.0701)	0.139 (0.0967)
FARMERTO FARMER	0.174 (0.124)	0.237* (0.139)
IMPROVEDSTOVE	0.247* (0.126)	0.122 (0.147)
CONSTANT	0.986 (0.622)	2.007*** (0.691)
Wald X^2	X^2 (22) = 1123 Prob > X^2 = 0.00	X^2 (24) = 1028 Prob > X^2 = 0.00
Goodness of Fit X^2	X^2 (1057) = 52055 Prob > X^2 = 0.00	X^2 (1059) = 519032 Prob > X^2 = 0.00
Observations	1,080	1,080

Robust bootstrapped (1000 Repetition) Standard Errors Adjusted for *Kebele* Clustering, because households in the same villages are likely to have common unobservable characteristics and circumstances. *Kebele* is translated as “peasant association” and includes several village settlements. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table A4 in the online appendix presents first-stage CA models. A number of variables are significant. Whether a household gave a loan in the last year, whether respondents believe they own their land, have improved stoves and trust in other villagers are positively correlated with the CA index and factor 1. These results suggest those rich enough to make loans and those who believe they own their land perceive stricter CA. Those who worry they would lose land in the next five years, have more extension visits and corrugated roofs perceive less stringent CA. Excluded exogenous variables, including tenure in village and *kebele* level forest management, which only act on private tree planting through CA, are also positively associated with CA. Robust standard

errors are adjusted for *kebele* clustering and three models have R^2 above 0.5.

Unless otherwise noted, robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Clustering is at the *kebele* level, because households in the same villages are likely to have common unobservable characteristics and circumstances. *Kebele* is often translated as “peasant association” and includes several village settlements

Table 3 presents IV results estimated using GMM and we see that the CA index and factor 1 are positively correlated with tree planting. 2SLS and GMM results are very similar for the model with the overall CA index, but in the 2SLS factor analysis models, as was the case for the OLS, only the factor 2 coefficient is positive and significant. Relationships between covariates and tree planting are limited, though in two IV models farmer-to-farmer extension is positively correlated with tree planting and significant at the 1% level.

Table 4 accounts for the count data nature of the dependent variable by estimating the model using a negative binomial regression after testing for and rejecting the Poisson specification (Prob. $> \chi^2 = 0.00$). We see little difference with previous CA results in the model with the equally weighted CA index positively and significantly correlated with tree planting, but no CA factors correlated with on-farm tree planting. Covariate results are in many cases similar to those of previous models, but more variables are significant than in the continuous models. In particular, those who gave loans had fewer trees, while more educated households with older household heads, more land and livestock, improved stoves and corrugated roofs plant more trees. These findings suggest that wealth and endowments may be important.

7. Conclusion

On-farm trees are a critical source of household wealth in highland Ethiopia and in East Africa a key supplier of tree products like fuelwood. The key research question this paper attempts to answer is whether more effective CA affects on-farm tree planting behavior. We believe this question is of interest not only for understanding whether more private trees can be expected as forest CA improves in the low-income developing world, but also as part of the more general issue of whether more sophisticated social coordination leads to important private outcomes. Relatively little research has focused on this general question in our particular context, though low-income countries across the world have turned to CA to bolster declining forest stocks.

Our theoretical model suggests that if we observe more stringent CA, which has at its core controlling open access through restrictions on harvests, we should also observe more on-farm tree planting. We test this hypothesis using data from the Ethiopian highlands and find that results support the theoretical model and suggest that decisions about numbers of trees to grow are very much influenced by the nature of community forest management. Indeed, in all models the equally weighted CA index is positively and significantly correlated with numbers of trees grown. For the factor analysis, the same was true for factor 1 in all but one model.

Our results are suggestive that better community forest CA may have profound effects on household behaviors. Tree planting on-farm is one example and our findings generally support those of Nepal et al. (2007) and Bluffstone et al. (2008) that CA causes households to invest in on-farm trees. In all models the equally weighted CA index is estimated to promote tree planting and in all but the negative binomial model factor 1 is estimated to increase on-farm tree stocks.

This finding has potentially important implications for climate change initiatives such as REDD+, because it suggests that a possible carbon benefit of more stringent CA could come from on-farm trees. Little is known about such benefits, however. As the relationship between CA and on-farm tree planting is clarified, it is useful to evaluate whether relationships also exist with other technologies that could substitute for forests. Such measures may include commercial fuels and improved agricultural inputs. Of perhaps critical importance is to evaluate under what circumstances constraints imposed by reducing open access increase rural incomes. Evaluating policy instruments that increase rents and assure gains from better management reach all parts of households and societies is also critical.

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Supplementary Information

Table A1. Results of Factor Analysis (Factor Loadings > 0.13 are Highlighted)

Variables Taken Directly from Household Survey	Factor1 (Eigenvalue 7.23; Prop. Expl. 0.71)	Factor2 (Eigenvalue 1.42; Prop. Expl. 0.14)	Factor3 (Eigenvalue 1.04; Prop. Expl. 0.10)
Identifiable system for fuelwood collection exists	0.628	0.203	-0.077
Identifiable system for grazing allocation exists	0.598	0.059	0.058
Clear and understandable system for forest access exists	0.574	0.465	0.077
Pays for the right to collect fuelwood	0.215	-0.056	0.258
Pays for the right to graze	0.198	-0.049	0.305
Access rules are fair	0.536	0.473	0.054
Can take what is needed, but not more	0.443	0.212	-0.005
Has influence over forest policies	0.413	0.232	-0.074
Helps decide on forest management	0.634	0.141	-0.229
Forest managers are democratically chosen	0.723	0.133	-0.243
Fuelwood collection limits exist	0.484	0.229	0.392
Grazing and fodder collection limits exist	0.366	0.054	0.415
Fixed quotas of fuelwood given	0.347	0.130	0.319
Fixed quotas of grazing and fodder collection given	0.430	-0.006	0.297
Forest managers monitor forest	0.715	0.008	-0.278
Villagers monitor forest	0.737	0.007	-0.268
Respondent is involved with monitoring forest	0.645	0.044	-0.223
Would be punished for taking too much fuelwood	0.712	-0.294	-0.061
Would be punished for grazing too much or taking too much fodder	0.647	-0.372	0.141
Could lose some or all forest rights if caught over-harvesting	0.603	-0.372	0.076
Other villagers unhappy if respondent took too much forest products	0.737	-0.375	0.050
Respondent would feel embarrassed if caught taking too much forest products	0.647	-0.460	-0.014
Number of days spent on forest planting and management during past month	0.305	-0.005	0.053

What, therefore, is the meaning of CA in the Ethiopian highlands? Table A1 suggests that respondents view CA as a package made up of diverse components. We see that factor 1, which is most important, loads all variables roughly equally. Factor 2 includes mainly variables that Bluffstone et al (2008) call “institutional characteristics” (e.g. clarity of access, fairness, public participation, democracy) and factor 3 is what they call “management tools,” including clear quotas, penalties and payments for collections.

Factor 1 is by far the most important factor and therefore should be a key focus. All variables have loadings that round up to at least 0.2. Fourteen of 23 variables have loadings greater than 0.5, which suggests that in the Ethiopian highlands “CA” is very broad-based and multi-faceted. Only payments to collect and labor inputs are less relevant aspects of CA.

Table A2. Dependent Variable Number of Private Trees on Own Land. Heckman Selection Model

Endogenous Variables (Predicted Values Used)	Equally Weighted CA Index Model	Factor Analysis CA Index Model
EQUALLY WEIGHTED CA INDEX	1,179*** (339.6)	
CA Factor 1 (All Questions Included. Roughly Equal Weights)	-	184.2* (109.0)
CA Factor 2	-	396.2 (640.5)
CA Factor 3	-	56.60 (143.1)
Exogenous Covariates		
OWNSLAND	32.91 (41.13)	14.14 (68.69)
LANDSIZ	26.38 (34.84)	12.50 (81.65)
CRRGTHS	43.10 (42.10)	-68.11 (86.18)
LIVESTOK	38.18*** (12.22)	64.39*** (23.20)
GIVENLOAN	-31.05 (79.45)	113.7 (125.7)
FRACTIONBOYS	291.0 (188.1)	704.5** (326.1)
FRACTIONGIRLS	532.5** (240.9)	654.8* (372.0)
FRACTIONFEMAD	326.2* (185.2)	399.1 (368.3)
FRACTIONMALAD	173.1 (203.0)	297.1 (438.9)
FAMSIZE	12.80 (18.89)	45.86 (33.45)
MAXEDUCHH	-1.754 (7.758)	5.324 (11.37)
HEADSEX	16.52 (57.63)	-48.92 (105.5)
HEADAGE	0.954 (1.616)	5.557 (3.786)
HEADEDUC	15.72 (11.11)	16.14 (15.17)
DISTTOWN	-0.657 (0.417)	1.313 (1.769)
DISTROAD	0.529 (0.631)	-1.927 (2.359)
EXPLNSZ5YRS	35.16 (54.66)	30.49 (82.47)
TRUSTGOT	8.500 (41.01)	132.7 (90.29)
NUMDAVISIT	26.90 (19.77)	33.16 (29.00)
FARMERTO Farmer	37.70 (52.18)	127.2* (75.46)
IMPROVEDSTOVE	32.83 (53.89)	70.06 (72.27)
MILLS LAMBDA	-4.472e+10** (2.256e+10)	1,282** (579.4)
CONSTANT	-812.1*** (248.5)	-1,481** (590.7)
Observations	1,080	828
Wald X^2	$X^2 (22) = 78.27$ Prob > $X^2 = 0.000$	$X^2 (24) = 45.56$ Prob > $X^2 = 0.005$

Robust, Bootstrapped (1000 Repetition) Standard Errors Adjusted for *Kebele* Clustering, because households in the same villages are likely to have common unobservable characteristics and circumstances. *Kebele* is often translated as “peasant association” and includes several village settlements. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The selection equation is a probit model of whether any tree planting occurred using all exogenous variables as explanatory variables. We find results that are highly consistent with previous findings, with the overall CA index and factor 1 once again positively and significantly related to tree planting. Covariate results are also similar to those of other models.

Table A3. Descriptive Statistics for Covariates, Expected Sign and Reason for Including in Models of Tree-Growing

Variable label	Mean	Std. Dev.	Min	Max	Expected Sign and Reason for Including
EXOGENOUS COVARIATES					
Wealth Endowments – with imperfect credit markets, own wealth finances trees					
Land size in hectares (LANDSIZ)	1.15	1.02	0	6.02	(+) Wealth indicator; complements trees
Corrugated roof (1 if yes) (CRRGTHS)	0.77	0.42	0	1	(+) Wealth indicator
Livestock in TLU (tropical livestock units) (LIVESTOK)	3.84	3.25	0	31.19	(+) Wealth effect; animals fed by trees
Gave loan in last year (1 if yes) (GIVENLOAN)	0.10	0.29	0	1	(+) Indicator of liquidity
Labor Endowments – labor complements trees, but investing in on-farm trees saves labor					
Family size (FAMSIZE)	5.48	2.18	1	15	(+/-) Labor complement or substitute
Fraction of boys (6–14 years) (FRACTIONBOYS)	0.15	0.15	0	0.67	(+) Higher dependency incents labor saving
Fraction of girls (6–14 years) (FRACTIONGIRLS)	0.14	0.15	0	0.75	(+) Higher dependency incents labor saving
Fraction of female adults (>14 years) (FRACTIONFEMAD)	0.32	0.19	0	1	(+/-) Labor complement or substitute
Fraction of male adults (>14 years) (FRACTIONMALAD)	0.31	0.19	0	1	(+/-) Labor complement or substitute
Human Capital – education and experience may complement trees					
Max. years of education of household members (MAXEDUCHH)	5.14	3.71	0	16	(+) Education
Gender of head (1 if male) (HEADSEX)	0.83	0.38	0	1	(+/-)
Age of head in years (HEADAGE)	51.05	14.87	20	97	(+) Experience
Years of education of head (HEADEDUC)	0.81	2.21	0	12	(+) Education
Market Access – trees may be planted for sale and therefore proximity may increase planting					
Walking distance to town in minutes (DISTTOWN)	82.76	58.32	0	280	(-) Market access
Walking distance to road in minutes (DISTROAD)	38.42	37.25	0	180	(-) Transport costs
Land Tenure – trees are long-term investments and are therefore promoted by tenure security					
Believes the land belongs to household (OWNS LAND)	0.44	0.50	0	1	(+)
Expects to lose land in next 5 years (1 if yes) (EXPLNS Z5YRS)	0.19	0.39	0	1	(-)
Information – tree planting often requires silvicultural and market information to be successful					
Trusts people in village (TRUSTGOT)	0.67	0.47	0	1	(+) Trust encourages information search
Number of visits by extension agent (NUMDAVISIT)	0.94	1.32	0	4	(+) Extension agents offer silvicultural info.
Farmer to farmer extension (1 if yes) (FARMERTO FARMER)	0.36	0.48	0	1	(+)
Technological Substitute – improved stove reduces wood consumption and substitutes for trees on-farm					
Uses improved stove (1 if yes) (IMPROVEDSTOVE)	0.20	0.40	0	1	(-)
EXCLUDED EXOGENOUS VARIABLES – EXPECTED RELATIONSHIP IS WITH CA VARIABLES					
Village-Level Survey					
Woreda* numerical indicator (WOREDA)	N/A				? Location fixed effects.
Village Population density (POPENSITY)	2.79	2.21	.55	8.78	(+) Higher population density encourages social coordination
<i>Forests are managed within Kebele</i> (KEBELEMG)	.513	.500	0	1	(+) Lower-level administration of forests reduces transactions costs and increases autonomy.
Community forestry dummy (COMMUNITYFOREST)	0.79	0.41	0	1	(+) Forest perceived as community forest imply ownership autonomy making easier to coordinate
Household-Level Survey					
Years Respondent Has Lived in Village	20.66	12.26	0	78	(+) More years in village improves knowledge of norms, increases influence and increases perception of coordination

* Woreda is an administrative district that is roughly comparable to a county.

Table A4. First Stage OLS Regression

Dependent Variables →	Equally Weighted CA Index	CA Factor 1	CA Factor 2	CA Factor 3
Exogenous Covariates				
OWNSLAND	0.0219** (0.00718)	0.116*** (0.0343)	-0.0460 (0.0339)	0.0660** (0.0228)
LANDSIZ	-0.0157 (0.00987)	-0.0910 (0.0504)	0.0957*** (0.0200)	-0.0386 (0.0259)
CRRGTHS	-0.0226** (0.00768)	-0.120*** (0.0367)	0.0385 (0.0462)	-0.0971** (0.0388)
LIVESTOK	0.000773 (0.00126)	0.00204 (0.00565)	0.0121 (0.00749)	-0.00741** (0.00281)
GIVENLOAN	0.0335*** (0.00778)	0.175*** (0.0430)	-0.0323 (0.0409)	0.0183 (0.0398)
FRACTIONBOYS	-0.0181* (0.00913)	-0.0799 (0.0445)	-0.0950 (0.0711)	0.0219 (0.0333)
FRACTIONGIRLS	-0.0243** (0.00971)	-0.114** (0.0492)	-0.0635 (0.0721)	0.0606 (0.0599)
FRACTIONFEMAD	-0.0347* (0.0171)	-0.149 (0.0870)	-0.213* (0.102)	0.138 (0.111)
FRACTIONMALAD	-0.0105 (0.0251)	-0.0157 (0.119)	-0.305** (0.106)	0.129 (0.0730)
FAMSIZE	0.00587** (0.00212)	0.0317** (0.0107)	-0.0157** (0.00566)	0.0118 (0.00673)
MAXEDUCHH	0.000419 (0.000746)	0.00143 (0.00335)	0.00358 (0.00654)	-0.000960 (0.00259)
HEADSEX	0.000355 (0.00598)	0.00468 (0.0301)	-0.0299 (0.0245)	0.0509* (0.0260)
HEADAGE	0.000234** (8.20e-05)	0.00102** (0.000391)	0.00116 (0.000727)	-0.000487 (0.000404)
HEADEDUC	0.000435 (0.000420)	0.00260 (0.00213)	-0.00335 (0.00195)	0.00550* (0.00282)
DISTTOWN	1.30e-05 (0.000124)	0.000316 (0.000573)	-0.00221* (0.00111)	-0.00156* (0.000721)
DISTROAD	0.000126 (0.000227)	0.000155 (0.00129)	0.00316** (0.00133)	0.000501 (0.00120)
EXPLNSZ5YRS	-0.0164** (0.00637)	-0.0873** (0.0319)	0.0275 (0.0181)	-0.0395*** (0.0114)
TRUSTGOT	0.00661*** (0.00189)	0.0281** (0.00887)	0.0399** (0.0154)	-0.0114 (0.00909)
NUMDAVISIT	-0.00894*** (0.00184)	-0.0420*** (0.00929)	-0.0235** (0.0103)	-0.00375 (0.00947)
FARMERTO FARMER	-0.00867 (0.00517)	-0.0395 (0.0247)	-0.0277 (0.0225)	-0.0152 (0.0143)
IMPROVEDSTOVE	0.0121** (0.00411)	0.0612** (0.0223)	-0.00191 (0.0184)	-0.0162 (0.0225)
Excluded Exogenous Variables				
WOREDA	-0.00583 (0.00893)	-0.0320 (0.0476)	0.00385 (0.0455)	-0.0213 (0.0177)
POPDENSITY	0.0184 (0.0106)	0.0944 (0.0537)	0.0148 (0.0196)	0.0317 (0.0183)
KEBELEMGT	0.122** (0.0429)	0.586** (0.219)	0.0975 (0.189)	-0.199 (0.154)
YEARS	0.00120*** (0.000312)	0.00643*** (0.00160)	-0.00225** (0.000812)	0.00339*** (0.000851)
COMMUNITYFOREST	0.0708 (0.0606)	0.384 (0.309)	0.0221 (0.189)	-0.288 (0.192)
CONSTANT	0.211** (0.0759)	-0.929** (0.393)	0.0188 (0.189)	0.342 (0.224)
Observations	1,106	1,106	1,106	1,106
R-squared	0.57	0.582	0.373	0.565

Unless otherwise noted, robust standard errors in parentheses ** p<0.01, * p<0.05, * p<0.1 Clustering is at the *kebele* level, because households in the same villages are likely to have common unobservable characteristics. *Kebele* is often translated as “peasant association” and includes several village settlements.

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Intellectual Property in Mexican Small Business: An Empirical Research

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Abstract

Intellectual property is an important topic that has been usually analyzed in big enterprises from developed countries but it has been overlooked a lot in its analysis and discussion within the context of small and medium-sized enterprises (SMEs) from both developed and economically emergent countries even when they represent more than 98% of all enterprises, provide jobs to more than 50% of the labor force and produce more than 50% of the Gross Domestic Product (GDP) of any country. Thus, the main goal of this empirical research is the measurement of intellectual property in small and medium-sized enterprises through three factors: patents, brand registration and image investment by considering a sample of 125 enterprises established in Aguascalientes State (Mexico). The results obtained show that patents, brand registration and image investment seem to be good measurements of intellectual property in small and medium-sized enterprises.

Keywords: intellectual property, patents, brand registration, small business

1. Introduction

Some decades ago, Arrow (1962) had already considered that markets were a fundamental source that provides an optimal level of innovation in services for the economy of any country. The existence of traditional markets with no level of innovation is an important aspect that gets an increasing interest among researchers focused in the development and implementation of market policies because innovation is usually acknowledged as an essential element that can provide higher productivity and growth in nations (Jensen & Webster, 2006). As a result, government authorities have implemented a series of public policies or rights of appropriation such as the intellectual property rights which have soften the effects of the low level of innovation of markets as they provide legal resources to enterprises in an effort to prevent imitations from their competitors.

In this regard, intellectual property rights are considered by several small and medium-size enterprises (SMEs) as too costly. This can create disadvantages to SMEs when compared with big enterprises in the development of skills for the use of intellectual property rights which produce a low level of innovation in SMEs (Cordes *et al.*, 1999; WIPO, 2003; Macdonald, 2004; Jensen & Webster, 2006). The investigation of Arundel and Kabla (1998) provides empirical evidence by showing that SMEs from Europa have a low tendency to patent their innovations in comparison to big enterprises. In a more recent study, Jensen and Webster (2006) proved that SMEs from Australia have lower patent registrations, trademarks and industrial designs than big enterprises.

On the other hand, the potential of investigation from SMEs in the different innovation activities is an essential policy that government authorities must consider as this indicates that it is an important indicator of a basic element to promote creativity in the economy (Jensen & Webster, 2006). Nowadays, the potential contribution that SMEs have in an increasingly globalized and competitive market is very limited because of several barriers that stop or inhibit the use of the system of intellectual property. An example of this is the restricted access to finance the investment in aspects of intellectual property or the acquisition of patents, the registration of brands and the factors of copyright, which implies the necessary intervention of government authorities (Jensen & Webster, 2006).

Similarly, the constant increase in opportunities provided by the international market and the globalization of economy and markets force SMEs to implement the necessary actions to protect their intellectual property since

patents, the registration of brands, copyright and industrial classified information are essential factor that SMEs must protect to preserve the use of their products, processes or services (Lloyd, 1995). However, SMEs can easily fail in their attempt to protect their intellectual property for different reasons such as the changes in the interests of clients, the government regulations and the increase of competition, which can make that both their products and services become duplicated by other companies, especially by big enterprises in countries that have a low level of industrial protection (Lloyd, 1995).

Thus, India, Thailand and Taiwan are the Asian countries that constantly break the protection laws of intellectual property, even when the same problems take place in South Korea, Indonesia and the Philippines, which has created a lot of international pressure on these Asian countries so they change their laws. This has forced different companies located in Asia to move to Western Europe and Latin America where the political and economic laws are more permissible to the violation of intellectual property rights (Awanohara, 1992). However, places like Hong Kong, Taiwan and China continue with the same laws as there is a strong international opposition, mostly from the United States of America, to force these countries to adopt more strict measures for the protection of intellectual property rights from both small enterprises and big corporations (Blass, 1992; Lloyd, 1995).

Consequently, the few published empirical investigations in the current literature that analyzes intellectual property in SMEs have focused in developed countries (for example Arundel & Kabla, 1998; Kitching & Blackburn, 1998; Cohen *et al.*, 2000; Cordes *et al.*, 1999; WIPO, 2003; Blind *et al.*, 2003; Macdonald, 2004; Jensen & Webster, 2006; Birk, 2006; Päällysaho & Kuusisto, 2011). However, there was not a single empirical research of SMEs in emerging countries; this creates the necessity to deepen in the analysis and discussion of intellectual property of SMEs in emerging or developing countries (Lloyd, 1995; Päällysaho & Kuusisto, 2011).

Within this set of ideas, the first contribution of this empirical research is the analysis of intellectual property of SMEs in an emerging country as it is the case of Mexico as well as the contribution to the methodology used, a model of structural equations to analyze the theoretical model of intellectual property as a whole. The rest of the work has been organized in the following way: the second section examines the theoretical framework, the previously published empirical investigations and the investigation hypotheses are established; the third section shows the methodology, the sample and the variables used; the fourth section analyzes the results obtained and, finally, the fifth section shows the main conclusions and the research discussion.

2. Method

Significant differences can be observed in the literature between big enterprises and SMEs regarding the use of intellectual property systems which can be created by multiple factors. Some of the most important ones can be the differences at the level of innovation since big enterprises have a higher number of patents than SMEs, because they have the necessary and adequate resources to develop a higher level of innovation (Jensen & Webster, 2006). However, both big enterprises and SMEs can develop similar levels of innovation; the problem is that SMEs have a lower capacity to obtain the necessary financing to register their patents.

In this regard, the relation between intellectual property and innovation has been analyzed and discussed slightly, in the context of SMEs in the literature of economy and business management. At the beginning of the third decade of the 19th century, Schumpeter (1934) had already considered that big enterprises were more innovative than SMEs, because they have a higher financial capacity to reinvest in innovation activities of high risk, which can provide them higher competitive advantages both in investigation and development activities as well as in innovation of processes. Considering that big enterprises usually have a higher production of goods and, consequently, higher profit than SMEs, it becomes understandable to consider that they can have a higher capacity to absorb costs that create innovation activities (Jensen & Webster, 2006).

Nonetheless, the literature also provides empirical evidence against this approach since SMEs can have different competitive advantages in the innovation activities in comparison to big enterprises, because they generally have more precise information about the requirements and needs of clients and consumers and, mostly, about the benefits and expenses in the development of innovation activities (Arrow, 1983), which can create a better protection of intellectual property from innovation activities (Acs *et al.*, 1997). Moreover, SMEs can also have a higher inertia and a higher capacity to recognize market niches run by big enterprises (Rogers, 2004; Jensen & Webster, 2006).

On the other hand, there are few published papers in the literature that analyze the use of intellectual properties of SMEs. Among the limited number of investigations that consider these two constructs are the ones of Lloyd (1995), Kitching and Blackburn (1998); Iversen (2002), CHI Research (2003), WIPO (2003), Hanel (2004), Jensen and Webster (2006); Bérard and Delerue (2010) as well as Päällysaho and Kuusisto (2011). However,

these papers analyze the relation of these two constructs by simply comparing the number of intellectual property rights that SMEs have, and as a result this type of analysis is very limited because only the intensity in the use of intellectual property, is considered instead of the absolute value of the use from SMEs, which would be more appropriate and interesting.

As a matter of fact, intellectual property rights such as patents, brand registration, copyright and industrial secrets are usually irrelevant for a considerable number of SMEs (Blind *et al.*, 2003), since the formal intellectual protection of their innovation activities is generally not considered as a priority within their business strategies. As a result, many SMEs that evaluate intellectual property rights adequately have probably never implemented some type of formal mechanism to protect their intellectual property (Tang & Molas-Gallart, 2004). Accordingly, a recent study about intellectual property in SMEs shows that only 23% of this type of enterprises, had made a process for the protection of their intellectual property in the last five years, and only 8% had obtained a patent (Birk, 2006).

Similarly, the literature considers that SMEs do not have an effective protection system of their patents that avoids the imitation of their products or services from their main competitors, or they simply consider that the protection of their patents is irrelevant since the cycles of technology development are shorter every time (Blind *et al.*, 2003). Consequently, the high costs produced by the protection of intellectual property is considered as one of the most important barriers, that halt or inhibit its implementation along with the difficulties faced by SMEs in legal processes to exert the law to intellectual property right (Päällysaho & Kuusisto, 2011).

Simultaneously, there are different SMEs that are constantly protecting their intellectual property rights, especially SMEs that have an industrial activity that is based in intensive knowledge, which is regularly producing several high knowledge and basic knowledge products or services that need a patent to be legally protected (European Patent Office, 2007). This situation can be seen frequently in most SMEs that work within a system of high biotechnological development and in the pharmaceutical industry. They need patents to continue working; that is why the protection of their intellectual property rights is essential (Macdonald, 2004; Moulin & Thue-Lie, 2005).

Despite this empirical evidence, a considerable number of SMEs prefer to carry out informal protection practices of intellectual property, before adopting legal actions (Kitching & Blackburn, 2003). However, the protection of intellectual property rights represents only a small part of the management and protection of practices, within intellectual property implemented by SMEs since there is a wide variety of activities to protect intellectual property, that do not compete against each other but imply a relation among them (Kuusisto *et al.*, 2005). These intellectual property practices are relatively simple and easy to control for SMEs, their use is economical and they are part of the regular working activities inside organizations (Päällysaho & Kuusisto, 2011).

Likewise, informal practices of intellectual property protection are too heterogeneous among themselves, and they are usually the result of the limited knowledge that SMEs have about intellectual property, and the interaction that it has with the community in general where it develops (Päällysaho & Kuusisto, 2008). Thus, informal practices of intellectual property protection provide very valuable information for researches (Kitching & Blackburn, 1998; Miles *et al.*, 2000; Blind *et al.*, 2003). Moreover, the different informal methods of intellectual property protection attempt to defend SMEs from internal risks, that they may face when firing employees that have valuable knowledge for the organization (Päällysaho & Kuusisto, 2011).

Regarding the informal methods of intellectual property protection, the most common ones in the literature are patents, brand registration and copyright (Lloyd, 1995; WIPO, 2003; Jensen & Webster, 2006). For example, in the case of patents in the United States of America, their registration implies the exclusive use or sale of inventions for a period of 17 years and such patents can be obtained for new processes, machinery, manufacturing articles, the creation of new or improved materials and special patents called plant breeder's rights which can be given to plants and ornamental designs (Lykes, 1994).

As a result of this, the appointment of patents also includes industrial designs and the designs of finished products. Nonetheless, in the case of new designs of furniture such as a lamp or a chair, the patent is the most appropriate method of intellectual property protection rather than copyright (Augustine, 1993). As a result, inventions are generally more prone to the acquisition of patents to protect both the professional activities of staff and the organization itself without decreasing the invention practices (Lloyd, 1995). Furthermore, patents can describe inventions with greater detail and the skills needed in a specific field where the invention is used (Grolier, 1995).

Additionally, patents produce important changes in the assurance of financing capital as there are several SMEs that are intensive regarding their knowledge and depend on the patent of their products or services for their survival and development because their portfolio of patents is usually the only economic capital that they have

(Levin *et al.*, 1987). Therefore, considering the information presented above, it is possible at this point to state the first hypothesis.

H1: The higher the use of patents, the higher the intellectual property of SMEs.

Regarding the registration of brands, they can take the name of a product or service and an incorporation certificate is usually given so the SME or organization, can use automatically the name to label their products or services in a legal way and, consequently, avoid its use by other enterprises (Lloyd, 1995). However, the registration of a brand can become invalid if the SME uses a brand, that does not belong to it and uses it to label similar products or services since this type of registration can usually include commercial names, the names of services, slogans of enterprises and symbols (U.S. Department of Commerce, 1992).

In a similar way to patents, it is advisable to visit the patents deposit from government institutions in their country before SMEs, do the process of brand registration to determine first if the brand intended to be registered exists, even when several SMEs consider that the costs of carrying out this process are high (Steinberger, 1990). Likewise, SMEs need to obtain precise and verified information about brand registration, current costs, different forms of implementation and other additional requirements depending on the country where the registration takes place (U.S. Department of Commerce, 1992). As a result of this, and considering the information presented above, the second research hypothesis can be stated.

H2: The higher the use of brands, the higher the intellectual property of SMEs.

Accordingly, intellectual property protection has different additional objectives to the traditional reasons of making a profit from innovation activities (Harabi, 1995; Cohen *et al.*, 2000), such as the creation of an image and reputation in business from which SMEs can obtain a social and business status in the ability to develop new products or services (Päällysaho & Kuusisto, 2011). Thus, it important the investment on marketing activities carried out by enterprises for the improvement of their image, and the image of their products and services which can produce the adoption of intellectual property protection activities (Jensen & Webster, 2006; Päällysaho & Kuusisto, 2011). Therefore, considering the information presented above, the third hypothesis can be stated.

H3: The higher the image investment, the higher the intellectual property of SMEs.

2.1 Sampling Procedures

In order to answer the research hypotheses established in the theoretical model of intellectual property, an empirical research was carried out in manufacturing SMEs from Aguascalientes State (Mexico), by using as a reference framework the directory of the Sistema de Información Empresarial de México (Business Information System of Mexico) for Aguascalientes State, which had 130 registered enterprises with 20 to 250 employees on July 30, 2016. Because the population of SMEs was too small, it was decided to apply a census among all SMEs considered. Moreover, the questionnaire was designed to be answered by managers of SMEs and implemented as a personal interview to the 130 selected enterprises. Only 125 questionnaires were answered and returned; five were eliminated because they were completed. This represents a reply rate of 96%. Table 1 presents the most important aspects of the research.

Table 1. Research design

Features	Survey
Universe	130 small and medium-sized enterprises
Geographic Area	Aguascalientes State (México)
Sample Unit	SMEs 20 to 250 Employees
Collection Method of Data	Personal Survey at the Managers
Sampling Rate	Simple Random
Sample Size	125 SMEs
Margin of Sample Error	±1% error, to a confidence level of 99% (p=q=0.5)
Date of Fieldwork	September - December 2016

2.2 Measures and Covariates

For the measurement of the variables of intellectual property, managers and/or owners of SMEs were asked to indicate whether their enterprises had carried out any type of inventions, registration of distinctive signs or investments in the improvement of image (1 = Yes, 0 = No). For the measurement of the degree of importance of intellectual property, managers and/or owners were asked to evaluate the inventions, registration of distinctive signs or investments in the improvement of image with a Likert-type scale of five points (where 1 = Not important and 5 = very important as their limits). Additionally, three adapted factors from WIPO (2003) and Jensen and Webster (2006) were considered: 1) *Patents* measured by means of a four-item scale; 2) *Registration of Brands* measured by means of a four-item scale; and 3) *Image Investment* measured by means of a nine-item scale. All the items of the

three factors were adapted from WIPO (2003) and Jensen and Webster (2006). This subjective approach of the manager's perception is more appropriate for the case of SMEs (Hughes, 2001; Garcia *et al.*, 2009).

In order to evaluate the reliability and validity the theoretical model of intellectual property, a Confirmatory Factorial Analysis (CFA) was carried out by using the method of maximum likelihood with the software EQS 6.1 (Bentler, 2005; Brown, 2006; Byrne, 2006). Also, the reliability of the three factors of intellectual property was evaluated by means of Cronbach's alpha and the Composite Reliability Index (CRI) (Bagozzi & Yi, 1988). The recommendations of Chou *et al.* (1991) as well as of Hu *et al.* (1992) were also taken into consideration regarding the correction of the statistics of the theoretical model when it is considered that the normality of data is present by using also the robust statistics in order to provide a better statistical adjustment of data (Satorra & Bentler, 1988).

Additionally, only four adjustment indices were considered in this research: NFI, NNFI, CFI and RMSEA since different authors consider that such indices are the most appropriate ones for the implementation of an CFA (Bentler & Bonnet, 1980; Byrne, 1989; Bentler, 1990; Hair *et al.*, 1995; Chau, 1997; Heck, 1998). Similarly, other authors considered that: values between 0.80 and 0.89 of NFI, NNFI and CFI indicate a reasonable adjustment of the theoretical framework; identical or higher values than 0.90 provide evidence of an excellent adjustment of the theoretical framework (Jöreskog & Sörbom, 1986; Byrne, 1989; Segars & Grover, 1993; Papke-Shields *et al.*, 2002); and when the RMSEA value is lower than 0.08 it is considered acceptable (Jöreskog & Sörbom, 1986, Hair *et al.*, 1995).

The results obtained of the CFA to the theoretical model of intellectual property are shown in Table 2 and they indicate that the theoretical model has a good statistical adjustment of data ($S-BX^2 = 114.829$; $df = 50$; $p = 0.000$; $NFI = 0.886$; $NNFI = 0.884$; $CFI = 0.910$; $RMSEA = 0.079$). All the items of the three factors related are significant ($p < 0.01$) and the size of all the standardized factorial loads are above 0.60 as established by Bagozzi and Yi (1988). Cronbach's alpha and the CRI have a value above 0.7; the Extracted Variance Index (EVI) has a value over 0.5 as considered by Fornell and Larcker (1981). These results show that there is enough evidence of reliability and convergent validity of the theoretical framework which justifies the internal reliability of the scales used (Nunnally & Bernstein, 1994; Hair *et al.*, 1995).

Table 2. Internal consistency and convergent validity of the theoretical model

Variable	Indicator	Factorial Loading	Robust -t Value	Cronbach's Alpha	CRI	EVI
Patents	PA1	0.728***	1.000 ^a	0.774	0.784	0.549
	PA2	0.649***	5.106			
	PA3	0.835***	7.027			
Trade Marks	RM1	0.832***	1.000 ^a	0.704	0.707	0.551
	RM2	0.640***	3.650			
Image Investment	IM1	0.868***	1.000 ^a	0.918	0.923	0.634
	IM2	0.910***	25.944			
	IM3	0.901***	26.341			
	IM4	0.738***	14.108			
	IM5	0.750***	13.065			
	IM6	0.758***	12.816			
	IM8	0.603***	8.871			
$S-BX^2$ ($df = 51$) = 114.829; $p < 0.000$; $NFI = 0.886$; $NNFI = 0.884$; $CFI = 0.910$; $RMSEA = 0.079$						

^a = Constrained parameters to such value in the identification process.

*** = $p < 0.01$

Regarding the discriminant validity, Table 3 shows that based on the interval test reliability suggested by Anderson and Gerbing (1988) an interval of 95% of reliability, none of the individual latent elements of the matrix of correlation has a value of 1.0. Similarly, the extracted variance recommended by Fornell and Larcker (1981) indicates that the square correlation between each pair of constructs is lower than their corresponding EVI. Thus, based on the results presented above, it is possible to conclude that the outcomes of both tests provide enough evidence of discriminant validity of the theoretical model.

Table 3. Discriminant validity of the theoretical model

Variables	Patents	Trade Marks	Image Investment
Patents	0.549	0.052	0.060
Trade Marks	0.092 - 0.364	0.551	0.098
Image Investment	0.113 - 0.373	0.174 - 0.454	0.634

The diagonal represents the Extracted Variance Index (EVI), whereas above the diagonal the variance is presented (squared correlation). Below diagonal, the estimated correlation of factors is presented with 95% confidence interval.

3. Results

The theoretical model of intellectual property was analyzed in order to prove the hypotheses established in the theoretical frame by using the structural equations model with the help of the software EQS 6.1 (Bentler, 2005; Brown, 2006; Byrne, 2006). Similarly, the nomological validity of the theoretical model was analyzed through the square Chi test. It was mostly based on the comparison of the results obtained from the original model and the measurement model; that provided non-significant results which provide an explanation of the relations observed between the constructs (Anderson & Gerbing, 1988; Hatcher, 1994). The results obtained can be seen in a more detailed way in Table 4.

Table 4. Results of the structural equation model of the theoretical model

Hypothesis	Structural Relationship		Standardized Coefficient	Robust t-Value
H1: Higher use of patents, higher intellectual property.	Patents	→ Intellectual P.	0.409***	5.452
H2: Higher use of brands, higher intellectual property.	Trade Marks	→ Intellectual P.	0.549***	4.849
H3: Higher image investment, higher intellectual property.	Image Inv.	→ Intelektual P.	0.479***	16.547
$S-BX^2$ (df = 50) = 128.146; $p < 0.000$; NFI = 0.879; NNFI = 0.871; CFI = 0.902; RMSEA = 0.079				

*** = $P < 0.01$

The results of implementing the structural equations model are presented in Table 4 and they indicate, regarding hypothesis **H1** ($\beta = 0.409$, $p < 0.01$), that the use of patents really have a significant positive effect in intellectual property in Mexican manufacturing SMEs. Regarding hypothesis **H2**, the results obtained ($\beta = 0.549$, $p < 0.01$) indicate that the use of brands also has a significant positive effect in intellectual property of SMEs. Finally, regarding hypothesis **H3**, the results obtained ($\beta = 0.479$, $p < 0.01$) indicate that the improvement of image also has a significant positive effect in intellectual property in Mexican manufacturing SMEs. Therefore, it can be confirmed that intellectual property in manufacturing SMEs can be measured without problems by using three factors or dimensions: *patents, brands and image investment*.

4. Discussion

According to the results obtained in this empirical research, it is possible to conclude in two fundamental aspects. Firstly, the registration of patents, brands and image investment have positive significant effects in intellectual property in manufacturing SMEs. Secondly, the intellectual property of this kind of enterprises can be measured through the registration of patents, the registration of brands and image investment. Consequently, if manufacturing SMEs intend to protect legally their intellectual property rights, they will have to create an environment that promotes and stimulates all activities related to improve significantly patents and brands and also increase prominently the resources to develop the image of both their products and the organization itself.

On the other hand, the registration of patents will allow manufacturing SMEs to have legal protection of their invention as well as the possibility of marketing such inventions; otherwise this can create serious problems to the organization because its patents can be used illegally by other enterprises. Thus, the legal registration of patents will have to be incorporated to the business strategy of manufacturing SMEs and all the functional areas or departments of the enterprise will need to work in coordination together so the patents they are using (even the ones they are developing) have legal protection through intellectual property.

Similarly, the registration of different brands from manufacturing SMEs will be fundamental for the growth and development of the organization because enterprises will improve significantly through their brands regarding their market position as well as the current and future ranking of products in the minds of their clients and consumers. Furthermore, the legal protection of intellectual property of brands from manufacturing SMEs can also facilitate the adoption and implementation of innovation activities. From the total of the economic benefits that can be obtained from the commercial exploitation of the organization's brands, a part of them can be used to the development of new products or the improvement of existing products.

Moreover, the image investment also plays an essential role in the legal protection of intellectual property of manufacturing SMEs because it is precisely through this how organizations can increase not only their market position but also the ranking of the brand of their products and the very image of the enterprise. Additionally, the image investment allows clients and consumers to have acknowledgement and loyalty to the products offered by stores above the ones of their main competitors. This implies that current and future clients/consumers will prefer to obtain products from manufacturing SMEs which will create a significant increase in sales and income as well as economic return of enterprises.

Likewise, this empirical research has different limitations that are important to mention at this point. The first limitation is the use of the scale to measure intellectual property since it only considers three factors or dimensions. Further investigations will need to incorporate different factors to verify the results obtained. A second limitation is the one related to the information obtained since only a part of the patent registration, brands and image investment was considered to be measured with qualitative variables. Further investigations will need to use quantitative variables to verify if similar results are obtained.

A third limitation is the measurement of the variables used since only three items were considered to measure the registration of patents, the registration brands and nine items to measure image investment. Further investigations will need to incorporate or add some other items to verify the results obtained. A fourth limitation is that the questionnaire was applied only to managers and/or owners of manufacturing SMEs of Aguascalientes State (Mexico) so the results may be different if another population is used. Further investigations will need to apply the questionnaire to both clients and suppliers of enterprises to verify the results obtained.

A fifth limitation is that the only manufacturing enterprises considered for the research had from 20 to 250 employees. As a result of this, further investigations will need to consider the enterprises that have less than 20 employees which represent more than half of the total of the enterprises established in Aguascalientes to verify the results obtained. A final limitation is that most of the enterprises interviewed considered that the information requested was confidential so the information provided may not necessarily reflect the real situation of enterprises.

Finally, it is important to go beyond the results obtained and discuss more deeply the following: what effects could have manufacturing SMEs if quantitative scales were used to measure intellectual property? What results would be obtained if a more sophisticated model were used in manufacturing SMEs for the measurement of intellectual property? What results would be obtained if other factors or dimensions were used for the intellectual property of manufacturing SMEs? These and other questions that may arise could be answered in future investigations.

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A Comprehensive Review of E-HRM in Service SMEs in Jordan

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Abstract

This article reviews current empirical studies on electronic Human Resource Management (E-HRM) in SMEs in Jordan and discuss some findings for future undertakings. The comprehensive review is composed of related studies extracted from the online index or data base of the various journals. Contextual structure had been presented to have a clear mapping and understanding with the proceedings. It also included some studies of E-HRM outside Jordan to supplement the insufficiency and reliability of the comprehensive review. Conclusion and recommendation had been made.

Keywords: E-HRM, SMEs, Jordan, comprehensive review, effects and benefits of E-HRM, implementation of E-HRM

1. Introduction

Generally, increasing evidence shows that SME's show a relevant function in the societal economic development of any country. SME's bring out most of current jobs and provide much of the resourcefulness and innovation that hike economic progress. The small and medium sized enterprises helps boost up the economy in Jordan. The strategies to invite, pay out, motivate and retain employees are becoming a dismaying task SME's as the battle for talent and skills become extremely competitive. The challenges of Human Resource Management (HRM) are higher now due to the complication in which organisations operate and function. The human resources or intellectual capital has emerged as main component in a company's future success (Abraham, et. al., 2014).

The term E-HRM connotes different meaning to any individuals in the Small and Medium Enterprises. But it is strongly defined as, a web-based result that takes advantage of the newest web application technology to give an online real-time HRM Solution. It is systematic and easy to use, feature-rich yet formative enough to answer to one's specific needs. Of all the resources, human capital is the most vital wealth because every activity in the business is controlled by them. In any business firm: service or industrial sector requires men. The main duty of the HRM is to build an effective selective instrument and functions by the aid of information technology. The traditional way which is HRM transform into E-HRM. It speeds up the velocity of information flows and can manipulate multiple tasks and serves as a tool of wise decision making. The integration of HR and technology helps in leveraging the HR activities and automating transactions related to recruitment, performance tracking, career planning and training. This means that they play complementary functions (Varma 2010).

1.1 Layout

This paper is organized as follows. The process involves reviews of the research or studies on E-HRM Services in SME's in Jordan and creates framework that could aid to a better explanation of some of the reviewed issues. There upon, framework is being used to analyse the studies described. It is followed by the presentation of the results of the analysis. Next to it is the related reviews and studies outside the country. After which, is the discussion section that links the results with the existing research and proposes future research directions. Finally, the conclusion wraps up the comprehensive review by reflecting on the findings.

2. The Screening Methods

The main purpose of this paper is to present a comprehensive review of information accumulated from the studies and journals from 2007 up to the present regarding Electronic-Human Resource Management (E-HRM) in service of Small and Medium Enterprises (SMEs) in Jordan. Of One hundred fifty-five (155) studies and readings scanned and reviewed in the web data base of European Journal, International Journal of Management

Reviews, Management and Service, International Journal of Business and Science, Research Gate, International Conference on Innovation, Linked in, Australian Journal of Basic and Applied Sciences, Asian Social Science and Academia only seven (7) studies support the comprehensive review. Some were neglected due to its irrelevancy to the comprehensive review and some were already obsolete. The seven (7) studies and reviews were accordingly satisfied and supported the inclusion criteria. Extracted data are: Level of Implementation of E-HRM; Benefits of the Use of E-HRM; Perceived Barriers of the Use of E-HRM and Effects of E-HRM in SME's In Jordan. The following related studies are Rawash 2012, Al-Dmour, et. al and 2012, Khasman, et al. (2015), Elhazzam (2015), Ayeta (2016), Ngai and Wat, 2006 and Marler (2009).

3. Contextual Framework

The comprehensive review reveals that e-HRM practice contains several entities that could affect the services in SME's in Jordan. Therefore examining those topics could help us understand how and why they affect the outcomes of the systems. To be able to map the current topics of the literature that discussed before, this section articulates a general framework that will later be used to identify the impact of E-HRM to SME's in Jordan as it is stipulated in Figure 1. In particular, this framework will be used as a part of a concept centric approach to review the E-HRM literature in hopes of new insight into understanding the positive or negative effect of E-HRM in the SME's in Jordan.

There are two reasons behind the rationale of the selection of framework is based on two reasons. Primarily, the inadequacy of standardisation on E-HRM allows any scheme to deliver some levels of understanding about the particular situation. The second component that appears in the scheme is also identified in E-HRM research as some of the reasons that affect organisation transformations (Strohmeier, 2007). Thus, the seek to examine how outcomes around E-HRM of SME's in Jordan are affected by factors such as: Level of Implementation of E-HRM; Benefits of the Use of E-HRM; Perceived Barriers of the Use of E-HRM and the effect of E-HRM. By assessing and evaluating those factors, it gives a clear understanding with the impact of E-HRM in the country and how or why those perceptions materialize.

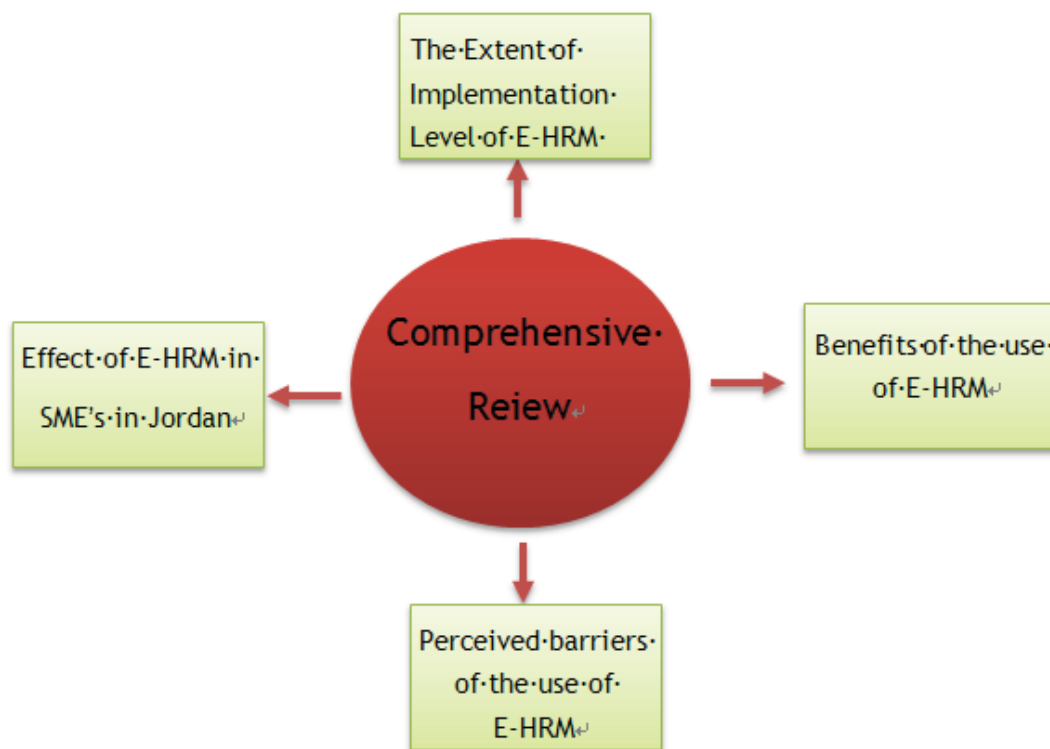


Figure 1. Contextual Framework

4. Data Analysis and Results

At this part, it shows results which were already statistically treated and analysed.

4.1 *The Degree of Implementation Level of E-HRM Functions*

This section demonstrates the descriptive analysis for the level of implementation of E-HRM functions. Al-Dmour, et. al 2012 reveals that there are a moderate level of E-HRM functions in shareholding enterprises since the result are more than the mean of the scale which is (3). The result of 61.2% refers to the level of implementation which indicates moderate implementation of E-HRM. Recruitment and selection, employee record keeping, internal and external communication respectively are the highest levels of implementation. According to the study of Marler (2009), Strong Implementation of e-HRM is identified with perceptions of strategic effectiveness of HR. It is both positive and negative perceptions.

4.2 *Benefits of the Use of E-HRM*

In the data analysis of the study of Al-Dmour 2015, he detailed the results in Table 12 (p. 220) that T-Value is 5.239 and the Sig. is .000. It is seemingly obvious from the results that adopters' group are more positive than non-adopters with regards to the perceptions of the advantages of E-HRM applications. The group of the enterprise who adopts E-HRM are attached more importance to the benefits of E-HRM in its capacity of facilitating the recruitment proceeds, organising HR process and reducing data re-entry and other benefits with the exceptions of high levelling competitiveness and creating wise decision making. According to Ayeta (2016), the e-benefits approach utilises the web to deliver information on the benefits of the employees; reading the costs for delivering, streamlining, benefits from administration, enhancing employee access and empowering employees' access to benefits information.

4.3 *Perceived Barriers of the Use of E-HRM*

As shown in Table (13) demarcates between the two groups based on their impulse towards the barriers restricting them from the use E-HRM applications in their enterprises. Conferring with t-test and mean results, it was concluded that the adopters' group are relatively different from the non-adopters' group with regards to their perceptions of obstacles inhibiting their companies from the use of E-HRM applications. The non-adopters' group has ranked highest of the following barriers compare to their counterpart: insufficient time to do the necessary analysis to determine the process to automate, Lack of knowledge in implementing the system, the management is not oriented with the technology behind IT applications in E-HRM, and the staffs do not have relevant knowledge and skills for E-HRM applications (Al-Dmour 2015). However, another study shows that the E-HRM adoption shows that many enterprises have problems when utilising new technologies including E-HRM due to numerous barriers which include lack of sufficient capital and skills (Ngai and Wat, 2006).

4.4 *Effect of E-HRM*

The data analysis of Khashman (2015) presented the analysis in the Tables 4, 5, 6 and 7 (p. 125 of his study, the F value is 13.36 with a significance equal 0.00, which is less than (0.05). this signifies, there is an effect of E-HRM practices as one of the operational performance dimensions. Furthermore, 8.60% of the variance in cost noted for E-HRM practices, 20.47 is the F value with a significance equal to 0.00, which is less than (0.05). It means that there is an effect of E-HRM practices on cost. The variance of 5.32% in "Quality of service" accounted by "E-HRM practices", the F value is 9.03 with a significance equal to 0.00, which is less than (0.05). For this reason, there is an effect of E-HRM practices on Quality of service. For Flexibility, the variance is 4.78%, the F value is 6.76 with a significance equal to 0.00, which is less than (0.05). Significantly, there is an effect of E-HRM practices on flexibility. The connotation of the finding for the Jordanian Enterprises is that they need to pursue a combined strategy aimed at E-HRM practices to improve operational performance. The E-HRM practices and operational performance were significantly related since findings revealed that E-HRM practices had a positive impact on Time, Cost, Quality service and Flexibility. Elhazzam (2015) discussed that ICT contributes a significant and positive effect on Human resource management Practices, the ICT regression coefficient ($\beta = 0.868$, $P = 0.00$). Based on the outcome the study hypothesis was accepted which indicated a significant effect of ICT on Human resource management Practices at level of ($P \leq 0.05$).

4.5 *Other Related Review of Electronic- Human Resource Management in Services in SME's Outside the Country*

This section of the paper presents the related proceedings to support the insufficient comprehensive reviews regarding the E-HRM in Jordan in SMEs. This is to support the impact of adoption of technology advancement in the field of HRM in the country.

Statistical treatment results that Malaysian SMEs recruitment policies are made primarily by highest rank in the management. It has shown that production systems, quality management and automation are prime domains of SMEs operations to be used in an e-business system, but HRM and recruitment are part of future planning. In Malaysian SME E-HRM is mainly for speeding up system to enable SMEs to deal with multi-cultural and multi-lingual working situation and that make employees and job seekers improve its communication and interaction (Poorang 2012). According to the Ministry of Manpower, Singapore, e-HRM initiatives could be introduced with an initial expenditure of S\$3,000 and few dollars for monthly cost. However, the low cost SME's could not afford to implement e-HRM initiatives (Rowly, et. al 2007). Moreover, Most of the studies have shown that only large organisations adopt E-HRM than SMEs (Kabst, 2009).

The positive and relevant result ($\beta = .279$; $p < .05$) is the effect of expectation and optimism towards technology. A further consideration in the progression model concerns the relatively low R2 ($R^2 = .104$), a justification that there are many factors, other than e-HRM practices, affect to increasing organisational commitment, while, the assumption regarding the adoption of e-HRM systems becomes significantly relevant when employees are particularly technology oriented (Bissola, et. atl. 2013). The attitude has been discovered with the basis of data analysis that it influence in the adoption of E-HRM. Subjective standards and perceived behavioural control did not give relevant effect. When making design in the implementation of methodologies and change management strategies, the information stated above is very important as interventions need to be created specifically to meet the organisation's requirement of E-HRM adoption. The research also has practical presumption especially for the function of HR department in making changes in management strategies in collaboration with other department in the company (Ramayah 2011). E-HRM contributes competitive benefits for supporting human resource management processes. It ensures easier, faster, and cheaper HR exercises accomplishment and guides in all types of operational, functional and strategic human resource management processes. It solves problem in a more effective and strategic HRM processes. All these advantages of E-HRM can be achieved easily only if the system is adopted or adapted in an organisation precisely and more effectively (Masum 2015)

5. Discussion

Findings indicate that the adoption of E-HRM within the sample under study is considered to be moderate. This signifies that the level of implementation of E-HRM application provides some variations among shareholdings companies. Some companies or enterprises can't deny the fact that they can't rid of using traditional method or still thinking to have such system in the future.

On the other hand, there is a significant relationship between the internal factors (organisations demographic, organisation resources, organisational sharing culture, organisation readiness and commitment, organisation's structural IT characteristics, perceived IT applications attributes /benefits of E-HRM applications, perceived obstacle to the use of E-HRM and the implementation level E-HRM in enterprises in Jordan put together. The recognised benefits of IT applications and organisation readiness and commitment are found to be the most important determinant of internal factors that are associated with the level of the implementation of E-HRM in shareholding companies.

The evaluation of the features of the perceptions of the benefits of E-HRM applications construct, findings stipulate that the group of adopters of companies was found to be more positive to all mentioned benefits of E-HRM applications than non-adopters. Moreover, the use of e-tools in medium sized organisations is perceived as useful, whereas not easy to use. The organisation perceived that the use of E-HRM helps them make HRM more effective (Bondarok, 2009). E-HRM provides competitive advantages for supporting human resource management processes. It ensures easier, faster, and cheaper HR activity accomplishment and helps in all types of operational, functional and strategic human resource management processes. It helps to take more effective and strategic decision to solve HR problems. All these benefits of E-HRM can be attained seamlessly only if the system is adopted or adapted in an organisation accurately and more effectively.

The findings of reviewed studies are not that valid and reliable. This is due to the lack of relevant studies related to the comprehensive review in electronic human resource management in Jordan. That is why, the author considered review findings from the studies outside Jordan.

6. Conclusion

The comprehensive review lacks the materials used which means that E-HRM is not common in the small and medium enterprises in Jordan. As mentioned by Kabst (2009) most of the SME's cannot take risk to afford the cost of creating E-HRM. Some of them also were not computer technology oriented.

7. Recommendation

It is highly recommended that future researchers will look into considering a study which relates to the adoption of E-HRM in any enterprises or companies in Jordan.

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How Can We Measure Stock Market Returns? An International Comparison

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Abstract

The aim of our empirical work is to identify how we can measure stock returns. Stocks returns are approximated as the growth rate of market share price. We use two measures of stocks returns; return on assets, ROA, and return on equity, ROE. As a control variable, we use firm age. Our samples consists of 186 firms from United Kingdom and 186 firms from Ukraine studied over a period of 4 years from 2007 to 2010. To this end, we estimate three models. Using the data panels methodology, we conclude that return on equity approximates better socks returns for United kingdom and Ukraine. We could not however find evidence on a significant association between return on assets and stock returns.

Keywords: stock return, firm performance, return on assets, return on equity

1. Introduction

Many studies tried to identify the determinants of stocks market return (Saadet, Gülin and Gökçe, 2011; Xinyi , Dimitris and Peiming, 2012). In this paper we identify what explains better stock returns; return on assets, ROA, or return on equity, ROE. To this end we examined a sample of two countries; United Kingdom and Ukraine. The next section will expose some studies explaining firm performance. In Section 3, we present our sample, the tested models and our variables. Section 4 interprets the descriptive statistics and our empirical results. A sensitivity analysis of our results by sector is made in section 5. The last section exposes our interpretations.

2. The Literature Review

Like Barth (1994), Barth et al. (1995), Barth et al. (1996), Eccher et al. (1996), and Nelson (1996), the article of Dan, Subramanyam, Robert (1999) tried to test the factors explaining market returns. The authors tests whether the net incomes estimate future cash flows of a firm. Examining a sample of 11425 firms, the authors found that the net income reflect better firm performance.

Similar to Molyneux and Thornton (1992), Demirguc-Kunt and Huizinga (1999), Staikouras and Wood (2004), Goddard, Molyneux, and Wilson (2004), Micco et al. (2007), Pasiouras Kosmidou (2007), and Flamini et al. (2009), Andreas and Gabrielle (2014) studied the factors explaining banks' profitability. As a measure of bank productivity, the authors use three ratios: return on average assets (ROAA), the return on average equity (ROAE) and the net interest margin (NIM). Examining a sample of 10 165 banks in 118 countries over a period of 15 years from 1998 to 2012, the authors conclude that the economic level of each country affects the factors explaining profitability of banks.

Like Athanasoglou, Brissimis & Delis (2008), Kosmidou (2008), Pervan, Pervan & Guadagnino (2010), and Kořak & Ćok (2008), Marijuana, Klime and Sandra (2014) tested determinants of profitability of Macedonian banks. Using a sample of 16 banks for a period of 6 years from 2005 to 2010, the authors report that good management of banks means higher performance. Furthermore, liquidity risk and solvability risk affect profitability of banks.

3. Data and Methodology

3.1 Sample Selection

In order to properly study firm performance, measured by stocks market return, we examine a sample of 186 firms in United Kingdom and 186 in Ukraine over a period of 4 years from 2007 to 2010. Data were used from the « Amadeus » database.

3.2 Choice of Variables and Hypotheses

The dependent variables:

- Stock returns: similarly to work Dan et al (1999), we approximate firm performance by the return of the share prices.

The independent variables:

- Return on assets, ROA: we approximate firm performance by the ratio of return on assets identified as the ratio of net profit over total assets. Higher firm performance will increase shareholder wealth, and then, market return.

Hypothesis 1: return on assets, ROA, is positively related to stocks market return.

- Return on equity, ROE: Following the work Ben said (2014), we measure firm performance by the ratio of return on equity approximated as the ratio of net profit over shareholders equity. Higher firm performance will increase share price, and then, market return. **Hypothesis 2:** return on equity, ROE, is positively related to stocks market return.

- **Firm age:** as a control variable, we will consider, only, firm age. Firm age is estimated as the number of years between creation year and current year. Generally, older firms are more notoriety. Therefore, shareholders often try to buy more shares from older firms. we assume, then, a higher share price and an enhance in shareholder wealth and market return. **Hypothesis 3:** firm age positively affects market return.

Table 1. Variables and expected signs

Variables	Abbreviation	Formulation	Expected sign
Stock returns	return	growth rate of share price	Dependant variable
Firm performance	ROA	Net income / total assets	+
Firm performance	ROE	Net income / shareholder's equity	+
Firm age	age	Number of years	+

3.3 The Models

Following the methodology of Dan, Subramanyam and Robert (1999), we use the following models:

$$Return_{it} = \alpha_0 + \alpha_1 * ROA_{it} + \alpha_2 * AGE_{it} + \varepsilon_{it}$$

$$Return_{it} = \alpha_0 + \alpha_1 * ROE_{it} + \alpha_2 * AGE_{it} + \varepsilon_{it}$$

$$Return_{it} = \alpha_0 + \alpha_1 * ROA_{it} + \alpha_3 * ROE_{it} + \alpha_3 * AGE_{it} + \varepsilon_{it}$$

4. The Empirical Results

4.1 Descriptive Statistics

Our sample consists of 186 firms from Ukraine distributed operating in the following sectors: 9 firms from the service sector, 6 firms from the real estate sector, 47 firms from professional activities, 14 firms from mining and agriculture sector and 110 firms from the manufacturing sector. As for the sample of United Kingdom, it contains 186 firms operating in the following sectors: 65 firms from the service sector, 23 firms from the real estate activities, 29 firms from professional activities, 20 firms from mining and agriculture sector and 49 from the manufacturing firms. We can conclude that in United Kingdom, firms are distributed in the service sector and in Ukraine most corporations operate in the manufacturing sector.

Table 2. Distribution of our sample into activity sectors

	Service	Real estates activities	Professionals activities	Mining and agriculture	Manufacturing	Total
Ukraine	9	6	47	14	110	186 firms
UK	65	23	29	20	49	186 firms

Statistics (table 3) show that firms of United kingdom are more profitable than firms in Ukraine. The mean values are equal to 0,0586 and 0,158 for return on assets, ROA, and return on equity, ROE, respectively. However, we conclude to a higher value of return on market share price for firms in Ukraine. In fact, growth rate of share price is equal to 0,239. Furthermore, share price for firms in United kingdom increases, annually, by 12,7%. We conclude that firms in Ukraine are older then firms in United kingdom with a mean value of 51,309 years. The average age of firms in United kingdom is 34,903 years with a minimum of 1 year and a maximum of 125 years. Finally, profitability, estimated by return on assets and return on equity, market return and age for firms in Ukraine are riskier than United kingdom. Standard deviations are equal to 0,121, 0,2070, 3,832 and 37,106, respectively.

Table 3. Descriptive statistics

United King dom					
	OBS	MEAN	STD DEV	MIN	MAX
ROA	718	0,0586	0,0962	-0,785	0,649
ROE	669	0,158	0,205	-0,905	0,977
Return	524	0,127	1,00429	-0,990	14,427
AGE	728	34,903	34,699	1	125
Ukraine					
	OBS	MEAN	STD DEV	MIN	MAX
ROA	736	0,00559	0,121	-0,901	0,600
ROE	681	0,0386	0,270	-0,987	0,975
R	376	0,239	3,832	-0,991	57,836
AGE	736	51,309	37,106	2	161

4.2 What Determines Firm Performance?

The results on the factors explaining market return are presented in table 4. As a dependant variable, we use market return calculated as growth rate of share price. Initially, we use, alternatively, as independent variables, return on assets, ROA, and return on equity, ROE. In the third model, we use these two independents variables. As a control variable, we use, only, firm age. The highest correlation coefficients equal to 15,24% for United kingdom and 5,23% for Ukraine. It seems that the independents variables of the third model explain better market return for United Kingdom and Ukraine. Across all specifications, we could not find affirmation on a positive association between profitability approximated by return on assets, ROA, and market return. All coefficients on this measure are not statistically significant. As for the effect of profitability measured by return on equity ratio the results are mixed. Our hypothesis 2 is checked, only, for Ukraine. Higher return on equity ratio leads to higher growth rate of share price. This result means that investors in Ukraine market try to buy shares of profitable firms. However, we conclude to a negative and a statistically significant effect of return on equity on market return for firms of United kingdom. This result indicates a decrease in share price for profitable firms in United kingdom. Finally, regarding firm age, we conclude to a positive and a statistically significant relationship, for all specifications, between firm age and market return. This findings means that older firms in United kingdom and Ukraine recorded an increase in their share prices.

Table 4. Determinants of stocks market returns

United King dom			
	Specification 1	Specification 2	Specification 3
	Return	Return	Return
C	-14,550 ^{***}	-14,0654 ^{***}	-14,0485 ^{***}
ROA	0,0632		0,107
ROE		-1,00819 ^{***}	-1,0267 ^{**}
Age	0,404 ^{***}	0,386 ^{***}	0,385 ^{***}
OBS	524	485	485
R squared(%)	14,36	15,24	15,24
Prob> F	0	0	0
Ukraine			
	Specification 1	Specification 2	Specification 3
	Return	Return	Return
C	38,490 ^{***}	40,412 ^{***}	-39,336 ^{***}
ROA	3,547		-5,618
ROE		2,176 [*]	3,818 [*]
Age	0,711 ^{***}	0,749 ^{***}	0,731 ^{***}
OBS	375	351	351
R squared(%)	3,55	4,85	5,23
Prob> F	0,0165	0,0058	0,0113

Note. ^{*}, ^{**}, ^{***}: significance at 10%, 5% and 1% levels respectively.

5. Explaining Firm Performance and the Effect of Activity Sectors

We try to determine the effect of activity sectors on explaining stocks market return. We considered five activity sectors; the service sector, the real estate sector, the professional sector, agriculture and mining sector and the manufacturing sector. We tested third model.

Table 5. Role of activity sectors in explaining determinants of stocks market returns

United Kingdom					
	Service	Real estate	Professional	Agriculture mining	Manufacturing
	Return	Return	Return	Return	Return
C	-8,439**	-12,222**	-9,334***	-10,896*	-23,158***
ROA	-7,207*	9,202	-1,739	-8,0760	6,469***
ROE	0,0865	-5,282	0,608	2,408	-1,963***
Age	0,303**	0,317**	0,328***	0,390**	0,446***
OBS	160	62	70	53	140
R squared(%)	9,47	20,25	23,19	18,14	48,96
Prob> F	0,0194	0,0410	0,0120	0,0895	0
Ukraine					
	Service	Real estate	Professional	Agriculture mining	Manufacturing
	Return	Return	Return	Return	Return
C	0,990	9,864	-35,852*	-34,280***	35,609***
ROA	32,250	64,442	-23,490	-8,0974	1,585
ROE	-6,814	-17,915	21,517**	6,572*	-0,224
Age	-0,0320	-0,144	1,574*	0,685***	0,502***
OBS	5	10	102	30	204
R squared(%)	1,04	-42,61	14,47	49,52	23,84
Prob> F	0,6061	0,9549	0,0238	0,0076	0

Note. *, **, ***: significance at 10%, 5% and 1% levels respectively.

The highest correlation measures are equal to 48,96% for the manufacturing firms of United kingdom, and 49,52% for agriculture and mining firms of Ukraine (table 5). We could not find affirmation on a positive relationship between profitability, measured by return on assets, ROA, and stocks market return for firms of Ukraine. However, the results for United kingdom are mixed. We conclude to a negative and a statistically significant impact of profitability, measured by ROA, for the corporations belonging to service sector. Furthermore, our hypothesis is retained for the manufacturing firms of United kingdom. Regarding the variable return on equity ratio, ROE, we reported a positive and a statistically significant effect on stocks market return for firms of Ukraine operating in the professional activities and agriculture and mining. However, we found a negative relationship for the manufacturing firms of United kingdom. As of our control variable, our research hypothesis is retained for all specifications, except, for firms of Ukraine operating in the service and real estate sectors.

6. Conclusion

Many works attempted to highlight the determinants of firm performance. In our paper, we try to determine how we can measure firm performance. In fact, firm performance was approximated using growth rate of share price. As independent variables that highlight firm performance, we used two ratios; return on assets, ROA, and return on equity, ROE. As control variable, we used, only, firm age. The results report that profitability measured by return on assets does not explain firm performance in United kingdom and Ukraine. However, we concluded to a positive and a statistically significant relationship between return on equity and stocks market return for firms of Ukraine. This finding do not rejects our second hypothesis. Higher profitable firms in United kingdom, measured by return on equity, have lower market return. This result does not accept our second hypothesis. We found, also, a positive interdependence between firm age and stocks market return for United Kingdom and Ukraine. This finding do not rejects our third hypothesis. Finally, we studied the effect of activity sectors on explaining firm performance. The results highlight that our first hypothesis is retained for the manufacturing firms of United kingdom. Our second hypothesis is retained for professional activities and agriculture and mining sector. Finally, we could not find affirmation on a positive relationship between firm age and stocks market return for firms in Ukraine operating in the service and real estate sectors.

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Cognitive Abilities, Democracy and Intellectual Property Rights Protection

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Abstract

The goal of this research is to investigate the link between cognitive abilities, as measured by cognitive abilities index and intellectual property rights protection using cross-national data. The findings suggest that cognitive abilities at a national level are significantly related with IPR protection. As expected intellectual capacity is positively and significantly related to the intellectual property rights and explain nearly 23% of cross national differences. In particular, a one standard deviation increase in the cognitive abilities index is associated with slightly less than a half standard deviation rise in IPR index. However, 65% of the effect of cognitive abilities on IPR protection is mediated by the democratic institutions.

Keywords: cognitive capital, intellectual, property protection

1. Introduction

A ballooning body of cross country studies investigates the impact of cognitive abilities on economic growth and GDP per capita, as well as a number of other socio-economic factors (Salahodjaev, 2015a; Salahodjaev, 2015b; Whetzel & McDaniel, 2006; Ram, 2007). Moreover, a number of follow up papers find that cognitive abilities are instrumental to antecedents of economic growth such as institutions (Kanyama, 2014) and credit sector size (Kodila-Tedika & Asongu, 2015) and corruption (Potrafke, 2012).

Although, related studies find that cognitive abilities is an antecedent of quality of institutional arrangements, the link between cognitive abilities and protection of intellectual property has not been explored up to this date.

Taking into account that intellectual property rights (IPR) are beneficial for economic growth (Thompson & Rushing, 1996; Adams, 2009), cognitive abilities may also be indirectly related on economic growth via this channel. Thus, the goal of this research is to explore this relationship. There are several channels: successfulness of economic policies, rule of law and soundness of institutions and human abilities.

Earlier studies show that human abilities, as estimated by a cognitive abilities index, is a robust antecedent of GDP per capita and economic growth. For instance, Weede and Kampf (2002) argue that 'standard indicators of human capital endowment — like literacy, school enrollment ratios or years of schooling — suffer from a number of defects. They are crude. Mostly, they refer to input rather than output measures of human capital formation. Occasionally, they produce implausible effects. They are not robustly significant determinants of growth. Here, they are replaced by average intelligence. This variable consistently outperforms the other human capital indicators in spite of suffering from severe defects of its own. The immediate impact of institutional improvements, i.e., more government tolerance of private enterprise or economic freedom, on growth it is in the same order of magnitude as intelligence effects are' (p. 380). Johnes and Schneider (2004) using cross-national data for the cognitive abilities index explore the effect of intellectual capital on economic growth. The study adopts a cross national growth regression model and finds that in growth regressions that include only robust control variables, IQ is statistically significant in 99.7% of these 1330 regressions. Similarly, Hunt and Whittman (2008) further find that intelligence is significantly related to economic development, although they 'question the simple explanation that national intelligence causes national wealth' (p.1).

In addition, cognitive abilities may also be related to the intellectual property right via quality of legal arrangements. For example, Potrafke (2012) shows that in countries with higher average intellectual abilities

there is a lower level of corruption. In a follow up study, Salahodjaev (2015c) analyzing data from more than 150 nations finds that cognitive skills have a negative effect on the size of the informal sector relative to GDP. Furthermore, studies find a positive correlations between intelligence and governance indicators (Kanyama, 2014) and freedom (Meisenberg, 2012; Meisenberg, 2014).

Thus study further adds to the related cross-national studies on the effect of cognitive abilities on various socio-economic outcomes by exploring the link between cognitive abilities index and strength of intellectual property rights in a sample of more than 120 nations.

The results of this study show that nations with higher levels of cognitive abilities are more likely to have stronger IPR protection. This link remains significant and robust even when we take into account the level of economic development, culture or types of adopted legal systems.

2. Data & Methods

This research adopts a proxy for IPR protection, namely the IPR index from Property Rights Alliance to explore the effect of cognitive capital on IPR protection.

Intellectual Property Rights (IPR) index

The International Property Rights Index (IPRI) was formulated by the Property Rights Alliance to operate as a benchmark for the conditions of property rights across the world. The IPRA takes into account three core aspects: the legal and political environment (LP), physical property rights (PPR) and intellectual property rights (IPR),

The Legal and Political Environment (LP) component provides an insight into the strength of the institutions of a country, the respect for the ‘rules of the game’ among citizens; consequently, the measures used for the LP are broad in scope. This component has a significant impact on the development and protection of physical and intellectual property rights.

The other two components of the index—Physical and Intellectual Property Rights (PPR and IPR)—reflect two forms of property rights, both of which are crucial to the economic development of a country. The items included in these two categories account for both de jure rights and de facto outcomes of the countries considered¹.

The overall grading scale of the IPRI ranges from 0 to 10, where 10 is the highest value for a property rights system and 0 is the lowest value (i.e. most negative) for a property rights system within a country.

Cognitive abilities

As a measure for cognitive abilities we use cognitive abilities index at a national level from Rindermann (2007). In this study the author derives a cognitive abilities index for more than 180 nations based on international student assessment tests such as TIMMS², PISA³, PIRLS⁴. In addition, the study relies on international intelligence test studies collected by Lynn and Vanhanen (2012) and discussed in Volken (2003) and Barnett and Williams (2004). This index ranges from 59 to 105 with an average of 84.

¹See http://internationalpropertyrightsindex.org/ipri2016_comp for more details

²Trends in International Mathematics and Science Study

³Programme for International Student Assessment

⁴Progress in International Reading Literacy Study

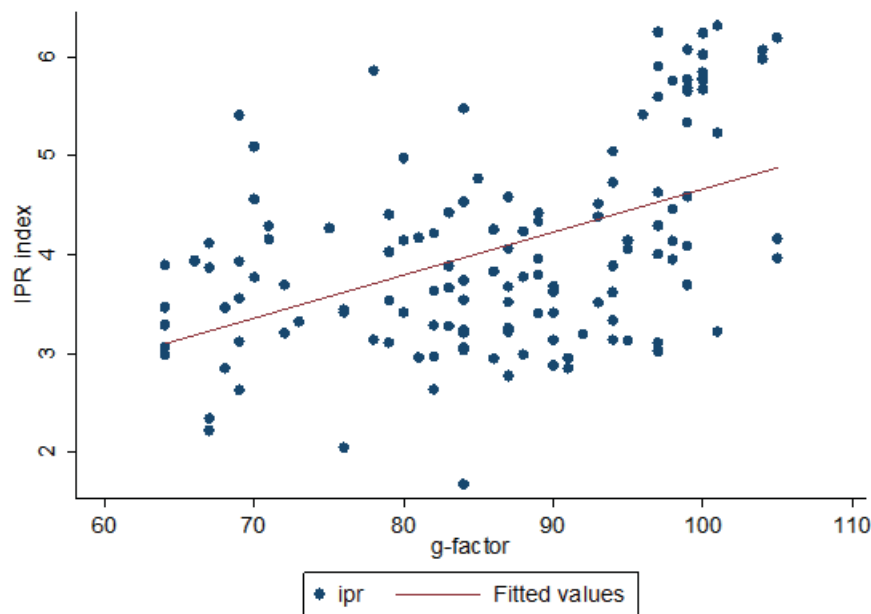


Figure 1. Visual association between cognitive abilities and IPR index, n – 138, corr. coef. = 0.49

Fig. 1 present visual association between cognitive abilities and IPR index for a sample of 138 nations. The results suggest that cognitive abilities are positively linked to intellectual property protection. For example the correlation is 0.49 and it is significant at the 1% level. However, while scatterplot presented above indicates that cognitive abilities and intellectual property rights have a positive relationship, this link may be driven by omitted variables or moderated by other variables. Thus, to assess the relationship between cognitive abilities and IPR index we adopt a regression function that can be specified as:

$$IPRI = INTERCEPT + b*CA + c*CONTROLS + error \tag{1}$$

where IPRI is intellectual property rights protection index; CA is variable that measures cognitive abilities index by country; CONTROLS is a set of control variables, namely, GDP per person, ethnic fractionalization, binary variable for nations with British legal origins and democracy index. Table 1 presents descriptive statistics. The descriptive statistics suggest that in our sample GDP per capita ranges from 640 international dollars in purchasing power parity to 132,0000 PPP \$. Nearly 33% of the countries in our sample have adopted British legal system and majority of countries have passed democratic transition threshold of 3.5 points.

Table 1. Descriptive statistics

Variable	Description	Mean	Std. Dev.	Min	Max
IPR	IPR index	4.057247	1.030612	1.67984	6.312332
GDP per capita	GDP per person (in '000s PPP USD)	17.77692	20.60943	0.640589	132.9723
Cognitive abilités	Cognitive abilities index	84.11579	11.65225	59	105
Ethnic fractionalization	The index of ethnic fractionalization	0.438444	0.258361	0	0.9302
British legal origins	Dummy variable for countries with UK legal origin	0.338309	0.474315	0	1
Democracy	Democracy index	4.664063	1.980378	1	7

3. Results

The econometric results are displayed in Table 2. Table 2 presents OLS results estimated in Stata 12 statistical software using standard OLS regression estimator with heteroskedasticity adjusted standard errors. Column 1 is a one variable specification where the IPR index is regressed on the cognitive capital index only. As expected cognitive capital is positively and significantly related to the intellectual property rights and explains nearly 23% of cross-national differences. In particular, a one standard deviation increases in cognitive abilities index which is associated with slightly less than a half standard deviation rise in IPR index.

However, extant studies also show that cognitive abilities is an important ingredient of economic development. Therefore it is important to control for the GDP per person in this specification. Column 2 takes into account this

factor and shows that GDP per person is positively and significantly linked to IPR. More importantly, the cognitive abilities index retains a significant effect, although at a 5% level. The results also suggest that when GDP per capita increases by 10,000 international dollars – IPR index increases by 0.3 slightly less than a half standard deviation.

In column 3, we further include a dichotomous variable for nations with British legal origins from La Porta et al. (2008) and the ethnic fractionalization index from Alesina et al. (2003). The results suggest that countries with British legal origins have higher levels of IPR protection while the effect of culture, measured by ethnic diversity is insignificant. The effect of cognitive abilities remains robust. This column further highlights the importance of legal system in effective management of intellectual property.

Finally, in column 4 we include a democracy index from Freedom house indicators. The results show that the democracy index has a positive and significant effect on IPR index. This variable is significant at the 1% level suggesting that protection of intellectual property is better in democratic countries. However, we also find that cognitive abilities are insignificantly related to the IPR index now. This implies that the direct effect of cognitive abilities is mediated by the political and civil liberties. This specification explains nearly 60% of cross-national variations in IPR protections. Moreover, the variance inflation factor for this model is below 10, suggesting that multicollinearity is not a problem in our empirical exercise.

Table 2. Cognitive abilities and IPR protection

	(1)	(2)	(3)	(4)
Cognitive abilities	0.0434*** (0.0068)	0.0147** (0.0063)	0.0168** (0.0070)	0.0065 (0.0071)
GDP per person		0.0317*** (0.0036)	0.0300*** (0.0034)	0.0295*** (0.0033)
British legal law			0.5323*** (0.1335)	0.4690*** (0.1296)
Ethnic fractionalization			-0.3439 (0.2786)	-0.2213 (0.2673)
Democracy				0.1431*** (0.0359)
Intercept	0.3236 (0.5900)	2.1968*** (0.5112)	2.0370*** (0.6476)	2.2035*** (0.6177)
<i>N</i>	138	136	136	135
adj. <i>R</i> ²	0.2252	0.5145	0.5625	0.5975

Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

To test this mediation effect we apply Sobel-Goodman mediation test. The results of this test suggest that 65% of the effect of cognitive abilities on IPR protection is mediated by the democratic institutions. This implies that the indirect effect of cognitive abilities on IPR is stronger than direct effects.

Finally, we tested whether this mediation effect is driven by countries with lowest and highest levels of democracy in our sample. To do so we have removed countries with the highest level of democracy (7 points) in column 1 and the lowest levels of democracy (1 and 2 points) in column 2. The estimates show that cognitive abilities index is insignificant while the democracy index is significant in this model. This may suggest that democratic countries are the winners of stronger protection of intellectual property.

Table 3. Cognitive abilities and IPR protection: sub-samples

	(1)	(2)
Cognitive abilities	0.0013 (0.0074)	0.0078 (0.0074)
GDP per person	0.0234*** (0.0037)	0.0295*** (0.0033)
British legal law	0.4590*** (0.1450)	0.4887*** (0.1337)
Ethnic fractionalization	-0.1316 (0.2966)	-0.0794 (0.2750)
Democracy	0.0638 (0.0424)	0.2400*** (0.0431)
Intercept	2.9389*** (0.6640)	1.4516** (0.6418)
<i>N</i>	103	119
adj. <i>R</i> ²	0.3551	0.6658

Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4. Conclusion

The findings of this article are important for a set of reasons. First, our results further show that human capital as captured by the cognitive abilities index, is an important variable in the prediction of a sub-dimension of a quality of legal systems such as IPR protection. Extant studies seemed to neglect the importance of cognitive abilities in this field of research.

Second, the results of our empirical exercise may indicate that cognitive abilities have indirect and positive effect on economic growth via the stronger protection of intellectual property. Therefore, the results reported in this study further highlight the significance of the abilities in economic growth and quality of efficiently functioning legal system. Thus, in cognitively able societies institutions protect business environment, achievements and thus improve welfare.

Finally, the findings of the Sobel-Goodman test imply that democratic countries are the beneficiaries of higher levels of cognitive abilities and IPR association.

On the other hand, there are some limitations in our research. First, this study is devoted to investigate the link between human abilities and IPR protection on the legal level, while whether cognitive capital reduce the size of illegal market for intellectual property remains the avenue for future research.

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The Effect of the Harmony between Organizational Culture and Values on Job Satisfaction

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Abstract

In this study, the effect of the harmony between organizational culture and values on job satisfaction is examined. Hierarchical regression analysis was applied to the data, which was obtained from the study conducted on 181 employees working in a private hospital in Istanbul. The result of the analysis shows that value-culture variation in which employees will have the highest job satisfaction is the traditionalist/conservative values-clan culture. The second most successful value-culture variation on job satisfaction is the impulsive/hedonistic values-adhocracy culture. In other words, it is predicted that job satisfaction will be high when an employee with traditionalist/conservative values works in an organization where clan culture is important, and an employee with impulsive/hedonistic values works in an organization where adhocracy culture is important. The most negative impacts on job satisfaction are impulsive/hedonistic values-clan culture and precautionary values-market culture. In other words, it can be said that an employee with impulsive/hedonistic values will be unhappy in clan culture, and an employee with precautionary values will be unhappy in market culture.

Keywords: organizational culture, values, job satisfaction

1. Introduction

Schein (1984) defines organizational culture as the pattern of basic assumptions that a given group has invented, discovered, or developed in learning to cope with its problems of external adaptation and internal integration and have worked well enough to be considered valid to be taught to new members to perceive, think, and feel in relation to those problems. The establishment of a strong organizational culture is critical in two respects. First, with the help of an organizational culture, employees have an opportunity to develop business relationships, adopt procedures and rules, internalize values and norms, and form collective behavior patterns. Second, organizational culture has direct or indirect influences on the structure, strategy and management approach of an organization. For instance, the culture of an organization influences information about marketing strategies and the messages of the organization (Ahamed & Mahmood, 2015). Therefore, there are important relationships between the success of the management of a business and the functioning of the organizational cultures. The rules that determine the behavior of the employees within the organization, the organizational structure, and the accepted organizational principles also shape the functioning of the organization. The power to control the degree of compliance of employees within the organizational culture is especially influential, since it will determine the quality of the relationships among the employees. Also, it will determine the effectiveness of the organization's operation and the extent to which the rules will be adopted by the executives (Erdoğan, 2007). Organizational culture is one of the most difficult concepts to understand and define. This is because organizational culture covers the values, expectations, implicit assumptions, and legacy that are part of the organization. While organizational culture is not recognized by most employees, it provides a sense of identity to employees and an unspoken guidance on how to get along within the organization. (O'Riordan, 2015). It is very important for organizations to create a strong organizational culture in order to protect their market position. In this context, the organization should develop an organizational culture that will create support, and focus on

continuous development. The presence of a strong organizational culture will also ensure the permanent retainment of employees (Habib et al., 2014).

Since the first studies on the concept of values were completed, the concept has been widely used, especially in the field of organizational behavior and behavioral sciences, as well as in branches of science such as sociology, psychology, anthropology and social psychology. Values are often examined in order to identify cultural groups, community, people, and change that occurs over time. Values are also used to explain the motivational basics of attitudes and behaviors (Schwartz, 2012). In this context, it is increasingly important to investigate the relationships between the values of individuals, the level at which culture affects the organizations in which they work, and the relationship and harmony between the variables and issues such as job satisfaction, commitment and motivation. Job satisfaction, one of the most important factors in terms of the analysis of behaviors within the framework of business management, includes positive feelings and attitudes that an individual has about his or her work (Riggio, 2014). The general attitudes of the employees regarding their work, and the work environment, are an indication of their job satisfaction levels.

On the one hand, job satisfaction is of great importance in terms of having a favorable effect of the experiences in the organization, and on the individual, while also affecting the emotional needs and value judgments of the individual employees (Erdoğan, 2007). Hence, managers should be aware that employees, particularly those with low job satisfaction, may tend to avoid work, and that they frequently make an effort to leave their job and begin working for another company (Türk, 2007). It is especially important to note that a strong organizational culture is expected to have a positive effect on job satisfaction. Robbins and Hucheson emphasize that job satisfaction is the result of the existence of an organizational culture (Biswas, 2015: 16). In general, the information available in the literature supports the conclusion that the harmony between values of employee and the organization leads to the development of varied attitudes towards the organizations in which the employees serve (Amos & Weathington, 2008).

In this context, specifically, the main objective of this study is to examine the effect of the harmony between organizational culture and values on job satisfaction. This paper provides empirical evidence regarding the relationships among organizational culture, values and job satisfaction in a developing country setting, Turkey. The results can be used as a reference for organizations to recognize which individual values are appropriate for increasing the job satisfaction. This study also draws attention to which variations among values and organizational culture is coherent for job satisfaction levels of employees. Within this perspective, this paper draws a route for organizations to constitute such a work environment encouraging the harmony between organizational culture and values to enhance the job satisfaction levels of employees.

2. Literature Review and Hypotheses

2.1 Organizational Culture

The concept of culture began to pass the forefront in the field of management science in the late 1960s (Fleury, 2009). As a whole, the concept of a culture created by individuals coming together in accordance with certain principles can be primarily considered as protection of the individual against the physical environment. In this context, cultures are the beliefs, values and judgments of individuals that constitute a society. It is important for a manager of an organization to be familiar with these elements. Within this frame, for the manager of an organization, culture can be defined as the set of beliefs, values, customs and outcomes of other interpersonal relationships created by certain human communities affecting the way of the institution works, and other activities of the institution. On the other hand, organizational culture refers to the ways the organization conducts its business. Therefore, organizational culture is one of the important distinguishing factors of an organization (Erdoğan, 2007). Numerous studies in a wide array of contexts have established the importance of organizational culture in determining success or failure of firms (Naqshbandi, et al., 2015b). Muafi (2009, p.106) has defined organizational culture as values, ideology, reputation, philosophy, symbols, customs, and the norms affecting organizational performance. In this context, corporate culture can be spread among employees in different forms, including ceremonies, stories, physical elements that are symbolic, and language, which are the most effective elements (Robbins & Judge, 2013). These elements will be briefly discussed. Stories are short narratives shared among employees and adapted from real events to inform others, especially new employees, about the organization. Physical symbols are the element that evokes something that distinguishes one organization from another. Physical symbols can be stronger than other elements, especially because they attract attention to the obvious theme. For example, Mother, a small advertising agency based in London, has no doors within the entire premises, except for the toilets. Therefore, this physical element symbolizes the cultural values of the organization, such as open communication, cooperation, creativity and equality (Daft, 2015). Ceremonies cover

some stereotypical activities that express and strengthen the organization's key values. For example, organizations such as Wal-Mart, IBM, and Pricewaterhouse Cooper use corporate songs as a ceremonial element of organizational culture. Finally, language represents an element that can help employees to integrate with organizational culture, acknowledge their acceptance of the culture, and protect it (Robbins & Judge, 2014).

There have been prominent culture studies over the last 30 years in the study of organizational behavior, especially in terms of improving organizational effectiveness and gaining perspective on the optimal use of human resources (Landekic, et al., 2015). In this context, organizational culture is classified by different researchers in different ways (Çavuşoğlu & Köse, 2016). The "Competing Values Framework", developed by Cameron and Quinn, is the most emphasis among these classifications. Cameron and Quinn, according to their model, classify four different cultures as clan culture, market culture, hierarchy culture and adhocracy culture (Bogdanowicz, 2014):

- *Clan Culture*: In this culture, it is important to take care of the employees, and to ensure that they have what they need to be satisfied and productive. In this context, the main focus of clan culture is to meet the needs of employees to achieve high performance. In this context, employee involvement and expectations of rapid change due to the external environment gains importance. Employee involvement creates a sense of responsibility, and increases their commitment to the organization. For example, Wegmans, a large supermarket chain, is an example of the clan culture because it invests heavily in employee development and support programs, such as scholarships to both full-time and part-time employees, paying good salaries, and sending employees to workshops and seminars. Employees are encouraged to take the initiative in dealing with customer issues and being creative (Daft, 2015).
- *Market culture*: This culture type focuses on a result-oriented business environment. Leaders within the organization are competitive, tough and demanding. The emphasis on winning keeps the organization together and long-term expectations, aggressiveness, making competitive moves, achieving goals and objectives are the elements of this culture. Organizational success is measured by market share and leadership in the market (Bogdanowicz, 2014).
- *Hierarchy culture*: This type of culture tends to be bureaucratic and is observed in organizations that reduce working creativity (Nam & Kim, 2016). Within this context, organizations with a hierarchy culture achieve goals through formal rules and close supervision rather than through shared values (Naqshbandi, Kaur & Ma, 2015a). Pre-determined procedures assign what to do and what not to do within the organization. The focal point of this culture is to keep the organization functioning smoothly. The most important feature is enforcing formal rules and policies which keep the organization together. This kind of culture is especially prevalent in the management of public institutions (Öz, Kaya & Çiftçi, 2015). Today, most administrators move away from this type of culture, because of the need for greater flexibility. However, Pasific Edge, as an example, has successfully implemented hierarchy culture principles to ensure that all projects are on time and on budget. (Daft, 2015).
- *Adhocracy Culture*: This culture type focuses on an entrepreneurial, flexible and creative business environment. There is an organic structure in which organizational status and positions are ignored, or considered only temporarily. Adhocracy culture is characterized by - far from being centralized - there is an emphasis on individual initiative and risk; this encourages creativity and the freedom to be flexible (Erdem, 2007). Google is one of the best examples of this type of organizational culture, highlighting values, creativity, individual initiative, experience, risk-taking and entrepreneurship. In addition, organizations such as companies in the marketing, electronics and cosmetics sectors that have to move fast to satisfy the customers can be evaluated within the scope of this culture type (Daft, 2015).

The four different categories in the Competitive Value Model described above relate to the harmony between cultural values, strategy, structure and environment. Each of them can be successful, depending on the needs of the external environment, and the focus of the organizational strategy (Daft, 2015).

2.2 Values

Different countries around the world and the varied societies within these countries may have similar or divergent values, depending on their cultures. The concept of value, one of the main sources of life and actions, is also of great importance in terms of the individuals which form the society. As individuals organize their lives according to the values which they have adopted, they measure the values they have by assessing and judging the different situations they face as a source of basic perception (Şişman, 2002). The concept of value is defined by different authors in different ways. Value is the sum of beliefs underlying the intellectual and behavioral processes that influence the behavior that can lead to a desired end-of-life situation, and that influences a person

in different situations (Connor & Becker, 2002; Özgener, 2004). Another definition of value is the beliefs and convictions that guide the ideals, preferences, decisions, and behaviors that are an essential part of the individual's work and daily life. (Cavanagh & McGovern, 1998, p.1). According to Hofstede (2001, p. 5), value is defined as the tendency to prefer a particular situation in relation to others. Schwartz (1992) opines that values are desirable, trans-situational goals that serve as guiding principles in the life of a person or other social entity (Çalışkur, 2014). According to Schwartz, values represent subjective beliefs that are based on emotions and are related to the goals that individuals want to achieve. Schwartz suggests that values are indicative of individual norms and behaviors about what is right and what is wrong. Hence, values emphasize the characteristics underlying individual behaviors, while also helping individuals to make assessments in certain events or situations. In this context, it can be said that the concept of values is individualistic, guiding and the importance that one places on values, varies from person to person (Özcan, 2012).

The theory of basic individual values developed by Schwartz is one of the leading theories in the field in the last 20-30 years (Lilleoja and Saris, 2014). Schwartz refers to the existence of three different universal needs in the context of his model (Schwartz, 1994). Accordingly, the universal needs are (Newton and Mazur, 2016): (1) biological organisms, (2) requisites of coordinated social interaction, and (3) survival and welfare needs of groups. Based on these three universal needs, Schwartz has defined 10 value types. These values and definitions are given in Table 1 below.

Table 1. Schwartz's Value Types and Their Definitions

Value Type	Definition
<i>Benevolence</i>	Preserving and enhancing the welfare of those with whom one is in frequent personal contact.
<i>Universalism</i>	Understanding, appreciation, tolerance, and protection for the welfare of all people and for nature.
<i>Self-direction</i>	Independent thought and action--choosing, creating, exploring.
<i>Stimulation</i>	Excitement, novelty, and challenge in life.
<i>Hedonism</i>	Pleasure or sensuous gratification for oneself.
<i>Achievement</i>	Personal success through demonstrating competence according to social standards.
<i>Power</i>	Social status and prestige, control or dominance over people and resources.
<i>Security</i>	Safety, harmony, and stability of society, of relationships, and of self.
<i>Conformity</i>	Restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms.
<i>Tradition</i>	Respect, commitment, and acceptance of the customs and ideas that one's culture or religion provides.

Source: Schwartz, S. H. (2012). "An Overview of the Schwartz Theory of Basic Values". *Online Readings in Psychology and Culture*, 2 (1), pp.5-7.

In his theory of basic individual values, Schwartz classifies the 10 motivational values shown in Table 1 as values that reflect individual, collective, and mixed interests (both individual and collective) within a circle. According to this, motivational values such as power, success, hedonism, anxiety and self-direction are within the area of individual interest; on the opposite side, motivational values such as benevolence, tradition and adaptive values reflect the common interest area. As the universalism and security motivational values between these two groups can be included in both groups, they constitute the group of mixed motivational values and the limit of individual and collective value spaces (Devrani, 2010).

2.3 Job Satisfaction

The job satisfaction concept is the most important variable that can be considered as an output in the context of the input-process-output models. In this context, job satisfaction has found a large work area particularly in the field of organizational psychology (Körner, et al., 2015). Job satisfaction is an attitude that reflects the assessments of the individual's job and job experience for a certain period (Schermerhorn, et.al., 2010). According to the most well-known and recognized definition by Locke (1976, p.1304), job satisfaction refers to a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences. In other words, job satisfaction can result when the characteristics of the job are assessed, and the individual develops positive feelings about his or her job. There are three important dimensions of job satisfaction: values, the levels of importance placed on these values, and perceptions. Values cover the subjective needs that are in the mind of the individual. In this context, job satisfaction is considered as a function of the values that the individual has developed, consciously or unconsciously. Second, the existence of these values does not mean that they are the same for every individual. For example, while job security is most important for one employee, another employee prefers a job that offers travel on business trips, rather than job security. According to these values, job satisfaction differs according to employees. On the other hand, perception is related to how the values and the present situation are seen by individual employees. Reactions differ according to the perception of individual employees (Wagner & Hollenback, 2010). In this context, by evaluating the job satisfaction, employee adds both

thoughts and opinions and feelings about the work (Saari & Judge, 2004).

2.4 The Effect of the Harmony between Organizational Culture and Individual Values on Job Satisfaction

The underlying reasons for individual attitudes, perceptions and behaviors can be explained through the concept of values. Therefore, by learning about an individual's value system, you can also have an opinion about why that individual behaves in a certain way, and what affects him or her. At this point, the harmony between individual values and the organization is coming into prominence. For example, a lack of harmony is a strong possibility between an individual who attaches great importance to independence, imagination, creativity, or freedom, and an organization that closely monitors employee compliance, within its organizational context. The opposite situation will greatly improve organizational alignment and harmony. While managers tend to appreciate and reward employees for adapting to the organization's culture, employees tend to get job satisfaction when they perceive that they are a good fit. Therefore, the organization should keep in mind that while it is necessary to search for candidates who are qualified to do the job, it is also important to assess a candidate's value system, to determine if these values are compatible with those of the organization (Robbins & Judge, 2013). In this context, organizational culture is considered to be the most effective factor in demonstrating the desirable and expected behaviors that will enable employees to achieve more, and produce more positive organizational outputs (Kaoa, Tsaur & Wub, 2016). Some studies stated that culture encourages employees to be more innovative (Naqshbandi, Kaur & Ma, 2015a; Naqshbandi & Kaur, 2011). The more an employee understands and grasps shared values within the organization, the fewer the disruptions to the creation of a coherent organizational culture (Cekuls, 2015). Job satisfaction is a function of the values that an employee gains from his job, consciously or unconsciously (Wagner & Hollenback, 2010). Organizational culture is as effective an influence on job satisfaction as experience, personality and job-related duties (Robbins & Judge, 2013).

When the studies on the variables within the scope of the job are examined, it can be seen that there are meaningful relationships between these variables. For example, Lund (2003) examined the effects on job satisfaction of culture types described by Cameron and Quinn. According to the results of this research, it was found that there is a positive relationship between clan and adhocracy cultures and job satisfaction, and a negative relationship between market and hierarchy cultures and job satisfaction. Tsai (2011) finds that job satisfaction levels increase in organizations with a strong organizational culture. As a result of research conducted on 530 nurses working in public and private hospitals, Jacobs and Roodt (2008) found that organizational culture has a significant effect on job satisfaction. Amos and Weathington (2008) determined that the harmony between employee and organizational values has a positive effect on job satisfaction. Nystrom (1993) found that employees in the health sector have a high level of job satisfaction, if the organization in which they work has a strong organizational culture. In another study, Tovey and Adams (1999) stated that organizational culture is one of the primary factors in job satisfaction. İşcan and Timuroğlu (2007) stated that clan and adhocracia culture types have a positive effect on job satisfaction; hierarchy and market cultures are inversely related to job satisfaction. Rızaoğlu and Ayyıldız (2008) examined the closeness of the relationship between organizational culture and job satisfaction, and determined that cultural power, service quality and customer value dimensions are the most important factors affecting employee job satisfaction. Bellou (2010) suggested that job satisfaction is low in organizations with aggressive organizational cultures, while it is high in organizations that offer equal pay, and opportunities for personal development, It is also high in organizations where there is a general passion for work and a strong image. In addition, Din and Ghetany (2016), Şendoğdu, Özata and Çiftçi (2014), Habib, Aslam, Hussian, Yasmeen and Ibrahim (2014), Vukonjanski and Nikolic (2013), MacIntosh and Doherty (2010), Johnson and Mcllynte (1998), Tzeng, Ketefian and Redman (2002) have reached the conclusion that organizational culture influences job satisfaction. Some studies (Olasupa, 2011) did not find a correlation between organizational culture and job satisfaction. Odom, Boxx, and Dunn (1990) stated that hierarchical culture types, one of the organizational culture types, do not promote employee job satisfaction.

It is stated in related literature that the harmony between individual values and organizational values will affect the employees' business behaviors. In this context, when considering individual values for the individual and organizational culture for the organization, an increase of the harmony between the individual and the organization makes positive contributions to the behavior and outputs (e.g. job satisfaction) of the individual in the business environment. Integrative harmony among the culture, values, targets and norms of the organization, and the personality, values, goals and rules of individuals can affect the organizational outcomes (Kılıç, 2010). When the studies dealing with the relationship between individual values and job satisfaction are evaluated, Yılmaz and Dilmaç (2011) examined the effects of teachers' values on job satisfaction and showed that among teachers, job satisfaction was significantly correlated with the sub items of the individual values, such as power, achievement, hedonism, arousal, self-control, universality, charity, tradition and security. Another result of the

research is the determination that teachers' job satisfactions significantly predict their personal values.

Employees working in a strong organizational culture act in accordance with shared values and norms that support both individual and organizational goals and objectives. In this context, employees will work in harmony to successfully perform the tasks assigned to them, ensure adequate job performance, and develop job satisfaction (Tsai, 2011). Similarly, Kane-Urrabazo (2006) notes that a healthy and strong organizational culture is an important influence in creating a satisfying work environment. Therefore, with this study, in the context of the effect of the harmony between the individual and the organization on organizational outcomes, the harmony between individual values and organizational culture and their impact on job satisfaction, the following hypotheses have been developed to be tested.

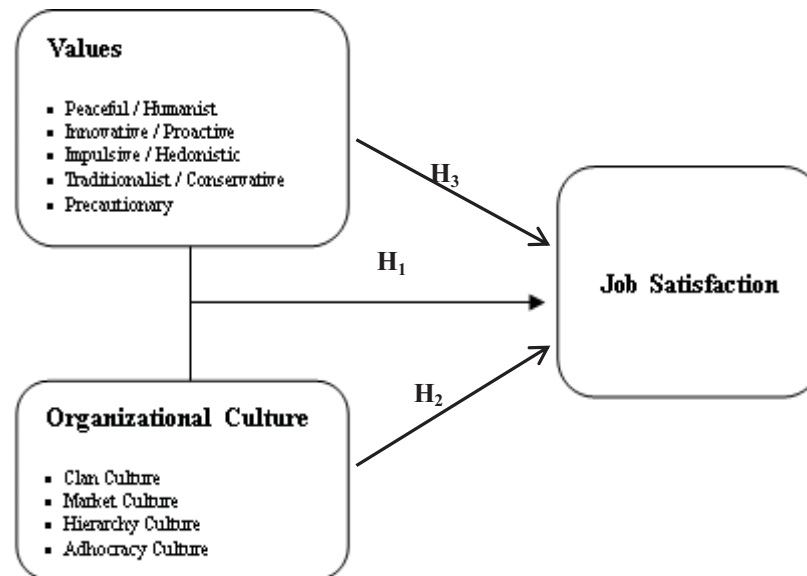


Figure 1. Model of the Study

Hypothesis 1 (H₁): The harmony between organizational culture and individual values has a significant effect on job satisfaction.

Hypothesis 2 (H₂): Types of organizational culture have a significant effect on job satisfaction.

Hypothesis 3 (H₃): Employees' values have a significant effect on job satisfaction.

In first phase of the analysis of the research, the effects of restructured personal values and organizational cultures on job satisfaction were examined separately, after factor and reliability analysis. Then the effect of a combination of 20 different individual values - organizational culture combinations on job satisfaction - was examined, so that the most compatible and the most incompatible combinations were determined.

3. Methodology

3.1 Sampling and Data Collection Method

The research was conducted on Liv Hospital's employees in Istanbul. During the period of the research, there were 545 employees in the hospital at all levels of employment. Questionnaires were distributed to all employees through full census sampling, and 181 questionnaires that were properly completed were collected. Analysis was based on the data obtained from the questionnaires.

The demographic characteristics of the participants that were gathered from the questionnaire are presented in Table 2. Accordingly, the majority of participants were female (67.4%) and under 30 years of age (69.06%). Considering the health sector in which the research was conducted, the high number of women and young employees can be accepted as normal for this sector. Regarding education level, most of the participants (91.2% in total) had a bachelor's degree, an associate's degree, or had been to high school. Of the total, 30,9% had a bachelor's degree, 48,1% had an associate's degree, and 12,2% had been to high school.

In terms of income variable, the majority of the employees who completed the questionnaire, 81.8% of the sample, had an income between 1300 TL and 3000 TL. Regarding seniority in firm, the majority of the participants were found to have 1-5 years of seniority (66.9%). Lastly, in terms of professional seniority of the

participants, it was shown that, again, the majority of the employees (44.2%) had been on the job between 1-5 years.

Table 2. Demographical Characteristics of the Participants

		f	%
Sex	Female	122	67,4
	Male	59	32,6
Age	Under 24	57	31,49
	24-29	68	37,57
	30-35	32	17,68
	36-41	20	11,05
	42-48	1	0,55
	Above 48	3	1,66
Education Level	High School	22	12,2
	Associate's Degree	87	48,1
	Bachelor's Degree	56	30,9
	Master's Degree	12	6,6
	Doctorate	4	2,2
Income	Between 1300 TL – 3000 TL	148	81,8
	Between 3001 TL – 6000 TL	30	16,6
	Between 6001 TL – 10000 TL	1	,6
	More than 10000 TL	2	1,1
Seniority in Firm	Less than 1 year	55	30,4
	1-5 years	121	66,9
	6-10 years	4	2,2
	More than 16 years	1	,6
Professional Seniority	Less than 1 year	24	13,3
	1-5 years	80	44,2
	6-10 years	39	21,5
	11-15 years	15	8,3
	More than 16 years	23	12,7

N= 181

3.2 Scales

The organizational culture, values and job satisfaction variables that were considered in the scope of this study were evaluated using three different scales (Table 3).

Table 3. Scales Used in the Study

Scale	Developed By	Number of Items
Values	Knoppen ve Saris (2009)	40
Organizational Culture	Cameron ve Quinn (2011)	24
Job Satisfaction	MSQ, Martins ve Proença (2011)	6

3.2.1 Value Scale

The Schwartz Value Survey developed by Schwartz (1992) was used to measure values (Schwartz, 2017). Years after the scale was developed it was differentiated due to the development of preferences for some of the values, and changes caused by the way or arrangement of the response scale. The 40-item version adapted from the Schwartz Value Survey by Knoppen and Saris (2009) was used in this study. The scale allows questions to be answered on a 6-point Likert basis from Strongly Disagree (1) to Strongly Agree (6).

3.2.2 Organizational Culture Scale

To measure organizational culture, a variable of this study, a scale developed by Cameron and Quinn (2011) was used. This scale was preferred in this study since it is comprehensively common and easier to understand. It consists of a total of 24 questions that identifies four types of organizational culture, namely clan, adhocracy, market and hierarchy. Participants who completed the questionnaire were asked to respond to questions on a 6-point Likert basis from Strongly Disagree (1) to Strongly Agree (6).

3.2.3 Job Satisfaction Scale

To measure the level of job satisfaction of the participants, a 6-question scale developed by Martins and Proença (2011) on MSQ for hospital employees and covered the internal dimensions of job satisfaction was used. The scale allows questions to be answered on a 6-point Likert basis from Strongly Disagree (1) to Strongly Agree (6).

3.3 Factor and Reliability Analysis

For each dimension of the scale, exploratory factor analysis was applied. Each factor passed through the KMO and Bartlett tests and the Anti Image analysis. Items that were below the value of the sampling adequacy of 0.50, the only one remaining under the factor, and factor loadings too close to each other were excluded from the evaluation.

Five factors that emerged from the factor analysis on the value scale were given terms of "Peaceful / Humanist"; "Innovative / Proactive", "Impulsive / Hedonistic", "Traditionalist / Conservative" and "Precautionary".

Table 4. Results of Factor and Reliability Analysis

Values				
Factor Name	Items	Factor Loading	Factor Extraction (%)	Reliability Analysis (Cronbach's Alpha)
Peaceful/ Humanist	v35	,760	15,767	,830
	v40	,731		
	v23	,712		
	v36	,694		
	v27	,618		
Innovative / Proactive	v12	,760	15,583	,812
	v1	,690		
	v11	,690		
	v3	,672		
Impulsive / Hedonistic	v8	,639	13,910	,775
	v26	,782		
	v10	,766		
	v30	,728		
Traditionalist / Conservative	v6	,505	11,246	,728
	v25	,818		
	v20	,790		
Precautionary	v28	,698	8,074	,599
	v5	,746		
	v16	,699		
		TOTAL	64,580	
Kaizer Meyer Olkin Measure of Sampling Adequacy			,880	
Bartlett Test of Sphericity Chi-Square			1367,832	
df			171	
Sig.			,000	

The job satisfaction scale used in the study was one dimensional. After a factor analysis was completed on the satisfaction scale using 6 questions, 3 questions were removed due to low factor loadings. There was a satisfaction level with a high reliability covering 3 questions.

Job Satisfaction

Factor Name	Items	Factor Loading	Factor Extraction (%)	Reliability Analysis (Cronbach's Alpha)
Satisfaction	sat2	,921	81.458	,886
	sat4	,893		
	sat1	,893		
		TOTAL	81.458	
Kaizer Meyer Olkin Measure of Sampling Adequacy			,738	
Bartlett Test of Sphericity Chi-Square			301,584	
df			3	
Sig.			,000	

In the factor analysis on the organizational culture scale, four factors appeared as if they were originally in the scale: "Clan Culture", "Market Culture", "Hierarchy Culture" and "Adhocracy Culture".

Organizational Culture

Factor Name	Items	Factor Loading	Factor Extraction (%)	Reliability Analysis (Cronbach's Alpha)
Clan Culture	oc4	,840	25,945	,950
	oc5	,803		
	oc3	,789		
	oc2	,783		
	oc6	,766		
	oc1	,723		
Market Culture	oc18	,815	18,917	,883
	oc17	,788		
	oc16	,726		
	oc15	,694		
	oc14	,681		
	oc13	,554		
Hierarchy Culture	oc22	,772	15,046	,900
	oc23	,731		
	oc21	,723		
	oc24	,720		
Adhocracy Culture	oc10	,716	15,000	,917
	oc8	,701		
	oc11	,653		
	oc7	,653		
	oc12	,569		
		TOTAL	74,908	
Kaizer Meyer Olkin Measure of Sampling Adequacy			,937	
Bartlett Test of Sphericity Chi-Square			3348,745	
df			210	
Sig.			0,000	

4. Findings

4.1 Correlation Analysis

The correlations between factors, factor averages and standard deviations are shown in Table 5. The most accepted among the values is the innovative / proactive, the least accepted is the traditionalist / conservative. The organization concerned has been largely associated with hierarchy and market culture. The satisfaction level is not very high. There are significant relationships between both independent variables and dependent and independent variables. More reliable interpretations will be made after the regression analysis.

Table 5. Correlation Analysis

	Ort	SS	1	2	3	4	5	6	7	8	9	10
1.Peaceful / Humanist	5,07	0,80	1									
2.Innovative / Proactive	5,22	0,80	.556**	1								
3.Impulsive / Hedonistic	4,75	0,95	.498**	.569**	1							
4.Traditionalist / Conservative	4,37	1,09	.369**	.301**	.317**	1						
5.Precautionary	4,96	1,02	.501**	.422**	.300**	.284**	1					
6.Clan Culture	3,71	1,35	.194**	.170*	.202**	.376**	.215**	1				
7.Market Culture	4,27	1,11	.300**	.320**	.252**	.280**	.169*	.565**	1			
8.Hierarchy Culture	4,30	1,18	.396**	.363**	.340**	.400**	.297**	.650**	.692**	1		
9.Adhocracy Culture	3,79	1,21	.225**	.121	.188*	.379**	.227**	.798**	.602**	.657**	1	
10.Job Satisfaction	3,64	1,15	.180	-,008	,095	.246	.210	.651	.452	.531	.660	1

Sample Size (N)=181 *p<0,05, **p<0,01

4.2 Hierarchical Regression Analysis for H₁ Hypothesis

The hierarchical regression analysis for the H₁ hypothesis is shown in Table 6. In the first step of the analysis, only the effect of organizational culture on job satisfaction was examined; in the second step, values were added to the analysis; in the third and last step, values-organizational culture variations were added to the analysis to measure the harmony.

Table 6. Hierarchic Regression Analysis

	Model1		Model2		Model3	
	Beta	Sig.	Beta	Sig.	Beta	Sig.
Clan	,307**	,001	,326**	,001	,318**	,004
Market	-,003	,974	,046	,559	,019	,822
Hierarchy	,105	,216	,145	,100	,139	,120
Adhocracy	,347**	,000	,281**	,004	,303**	,009
Peaceful/ Humanity			,085	,245	-,059	,496
Innovative / Proactive			-,235**	,002	-,059	,519
Impulsive / Hedonistic			-,010	,886	,025	,730
Traditionalist / Conservative			-,038	,534	,075	,265
Precautionary			,096	,134	,090	,181
Peaceful/Humanity x Clan					-,025	,858
Peaceful/Humanity x Market					,239	,071
Peaceful/Humanity x Hierarchy					-,097	,553
Peaceful/Humanity x Adhocracy					-,014	,918
Innovative/ Proactive x Clan					,329	,089
Innovative/ Proactive x Market					-,049	,783
Innovative/ Proactive x Hierarchy					,238	,163
Innovative/ Proactive x Adhocracy					-,185	,131
Impulsive/ Hedonistic x Clan					-,376*	,031
Impulsive/ Hedonistic x Market					-,003	,979
Impulsive/ Hedonistic x Hierarchy					,084	,579
Impulsive/ Hedonistic x Adhocracy					,294*	,037
Traditionalist/Conservative x Clan					,341**	,009
Traditionalist/Conservative x Market					-,163	,128
Traditionalist /Conservative x Hierarchy					,110	,376
Traditionalist /Conservative x Adhocracy					-,183	,166
Precautionary x Clan					,025	,840
Precautionary x Market					-,230*	,018
Precautionary x Hierarchy					,007	,957
Precautionary x Adhocracy					-,084	,509
Model R ²	0,117		0,522		0,64	
R ² Change	0,117		0,405		0,118	
F Change	4,645**		36,202**		2,481**	

Dependent Variable: Job Satisfaction, Sample Size=181 *p<0,05, **p<0,01

Standardized regression values are reported.

Only when the effect of organizational culture on job satisfaction is examined, clan (Beta=0.318**) and adhocracy (Beta=0.303**) cultures have a positive effect on the employee's job satisfaction. On the other hand, there is no positive or negative effect of market and hierarchical cultures. When employee values are added to the analysis, it is seen that the effect arising from values on satisfaction is only innovative/proactive, and this effect is also negative (Beta= -0,235**). In other words, employees who have innovative/proactive values regardless of other factors are more likely to have problems with job satisfaction. On the other hand, there is no positive or negative effect of peaceful/humanity, impulsive/hedonistic, traditionalist/conservative and precautionary values.

In the third step, in order to analyze the effect of the harmony between value and organizational culture on job satisfaction, value-organizational culture variations were added to the analysis. In the resulting analysis, the variation in which employees have the highest job satisfaction has become a traditionalist/conservative x clan. In other words, when a traditionalist/conservative employee works where the clan culture dominates, it is predicted that job satisfaction is the highest (Beta=0.341**). The second highest variation is impulsive/hedonistic x adhocracy (Beta=0.294*). Two cultures with the most negative effects on job satisfaction are impulsive/hedonistic x clan (Beta= -0,376*) and precautionary x market (Beta= -0,230*). In other words, it can easily be said that an employee with impulsive/hedonistic values will be unhappy in a clan culture, and a precautionary employee will be unhappy in a market culture. All the other variations between value and organization culture has no significant effect on job satisfaction.

5. Results and Discussion

This research, designed to examine the effect of the harmony between organizational culture and individual values on job satisfaction, provides tangible results that should be taken into account, in both human resource policies of

organizations and workplace preferences of employees. Compared to previous research, it is seen that similar results were obtained. In general, positive research results (Tsai, 2011; Jacobs & Roodt, 2008; Amos & Weathington, 2008; Nystrom, 1993; Din & Ghetany, 2016; Habib, et al., 2014; Vukonjanski & Nikolic, 2013; MacIntosh & Doherty, 2010; Tzeng, Ketefian & Redman, 2002) between organizational culture and job satisfaction were supported.

Moreover, the results of studies on the classification of organizational culture in this study were also supported. For example, the positive effects of the clan and adhocracy culture types on job satisfaction revealed by the research results of Lund (2013) and İşcan & Timuoğlu (2007) were supported by the results of this research. Clan and adhocracy culture increases job satisfaction. On the other hand, the results of Yılmaz & Dilmaç (2011) were only partially supported by this study. Yılmaz & Dilmaç's finding that values predict job satisfaction without any grouping is also observed in relation to group satisfaction and job satisfaction as a result of factor analysis within the findings of this research. Values predict job satisfaction according to different combination groupings.

On the other hand, according to the results of this research, the two most negative effects on job satisfaction are impulsive/hedonistic-clan culture and precautionary values-market culture. In other words, it can be said that an employee with impulsive/hedonistic values will be unhappy in a clan culture, and a precautionary employee will be unhappy in a market culture.

Within the framework of results discussed above when the hypotheses formulated for the study were evaluated, it can be declared that the hypotheses were partially supported in respect of the findings. H_1 that hypothesized the harmony between organizational culture and individual values has a significant effect on job satisfaction were partially supported. We found that only the harmony between clan culture and traditionalist/conservative value and the harmony between adhocracy culture and impulsive/hedonistic value affects positively and significantly job satisfaction. Moreover, we revealed that only the harmony between clan culture and impulsive/hedonistic value and market culture and precautionary value affects negatively and significantly job satisfaction. H_2 hypothesizing a significant effect of types of organizational culture on job satisfaction is also partially supported. We found that only clan and adhocracy culture affect positively and significantly job satisfaction while there is no effect of market and hierarchical culture on job satisfaction. Lastly, H_3 that hypothesized employees' values have a significant effect on job satisfaction is also partially supported. We revealed that only innovative/proactive value affects negatively and significantly job satisfaction while peaceful/humanity, impulsive/hedonistic, traditionalist/conservative and precautionary values have no effect on job satisfaction.

6. Implications of the Study

When the theoretical contribution of this study is evaluated, it can be determined that the harmony observed between different organizational culture types and values has significant effects on job satisfaction. In this context, it can be predicted whether or not job satisfaction is positive when it is known which corporation culture is compatible with which values. Businesses can seek to create a harmonious organizational culture according to these findings. The finding that especially clan and adhocracy organizational culture types increase job satisfaction should attract the attention of executives. Employees working for a service sector, especially in hospitals, agree to work in organizations where individual initiatives and risk taking are more dominant, and are more likely to prefer organizations that are more interested in providing for their needs, including a more flexible and creative work environment. This harmony has a significant impact on job satisfaction. Organizations that want to improve the job satisfaction level of their employees should try to establish clan and adhocracy cultures, in accordance with the results of the research. They may employ individuals with traditionalist/conservative and impulsive/hedonistic values. This can be achieved by retaining employees. Employees who stay with an organization tend to become more compatible with the organization, and are competitive and qualified employees.

7. Limitations and Directions for Future Research

Although all possible efforts have been made, some of the limitations of scientific work have also emerged in this study. First of all, although it is desirable to reach all employees by means of the full census sampling method, adequate and complete returns were not obtained from all of the hospital employees who formed the sample of the study. This was due to varied shifts, flexible work, and the intensity of the work. Therefore, in the subsequent researches, it is important to increase the number of samples. On the other hand, the fact that the study is carried out in a single organization and in one country lowers the generalizability of the study results. A comparative assessment of different organizations and countries may be the subject of future research. This study also examined the organizational culture using the instrument developed by Cameron and Quinn (2011), thus future studies can consider using other recent instruments developed by other authors such as Tsui, Wang and

Win (2006). Finally, there can be a great number of behavioral variables other than job satisfaction affected by organizational culture and values. Since these variables were not considered in this study, various variables such as organizational commitment, job commitment, intention to leave, organizational identification, etc. can be taken into account in future research.

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Testing the Relationship between Free Cash Flow and Company Performance in Borsa Istanbul

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Abstract

This study tests whether free cash flow affects the performance of firms in the context of the free cash flow hypothesis. The study applies a panel regression method to a data set consisting of 2,175 observations belonging to 370 companies listed in Borsa Istanbul during the period 2009-2015. A significant, negative relationship is found between free cash flow and firm performance measured by Tobin's Q ratio. Greater free cash flow in the hands of managers leads to the lower performance and, conversely, less free cash flow in the hands of managers leads to higher performance. The results also confirm that leverage and dividend payments have a positive effect on performance. Thus, the results support the free cash flow hypothesis for Turkey.

Keywords: free cash flow hypothesis, agency theory, free cash flow, Tobin's Q, Borsa Istanbul, emerging markets

JEL Classification: G10, G15, G34, G35

1. Introduction

As financial markets develop, the importance placed on corporate governance increases. Many countries, Turkey included, are taking steps the field of corporate governance by advancing its principles and putting regulations in place. The steps taken and regulations created are generally those of developed countries adapted to local conditions. Thus, a need arises for the both the theoretical framework and application to be tested in countries that adopt corporate governance structures. The results obtained contribute to the formulation of corporate governance regulations and/or principles more appropriate for the realities of the country.

The divergence of control and ownership of a firm, that is, the personal interests of managers and those of shareholders, leads to the agency problem (Jensen & Meckling, 1976). After calling attention to the agency problem, Jensen (1986, 1993, 1999) used agency theory as a launching point to propose the free cash flow hypothesis. According to this hypothesis, company managers prefer possess free cash flow that they can easily manipulate. They tend to use free cash flow for their own interests rather than those of shareholders. This leads, in particular, to investment in projects with negative net present value (Jensen, 1986; Jensen & Meckling, 1976). Managers prioritize their own interests, making expenditures or poor decisions that result in losses known as agency cost that have a negative impact on company performance.

According to the free cash flow hypothesis, a negative correlation exists between company performance and the amount of free cash flow under the control of managers. Debt financing or dividend payouts reduce free cash flow, having a positive effect on company performance. Titman, Wei, and Xie (2003), Fairfield, Whisenant, and Yohn (2003) and Dechow, Richardson, and Sloan (2008) argued that company performance is negatively affected by overinvestment using free cash flow under managers' control. The work of Park and Jang (2013), Heydari, Milad, and Javadghayedi (2014), Brush, Bromiley, and Hendrickx (2000) and Wang (2010) also revealed a negative correlation between performance and free cash flow. Furthermore, Rozeff (1982) and Easterbrook (1984) found that dividend payouts or increases in dividend amounts were necessary for lowering agency costs. These findings have also been confirmed by DeAngelo and DeAngelo (2000) and La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2000). Aigner, Lovell, and Schmidt (1977), on the other hand, reached different conclusions regarding dividends.

Like many developed markets, corporate governance principles were first put in place in Turkey in order to reduce costs arising from the agency problem. In 2003 the “comply or explain” concept was first applied to Turkish corporate governance principles. In 2012 mandatory rules were put in place and in 2013 the Capital Market Law went into effect. This law elevates practices regarding corporate governance to the status of law. The new Turkish Commercial Code put into effect in 2012 bears influence of corporate governance principles (Alp & Kılıç, 2014).

Legal infrastructure has been put in place in Turkey, and corporate governance principles are of the utmost importance. Now it is necessary to empirically test the theoretical appropriateness of the regulations and practices. The first phase of the free cash flow hypothesis, stating that dividend payouts, and the argument that external debt financing reduces free cash flow, was tested by Kadioglu and Yilmaz (2017) and the findings supported the free cash flow hypothesis. The second phase of testing the free cash flow hypothesis recommended by the researchers is the effect of free cash flow on company performance, which is the topic of this study.

Though many studies test corporate governance and company performance, dividend policy and corporate governance or capital structure and company performance in Turkey, there is no study directly testing free cash flow in the hands of managers and company performance in the context of the free cash flow hypothesis. This study aims to contribute to the literature by filling this gap. Furthermore, the conclusions reached in this study are likely to contribute to the formulation of regulations and principles in the field.

This study examines firms traded on Borsa Istanbul the validity of the free cash flow hypothesis, especially the relationship between free cash flow and company performance. This study utilizes the IFRS yearly nonconsolidated and consolidated financial statements of 370 firms traded on Borsa Istanbul for the period 2009-2015. A panel regression is used to test for a correlation between dividends per share, debt ratios as well as the ratio of free cash flow to total assets and the company performance measure Tobin’s Q ratio. A dummy variable is used to differentiate between consolidated and nonconsolidated financial statements. The sample from the study by Kadioglu and Yilmaz (2017) is expanded and varied. While only nonconsolidated financial statements were used in Kadioglu and Yilmaz (2017), this study adds consolidated financial statements and the number of firms included in the study has been raised from 227 to 370. In addition, more current data are used by adding 2015 data, while 2008 data from the period of the financial crises have been removed.

The two-way fixed effect panel regression analysis identifies a significant, negative relationship between the Tobin’s Q ratio, which measures company performance and free cash flow. In addition, a significant, positive relationship is identified between the Tobin’s Q ratio and debt ratio and dividends per share. The results support the free cash flow hypothesis and are both compatible and complimentary with those of Kadioglu and Yilmaz (2017). As suggested by the hypothesis, a negative correlation is found between company performance and free cash flow. The reduction of free cash flow in the control of managers is found to have a positive effect on company performance, while increase of free cash flow has a negative effect.

The following section consists of a literature review. Section 3 discusses data and methods, while Section 4 outlines the results. Section 5 discusses the conclusions and makes further recommendations.

2. Literature Review

The divergence of company control and ownership, that is, the misalignment of managers’ personal interests and those of shareholders gives rise to the agency problem (Jensen & Meckling, 1976). Using the agency problem as a point of departure, Jensen (1986, 1993, 1999) proposed the free cash flow hypothesis.

According to the free cash flow hypothesis, managers prefer to be in control of free cash flow that they can manipulate easily. Rather than using these funds for the benefit of shareholders, they may use it for their personal gain. For example, when there is an excess of funds, they are able to invest in projects with net negative present value (Jensen, 1986; Jensen & Meckling, 1976). It may lead to lavish expenditures unrelated to company operations. Managers may prioritize their personal interests, making expenditures and poor decisions that lead to losses, known as agency cost, which has a negative impact on company performance. According to La Porta et al. (2000), agency cost may be an issue even in capital markets with more stringent rules and sanctions. According to Opler, Pinkowitz, Stulz, and Williamson (1999), agency cost can be seen more blatantly in company takeovers or acquisitions.

Managers who don’t wish to be deprived of free cash flow under their control prefer to avoid policies that reduce free cash flow. According to the free cash flow hypothesis, dividend payouts and debt financing may reduce free cash flow (Kadioglu & Yilmaz, 2017). Dividend payouts distribute the free cash flow in managers’ control to shareholders. One of the methods used by managers who are need for cash is capital increases, collecting funds

from shareholders. In nearly all countries, however, raising funds through capital increases is subject to strict rules like preparing a prospectus, public disclosure, independent audit and approval from a regulatory authority. In order to sidestep this method, managers prefer to avoid paying out dividends in the first place. Therefore, dividend payouts reduce free cash flow in the hands of managers and help to reduce agency cost.

Loans taken from external sources give the lenders claim over the borrowing firm, and in extreme cases the lender may demand that the borrower file bankruptcy. Therefore, managers averse to the threat of bankruptcy or pressure from lenders may not look favorably on external debt financing. According to Park and Jang (2013), securing funds from external sources reigns in overinvestment and the payment of interest on loans reduces free cash flow in the hands of managers.

Therefore, the free cash flow hypothesis proposes that a negative correlation exists between company performance and free cash flow. Thus, reducing free cash flow in managers' control gets rid of the agency cost, improving company performance. The way to reduce free cash flow, therefore, is by making the dividend payouts and securing external debt financing.

Rozeff (1982) and Easterbrook (1984) proposed that paying or increasing dividend amounts is necessary in order to reduce agency cost. DeAngelo and DeAngelo (2000) and La Porta et al. (2000) also reached similar conclusions, which were also confirmed by Aigner et al. (1977). The thesis that external financing or dividends reduce free cash flow available to managers has been empirically supported by Lang, Ofek, and Stulz (1996), Li and Cui (2003), Byrd (2010), Khan, Kaleem, and Nazir (2012), Fatma and Chichti (2011) and Zhang (2009) and by Kadioglu and Yilmaz (2017) in the Turkish context.

Titman et al. (2003), Fairfield et al. (2003) and Dechow et al. (2008) put forth that in the case of free cash flow in the control of managers or overinvestment with these funds, company performance is negatively affected. Studies conducted by Park and Jang (2013), Heydari et al. (2014), Brush et al. (2000) and Wang (2010) found a negative relationship between free cash flow and performance.

Though many studies may exist in Turkey testing corporate governance and company performance (Çarıkçı, Kalaycı, & Gök, 2009; Dağlı, Ayaydin, & Eyüboğlu, 2010; Ersoy, Bayraktaroğlu, & Şamiloğlu, 2011; İlhan, Topaloğlu, & Özyamanoğlu, 2013; Karakoç, Nezih, & Erhan, 2016; Karamustafa, Varıcı, & Er, 2009; Kula & Baykut, 2013; Taşkırmaz & Bal, 2016; Yavuzaslan & Kalmis, 2016; Yücel, 2016) or dividend policy and corporate governance (Aydin & Cavdar, 2015; Gürbüz, Aybars, & Kutlu, 2010; Mazgit, 2013; Mitton, 2004) or capital structure and company performance (Acaravcı, Kandır, & Zelka, 2015; Doğan, 2013; Önem & Demir, 2015) or corporate governance and share performance (Kılıç, 2011) no study exists testing the relationship between free cash flow and company performance in the context of agency cost resulting especially from corporate governance and the agency problem.

Table 1. Basic Data

Year	Information on all firms traded on Borsa Istanbul (million TL)				Information on firms included in the study (million TL)			
	Firm number	Transaction volume	Total nominal capital	Total market value	Firm number	Total assets	Total nominal capital	Total market value
2009	325	482,500	70,061	350,761	258	403,143	39,697	154,120
2010	350	635,700	80,806	472,553	277	482,416	47,718	259,359
2011	373	694,876	89,274	381,152	299	574,781	53,728	297,407
2012	395	621,979	96,634	550,051	334	648,917	59,882	360,281
2013	405	816,858	103,179	503,668	348	703,165	66,032	388,099
2014	401	870,962	104,540	624,369	347	765,931	66,304	380,585
2015	395	1,025,874	104,657	554,880	318	872,730	65,149	416,506

Source: www.spk.gov.tr

3. Data and Methodology

3.1 Data

This study utilizes the IFRS yearly nonconsolidated and consolidated financial statements for the years 2009-2015 of 370 firms traded on Borsa Istanbul. A total of 2,175 observations are present in the study. When compiling the sample, financial institutions subject to their own regulations such as banks, insurance and retirement firms, brokerage houses, and securities investment associations were excluded. Firms traded on the stock exchange are required to prepare and disclose IFRS financial statements. If there is no subsidiary or participation subject to consolidation the financial statements are nonconsolidated. A dummy variable is used to distinguish between consolidated and nonconsolidated financial statements. Of the 2,175 observations used,

1,273 are derived consolidated and 902 from nonconsolidated financial statements.

Table 1 displays information relating to companies traded on Borsa Istanbul from 2009 to 2015. The table shows the total market value, assets and nominal capital amount of the firms used in the study for the period 2009-2015.

Table 1 indicates that over 80% of traded firms are included in the study. Throughout the period of analysis, the number of firms traded on Borsa Istanbul increased 1.2 times, while the trade volume increased 2.1 times. Of the market value of the population, 65% is included while 61% of nominal capital is included. In the sample the total assets of the companies from the period 2009-2015 rose 13.82% on average annually, while nominal capital rose at an average rate of 13.63% annually during the first 4 years. In the final year this rate dropped by -1.74%.

The data ranges from a minimum 2 years, maximum 7 years and an average of approximately 6 years. In years in which no dividends were paid the dividends per share rate is marked "0". When calculating the free cash flow (FCF) variables used in the regression the FCF obtained are divided by total assets in order to get comparable results between firms (Chung, Firth, & Kim, 2005; Gul & Tsui, 1997; Lehn & Poulsen, 1989; Mansourlakoraj & Sepasi, 2015; Rahman & Saleh, 2008).

The variables are calculated using the items in the budget and income table below.

Table 2. Variables

Variable	Type	Formula
<i>LNTQ</i>	: Dependent	$\ln((\text{market value} + \text{total debt})/\text{total assets})$
<i>DPS</i>	: Independent	Cash dividends / number of shares in circulation
<i>LEV</i>	: Independent	Total external funds / total assets
<i>BV</i>	: Control independent	Shareholder equity/ Paid-in capital (Book Value)
<i>SIZE</i>	: Control independent	$\ln(\text{total assets})$
<i>FCF</i>	: Independent	$(\text{Operating profit} + \text{depreciation expenses} - \text{corporate income tax} - \text{financing expenses} - \text{cash dividends paid})/\text{total assets}$

When finding the market value of the firms, the daily average price over the entire year is used rather than that of a single day at the end of the year. Thus, the negative impact of possible price abnormalities of a particular day is avoided.

Table 3 displays the descriptive statistics of variables used in analysis.

Table 3. Descriptive statistics

	<i>LnTq</i>	<i>DPS</i>	<i>FCF</i>	<i>SIZE</i>	<i>LEV</i>	<i>BV</i>
Mean	-0.447	0.270	-0.019	19.331	0.512	6.540
Median	-0.474	0.000	-0.007	19.292	0.461	2.120
Maximum	3.759	40.636	0.482	26.305	14.572	1124.158
Minimum	-3.900	0.000	-2.416	13.864	0.001	-17.872
Std. Dev.	0.913	1.688	0.133	1.914	0.677	39.589
Skewness	0.294	17.114	-6.321	0.212	11.652	21.417
Kurtosis	4.088	354.820	88.629	3.140	190.482	514.084
Observations	2175	2175	2175	2175	2175	2175

Table 3 summarizes descriptive statistics relating to the sample, including the average, median, maximum and standard deviation of the 2,175 observations taken from 370 companies over 7 years.

Table 4 displays the correlation matrix between the variables.

Table 4. Correlation between variables

	<i>DPS</i>	<i>FCF</i>	<i>LEV</i>	<i>BV</i>	<i>LNTQ</i>	<i>SIZE</i>
<i>DPS</i>	1.00	0.07	-0.04	0.69	0.12	0.01
<i>FCF</i>	0.07	1.00	-0.49	0.09	-0.15	0.24
<i>LEV</i>	-0.04	-0.49	1.00	-0.06	0.29	-0.14
<i>BV</i>	0.69	0.09	-0.06	1.00	0.05	0.00
<i>LNTQ</i>	0.12	-0.15	0.29	0.05	1.00	-0.07
<i>SIZE</i>	0.01	0.24	-0.14	0.00	-0.07	1.00

Table 4 shows that the correlation coefficients between variables are at low levels. Only the coefficient of the correlation between dividends per share and book value is higher, but still acceptable level.

3.2 Methodology

This study investigates the effect of free cash flow in the hands of managers on company performance as proposed in the free cash flow hypothesis in Turkish capital markets. According to the free cash flow hypothesis, high amounts of external debt financing or high dividend payouts reduce funds under the control of managers, which reduces agency cost and helps to align the interest of the managers and shareholders. The reduction of

funds available to managers positively affects company performance. Therefore, this study seeks to determine whether a negative, significant relationship exists between free cash flow and company performance. At the same time, the existence of a connection between performance and debt ratios or dividend payouts is also investigated.

The Tobin's Q ratio is a widely used measure of manager performance used by Smith and Watts (1992), McConnell and Servaes (1995), Rajan and Zingales (1995), Himmelberg, Hubbard, and Palia (1999), Brush et al. (2000), Demsetz and Villalonga (2001), Harvey, Lins, and Roper (2004), Heydari et al. (2014). This measure has been used in the Turkish context by Canbas, Dogukanli, Düzakın, and Iskenderoglu (2005), Koçyigit (2009), Karamustafa et al. (2009), Ersoy et al. (2011), Mandacı and Gumus (2010), Şahin (2011), Doğan and Yıldız (2013), Acaravcı et al. (2015), Önem and Demir (2015), Yücel (2016). Other studies have taken the logarithm of the Tobin's Q ratio and entered it into an analysis (Kazempour & Aghaei, 2015; Mansourlakoraj & Sepasi, 2015; Park & Jang, 2013).

Lehn and Poulsen (1989), Lang, Stulz, and Walkling (1991), Wells, Cox, and Gaver (1995), Chu (2011), Gul and Tsui (1997), Wu (2004), Chung et al. (2005), Brush et al. (2000), Wang (2010), Al-Zararee and Al-Azzawi (2014), Mansourlakoraj and Sepasi (2015), Rahman and Saleh (2008) and Kadioglu and Yılmaz (2017) used the undistributed free cash flow method when calculating free cash flow.

The free cash flow hypothesis proposes that free cash flow in the hands of managers is inversely proportionate to company performance due to agency cost. According to the hypothesis, external debt financing and dividend payouts reduce amount of free cash flow in the hands of managers and increase market enforcement upon managers, which has a positive effect on company performance. Therefore, the effect of leverage and dividends on company performance is also investigated. For this purpose, data from 370 firms from the period 2009-2015 are applied to the equation and panel regression below. This equation has been used by Brush et al. (2000), Mansourlakoraj and Sepasi (2015), Heydari et al. (2014), Park and Jang (2013). A variation using similar performance measures other than Tobin's Q has been used by Hong, Shuting, and Meng (2012), Nunez; Nunez (2013, 2014), Al-Zararee and Al-Azzawi (2014).

$$\ln Tq_{i,t} = \alpha + \beta_1 DPS_{i,t} + \beta_2 LEV_{i,t} + \beta_3 BV_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 FCF_{i,t} + \beta_6 Kons_{i,t} + \varepsilon_{i,t}$$

Here, $\ln Tq_{i,t}$ expresses the logarithm of the Tobin's Q ratio of firm i in year t , while $DPS_{i,t}$ is the ratio of cash dividends per share for firm i in year t . The variable $LEV_{i,t}$ represents the ratio of total debt to total assets for firm i in year t , while $BV_{i,t}$ expresses the book value of firm i in year t . The variable $SIZE_{i,t}$ represents the logarithm of total assets of firm i in year t , while $Kons_{i,t}$ is the dummy variable indicating whether the observation of firm i in year t belongs to a consolidated or unconsolidated financial statements. The variable $FCF_{i,t}$ is the ratio of free cash flow to total assets.

This study relies on the following hypotheses when testing the free cash flow hypothesis especially when concerning the relationship between free cash flow and company performance.

H1: Free cash flow under managers' control negatively affects company performance.

H1a: Dividend payouts positively affect company performance.

H1b: External debt financing positively affect company performance.

4. Results

Empirical studies analyze data with the assumption that they possess a constant mean over time. Panel data, however, are sometimes non-constant, as it unknown whether they possess a unit root. According to some researchers, the non-stationary nature of the data or the presence of a unit root causes the variable to have a non-constant mean over time. This also leads to a high autocorrelation problem despite a low Durbin-Watson statistic (Kutty, 2010).

All of the variables in this study are subject to a unit root tests as have been performed by Levin, Lin, and Chu (2002), Im, Pesaran, and Shin (2003) and Augmented Dickey and Fuller (1979). According to the unit root test results, apart from the $SIZE$ variable, all are free of unit roots. As for the $SIZE$ variable, by taking the difference on the first level it was made stationary. Table 5 displays the final test results.

Table 5. Unit root tests

		Levin, Lin and Chu	Im, Pesaran and Shin W-stat	ADF - Fisher chi-square
<i>LnTq</i>	Stat	-83.47	-17.32	1108
	Prob.	0.00	0.00	0.00
<i>FCF</i>	Stat	-70.71	-21.48	1721
	Prob.	0.00	0.00	0.00
<i>DPS</i>	Stat	-25653	-1418	516.60
	Prob.	0.00	0.00	0.00
<i>D(SIZE)</i>	Stat	-85.35	-20.66	1591
	Prob.	0.00	0.00	0.00
<i>LEV</i>	Stat	-31.37	-6.18	1072
	Prob.	0.00	0.00	0.00
<i>BV</i>	Stat	-161.71	-14.78	1032
	Prob.	0.00	0.00	0.00

Note. The probability value less than 5% indicates a rejection of the null hypothesis that a unit root is present. As seen in Table 5, the variables used in this study are stationary or have been transformed to stationary, as the probability rate of three different test results have a statistical significance of 1%.

This study aims to test the free cash flow hypothesis proposed by Jensen (1986, 1993, 1999). The hypothesis states that, dividend payments to shareholders and/or raising debt financing reduces the agency cost resulting from free cash flow in the hands of managers, therefore, improving firm performance. Thus, it is proposed that a negative correlation exists between free cash flow and performance. Another argument of the hypothesis is that debt financing and dividend payouts affecting free cash flow also affect performance indirectly.

Table 6 displays the results of the equations used to test the relationships mentioned above. Given that the effects of the 2008 global financial crisis might carry over into 2009, the results were repeated both including and excluding the year 2009. The regression repeated without 2009 both controlled for the effects of the crisis and also showed whether the crisis had any effect at all.

Table 6. Two-way, fixed-effect panel regression results

Variable	Entire period (2009-2015)		Post-crisis period (2010-2015)	
	Coefficient	T-statistics	Coefficient	T-statistics
Constant	0.130709	5.90*	0.154519	6.27*
<i>DPS</i>	0.057138	4.46*	0.045680	3.19*
<i>FCF</i>	-0.264276	-3.43*	-0.310998	-3.83*
<i>LEV</i>	0.153445	7.15*	0.164166	6.40*
<i>D(SIZE)</i>	-0.065330	-2.95*	-0.059394	-2.67*
<i>BV</i>	-0.004118	-6.92*	-0.004413	-5.38*
<i>Kons</i>	0.026451	0.83	0.028006	0.79
F-statistics		14.96*		14.57*
Adj R ²		0.70		0.73

Note. * indicates a statistical significance of 1%. Due to insufficient observation resulting from unbalanced data, the Hausman test is performed as a one-way, random-effects model. The Hausman test is recommended the fixed-effect model.

According to the model outlined in Table 6, 70% percent of variability in the Tobin's Q ratio can be explained with variability in the of free cash flow, debt ratio, total asset and book value variables. The estimated model's general statistical significance level shown by the *F*-statistic is at a 1% level. To see the effects following the 2008 global crisis, it is seen that the results in the regression did not change.

Again in Table 6 it is seen that the free cash flow-asset ratio has a negative correlation with the Tobin's Q ratio with 1% significance. While the higher free cash flow in the control of managers has a positive effect on company performance, the lower free cash flow negatively affects performance. Inverse relationship between free cash flow under the control of managers and performance demonstrates that the fundamental argument of the free cash flow hypothesis is valid in the Turkish context. These results are compatible with the findings of Titman et al. (2003), Fairfield et al. (2003), Dechow et al. (2008), Park and Jang (2013), Heydari et al. (2014), Brush et al. (2000) and Wang (2010). The hypothesis argues that using external debt financing and dividend payout reduces the amount of free cash flow in the hands of managers. This aspect of the hypothesis was tested in the Turkish context by Kadioglu and Yilmaz (2017), who reached conclusions supporting the hypothesis.

According to the free cash flow hypothesis developed by Jensen (1986), paying out dividends is one method of reducing agency cost resulting from a conflict of managers' and shareholders' interests. Looking at the effects of

debt ratios and dividend payouts on company performance, a positive relationship with a statistical significance of 1% is identified between the debt ratio *LEV* and the Tobin's Q ratio *LnTq* as well as between dividend payout rate *DPS* and *LnTq*. External debt funding was similarly found to boost company performance in the studies of Fama and French (2002), Gill, Biger, and Mathur (2011), Ramachandran and Candasamy (2011), Kazempour and Aghaei (2015), Park and Jang (2013), Acaravcı et al. (2015) and Doğan (2013). For firms traded on Borsa Istanbul, using external debt financing and dividend payouts reduces free cash flow in the hands of managers, therefore, enhancing company performance. When considered along with those of Kadioglu and Yilmaz (2017), these results show that the free cash flow hypothesis is valid in the Turkish context.

5. Conclusion

When the interests of company managers and those of shareholders are in conflict, agency cost arises due to the agency problem. This can lead to the use of free cash flow for investments with a negative net present value or lavish expenditures not directly related to company operations, therefore having a negative impact on company performance. According to the free cash flow hypothesis, free cash flow can be reduced with dividend payouts and securing external debt financing. This way firms can strengthen their performance.

This study investigates the validity of the free cash flow hypothesis. More precisely, it tests for a negative correlation between free cash flow and company performance for firms traded on Borsa Istanbul. The study utilizes the IFRS yearly consolidated and nonconsolidated financial statements of 370 firms for the period 2009-2015. A two-way panel regression method is applied to dividends per share, debt ratios and free cash flow-to-asset ratio and the performance measure Tobin's Q ratio to test for any correlation.

The results of the two-way fixed-effect panel regression reveal a negative, statistically significant relationship between the Tobin's Q ratio and free cash flow. Furthermore, a significant relationship is also identified between the Tobin's Q ratio and debt ratio and dividends per share. The results support the free cash flow hypothesis, and are both compatible and complimentary to those of Kadioglu and Yilmaz (2017). As suggested by the hypothesis, free cash flow in the hands of managers has a negative correlation with company performance. The reduction of free cash flow under managers' control is shown to have a positive effect on company performance, while increases in free cash flow are shown to have a negative effect.

Given that increased importance is being placed on corporate governance in Turkey, this study's test of the theoretical framework can contribute to the formation of regulations and principles in this area. According to the free cash flow hypothesis, free cash flow leads to agency cost and negatively affects firm performance; therefore it may be beneficial to adopt these principles and/or create regulations that discipline or reduce free cash flow in the hands of managers. In order to reduce free cash flow, dividend payout should be regulated through corporate governance principles, which can be used as a political tool by regulatory authorities.

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Animal Mistreatment in Business: Ethical Challenges and Solutions

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Abstract

Animal mistreatment in businesses around the world is becoming a hotly debated topic. Many animal welfare laws protect wild animals and pets, but make exemptions for animals in farms, zoos or labs. There are economic benefits behind animal mistreatment since businesses can maximize profits by, for example, raising animals in crowded spaces, or forcing them to perform shows. However, ethical arguments on this issue reveal that animal mistreatment may actually cost more than humane animal treatment. Furthermore, consumer awareness on animal mistreatments is increasing, so this poses both a threat and opportunity to businesses. As society puts more and more value on sustainable green business today, inhumane animal treatments may harm a company's reputation and reduce its sales. Businesses should be aware of this trend and examine new humane alternatives to their traditional practices in order to stay competitive in the market.

Keywords: animal abuse, business ethics, corporate social responsibility, environmental sustainability

1. Introduction

Animals have been human's companions for thousands of years. They serve as people's food, medicine, transportation, farming labor, and entertainment. However, the rise of commercialism has forced businesses to maximize profit which means reducing cost while increasing production on animal products and services. This trend has led to a series of industrialized inhumane treatment of animals, such as slaughter at early age, captivity, stressful living condition (page number required for direct quotation).s, overuse of antibiotics and drug testing. If animal rights are important ethical topics, businesses cannot ignore this topic, for example, the 68 billion animals slaughtered every year in farms. In addition, livestock is responsible for emitting 64% of anthropogenic ammonia, which holds a severe potential for ecosystem pollution (Zur & Klöckner, 2014). Thus, factory farming alone contributes substantially to environmental unsustainability, let alone many other types of businesses that are guilty of animal abuse.

Like humans, many animals have a sense of pain and emotion. "Certain species are capable of complex emotions, can communicate using language, and have a sense of self" (Hitch, 2015). Therefore animal welfare becomes an issue of business ethics. Abusive actions are not acceptable for many animal-rights activists, but businesses may argue that it is required for them to survive and serve the market demand. Are animal mistreatments necessary for business' profitability? What are the solutions for animal mistreatment in business?

This paper examines current animal mistreatments in business practices, including those in agriculture, entertainment, laboratory research and pet breeding. Next, the paper explores related laws and regulations, economical reasoning behind animal welfare, and arguments on animal rights. The analysis focuses on solutions to reduce and prevent animal mistreatments, and highlights managerial implications on this topic of animal welfare in businesses.

2. Animal Abuse in Business

2.1 Agriculture

Throughout history, humans have used animals for food and labor in agriculture. In modern times, farming labor has largely been replaced by machines. In this section we focus on animal mistreatment in the production of animal products: meat, eggs and milk. According to Farm Forward (2010) although there are still animal-friendly ranches around, cruel "factory farms" produce 99% or more animal flesh in order to satisfy the food demand in

the United States (Farm Forward, 2010). Factory farms, by its name, aim to produce animals as commodity products based on economies of scale. As profit-driven companies, their top consideration is efficiency of production, not animal welfare.

Animals in industrialized factories often live in crowded confinements, away from their natural habitats. Their living conditions are often filthy, unconformable and stressed. Antibiotics are frequently used in animal feed to “combat immunological stress from overcrowding and production-associated diseases...and to promote faster weight gain” (Rossi & Garner, 2014). Taking beef cattle as an example, many of them have never seen grass, because they are being fed by high-protein soybeans so that they can gain weight faster. The farm is full of foul smell from cow waste. As soon as the animal reaches market weight, it will be slaughtered for sale. The average lifespan of beef cattle is 2 years, compared to their natural lifespan of 20 years (Saja, 2013).

For egg production, abusive practices of chicken start as soon as chicks are hatched. Immediately after hatching, the male and female chicks are separated. Females will be sent to egg production facilities and the males are destroyed (Farm Forward, 2010). “Destroy” means the male chicks are killed in the first day of their lives, because they do not lay eggs. Females are not any luckier, as they must endure a long period of torture. Female chickens live in small cages of a size of printer paper where they can hardly open their wings or turn around for their entire lives. They suffer serious stress and 80-89% of hens have osteoporosis due to forced heavy egg production (Greger, 2011).

Milk production involves heavy animal mistreatment as well. Cows do not produce milk unless they give birth to calves, so they will be artificially inseminated to pregnancy. The baby calf is taken away by force from the mother immediately after birth, because the mother’s milk needs to be reserved for human (Macwilliams, 2013). A male calf will be made into veal meat, and a female calf will be raised to become another dairy cow. A dairy cow only lives for 4 years compared to their natural lifespan of 20 years (Saja, 2013). As their milk production drops to a point that it is no longer favorable for the business, the cow usually will be slaughtered for hamburger meat.

Animals living in factory farms certainly suffer from crowded, dirty and stressful surroundings, use of constant antibiotics, and substantially shortened lifespan. Often times, these mistreatments are accompanied by emotional distress of losing freedom or losing their kids. Agriculture is definitely a major industry for animal immoral actions.

2.2 Entertainment

Besides being people’s food, animals also play a substantial role in providing entertainment to human beings. Examples are monkeys at zoos and circus, elephants picking up children for money at tourist sites, dolphins performing shows, and horses for riding and competition. These animals are better off compared to farm animals because the entertainment business does not directly kill them, but a lifetime of slavery, captivity, and stress are major concerns.

Famous animal theme park Sea World was heavily criticized for cruelty on orca whales (“killer whales”). In 2013, a famous documentary called “Blackfish” revealed the stunning truth behind orca whale performance and accused Seal World for conducting animal abuse (Goodale, 2015). Original orca whales were captured from the wild four decades ago and the breeding program sustains the need for the park in later years. Orc a whales are selected for mates in the nature, but have to receive regular artificial insemination at Sea World. Besides, the tank for the whales are too small and too shallow that they often develop sunburn scars, and they have to swim over a thousand circles around the pool per day to get enough exercise. Orca whales are highly intelligent and social creatures. In the wild they stay in groups led by a “matriarch”, with her baby calves, her older young calves and her adult calves (Last, 2012). They even have a “babysitting system” to share the responsibility of taking care of the calves. Captivity deteriorates these smart animals’ mental and physical health at a stunning rate. A killer whale in captivity is 2.5 times more likely to die compared to a wild killer whale (Last, 2012).

The case of the orca whale reflects ethical problems from animals used for human entertainment: captivity, bad living conditions, psychological stress and so on. Animals in circuses, at tourist sites, and in the zoos all suffer from mistreatments similar to orca whales (Shani, 2010). On the one hand, close interaction with live animals do provide value for education, and zoos can protect endangered species. One the other hand, torturing animals either mentally or physically just to make profits is not considered moral. There are a few zoos that do contribute to human’s knowledge of nature, but the majority of zoos are still “morally unjustified” (Shani, 2010).

2.3 Laboratory Experiments

Animals are often used for experiments to test a new drug, new chemical, new vaccine, new food or skin-care

product. The lab practices may lead to itching, allergies, pain, tumor, insomnia and death for these animals. 90% of animals in laboratory testing are mice and rats (Badyal, 2014), but people also use birds, rabbits, pigs, hamsters, and even human's relative -- chimpanzees. In the US, more than 100 million animals have died due to laboratory experiments (Collins, 2015). Collins also points out that before these animals die, they have to sometimes inhale toxic smoke, have their skull opened, have their skin burned, be restricted to move...etc. Lab environment is stressful and uninhabitable for these caged animals to be healthy, and it is not an ethical practice to torture helpless animals for our own benefit and curiosity. After all, animals in labs do not have better lives compared to those in farms and in zoos.

2.4 Pet Breeding

Pet breeders may look like they are very nice to animals and many of them do love pets. However, some research shows that the pet breeding business is also questionable in terms of ethics. Pet breeding is, after all, still a business that aims for profit. Breeders focus on purebred and they look for animals that can be sold at a high price, not the happiness of animals at large. The criticism of pet breeding targets the fact that there are already too many unsold pets, yet pet breeders are creating more lives irresponsibly. Every dog or cat purchased from a breeder is a sign for the euthanization of a homeless pet in the shelter, due to a missed chance of finding a new home (PETA, n/a).

A second criticism on pet breeding is that it intervenes against evolution and creates certain traits on animals which human desires. These traits may be harmful for animals and not functional for them. The birth defects coming from breeding can include "crippling hip dysplasia, blindness, deafness, heart defects, skin problems, and epilepsy" (PETA, n/a). Even for those pets who successfully survive, the looks humans want may not be beneficial to them: e.g. a short face that is difficult for breathing, overly long hair that covers their sights, or a mouth that keeps dropping saliva.

Above are four common categories of businesses that are directly involved in animal mistreatment. However, there are more industries that kill and harm animals indirectly (e.g. from polluting the natural environment). Since the indirect harm to animals is too large a topic to be explored, this paper will focus on the above four types of businesses. The questions facing these cruel practices are: can businesses still operate ethically when there are known animals suffering? Are there solutions to end animal cruelty while keeping the businesses running? To answer these questions, we will first examine current laws and regulations on animal welfare and their efficiency, followed by economic reasoning behind current unethical animal treatment in businesses and opposing perspectives on animal welfare.

3. Laws and Regulations on Animal Welfare

There are already many laws and regulations that try to protect animal rights, especially in developed countries. A famous one is "Animal Welfare Act" which was established in 1966 in the US, followed by a series of amendments all the way up to 2013. The Act regulates that animal dealers, exhibitors, transporters and researchers must be registered or licensed, and a license will be issued only if the party meets the compliance requirements (Animal Welfare Act, 2016). However, farm animals and pets in trade shows and pet stores are exempt from the Act. In addition, "rats and mice, along with birds bred for experimental purposes, are exempt from the requirements of the Animal Welfare Act" (Kuwahara, 2011). Therefore the US Animal Welfare Act does not protect all animals.

Animal mistreatment can be difficult to prosecute as well. During 2011-2012 the Agri-Food & Veterinary Authority of Singapore investigated 444 alleged cruelty complaints of which only 2 offenders were prosecuted (See, 2013). So there is a big gap between filed complaints and the cases that actually got prosecuted. Singapore has the Animals and Birds Act but, unfortunately, animals for food, entertainment, and research are excluded from the animal protection laws just like in US. When processing an animal abuse case, the court must first determine if the action towards the animal is legitimate, but the list of 'legitimate' uses of animals is 'virtually endless' (See, 2013). Animals in zoos, labs, farms do not receive protection from law.

Similarly, Northern Europe has regulations on farm animals, but only to label them differently based on how much animal welfare the farm provides to animals, like "free-range" or "organic". Compliance with higher animal welfare standards is a choice for businesses, not a requirement (Heerwagen et al, 2015). However, the labeling will only largely improve animal welfare if customers eagerly support it. In the Danish market, the market share of products with "quality labels" is around 15 % (Heerwagen et al, 2015). This small number shows low level of interests for the general public to purchase meat from an animal-friendly farm. Thus, the labeling legislation only has a moderate impact on reducing animal cruelty, but at least this is a good step forward to encourage animal-friendly practices.

Other smaller-scale legislations are also in effect. In 2015, California's Prevention of Farm Animal Cruelty Act and its corresponding Assembly Bill (AB) 1437 eliminated "battery cages" for hens in California (Malone, 2016). This act also requires farms to give hens at least 116 square inches of floor space (Malone, 2016). It is a victory for animal welfare activists who also have lobbyists working hard to make this bill pass. However, 116 sq. in. is similar in size to two sheets of letter-sized paper. This tight space, even without cages, is still much less than what the birds naturally desires for a healthy life. Cage-free systems are not better animal welfare (Kesmodel, 2015). They do not really save the birds but increase the price of eggs.

4. Economic Reasoning for Animal Mistreatment

4.1 Reduce Cost & Maximize Profit

A major reason behind inhumane animal treatment is that it reduces production costs substantially. Take poultry production as an example: why do chickens have to live in cramped spaces? This is because tight spacing limits their activities so that they can gain maximum weight. Research shows that "successful and profitable fattening of broiler chickens could be arranged in population density between 14 and 15, and 16 birds per square meter (10.8 square feet). In this case, the production results would be between 33 and 35 kg/m² meat (Mitrovic, et al. 2010). Another business concern is that the factory farm only have limited space and purchasing new facilities can be costly. Therefore producing as much meat as possible in limited space is favored.

A second example comes from beef and milk production. Why do factory farms slaughter cattle at an early age (for beef cattle at age 2 and for dairy cows at age 4-5)? This is because when they get older, keeping them won't be economically efficient as they will produce less while eating the same amount of feed. A study has reported that in cattle (for milk and for reproduction), maximum production (measured by weight of calf at weaning) does not peak until 5 years of age (Durham, 2011). After it peaks, their productivity drops and it is no longer profitable for factory farm owners to keep them alive. Similar cost-reducing mindset also lies in animal laboratory experiments, where purchasing mice is much cheaper than human testing or simulation software development.

4.2 Improve Quality

Think about will a drug that has not been tested on animals before it is considered safe by patients and gaining federal approval for sale? Because animal experiment signals safety, research institutions usually exaggerate their results from animal testing (Collins, 2015). Similarly, in the pet breeding business, customers love pure breeds and young, good looking pets. Pets from a breeding company may give the impression of good gene selection and high quality. No matter if the "quality" is really good or not, businesses have an economic reason to mistreat animals if this can lead to better image and therefore higher profit potential.

4.3 Only Factory Farms can Meet Market Demand

Global market demand for meat consumption is rising. A person consumes on average of 89 kg (191 lbs.) of meat per year when his or her annual income is US\$43,901. China has the highest growth rate of 5.1% per year in meat consumption, followed by India and Brazil. Even developed countries, like Norway, has an annual growth rate of 1.6% (Cole & McCoskey, 2013). Given such high meat demand, how can businesses satisfy the market if they do not pursue low-cost and conventional high-volume factory farming? This is often a question posed to animal welfare activists.

While it may be true that only highly efficient factory farms can satisfy the market demand, the negative externalities of meat consumption must be examined first to see if people really want to satisfy the demand or lower the demand. Farming animals is one of the top threats to environmental sustainability. Meat production contributes about 51% of all greenhouse gas emission globally, exceeding the emission from all the transportation vehicles added up together in the world (Cole & McCoskey, 2013). In the US, livestock contributes to 80% of surface water contamination. Human also lose 40 billion tons of soil per year due to erosions caused by animal products production. Furthermore, the livestock sector accounts for about 78 per cent of all agricultural land, and 30 per cent of the land surface of the planet (Zur & Klöckner, 2014). Counting these environmental costs, meat price would increase to a level where most people cannot afford to eat regularly.

Meat consumption also deprives us of natural resources. Meat is the most expensive source of food, as it takes 6 pounds of high-quality grain to produce 1 pound of meat (Hoovers, 2011). If all the grain for livestock in the US is used to feed humans, then 800 million more people can be fed (Cole & McCoskey, 2013). As there are people still starving on earth, eating meat means taking food away from them and leads to waste of natural resources that produces these grains.

The damage on the environment from meat production is so severe that it becomes a global threat facing society.

As Cole and McCoskey (2013) argued, “demand for meat may require aggressive and potentially controversial policy interventions” in order to protect our planet. Therefore it is not a problem of meeting meat demand, but more a problem of reducing the meat demand. If factory farms continue to run as they are, there will be perpetual devastation to our environmental sustainability and not only animals but also human beings may not have an inhabitable earth in the future.

However, before we can conclude that reducing meat demand is the key to reducing animal mistreatment, there is an important question for us to answer: will humans gain enough nutrition by eating less or no meat? In the last 100 years human consumption of animal products exploded and there have been more people with obesity, heart diseases and high cholesterol. The relationship between over-consumption of animal protein and these diseases are clear according to researchers: more animal protein consumption is positively correlated with cholesterol levels, and the lower the percentage of animal-based foods that are consumed the greater the health benefits (Green et al, 2010). Green’s study indicates that a healthy level of animal-based diet shall be 0-10% of total calorie intake. Therefore, people are eating too much animal protein than they should and reducing the demand for meat can actually benefit human health.

In summary, businesses do not have an ethical excuse of “meeting the demand” to mistreat animals in producing animal products, because the demand is already so high that it deteriorates our environment, our natural resources and also people’s health. “Meeting the demand” may itself become unethical. Rather, if animal-friendly farming practices cannot meet market demand due to inefficiency, then increased prices may adjust the market balance accordingly by discouraging an animal-based diet, thus benefiting the environment and our health.

4.4 Zoos Contribute to Species Preservation

Due to climate change and human activities, many wild animals suffer from habitat loss and become endangered. One argument supporting animal confinement in zoos is that it contributes to species preservation: “if a species is likely to become extinct in the wild and you can capture the animals humanely and recreate the physical and behavioral conditions...then that function of zoos is defensible” (Keulartz, 2015). However, zoos do not always have endangered species, and they keep many animals for human amusement and entertainment. Even for endangered animals, confinement may lead to a loss of wild abilities and the animal may not be released to live independently again. It is impossible for any zoo to recreate an environment that is truly comparable to animals’ natural habitats because it requires immersive spaces (Keulartz, 2015). Does the benefit of species preservation outweigh the liberty and well-being of animals? It remains a controversial question.

4.5 Animal Testing Is Required for Biological Product Development

As discussed earlier, animal testing may suggest product safety and quality in biological products like medicine. Moreover, when human testing is considered high-risk, regulating agencies encourage experiments on animals. In 2002, the US Food and Drug Administration (FDA) published “Animal Rule” which establishes “approval of drug and biological products for human use whereby researchers can use animal data and not have to show efficacy in human subjects” (Walker, 2011). FDA’s movement is to protect human subjects who may be exposed to harmful ingredients during the test, and it does not waive the testing requirement either. The hidden assumptions here are (1) a new biological product is safer if it has been tested on living beings, and (2) the results from animal experiments can well predict reactions on human.

However, these assumptions are questionable. The safety of a biological product depends on many aspects including design of the product and the manufacturing processes. As one study found, “testing product and process intermediates alone is helpful, but does not provide a complete solution to viral safety” (Plavsic, 2016). Secondly, animal experiment results cannot always indicate the product’s effectiveness on humans. As a former director of US National Cancer Institute noted, scientists have cured cancer on mice decades ago, but the cure could not work on humans (Collins, 2015). Human diseases are best studied if people can focus on humans, and people should not sacrifice animals simply because humans do not want to take the risk. Therefore, the testing requirement of biological products is not a strong ethical excuse for animal mistreatment.

5. Possible Solutions

5.1 Alternatives to Factory Farming

The simplest way to reduce animal suffering in factory farming is vegetarianism as it reduces the demand of meat and thus reduces the numbers of animals being raised and killed. However, not everyone on earth can easily become a vegetarian. The taste and nutrition people desire from animal-based food is still valued in our society. According to the Food and Agricultural Association of the United Nations, India is the country with the highest

number of vegetarians, but they account for only 42% of households (Sarkar, 2014). Vegetarianism is likely to reduce animal cruelty, but may not eliminate it due to global differences in tastes and diets.

Another alternative is to promote animal friendly farms which allow cattle to graze on pastures and chickens to run around. A humane farm will not feed the animals with hormones and antibiotics unnecessarily and will provide them with a natural habitat. The animals can live close to their live expectancy with happy mood. When they have to be slaughtered, farms can use painless methods like carbon dioxide gas intoxication. In summary, animals in humane farms “do not experience pain, distress, injuries, frustration, disease, hunger, or thirst” and their natural needs are met (Vaarst, 2012). However, the success of these farms does require humans to reduce animal-based product consumption first, because humane farms have low productivity in producing meat, egg, milk or other animal products. For example, “available pasture on the earth could not sustain the 1.3 billion cattle now raised and slaughtered for food” (Pluhar, 2010). We simply do not have enough natural resources to provide to these animals.

In addition, animal activists contend that it is never moral to kill lives for food, no matter how humanely animals are treated: “It would be wrong to raise succulent young humans for their flesh...same applies to sentient nonhumans” (Pluhar, 2010). Humane farms are still unethical according to these activists. Therefore, combined with the promotion of vegetarianism and education which will be discussed later, customers may be willing to consume less animal products or pay more for them. Then, turning factory farms into animal-friendly farms could be a practical and favorable solution for animal mistreatment. However, ethical issues may not be fully avoided.

A new innovative solution for factory farm cruelty is In-Vitro meat, which is meat cultured in labs without killing a life. This production process involves extracting cells from a live animal, then culture the cells in “nutrient-rich growth medium in a bioreactor” to form muscle (Laestadius, 2015). In-Vitro meat is not on the market for sale yet, but controversy has already shrouded this new technology. Supporters state that cultured meat is healthy with no negative environmental effect and no feeling of guilt (Laestadius, 2015). Man-made meat may be the key to world hunger as cells can multiply endlessly, theoretically speaking, with very low costs. However, critics argue that In-Vitro meat is fundamentally unnatural. There may be hidden threats to nutrition deficiency, human health and the environment (Laestadius, 2015). The public acceptance of In-Vitro meat is still in question, but it is one possible solution to end suffering of animals in factory farms.

5.2 Alternatives to Animal Experiments

Choices of animal experiment alternatives are abundant. Cultured cells or tissues enable scientists to reproduce animal or human tissues in labs for testing. Computer simulation can create virtual human programs which could be more effective than animal testing: “virtual metabolism program can now predict drug effects in humans more accurately than animals can” (Arora, 2011). DNA chips have DNA fragments aligned on a piece of glass and researchers can experiment drugs on the chip. Microbiological substitution uses fungi instead of animals. Micro dosing allows new drugs to be experimented safely on humans using small quantities, but this method is very costly. Other alternatives include microfluidics, epidemiological surveys, plant-tissue based materials and a host of emerging new technologies (Arora, 2011).

These alternatives are already in use and help to reduce animals needed for experiments. They contribute to “40% decrease in animal use” in Indian research institutions (Badyal, 2014). However, these methods can only reduce the number of animals sacrificed, but cannot completely eliminate animals used for research (Arora, 2011). They cannot provide a full replica of an animal or human body and the regulation agencies may not allow drugs to pass certification unless it has been tested on animals. But with the development of technology, maybe one day people can really be able to skip animal testing by using alternative experiments completely.

5.3 Alternatives to Other Animal Mistreatments in Business

For its value of education and conserving endangered species, zoos may not be eliminated for animal welfare. However, they can be less like caged exhibitions and more like replicas of animals’ natural habitats, with enough space and humane care provided. This expectation requires zoos to move out of the cities, and use vast lands for both conservation of animals and environments together: “zoos will increasingly become more like national parks and wildlife reserves” (Keulartz, 2015). Instead of putting animals in cages, zoos can put people in secured vehicles while traveling through the habitat to get a thrilling view of nature.

There is no better alternative for entertainment animals other than to set them free. Animals have their own lives and natural behaviors and the only entertainment they can provide to people is a harmonious nature. Entertainment venues are likely to draw criticism from animal right activists and also from wildlife protectionist

(Keulartz, 2015). Conserving endangered species may be a moral reason to confine animals, but entertainment is not an ethical reason to keep animals in captivity.

Pet breeding, as discussed before, is not ethical when there are more similar pets in the shelters waiting for a home. Pet breeding signifies human intervention into the evolutionary process and may cause genetic defects. Thus, the best solution for this problem is to stop the practice. As Fox (2010) noted, the “most ethical approach to dog ownership is to re-home a neutered rescue dog as opposed to buying or breeding a puppy.” This solution requires specific laws and regulations, which could be hard to execute considering it is very easy to hide the breeding animals at home. However, people can reduce pet breeding by refusing to purchase pets from breeding mills.

5.4 Legislation & Media Coverage

Legislation can be powerful, but currently animal mistreatment in business is more of an ethical issue than a legal one. As discussed earlier, in many countries, the animal protection laws exclude animals for farming, entertainment and research purposes. Therefore businesses comply with higher humane animal standards only voluntarily. After studying animal rights legislation in Sweden, United Kingdom, Germany and Spain, Lundmark et al (2014) concluded that “farmers affiliated to an organic standard or to a specific animal welfare standard were mainly motivated by ethical concerns.” So, even when there are different levels of standards available for businesses to voluntarily participate, the bottom line is that the government will not prosecute conventional factories farm, zoos, research labs or breeders, as they are still legal. If governments really want to support animal welfare, they should prohibit these inhumane practices in producing animal products (Forsberg, 2011). However, future legislation enforcing humane animal treatments in all businesses can be expected if public awareness becomes high enough on this topic.

Media coverage on animal mistreatments in business can reveal the unknown reality of animal suffering to the public. Once people are aware of the issue, it is easier to call for actions to stop unethical animal treatments. In 2011, undercover journalists from BBC filmed a footage of Indonesian slaughterhouses which import cattle from Australia. One week after the footage was published the Australian government suspended the live export of cattle to Indonesia (Tiplady & Phillips, 2015). The public reaction on the bloody scenes from slaughterhouses was emotionally intense and put pressure on the government to make quick changes. Whether banning cattle export can really cease animal cruelty remains uncertain; at least this case manifests the power of media. Therefore, one solution for animal cruelty is to encourage media to report more similar cases to educate the general public. The public can then exert influence on legislation, market demand for animal product, and the moral pressure put on businesses.

6. Managerial Implications

The ethical issue regarding animal mistreatment is not only a threat but an opportunity for businesses. The threat comes from social criticisms on animal abuse which may lead to decreased sales, especially with increased public awareness on animal welfare. A public survey showed that more consumers prefer sustainable and humane animal products: “animal welfare” and “nature” have become popular terms in public discussions and it shows increasing consumer awareness (Borkfelt et al, 2015). With this trend of public awareness, businesses practicing animal abuse may face more and more challenges from consumers, non-profit organizations, animal-friendly competitors and even the government in the future.

On the other hand, there are businesses opportunities associated with this trend on animal welfare. Just like the European labeling system discussed above, businesses can label their products as “from humane farms”, “no animal testing”, or “donate a percentage of sales to animal protection foundations”. Customers may be willing to pay a premium for those socially responsible promises. Eventually, the increased sales and improved brand reputation may compensate for the higher costs of producing animal-friendly products. As Borkfelt et al (2015) noted, the “welfare quality brands” can really profit from the trend of “green” or “ethical” product preference”. There are successful businesses that have already discovered this opportunity and acted on it. For example, McDonald's announced a plan to switch to the use of cage-free eggs in its breakfast products in late 2015 while Taco Bell became the first quick-service restaurant to launch a new menu of vegetarian options (Americas Food and Drink Insight2016).

7. Conclusion

Animal mistreatment in business is facing increasing criticism as it threatens a company's social responsibility, endangers the environment, and even erodes profits as consumers become more aware of this issue. As public concern increases, it is possible that more legislation will start enforcing animal welfare in commercial

enterprises in the future. There are quite a few alternatives to conventional animal treatments which have potential business opportunities. Businesses should be aware of this trend and examine new humane alternatives in order to stay competitive in the market as well as to foster environmental sustainability. After all, helping animals is also helping human beings as it retains our humanity as the leader for all species.

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Understanding the Behavioral Paradox of the Companies' by Using "The Corporation" Documentary

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Abstract

Films are widely used in business education to illuminate management concepts. Since films can provide a version of how theories and concepts can actually be put into practice, they have more lasting impression. On the other hand; ethical issue are complicated and they involve many processes and influences that are diverse and interlinked. That's why it is difficult for students to understand potential conflicts of interest if they lack business experience or frame of reference. In this study, "The Corporation", a documentary film by March Achbar, Jennifer Abbott and Joel Bakan, which has received awards in film festivals around the world, has been used for analysis to illustrate the behavioral paradox of corporations. Film analysis has been used as an educational tool in order to teach organizational behavior and management concepts since 1970s. To check our assumption we have designed a study to explore whether using "The Corporation" documentary in classroom settings will raise the awareness of the students about the role that corporations play in ethical, social, and environmental issues which are essential for business decisions, and thus enable the students -the future business managers-, to understand the paradoxical behaviors of corporations. After the students watched "The Corporation", a quantitative analysis has been conducted by comparing the written essays of the students as regards their interpretation of the film.

Keywords: business ethics, ethical decision-making, business ethics education, corporate social responsibility, film analysis

1. Introduction

Films are said to be a powerful tool for teaching students. With the ability to shift perspectives and conceptual flexibility (Champoux, 1999), they can be used as a case study, to solve problems, to give importance to abstract concepts, to provide vicarious experience and to illustrate historical events. It is also a powerful tool for demonstrating the application of the theory and illustrating the concepts in order to provide students with meaningful opportunities to observe and to understand stakeholder interactions (Champoux, 1999; Buchanan & Huczynski, 2004). Selected film scenes from feature films can also offer exceptional visual and dramatic presentations of various aspects of business ethics and moral reasoning (Champoux, 2006). In addition; we are living in a culture dominated by electronic media, demographic structure of classes are changing and instructors are expected to be sensitive to "digital native" learners' needs (Fee and Budde-Sung, 2014).

Documentary films are said to be one of the potential tool to influence people's behaviors (Janpol and Dilts, 2016). The documentary, "The Corporation" can be used as a valuable teaching tool, because for business students, it provides a context and imagery, in which they experience the fundamental conflicts arising as a result of corporate actions. Business students need to have the awareness that they will probably face some ethical or environmental problems while making business decisions. Real illustrations of ethical dilemmas faced by corporations on their day-to-day interactions and transactions, discussed by business people involved in the problems, is a very effective method for business students to face some of these issues and make their own judgments.

In this study, "The Corporation" (Abbott & Achbar, 2005), a documentary film by March Achbar, Jennifer Abbott and Joel Bakan, which has received many awards in film festivals around the world, has been used to illustrate the behavioral paradox of corporations as a result of ethical dilemmas that arise in everyday business.

The film starts with the premise that a legal person's rights have been given to the corporations, so corporations must be evaluated as a person and one must think about what kind of person the corporation is. As one of the indispensable actors of the society, positions and responsibilities of corporations in the society are examined with a critical perspective in the film.

When teaching business concepts; it is a challenge to link the wide variety of theories to the "real world" and provide students with an organizational frame of reference to help them understand and appreciate the relevance and context within the subject. (Kester, Cooper, Dean, Gianiodis and Goldsby, 2009). It is pointed out that; concepts that are difficult-to-teach can be shown and taught by films (Higgins & Dermer, 2001). Since ethical problems are complicated, interrelated, and mostly there are more than one right answer, the use of films like "The Corporation" documentary, helps students to understand the ethical issues business people face during their everyday life.

In this study, we hypothesize that using of the documentary "The Corporation" in a Business Ethics and Corporate Social Responsibility course will create a relatively higher level of understanding on students watching the film, than that of the other group, for ethical dilemmas caused by behavioral paradox of corporations.

The study is structured by parts of introduction, method, results and discussion. Introduction section includes identification of research problem and discusses theoretical background including teaching with films, behavioral paradox managers face, and ethical decision making. Data and study design are described and examined in method and results sections. Final section offers remarkable notes, discussion, implications for managers and future research suggestions.

1.1 Theoretical Background

1.1.1 Teaching with Films

In the early twentieth century, very soon after the motion pictures appeared as a medium for entertainment, many educators began to dig out the films in order to use them as a learning aid in the classroom (Huczynski & Buchanan, 2006). Butler, Zaromb, Lyle and Roediger (2009) states that in 1918, Sumstine (1918) conducted a study of visual education in high school, and in 1933, Hansen (1933) tried to determine the contribution of educational films to the retention of informational learning. Ohio State University professor W.J. Fleig (1950) affirms that: *"movies make it possible to bring to students types of industrial activities which are foreign to their locality. The films may be presented during regular class hours and can be tied in with a class discussion. All or part of a film may be repeated if desired"* and the idea of using films in business education dates back to this statement.

Since the 1970s, educators have experienced using the film as a teaching tool and this tool's adoption by others have been encouraged and urged. Wegner was one of the first researchers to use this medium. In his 1977 booklet (Wegner, 1977), he described different kinds of films and showed the use of them in the classroom. Many other studies in social sciences (such as history, English, psychology, business, and etc.) have empirically showed that; films are effective tools to increase students' interest, understanding and engagement in the courses (Foreman & Thatchenkery, 1996; Scherer & Baker, 1999; Champoux, 1999; Comer, 2001; Huczynski & Buchanan, 2004; Champoux, 2004; Buchanan & Huczynski, 2004; Clawson, 2006; Frieden & Deborah, 2007; Gonzales & Zarzosa, 2008; Butler, et.al., 2009). Using films as an educational resource to illustrate business management concepts like ethical decision-making, risk taking, leadership, communication, strategic management and, organizational culture have also been discussed by many researchers (Scherer & Baker, 1999; Champoux, 1999; Mallinger & Rossy, 2003; Champoux, 2006; Ambrosini, Billsberry and Collier, 2008; Butler, et.al, 2009; Tyler, Anderson and Tyler, 2009; Smith, 2009).

In order to understand and grasp the relevance and context of the subject; most students require the organizational frame of reference needed (Kester, 2008). Films have a particular value when teaching inexperienced students whose knowledge is limited about business practices and workplace. Films provide students a different perspective about many topics that affect management theory and practice that they might not have experienced in person (Mallinger & Rossy, 2003). Many educators theorize that films increase students' attention and learning. Champoux (1999) suggested using films because films offer a visual portrayal of theories and concepts taught in organizational behavior and business management courses. In addition, films can provide a common reference point for students to observe management practice (Ambrosini, et.al, 2008). Feature films can also be used to demonstrate the chaos, dynamic complexity and irregularity in organizational settings (Smith, 2009). Using films in class can be a valuable supplement to traditional textbooks that are used more to fragment and simplify for presentational purposes (Dunphy, Meyer and Linton, 2008). And because films mimic real-life

experience more than case studies, students are affected more because what they see and hear influence them more than what they read (O'Boyle and Sandona, 2013). Films are also used for engaging and retaining the students because they are attention capturing (Scherer & Baker, 1999). They also provide platforms for analyzing and integrating the topics, which are usually taught separately (Buchanan & Huczynski, 2004).

It is vital that, for providing the opportunity to students to study the related subject, the selected film has the potential. Bumpus (2005) has used some criteria to determine whether a film will be an effective learning stimulus in the classroom: exemplification and clarification of applicable course concepts, engagement, awareness of interrelationships and interdependencies, previous use, running time, accessibility, stereotypical roles, subtitled foreign films and exposure to diverse stakeholders are some of the criteria that he has suggested. As a result, when choosing a film or a documentary to be used as a medium in classroom settings, it is important to consider these criteria to create an impact on students.

Table 1 represents a short list of films that have been used in management and business ethics courses as a teaching material, with their topics (or related business concepts), and the researchers who have examined them. This selection includes *Enron* to illustrate the business ethics (Cox, 2009); *Rising Sun* to teach cross cultural communication and to understand transplant organizations (Foreman & Thatchenkery, 1996); *12 Angry Men* to see biases, conflict and power issues, *Thirteen Days* to illustrate complex and politicized decision processes (Buchanan & Huczynski, 2004); *Dead Poets Society* to stimulate class discussion on issues such as ethics, values, and organizational pressures toward conformity, and on role conflict and autonomy (Berger & Pratt, 1998); *A Soldier's Story* to explore leadership and power analysis, *The Associate* to analyze new ventures, *The Smoke Signals* to assess communication and perception analysis, *The Joy Luck Club* to understand motivation and personality subjects (Bumpus, 2005); *Gung Ho* to explain cultural issues (Mallinger & Rossy, 2003); *The Breakfast Club* (Christopher, Walter, Marek and Koenig, 2004) and *Slumdog Millionaire* (Cardon, 2010) to stimulate discussion of issues related to stereotyping and prejudice; *Crash* to illustrate the significance of knowing other cultures and how this can influence communication between individuals (Villalba & Redmond, 2008) and many films suggestions to teach strategic management (Ambrosini, et.al 2008).

Table 1. Examples of Films Used as a Teaching Material in Management and Business Ethics Education (Films and Relates Business Concepts)

Film (alphabetically)	Topic(s)	Researcher(s)
12 Angry Men (1957)	Biases, conflict and power issues	Buchanan and Huczynski (2004)
A Soldier's Story (1984)	Leadership and power	Bumpus (2005)
Casablanca (1942)	Ethics in a societal sense	Macy and Terry (2008)
Crash (2004)	Culture and communication	Villalba and Redmond (2008)
Dead Poet Society (1989)	Ethics, values, and organizational pressures toward conformity	Berger and Pratt (1998)
Enron (2005)	Business ethics	Cox (2009)
	"Ethics versus economics"	Macy and Terry (2008)
Grumpier Old Man (1995)	Ethical dilemmas	Champoux (2006)
Gung Ho (1986)	Cultural issues	Mallinger and Rossy (2003)
Philadelphia (1993)	Discrimination, ethical dilemmas created by HIV Status at the workplace	Gonzales and Zarzosa (2008)
Scent of a Woman (1992)	Ethical dilemmas	Champoux (2006)
Shark Tale (2004)	Ethical dilemmas	Champoux (2006)
Slumdog Millionaire (2008)	Discussion of issues related to stereotyping and prejudice	Cardon (2010)
The Associate (1986)	New ventures	Bumpus (2005)
The Breakfast Club (1985)	Discussion of issues related to stereotyping and prejudice	Christopher, et.al. (2004)
The Corporation (2005)	Business ethics, corporate social responsibilities, ethical dilemmas	Hatfield (2008)
The Emperor's Club (2002)	Ethical dilemmas	Champoux (2006)
The Joy Luck Club (1993)	Motivation and personality subjects	Bumpus (2005)
The Lion King (1994)	Leadership and role conflict	Comer (2001)
The Magnificent Seven (1960)	Power, motivation, and influence tactics	Huczynski (1994)
The Rising Sun (1993)	Cross cultural communication and transplant organizations	Foreman and Thatchenkery (1996)
The Smoke Signals (1998)	Communication and perception	Bumpus (2005)
Thirteen Days (2000)	Complex and politicized decision processes	Buchanan and Huczynski (2004)

Students also see the implementation of the concepts in various contextual settings with films. It is noted that using films as an effective pedagogical tool raises the interest of students without sacrificing academic rigor,

allows classes to observe and evaluate processes in action, exposes students to a world beyond their own, and offers opportunities for discussion, values clarification and personal assessment (Berger & Pratt, 1998).

Previous research suggests a framework to resolve and analyze the movies or to “connect things up”. This framework can be either to the relevant management concept or to the discussion topic in the textbook (Dunphy, 2009). The use of the documentary film *The Corporation* in the classroom has also been discussed. Hatfield (2008) has argued the use of this film and stated that it is a powerful exemplification of ethical issues facing the financial manager in classroom settings. She argues that the documentaries can be used as a platform for live discussions for issues that could potentially occur, but her hypotheses were left untested.

1.1.2 The Behavioral Paradox: Ethical Decision-Making and Management Behavior

Ethical issues in business emerge because of isolation from traditional business decision-making. The scandals like Enron or WorldCom that large corporations face today did not occur independently of the companies' economic activities but were actualized according to a series of decisions that were made at various points in time and from those earlier decisions.

Ethical Decision-Making

Decision-making is one of main activities of management. It usually requires, respectively, to define and examine the problem, recognize the possible solutions, evaluate them, choose the best one, and then apply it. There are some critical points about the structure and feature of ethical decision-making (Carroll & Buchholtz, 2000). Most ethical decisions have:

- Prolonged Consequences: Primary effects are pursued by a set of other consequences which are influential in organization.
- Multiple Alternatives: They do not have one best solution. Each solution can present in a different way of figuring out the problem.
- Mixed Results: Results are composite and sometimes confused. They have the lack of clarity.
- Undeterminable Consequences: Some results of a decision may be unexpected. This also brings about uncertainty.
- Individual Implications: Ethical problems can be personal and have personal advantage and disadvantages for the decision-makers.

Decision-making is a big responsibility for managers. Managers face ethical dilemmas in work place and try to make several decisions by considering their results in every aspect. Managers take into account the ethical values while making decisions since their ethical/unethical decisions affect the organizations as a whole. All stakeholders including employees, shareholders, suppliers, customers and public are affected by managers as decision-makers. Companies should prepare a series of values that are applied during decision making process. These values should highlight which actions are right or wrong for the organization (Bansal & Kandola, 2004). Establishing a connection between ethical theory and management behavior could provide understanding of ethical manners. Therefore this understanding have raised the ethical awareness of them and shed light on seeing results of their decisions. Devastating outcomes of unethical behaviors of managers have resulted in the coming up of ethics itself and ethical issues (Premeaux, 2004).

The main ethical theories are built on three moral theories. *Utilitarian theories* suggest that people should judge their behavior by considering social outcomes. *Theories of rights* underline the rights people belong. *Theories of justice* center on multiple effects of decisions and procedures (Velasquez, 2006). These theories draw attention to different aspects of morality for individuals and take them from distinctive perspective. However, researchers do not have to follow one of these theories. They just provide the decision-making guideline for managers and will be useful and influential on their ultimate decisions (Premeaux, 2009).

Social Responsibility in the Decision Making-Process

Managers also have to take into account several values in the decision-making process. These values may affect the efficiency of decisions by the managers. Within this context, these values are called “managerial values”. They include not only basic personal values but also acquired values from their roles in formal organizations. These are classified as economic, technological, political, environmental, aesthetical and social values. The importance of these values varies according to the process the managers try to carry out. Each process, profit maximization management, trusteeship management and life-quality management, requires distinct values to be considered. When the managers come to the level of life-quality management, it is required that they analyze external and internal environment of the corporation as a whole (Hodgetts & Kuratko, 1991). Therefore, the term

“social responsibility” has begun to become important.

Social responsibility is a responsibility for managers to take into account the outcomes of their decisions on all dynamics of social system. They take over social responsibility by looking after others who may be affected by organization actions. While deciding on something, managers think about their organization’s goals (Carroll & Buchholtz, 2000) and try to make them reasonable in terms of social responsibility. Corporate social responsibility (CSR) is defined as “meeting the needs or expectations of all stakeholders” (Bansal & Kandola, 2004). Decisions of managers affect all stakeholders’ activities in the long-term. It is assumed that decisions considering ethical values cannot lead to negative effects on the society. Undoubtedly, sometimes companies may lose their rational behavior to meet public needs and break laws to make more money.

From the perspective of *complexity theory*, it is possible to develop an understanding of how decision-makers behave in a complicated system. Rather rejecting the existence of contradictory or paradoxical driving forces within a company, a model asserted by complexity theory accepts that different shapes of normative orientation are at play within all of the system’s complex dynamics. It makes it unrealizable to sort out a variety of values that flow within a complex system as being either “business” priorities or “ethical” considerations. Complexity theory seems to propose that business discretion and individuals’ sense of normative propriety may not be of a distinctly different order at all (Morland, 2008). However, the main problem is the lack of information or utilitarian approach of managers. There occurs a paradox between realized and expected business concerns, decisions and management behavior. It may be useful, helpful and effective to benefit from supplementary educational tools including case studies, video clips and documentary/feature films to be comprehended this conflict (dilemma) and CSR concept to students better. The students, as the future business leaders, need to know and analyze the impact of their decisions on organizations, stakeholders and environment. Advantages of using films are visuality involvement and providing an opportunity to assess some cases with results. In this context, with regard to difficult-to-teach concepts of business ethics, some instructors have adopted to develop different educational techniques and materials.

1.1.3 Teaching Business Ethics with Films

To teach business ethics, and to do this in an understandable and true way is one of challenge facing by the lecturers. An average business ethics education aims to teach students about what are the basis of ethical theories and how students behave and decide ethically in workplace. Objectives varies from one course to another. Here are some examples of course objectives: to create an ethical awareness, to promote ethical behaviors, to provide an understanding of ethical reasoning, and to combine all objectives (Cox, Friedman and Edwards, 2009).

Business Ethics courses include abstract and abstruse concepts for students. Students need to be informed of possible ethical dilemmas that they will face in the business life. They want to advance their skills that let them to evaluate how ethical business decisions are in terms of all relationships and dynamics of the company (Hatfield, 2008). And this is a challenge for educators, they need to link between theory and practice, in order to prepare students for the ethical conflicts they will face in their future careers (Asaad, 2016).

Integrating films into a business ethics course as a presentation of ethical dilemmas, brings a catchy aspect to teaching, learning and understanding the ethical concepts. In this concern; because movies are presented in a narrative form, especially the documentary-style films, complex concepts can be understood better (Asaad, 2016). At this point the documentary, “The Corporation” can be utilized as a worthwhile practice-oriented teaching tool to present students a set of examples of ethical issues from real business life, to try to frame business ethics in a practical sense, and to associate theory and practice.

2. Method

In this study, the documentary film *The Corporation* is used as a teaching aid but not as a primary medium in an elective “Business Ethics and Corporate Social Responsibility” course. *The Corporation* is a documentary film based on interviews with corporate insiders, carefully composed resulting in a documentary that provides a challenging view of corporations’ responsibilities to society in general. There are no actors in the film, which causes the character dramatizations to be minimal.

The Corporation does provide some interesting anecdotes in which corporations have behaved ill. The main question considered in *The Corporation* is “if corporations are considered to be a person, what kind of a person are they?” The answer comes early in the film: a psychopath. Without considering the accompanying positive aspects and benefits, presenting the negative sides of business is a standard tool of the film. By using many different ideas from experts, business thinkers to corporate people, the film concludes that the corporation is today’s dominant power, it is a greedy, amoral entity based on making as much profit as possible without caring

about ethical, social and environmental responsibilities.

We hypothesize that viewing of the documentary “The Corporation” as a supplemental teaching material will attract students and create more awareness than traditional lecturing methods. This will in turn affect a change in understanding the ethical and social problems created by the corporations in the society. Thus, our hypothesis is that using of the documentary “The Corporation” in a Business Ethics and Corporate Social Responsibility course will create a relatively higher level of understanding on students watching the film, than that of the other group, for ethical dilemmas caused by behavioral paradox of corporations.

H₀: The viewing of the documentary “The Corporation” will not create a significant difference between two groups on their understanding levels.

H₁: The viewing of the documentary “The Corporation” will create a significant difference between two groups on their understanding levels.

For the purpose of the study, forty business administration undergraduate students from a public university in Istanbul, who attended a seventh semester undergraduate level course entitled “Business Ethics and Corporate Social Responsibility”, were chosen to participate in the study. We prefer to study on 3rd year students since they took basic business administration courses such as Introduction to Business, Management and Organization, and Organizational Behavior. The sample is equally divided between genders. The age of the sample ranges from 20 to 25. The average age is 21.

Students attended the class given by the professor for 12 weeks. They were randomly divided into two groups at the end of the 12th week. The control group was consisting of 20 students and experimental group was 20 students. The control group received no extra material about the course, while the experimental group viewed The Corporation documentary. Then, both groups were asked to write an essay (of at least 300 words) considering the role and responsibilities of the corporations in the society at a 40- minute session in the classroom. Each essay was graded blindly by a teaching assistant over 100 (Table 2).

3. Results

According to gathered data from 40 students, results are shown Table 3-4-5.

Table 2. Group Statistics

Group	N	Mean	Std. Deviation	Std. Error Mean
Control Group	20	43,3333	33,36665	7,28120
Experimental Group	20	76,3158	17,06541	3,91507

Upon grading the essays, the grades were analyzed statistically by using SPSS 17.0. Compared to the control group, students in the experimental group reported results that were highly significantly different ($p \leq .01$ or lower). The results of independent samples t-tests were outlined in Table 3 through Table 5.

To test the null hypothesis, t-test for independent samples was used (Table 3). Before implementing the test, the normality assumption is checked. Two non-parametric tests (Mann-Whitney U test and Kolmogorov-Smirnov test) were also used to test the same null hypothesis (Table 4 and 5).

Table 3. Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
	Equal variances assumed	11,156	,002	-3,872	38	,000	-32,98246	8,51898	-50,22822
Equal variances not assumed			-3,990	30,412	,000	-32,98246	8,26702	-49,85639	-16,10853

Both the parametric test (see Table 3) and the two non-parametric tests (see Table 4 and Table 5) show that there is highly significant evidence against the null hypothesis; that is, there is no difference between the means of the grades of the two groups. Therefore, we assume that the viewing of “The Corporation” documentary will create a significant awareness to the students' understanding of ethical and social issues.

Table 4. Test Statistics^b

Mann-Whitney U	84,000
Wilcoxon W	315,000
Z	-3,153
Asymp. Sig. (2-tailed)	,002
Exact Sig. [2*(1-tailed Sig.)]	,001^a

a. Not corrected for ties.

b. Grouping Variable: Group

Table 5. Test Statistics^a

Most Extreme Differences	Absolute	,514
	Positive	,514
	Negative	,000
Kolmogorov-Smirnov Z		1,623
Asymp. Sig. (2-tailed)		,010

a. Grouping Variable: Group

As a result, our analysis proved that using the documentary "The Corporation" as a supplementary tool in a Business Ethics and Corporate Social Responsibility course, raises the awareness of students about the role that corporations play in ethical, social, and environmental issues.

Before making a conclusion, it is important to consider the following limitations of this study:

- This documentary is a copyrighted material. Therefore, supplying a legal copy of the film might also bring some extra costs to be considered.
- No structured questionnaire were used to collect data, instead data were collected from the grades students have collected from their written essays.
- The cultural dimension might also be considered as a limit because of the content of the film was based on mainly the economical issues of USA, including corporations, regulations, ethical beliefs, and social structure.

4. Discussion

Due to the nature of the field of business ethics and corporate social responsibility, relevant course concepts and theories can be illustrated in a wide array of films and documentaries. This work has suggested the use of a documentary as a tool to illustrate, elucidate and ultimately teach ethical and social responsibility issues in business. An exploratory research design was used to analyze the effects of using the documentary "the Corporation" on the awareness state of the students in terms of ethical, social and environmental issues which have critical role in the decision making process of business managers.

At this point, the main objective was to make an evaluation about how the students assess this paradox including conflicts and dilemmas between "what is right" and "how it is perceived" in the business world. In conclusion, the results of this study suggest that using "The Corporation" documentary in the classroom can have a significant impact on students' understanding of ethical and social problems created by the corporations in the society.

Although there were many studies highlighting the use of films in different class settings, only a few (Sumstine, 1918; Cox et al. 2009) include statistical analysis to support the presented ideas. At this regard, this study statistically proves that the viewing of "The Corporation" documentary creates a significant increase in the students' awareness state regarding ethical, social, and environmental issues.

"The Corporation" presents the negative aspects of business without regarding the positive effects and provides some anecdotes about the behavioral paradox of corporations. Thus, it is emphasized that the students (regarded as future business managers) need to understand and figure out the impact their business decisions have on the stakeholders by using this documentary in this study. As an implication for lecturers, it is advised to use this documentary on the later semesters. Also, this documentary is a powerful tool to assess the business education system. Using it as a pre and post assessment tool (eg. at the beginning of the first semester and at the end of last semester), it is also possible to measure the effectiveness of business education, whether the curriculum made any changes on students' perception regarding ethical problems caused by managerial actions.

For the future research about using “The Corporation” in business education, it might be convenient to consider the following statements:

- Using larger samples in similar studies might enable researchers to make a content analysis, which could bring the benefits of qualitative research.
- In this study, "The Corporation" was used as secondary material to supplement learning. It might be useful to test whether this documentary will create more benefit as a primary medium.
- The documentary is a relatively long one. It can be divided into segments, and can be shown and discussed separately supporting the course material for each week, thus comparing the reinforcement effect on the learning outcome.

With the rapid development of new technologies, our “wired world” is continually changing, and this requires educators to stay current with the latest educational technology. In addition; new generation is influenced more by what he/she sees, hears and does than what he/she reads and because films mimic real-life experience, students may learn better with films.

This study may play an instructive role for lecturers teaching Business Administration courses. Results of the study support that teaching with films makes students more interested in courses. Specific to Business Ethics Course, teachers may focus on how students find out ethical issues in a better way and exemplify these issues by using visual tools like films, videos, documentaries, animations and even games or simulations. With the rise of information era and new technologies, students need to catch and learn new business concepts via technology and this raises the importance of visual learning practices in the field of education. Not only for teachers, this study also stirs universities up to prepare a set of mixed education kit including readings, team assignments, case studies, games and films which are one of the most catchy materials for students.

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Six Sigma Methodology: Is It a Success Factor for Companies?

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Abstract

This paper presents an analysis of the economic performance and profitability of companies using the Six Sigma methodology. Of the 425 Brazilian companies currently on the open market, 93 use Six Sigma. The companies were first categorised by their sectors, according to how they are classified on the capital market, and then, by their size according to the Brazilian Development Bank. The results in recent years (2011–2013) of companies that use Six Sigma were compared to the results of those that do not, based on a statistical inference test of the differences between the two populations, with unknown standard deviations and a confidence interval established at the 95% level. The findings show that, in nine sectors, the Six Sigma methodology contributes to the optimisation of processes and economic performance.

Keywords: six sigmas, economic performance, profitability

1. Introduction

Due to increasing competition, quality improvement practices are becoming a requirement for companies that wish to remain active in the market. These practices have as their main objective satisfying customers' needs and meeting expectations for return on shareholders' investment.

Specialists have extensively discussed methods for optimising processes and services, starting with the reduction of variability, which contributes to more efficient economic and financial results and reduces the operating costs of processes and services. Therefore, experts see the implementation of the Six Sigma (6σ) methodology, which uses statistical tools, as a means of reducing processes' variation, increasing productivity and profitability and cutting down on costs (Almeida, Müller, Reis, Neto & Minervi, 2012; Andrietta & Miguel, 2007; Antony, 2004; Cabrera Júnior, 2006; Chanade, 2009; Corrêa & Corrêa 2011; Eckes, 2001; Roos, 2009; Trad & Maximiano, 2009).

The case that has resulted in the greatest visibility for this methodology and has become a worldwide standard in this matter is General Electric (GE) in the United States (US). In Brazil, the most famous case is the Brasmotor Group, both for being the first company with national technology to apply 6σ in the country and for having managed to obtain, in 1999, two years after the implementation of the 6σ programme, financial gains in the order of 20 million Brazilian reais (Werkema, 2002).

The successful results brought about by the use of 6σ has aroused the interest of organisations in different sectors, not only to enable improvements in the quality of products, services and processes but also to allow a significant increase in organisational performance, cultural change and human capital (Pinto, Carvalho & Ho, 2006). The implementation of this methodology follows parameters established by pioneering companies. However, some elements such as culture, type of process and company size have been neglected, potentially undermining 6σ 's effectiveness. This makes certain adjustments necessary (Ariante, Casadei, Guiliani, Spers & Pizzinato, 2005; Mergulhão, 2003) so that this methodology can be correctly adjusted for each company.

Thus, 6σ has been applied through a comprehensive approach, aligned with the implementation of strategies that promote the improvement of business performance. This increases companies' potential competitiveness and pushes to the fore strategic and managerial initiatives that a) prioritise continuous improvement of the quality of

products and/or services, b) enhance the capacity for innovation, even when facing the challenges of establishing competitive advantages and c) reduce costs and waste. As a result of these effects, these organisational initiatives are gaining greater prominence and attracting attention not only in the academic community but also in business environments (Berlitz & Haussen, 2005).

In this context, some questions arise:

- Is 6σ worth applying?
- Does this methodology improve organisations' results and growth (Chanade, 2009; Trad & Maximian, 2009)?
- Why has so little research been done on the efficiency of this methodology?

Almeida et al. (2012) reviewed the few existing publications on 6σ , and, according to the cited authors, for the period between 2004 and 2012, only 26 publications appear in the Scientific Electronic Library Online. Based on these considerations, the overall objective of the present research was to analyse if companies that use 6σ enjoy higher economic performance as compared with companies of the same segment that do not report using this methodology.

2. The 6σ Methodology

The evolution of the 6σ methodology, forced countries such as the US to modify, from the start, how they produce products and services (Corrêa & Corrêa, 2011; Pande, Neuman & Cavanagh, 2000; Ribeiro & Caten, 2012; Summer, 2003). The initial idea was to reduce variation in products' critical features, decreasing the chances of failure to close to zero. However, the 6σ programme surpassed the limits of mere variability reduction to become a philosophy of troubleshooting based on the Deming Cycle – initially applied in Japan – and on the use of quality tools and more accurate statistical techniques (Ribeiro & Caten, 2012).

According to Summer (2003), after 1995, Jack Welch, the manager of GE, launched a number of quality initiatives, rigidly following the 6σ methodology. Welch tied this approach to the company's upper hierarchy and linked the annual bonus of the 40 top executives to 6σ goals. In this way, whoever successfully implemented quality management would rise through the ranks of GE. Up to 1995, the company had worked with an average of 35,000 defects per million opportunities (DPMO).

At that time, Welch's goal was for the company to achieve, by 2000, the 6σ level, namely, a hit rate of 99.99966%. Many criticised Welch's rigid policies, but he was confident these would succeed. In 1998, GE increased its sales from 90,800 million to 100,500 million US dollars, and profits went from 8,200 to 9,300 million US dollars (Summer, 2003).

Researchers do not claim that only the 6σ by itself caused GE's success (Summer, 2003). The methodology was applied quite intelligently, but, to achieve growth targets, 6σ was combined with other strategies, such as globalisation, improvement in services and implementation of e-business. For Cabrera Júnior (2006), what differentiates 6σ from other methods are not the tools used, because these are not new to the area of quality control, but the way in which the tools are combined to focus on the search for stable processes.

In this methodology, organisations' sigma level is determined, which measures the companies' general and quality performance. Thus, the higher the companies' sigma level, the higher the quality of their offer, as shown in Table 1.

Table 1. Calculation of sigma level

Revenues %	Sigma Level	DPMO
30.9	1σ	690,000
69.2	2σ	308,000
93.3	3σ	66,800
99.4	4σ	6,210
99.98	5σ	320
99.9997	6σ	3.4

Source: Pande et al. (2000, p. 31)

The scope of a 6σ level, namely, a hit rate of 99.9997% in its processes, takes a company to the 'world-class' quality level. This level needs to be pursued by the company in its logistics system and in related performance indicators: costs, productivity, quality, activity duration, customer service, transportation and distribution, warehousing, planning, services, materials management and people administration. The goal of all companies should be the attainment of excellence with a negligible level of failure, that is, the 6σ level (Pande et al., 2000)

Companies seeking to implement the 6 σ methodology are motivated by successful stories reported of its use in continuous improvement processes and by a desire to understand customers' requirements and critical inputs in processes, which are necessary to be able to respond to changes in defined specifications. Companies also desire to improve the quality of their offer; optimise process flows and productivity gains; reduce work cycles; increase productive capacity and product reliability; reduce defects, costs and waste; eliminate activities that do not add value to processes from the clients' point of view; and maximise profits to increase profitability and economic performance (Andrietta & Miguel, 2007).

Thus, 6 σ brings quite significant financial results through the optimisation of production processes by reducing costs when the method is applied. However, improvement of a business as a whole cannot be understood only as an effort to improve quality. This becomes meaningless if no increase occurs in economic performance and profitability (Cabrera Júnior, 2005), support for strategic planning (Santos & Martins, 2010) and organisational improvement (Arnheiter & Maleyeff, 2005) – not only in terms of people's behaviour but also processes' behaviour.

Galvani and Carpinetti (2013) draw attention to theoretical and practical differences in the number of DPMO. To the cited authors, in practice, processes rarely keep going without changes over time. These authors forecast that, with the natural deterioration of processes, they can get out of statistical control, which results in an increase in the production of items that do not meet the defined specifications – a result for which customers will not be willing to pay. This changes process capability indicators. Galvani and Carpinetti (2013) propose that a probability of 3.4 DPMO needs to be considered, which is quite different from the theoretically ideal value of 0.002 DPMO.

Santos and Martins (2008) developed a reference model with two approaches to studying 6 σ in organisations. The first is a statistical approach primarily based on the concepts of the statistical process control created by Walter Andrew Shewart at Bell Labs in 1924. The second approach is a strategic approach that considers 6 σ a business improvement process or strategy, acting flexibly and comprehensively through all processes, products and functions in order to improve businesses' profitability, eliminate wastes, reduce non-quality costs and improve all operations' efficiency. Thus, publications appear to seek to strengthen the managerial and strategic allusions that are implied by 6 σ practices (Chang, 2004).

However, the 6 σ methodology covers more than just quality control and accurate statistics (Welch, 1999). This methodology addresses this issue but then goes far beyond, pushing for the improvement of leadership practices by providing tools for thinking about difficult issues. At the heart of 6 σ lies an idea capable of totally changing companies' logistics. By concentrating on customer-facing views and goals, the focus is taken away from the organisations in question, namely, companies look beyond processes and focus on clients.

Summer (2003) underlines the perennial question of what is new about 6 σ , so researchers need to discover what distinguishes this methodology from others and demonstrate the advantages of its implementation. Unlike total quality management, 6 σ is based on numbers, facts and data, which makes it more result oriented.

Arnheiter and Maleyeff (2005) highlight the importance of the role of company employees in 6 σ improvement processes, which promote organisational improvement in both people and processes' behaviour. Thus, 6 σ is related not only to the reduction of errors but also to the development of staff's ability to implement necessary changes in their company. Another important role in 6 σ projects is played by customers since, by increasing their satisfaction, companies can also increase their profits.

Among other things, market leadership is commonly thought to be the basis for 6 σ 's success (Antony & Banuelas, 2002; Blakeslee Jr., 2001; Eckes, 2001; Harry & Schroeder, 2006; Ho, Chang & Wang, 2004; Pande et al., 2000; Werkema, 2002). Another critical factor often pointed out for success is the proper choice of projects. (Adams, Gupta & Wilson, 2003; Harry & Schroeder, 2006; Pande et al., 2000; Perez-Wilson, 1999). However, aspects such as cultural changes (Galvani, 2010) and greater commitment – not only among top management but also all employees involved in this process (Eckes, 2001) – allow 6 σ programmes to succeed or fail.

Trad and Maximiano (2009) point out that, in recent decades, empirical gains in the area of production and operations management have come mainly from practical developments, not academic developments. Practical development is caused by highly competitive markets, whether international or national. These markets require companies to provide rapid responses to adapt to new global economic scenarios, and this speed requires academic researchers to be always attentive to new management practices that arise in Brazil and worldwide.

In addition, the 6 σ process's variability is one of the most studied topics in management. Given organisations' need to achieve the best results, this is a much researched topic since 6 σ can contribute significantly to

organisations' success. The use of statistical metrics helps reduce process variability (Hoff, 2005). The 6σ method's benefits are the main factors that attract organisations' interest (Andrietta & Miguel, 2007). Along these lines, Júnior and Lima (2010) report that several organisations have generated significant revenues by implementing this methodology. Marzagão, Lopes, Gouvea and Carvalho (2014) point out that the critical success factors of 6σ have been explored by authors in the literature on corporations. The present study emphasises the academic relevance of this research since the use of 6σ in Brazil is relatively recent, which provides an opportunity for further studies to address the related issues. The main proposed hypothesis is that Brazilian corporations that use this methodology are more efficient, and, consequently, they benefit from higher operating performance.

3. Research Methodology

The present research was quantitative (Richardson, 1999), descriptive (Diehl & Tatim, 2006) and documentary. Its universe was Brazilian companies with shares listed on the stock market, especially those that have reported using 6σ . The data were collected from these companies' annual reports, websites, annual social reports, replies to emailed questions, queries about clients of consultancies specialising in 6σ and participation in regional and national events related to this methodology between July 2013 and February 2014.

Further data were collected from the Economática[®] database and from publications of the Brazilian Securities Commission, from which information was obtained about companies' financial performance, focusing on the period between 2011 and 2013. After this survey, the selected companies (i.e. 425 companies with shares on the capital market) were stratified first by sector, according to the classification system used by the São Paulo Stock Exchange, next, by size, according to the criteria of the Brazilian Development Bank (BNDES) and, last, by use or non-use of 6σ . Subsequently, the companies' economic performance and profitability metrics were collected. Then, the averages were calculated for each sector by company size. Finally, these averages were compared between companies using or not using the 6σ methodology.

To measure the companies' operational performance, the following metrics were used:

- Earnings before interest and taxes (Δ EBIT), which measures net operating revenue after subtracting costs and operating expenses but before subtracting depreciation and amortisation (Hoji, 2004)
- Gross margin, which indicates if companies have economies of scale in implementations of investments, providing a measure of the companies' cost structure control (Kayo & Famá, 2004)
- Net margin, which signals if companies have improved their managerial, financial and operational efficiency, increasing the percentage of profit in relation to revenue, representing potential cash flow generated by operating activities of companies – free of tax – so the Δ EBIT margin is calculated in relation to total assets, as the result of the division of profit before interest and taxes by total assets (Assaf Neto, 2007)

Company growth was measured by with the following profitability indices (Assaf Neto, 2007):

- Return on assets or the division of net income by total assets, which expresses the overall efficiency of companies in generating profits through their asset structure
- Return on investment, which results from dividing the profit generated by average investment assets
- Return on equity, which is one of the fundamental ratios used in financial analyses and is the result of dividing the net income by the average shareholders' equity

The present study adopted a conservative assumption that no differences exist between the results of companies that do or do not use the methodology. In addition, an alternative hypothesis was proposed that, with the use of 6σ , organisations improve their performance and growth and increase their indicators of economic performance and profitability compared to companies that do not use the same methodology.

Thus, sample standard deviations were used in order to estimate the population standard deviations. In this case, the estimation procedure followed Student's t-distribution and not a normal distribution since the population standard deviations were not known (Anderson, Sweeney & Williams, 2008). Statistical Package for the Social Sciences software was also used to support the analyses. In tests of significance of sample averages, the null hypothesis was rejected, with a significance level of 5% ($\alpha = 0.05$).

4. Presentation and Analysis of Results

Therefore, using Economática[®] software, the 425 companies with shares on the capital market were selected and each of their websites were checked for information about the use of 6σ . Out of 425 companies, 22% (i.e. 93 companies) reported using this methodology.

After distributing companies that use 6σ by sector, the following classification was obtained: 14 in machinery, equipment, vehicles and spare parts; 14 in metallurgy; 10 in textile and clothing; 7 in civil construction and materials for construction and decoration; 5 in transportation and logistics; 5 in electricity; 5 in wholesale and retail commerce; 4 in food; 4 in communications and information technology; 3 in mineral extraction; 3 in pharmaceuticals and hygiene; 3 in pulp and paper; 2 in banking; 3 in telecommunications; 2 in agriculture (i.e. sugar, alcohol and sugar cane); 1 in beverages and tobacco; 1 in toys and leisure; 1 in packaging; 1 in oil and gas and 1 without a primary sector.

Machinery and equipment sector: Following this classification, the two averages of indicators of economic performance and profitability were compared for companies of this sector, using the BNDES's size criteria. The following results were obtained: 47.8% of these companies are classified as large, 4.3% as medium-large, 21.7% as medium-sized, 13% as small and 8.7% as micro-companies. A further 4.3% are classified as undefined because they do not disclose their annual gross revenue data.

After separating the companies of this sector by size, the following results were obtained: all the large and medium-large companies – a total of 12 – use the 6σ methodology, as do two out of the five medium-sized companies. None of the five companies classified as small, micro or undefined use the methodology. Therefore, we analysed only the differences between the average indicators of the medium-sized companies in this sector. The other 12 companies in this sector using 6σ were not analysed since no comparison was possible between companies that do or do not use 6σ within the same size category. Notably, the selected sector's companies were among the first to implement this methodology in Brazil.

After this last classification, the economic performance indicators of this sector's medium-sized companies were compared. The analysis revealed that the indicators are higher in the companies using the methodology, which means they show better operational performance and efficiency. As for the profitability indicators, 44% are higher in the companies using the methodology, 44% are equal and 12% are lower. A general assessment of indicators revealed that 72.23% of the values have increased in the companies using the methodology, 22.22% have equal values and 5.55% show lower values.

Metallurgy and steel sector: In this category, 50% of the companies are classified as large, 28.6% as medium-large, 7.1% as medium-sized, 3.6% as small and 10.7% as undefined because they do not disclose their annual gross revenue data. Ten out of the 14 large companies (71.42%), three out of eight medium-large companies (37.5%), none of the medium-sized companies and one small company apply the 6σ methodology. Thus, only the differences between the indicators of the large and medium-large companies were analysed in this sector.

In this sector, economic performance indicators are higher in companies using the methodology in 33.33% of the cases and equal in 66.67%, which does not provide evidence that operational performance and efficiency are higher in the companies using 6σ .

As for profitability indicators, 44% have increased in the companies using the methodology, 44% are equal and 12% are lower. We were not able to check if overall efficiency, effectiveness in resource allocation and return generated are higher in companies that use the methodology.

As for medium-large companies in this category, economic performance indicators are higher in 44.45% of the companies using the 6σ methodology and they are the same in 55.55%. However, we were unable to confirm whether operational performance and efficiency are higher in companies that use the methodology. As for profitability indicators, an increase in 55.56% was observed in the companies using 6σ , while 44.44% remain equal – failing to show clearly higher overall efficiency, effectiveness in resource allocation and return generated in companies using this methodology.

Textile and clothing sector: This category includes 29 companies of which 55.2% are large, 17.2% are medium-large, 6.9% are medium-sized, 10.3% are small and 10.3% are undefined. In terms of application of the 6σ methodology, 10 out of the 16 large enterprises use the methodology. None of the medium-large, medium and small companies use it. Therefore, we compared only the large companies' economic performance indicators, finding that economic performance indicators are higher in 88.89% of the companies using 6σ and are equal in 11.11%. We concluded that operational performance and efficiency are better in companies using this methodology.

As for profitability indicators, 44.45% of them are higher in companies using the 6σ methodology, and 55.55% are equal. This shows that overall efficiency, effectiveness in resource allocation and return generated are higher in companies that use 6σ .

Civil construction and construction and decoration materials sector: This category includes 48 companies. Large organisations make up 61.4%, 13.6% are medium-large, 2.3% are medium-sized, 6.8% are small and 15% are undefined. We found that only seven large companies use the 6σ methodology. Therefore, only the large companies were analysed, by which we verified that economic performance indicators are higher in 44.44% of the companies using 6σ . In 44.44% of the cases, the indicators are equal, while 11.12% are lower. We found that operational performance and efficiency are better in companies that use this methodology. As for profitability indicators, 55.56% of them are higher in companies that use the 6σ methodology, 33.33% are equal and 11.11% are lower, which shows that overall efficiency, effectiveness in resource allocation and return generated are higher in companies that use this methodology.

Electricity sector: This consists of 46 companies of which 78.3% are large, 6.5% are medium-large and 15.2% are undefined. After grouping these by application of the 6σ methodology, we found that five companies using 6σ are large, out of a total of 36 large businesses.

An analysis of these large companies' indicators showed that economic performance indicators are higher in 11.12% of the companies using 6σ . The indicators are equal in 55.55% and lower in 33.33% of the cases. Thus, the application of this methodology has not brought improvements in operational performance and efficiency because these indicators are not higher for this sector's companies.

As for profitability indicators, 55.56% of these have risen in companies that use the 6σ methodology, 33.33% are equal and 11.11% are lower, showing that overall efficiency, effectiveness in resource allocation and return generated are higher in companies that use 6σ . In general, indicators are higher in 33.34% of the companies applying this methodology, but 44.44% are equal and 22.22% lower, showing that this methodology's application has not improved indicators. However, notably, this is a reality experienced by just five companies that use 6σ , since the other 31 company do not use it.

Transportation and logistics sector: This includes 22 companies, of which 68.2% are large, 4.5% medium-sized and 27.3% undefined. All the companies that use the 6σ methodology are large, that is, 5 out of 15 companies (33.33%). In this sector, economic performance indicators are higher for companies using 6σ in 22.23% of the cases, while the indicators are equal in 44.44% and lower in 22.22% of the cases. Thus, these indicators do not show that the use of this methodology has brought better results.

As for profitability indicators, in 55.56% of companies using 6σ , these have increased, 33.33% are equal and 11.11% are lower, showing that overall efficiency, effectiveness in resource allocation and return generated are higher in companies that use the methodology. Regarding the indicators in general, 38.89% are higher for companies that apply this methodology, 44.44% are equal and 16.67% lower. That is, companies that use the 6σ methodology overall do not have higher profitability and economic performance than companies that do not use 6σ . However, notably, only about five companies are using this methodology and 15 are not.

Wholesale and retail commerce sector: This consists of 18 companies of which 94.4% are large and 5.6% are undefined. Five out of the 18 companies (28.54%) apply the 6σ methodology.

Economic performance indicators are higher in companies that use 6σ in 11.12% of the cases, but the indicators are the same in 33.33% of the cases and lower in 55.55%. Thus, these indicators show that results are worse for companies that use this methodology. As for profitability indicators, 33.34% of them are higher in companies that use the 6σ methodology, 33.33% are equal and 33.33% are lower, showing that overall efficiency, effectiveness in resource allocation and return generated are not higher in companies that use 6σ .

As for the indicators in general, they are higher for 22.23% of the companies that use this methodology, 33.33% equal and 44.44% lower. That is, companies using the 6σ methodology have a worse profitability and economic performance than those that do not use 6σ , although these are the results for only five companies using 6σ and 13 not using it.

Food sector: Here, 68.8% of companies are large, and 31.3% are undefined. All companies using the 6σ methodology are large (i.e. four out of 11), which corresponds to 37.3%. Economic performance indicators are higher in companies that use the methodology in 44.45% of the cases, equal in 44.44% and lower in 11.11%. Thus, these indicators do not show better company results from the use of 6σ .

Profitability indicators have increased in 33.34% of the companies that use the 6σ methodology, 44.44% are equal and 22.22% are lower, showing that overall efficiency, effectiveness in resource allocation and return generated are not higher in companies that use this methodology. Thus, in 38.89% of the cases, in general, indicators show an increase for companies that use the methodology, for 44.44%, indicators remain the same and they are lower for 16.67%. That is, companies that use 6σ do not have higher economic performance and

profitability indicators than companies that do not. However, these results are based on only four companies using this methodology versus 11 that do not use it.

Pulp and paper sector: This includes six companies, of which 83.3% are large and 16.7% are medium-large. Three of the five large companies use the 6σ methodology.

Economic performance indicators are higher in 55.56% of companies that use 6σ , equal in 11.11% and lower in 33.33%. Thus, the indicators show that the results are better for companies that use this methodology.

As for profitability indicators, 22.23% of them are higher in companies that use the 6σ methodology, 55.55% are equal and 22.22% are lower. This shows that overall efficiency, effectiveness in resource allocation and return generated are not higher in companies using this methodology.

In general, indicators are higher in 38.89% of the companies that use 6σ , equal in 33.33% and lower in 27.77%. That is, companies that use this methodology have better economic performance and profitability than those that do not use 6σ . This comparison was made between three companies that use the 6σ methodology and two that do not.

Telecommunications sector: Here, 53.3% of companies are large, 40% are undefined and 6.7% are small. The companies that use 6σ are all large (i.e. two out of the 16 companies or 12.5%).

Economic performance indicators are higher for 44.45% of companies that use this methodology and equal in 55.55%. Thus, these indicators do not clearly show that results are better for companies that use the 6σ methodology.

As for profitability indicators, 33.34% of these are higher in companies that use 6σ , 44.44% are equal and 22.22% are lower, showing that overall efficiency, effectiveness in resource allocation and return generated are not higher in companies using this methodology. In general, 38.89% of indicators are higher in companies that use the 6σ methodology, 50% equal and 11.11% lower. That is, companies that use 6σ have the same economic and profitability performance as companies that do not use it. This comparison was made between two companies using this methodology and 14 not using it.

Agricultural sector: In this category, 50% are large companies, 16.7% medium-large, 8.3% medium-sized and 25% undefined. Only one medium-sized company uses the methodology, which precluded a comparison between companies by size and use of 6σ .

Banking sector: Here, of 25 companies, 32% are large and 68% undefined. Only two out of the eight large companies use the 6σ methodology.

Economic performance indicators are higher in 33.34% of the companies using this methodology, the same in 44.44% and lower in 22.22%, indicating that results are no better for companies using the 6σ methodology. Profitability indicators are higher for 11.12% of companies using this methodology, equal in 33.33% and lower in 55.56%. This shows that global efficiency, effectiveness in resource allocation and return generated are lower for companies that use 6σ .

In summary, in 22.24% of the cases, indicators are higher in companies that apply this methodology, equal in 38.88% and lower in 38.88. Namely, companies that use the 6σ methodology have a similar economic performance and profitability to companies that do not use 6σ . In this sector, only two companies use the methodology and six do not.

Beverages and tobacco sector: This category has two large companies, but only one of them uses the 6σ methodology, making a comparison of indicators impossible. Thus, the analysis of economic performance and profitability had to be carried out without a statistical analysis.

Economic performance indicators are higher in companies using the 6σ methodology in 100% of the cases. As for the profitability indicators, 44.45% of them are higher for the company using 6σ and 55.55% are lower, showing that overall efficiency, effectiveness in resource allocation and return generated are lower for the company that uses this methodology.

As for the indicators in general, 72.23% of these are higher in the company applying the 6σ methodology and 27.77% are lower. That is, the company that uses 6σ has better economic performance and profitability than the company that does not use 6σ .

Toys and leisure sector: This includes four companies, 50% of which are medium-large, 25% medium-sized and 25% undefined. Only one medium-large company uses the 6σ methodology. As only one company of this size uses this methodology, the test statistics were not valid for a comparison of the two samples, and, as the

average and standard deviation are not known for this population, it was not possible to establish an interval estimate for the companies sampled.

Economic performance indicators are higher in 55.56% of the companies using 6σ and worse in 44.44%. Thus, the indicators show that the results are better in companies that use this methodology.

As for profitability indicators, 55.56% of them are higher for companies that use the 6σ methodology, and 44.44% are lower, showing that overall efficiency, effectiveness in resource allocation and return generated are higher when 6σ is used. In general, the indicators reveal better results for 55.56% of the companies applying the methodology and lower results in 44.44%, that is, better economic performance and profitability in companies that use this methodology.

Communications and information technology sector: Here, 71.4% of the companies are large, 14.3% are medium-sized and 14.3% are undefined. Four out of the five large companies use the 6σ methodology (80%). Since only one company does not use the methodology, the test statistics were not valid for comparing the two samples.

Mineral extraction sector: In this category, 37.5% of the companies are large, and 62.5% are undefined. Two of the three companies use the 6σ methodology.

Pharmaceuticals and hygiene sector: This has five companies of which 60% are large and 40% are undefined. All the large companies use 6σ .

Oil and gas sector: This category contains six companies: 83.3% large and 16.7% small firms. The only company of this sector that uses this methodology is large, accounting for 20% of this sector.

Companies without a primary segment: This includes 43 companies. Of these, 18.61% are large, 2.3% medium-large, 2.3% medium-sized, 2.3% small and 74.4% undefined. In this and the previous three sectors, we could not compare companies' economic performance and profitability indicators.

The analyses further showed that nine sectors do not have companies that use the 6σ methodology. These include stock, commodities and futures exchange; real estate credit; education; print shops and publishers; hotels and tourism; financial intermediation; sanitation, water and gas services; and medical services.

5. Conclusion

The methodology – quantitative and descriptive methods supported by documentary research – applied in this study was effective in achieving the research goals, since it made possible, through indirect data, analyses and comparisons of the use or non-use of 6σ by 425 companies listed in the Brazilian open capital market. After classification of the companies by size, the results revealed that 78 (83.87%) out of the 93 companies analysed that use the 6σ methodology are large.

These results offer answers to the questions that motivated this study for the sectors of machinery, equipment, vehicles and spare parts; textiles and clothing; civil construction and construction and decoration materials; pulp and paper; beverages and tobacco; and toys and leisure. The indicators for operational performance, overall efficiency, effectiveness in resource allocation and return generated are higher for companies that use the 6σ methodology compared with those that do not use it. Therefore, in the sectors studied, the use of 6σ contributes to the optimisation of processes, thereby generating growth and improving economic performance.

In the metallurgy and steel, electricity, transportation and logistics, food, telecommunications and banking sectors, the results do not show differences between companies that do or do not apply the 6σ methodology. Thus, the benefits brought by the use of 6σ could not be verified for these sectors.

After an analysis of the commerce sector, the results of companies that use the 6σ methodology are lower than those of companies that do not use it. Since the application and implementation of 6σ were not evaluated, we were unable to verify the causes of this result. In the communications and information technology, mineral extraction, pharmaceuticals and hygiene, agriculture, packaging and oil and gas sectors, as well as companies without a primary segment, a comparison was not possible as not enough companies were available.

In view of these results, we conclude that, for companies of various sectors, the 6σ philosophy is a business strategy that is here to stay and spread, rather than just a fad. The 6σ programme has been improved since this research was conducted, and it is being adopted by an increasing number of organisations in the machinery and equipment, metallurgy, textiles and other sectors, in which the 6σ methodology is already predominant. However, in the agriculture, beverages and tobacco and toys sectors, 6σ is still rarely applied.

For the purposes of this study, the 6σ methodology cannot be said to be a variable of success since, in this study, 6σ could not be separated from other variables. However, notably, in the period under analysis, most companies that used this methodology showed better results than those that did not.

As for the future of 6σ philosophy, some trends stand out, including an understanding of the synergy between 6σ and lean manufacturing practices that has generated a methodology called Lean Six Sigma and an increased dissemination of Design for Six Sigma. The number of midsize and small companies is increasing that plan to use the philosophy after making the adjustments and simplifications necessary for their reality. The 6σ philosophy is being implemented as a strategy for creating value for businesses and not simply for eliminating defects or reducing costs. In addition, 6σ is being integrated with quality programmes and standards, and specific software for 6σ management is being used in organisations and for decision-making based on factual data.

The limitations of this study include a lack of information in the Economatica[®] database, delays in companies' responses regarding the use of the 6σ methodology, the limited number of companies that apply the methodology in certain sectors, ongoing mergers and acquisitions of companies and websites that were still in construction or outdated at the time of this research. Regarding future studies, the results before and after the application of the 6σ methodology could be analysed in a sample of Brazilian companies of different sectors, to evaluate the scope of this application and to study the impact of local culture on the use of the 6σ methodology.

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The Role of Internal Control Components in the Maintenance of Public Funds: Applied Study on the Jordanian Ministry of Justice – North Province as Perceived by the Workers of Internal Control and Accounting Departments

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Abstract

This study aims at identifying the internal control components at the Jordanian Ministry of Justice (North Province) as well as identifying the role of those components in maintaining public funds and measuring the impact of said role. The study population consisted of all the workers of the accounting and internal control departments at the Jordanian Ministry of Justice (North Province) who counted (81) employees. The study sample was chosen from that population where (70) questionnaires were distributed, (66) questionnaires were retrieved and (3) questionnaires were excluded for the reason of short information which made the study sample reach at (63) male and female employees at the rate of (%90) of the study population. Of the most prominent results of the study is that there is a role of the internal control components at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds in a medium level. Moreover, the internal control context received the highest arithmetic mean in maintaining public funds as a component of internal control at the Jordanian Ministry of Justice (North Province); monitoring, as an internal control component, attained the highest effect in comparison with the other internal control components, while the least effect was for the component of the internal control environment. The study produced several recommendations most significantly the importance of concentrating on internal control in general to elevate its efficiency in maintaining the public funds at the Jordanian Ministry of Justice (North Province).

Keywords: accounting; auditing; public funds

1. Introduction

Internal control in private and public enterprises is the safety valve that protects their tangible and intangible assets, and this obliges the managements of those enterprises to support and activate internal control to be able to accomplish their tasks completely. The presence of good internal control is supposed to prevent many peculations and robberies to public funds.

The multiple developments and diversity in the state's activities necessitated finding ways and methods to keep an eye on public funds to preserve it from loss and aggression which interrogated internal and external control on public funds. The public fund in Jordan is the spine rachis of the state's activities and it is the right of all Jordanians. Therefore, the government has to control public funds to ensure its good expenditure for the well – being of the country. The researcher will study the role of the internal control components in maintaining public funds through applying the subject on the Jordanian Ministry of Justice (North Province).

2. The Study Problem

The study problem lies in identifying the role of internal control in the maintenance of public funds:

This leads to the following sub – question:

1. Is there a role for the internal control environment at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds? and measuring the effect of that role – if any – from the total impact of the internal control components in the maintenance of public funds.
2. Is there a role for risk assessment at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds? and measuring the effect of that role – if any – from the total impact of the internal control components in the maintenance of public funds.
3. Is there a role for internal control activities at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds? and measuring the effect of that role – if any – from the total impact of the internal control components in the maintenance of public funds.
4. Is there a role for information and methods of its communication at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds? and measuring the effect of that role – if any – from the total impact of the internal control components in the maintenance of public funds.
5. Is there a role for the internal control monitoring at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds? And measuring the effect of that role – if any – from the total impact of the internal control components in the maintenance of public funds.

3. The Study Objectives

This study has the following objectives:

1. Identifying the components of internal control at the Jordanian Ministry of Justice (North Province) and recognizing the concept of public funds.
2. Identifying the role of the internal control environment at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds and measuring that role – if any.
3. Clarifying the role of risk assessment as one of the internal control components at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds, and measuring that role – if any.
4. Showing the role of internal control activities at the Jordanian Ministry of Justice in the maintenance of public funds, and measuring that role – if any.
5. Clarifying the role of information and methods of its communication as one of the internal control components at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds, and measuring that role – if any.
6. Clarifying the role of monitoring as one of the internal control components at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds, and measuring that role – if any.

4. The Study Importance

The internal control system represents an information base for the various departments and divisions in the public and private sectors which justifies the concern granted to this system and its development. The Jordanian Ministry of Justice is of the main pillars that support public fund with revenues, which gives necessity to activating the internal control over it. Internal control over public funds is of the main targets of the Ministry of Finance, Audit Bureau and other control departments in Jordan. Activating the work of internal control achieves reform in maintaining public funds and protecting them from negligence, theft and loss. Public funds are for the whole homeland and must be maintained through different types of control.

5. The Distinctiveness of this Study from Previous Studies

This study will be applied on the Jordanian Ministry of Justice (North Province), and it will also be applied through the perspective of the internal auditors and the workers of accounting departments, while the previous studies did not handle this ministry and specifically North Province, and they also did not blend the internal auditors and the workers of accounting departments at the same time.

6. Previous Studies

The Study of (Nsanganzeli, Amos Japhet, Jagero, Nelson, (2011) under the title, The Role of Internal control in Maintaining the Assets in the Public Governmental Institutions in Tanzania.

This study aimed at identifying the relationship between the level or scope of safeguard and management of non – current assets and the level of efficiency, effectiveness and strength of the internal control systems in those institutions. The sample used in this study was the Ministry of Infrastructure Development in the government of Tanzania. The study was also concerned with the different departments, agencies, institutions and authorities of

the ministry in addition to the center of the ministry itself. Different methods of analysis were adopted in this study including statistical methods like: Frequency tables, charts, percentages and schedules and so on. The study pointed out that the situation shows irrelevant or unsatisfactory responses to the study questions and recommended to take immediate measures to rescue the internal control systems in the public institutions in Tanzania to safeguard and well – manage the non – current assets.

The study of (Ghneimat& Siam, 2011) under the title: The Effective Factors in the Efficiency of the Internal Control Systems at the Jordanian Ministries.

The purpose of this study was to identify the effective factors in the efficiency of the internal control systems at the Jordanian ministries and to recognize the most significant constraints that limit their efficiency and development. The study indicated that the most effective factor in the efficiency of the internal control systems at the Jordanian ministries was the accounting system and its components, and that the least effective factor was the workers competency and the performance control. The study revealed febleness in applying the policies of choosing, appointing and training employees in addition to the weakness of administrative leaderships and the short role of the legislative authority. The study recommended the necessity for the Jordanian government to give the internal control systems at the ministries more attention, focus on the effective administrative and financial constituents, activate the choice and appointment principles and standards and develop precise standards to measure and assess the governmental performance.

The study of (Filipiak, Beata, 2012) with the title: Internal Control in Local Government Units in Poland.

This study offered specific problems in the field of internal control in the local governmental units in Poland. The study was not restricted to the outlines of the compulsive procedures of operating the internal control in those researches in the domain of those procedures taking into consideration defining the changes in internal control basically depending on the respondent's indicators and through performing a critical analysis to the internal control measures. The study assessed the internal control used in the governmental administrative units. The results were distributed at the rate of %7,60 for the treasury unit, %4,42 for the separated system units data for the purposes of internal control, and the control used by the auditing council got %2,37 of the governmental administrative units under study. The study pointed out that the assessment of the control place and procedures has a role in the local control units, which shows the necessity to make the changes not only in using the control information but primarily at the site and legality of asking for the establishment of separated system units.

The study of (Abu Kameel, 2014) under the title: "Assessment of the Efficiency of Internal Control in the Governmental Ministries".

This study aimed at the assessment of internal control in the governmental ministries through assessing the accounting system, assessing the internal auditing system and showing the weakness and strength points in the internal control systems followed in the governmental ministries in Gaza Strip in Palestine. The researcher used the descriptive analytical approach on 100 employees of the ministries of the Palestinian National Authority in Gaza who are related to the internal control such as auditors or others. Of the most significant results of the study are that there is a good accounting system and that there are lists and decisions for the works but there is no development for the applied accounting system. The study also assured the presence of controlling evidences and work programs.

The most important recommendations of the study were the necessity of developing and assessing the accounting system continuously to verify its ability to give correct and sufficient statements about the activities of the entities under control, developing the laws and legislations that adjust the censorial work, taking guidance from the censorial rules prepared by the international organizations of financial control, developing the internal auditing system due to its extreme importance in activating the role of internal control, giving share to the workers in internal control in auditing budgets after being prepared and developing control programs.

The study of (Ayyash, 2014) with the title: "The Role of Internal Control in Elevating the Financial Control Efficiency".

The purpose of this study was to identify the elements of the internal control structure, assess the internal control systems in the Yemeni communication companies and recognize the relationship between the internal control elements and the financial performance efficiency in the Yemeni communication companies. The descriptive approach was used to create the theoretical framework of the study and a field study was conducted to realize the objectives of the study and test its hypotheses. Data was collected by means of a questionnaire distributed to the Yemeni communication companies. The results produced by the study were as follows: The Yemeni Communication Company has good and acceptable control structure. The study also affirmed the presence of a

statistically significant positive relationship between the internal control elements and the financial performance efficiency and that the existence of good internal control elements essentially leads to the improvement of the qualitative characteristics of the financial statements and information which helps the management to rationalize and support its decisions. The study presented a cluster of recommendations most prominently: Pursuing the process of modernization and development of the internal control structure of the Yemeni communication companies, adhering to the organizational policies and procedures of the Yemeni communication companies and modernizing those policies and measures.

The Study (Al-Abbadi, Ibrahim 2014) under the title: "The Role of the Internal Control System in the Jordanian Governmental Units in the Adjustment of Governmental Expenditure, Field Study on the Governmental Units in Jerash Governorate".

The study aims at identifying the internal control system's standards and their relation with the governmental expenditure adjustment as well as identifying the concepts, types and elements of the internal control system and specifying the strength and weakness points in the internal control system applied in the Jordanian governmental units. To achieve the study's objectives, the researcher designed a questionnaire and distributed it on a sample of 50 individuals of the study population members who counted 126 persons. 45 questionnaires, at the rate of %90, were retrieved and one questionnaire was unanalyzable. Of the results of the study: there is a big role for selecting and training the financial employees in adjusting the governmental expenditure where the effect rate was about %82 and weakness in training on the modern accounting methods. In the light of the results, the study recommended giving sufficient care to the internal control standards to adjust governmental expenditure and limit wastage, holding training courses and workshops for the financial employees to keep up with development and enhance the values of belonging and integrity, specifying the validities and references of governmental expenditure and placing the necessary controllers to spend out of the general budget.

The Study Alwadia (2016) under the title: "The Role of Internal Control Over Commodity Stocks in the Maintenance of Public Funds".

This study aimed at identifying the role of internal control over commodity stocks at the Palestinian Ministry of Health in Gaza Strip. The study adopted the descriptive applied approach which is based on collecting and interpreting data about the phenomenon. Focus was given to the views of 50 employees working in the field of internal control and in the stocks of the Palestinian Ministry of Health in Gaza Strip through personal interviews with a number of workers and a special questionnaire which was designed for this purpose and distributed in 2015 where 50 questionnaires were distributed and rate of recollection was %86. Of the most important results of the research the presence of effective internal control on the commodity stocks which helps in safeguarding the public funds in the Palestinian Ministry of Health in Gaza strip. The research also revealed that the internal control applied the documentary session and the sound financial procedures of controlling commodity stocks, it also showed the absence of massive obstacles that detain the work of internal control and explained some of the obstacles and their solutions. A number of recommendations were produced most importantly seeking the help of the internal control unit effectively when preparing the annual requirements, giving more attention to internal control by the top management providing its needs which help to perform its work properly, activating the moral and material incentives, increasing the care for the development of the workers' skills and utilizing modern techniques.

7. The Jordanian Ministry of Justice

The Jordanian Ministry of Justice was established on (11/4/1921) under the name (Justice Advisor) to be the executive arm of the Jordanian judicial system. From that date on, it started practicing its role in realizing the basic mission of the state in raising justice among people, establishing the values of equality, equal opportunities and maintaining the rights and gains of citizens which were stipulated in the constitution and guaranteed by the laws and legislations in force. (Jordan Ministry of Justice website, 2017).

What we care for in this study is the controlling aspect of the Jordanian Ministry of Justice which is represented in the internal control committees and the system followed by those committees to maintain public funds. Following is a simplified explanation about the internal control system and the public funds in Jordan.

8. Definition of the Internal Control System

It was defined by the commission on audit methods as "It includes the organizational plan, coordination means and measures used in the project to protect its assets, audit accounting statements, ensure their accuracy and reliability, increase productive sufficiency and encourage workers to adhere to the established administrative policies". (Abdullah, Khaled Amin, 2012, P 167).

The definition of the American Accounting Association (AAA) stated that internal control is "The set of methods and measurements used by the establishment to protect its assets and verify the accuracy of accounting information. (Al-Hisban, 2009, P 46).

Internal control was also defined as "A process designed to provide reasonable assurance regarding the department's achievement of its objectives relating to the following aspects".

- a. Compliance with applicable laws and regulation.
- b. Effectiveness and efficiency of operations.
- c. Reliability of financial reporting. (Al-Rifae'e, Khalil et al., 2013: P 48).

The French Institute of Audit and Internal Control IFACT (2015) defined internal control as "A system of the organization defined and implemented under its responsibility a set of means, behaviors, procedures and actions adapted to the specific characteristics of each company. It contributes to the control of its activities, ensures the efficient use of its resources and enables it to take appropriate account of significant risks including the operational and financial. (Birbah, 2015: P 3).

It was defined by the International Standard on Auditing No. 3,5 as a process designed and affected by the management where the individuals entrusted with control or management design, apply and maintain it to provide reasonable assurance regarding the achievement of an establishment to its objectives related to the reliability of preparing financial statements and the efficiency and competency of operations and compliance to the applicable laws and regulations. (Al – Abbadi, 2014)

(Zunaibat, 2015).

9. Components of Internal Control

The international audit standards (international audit standard 3, 5) divided the internal control components into five basic components which are control environment, risk assessment, internal control activities, information and communication and monitoring, and here is a detailed explanation for each of them:

1. **Control environment:** Control environment is the basis of the other components of the internal control system. The absence of this significant element will surely be the reason for the inefficiency of this system even if the other components were powerful. This environment is determined by the approval of the individuals in charge of the internal control system. Moreover, the outlook and attitude of the management toward internal control have strong impact on its efficiency. The management, therefore, must show its strong support to internal control and communicate it to every person in the establishment. Internal control is the reflection of the strength of competency and ethics of the people in charge of it, and the achievement of effective internal control requires commitment to financial integrity and benign ethical values. If internal control was correctly designed, commitment should start from the top beginning with the executive chairman of the organization to be generalized to the whole organization. (Hammad, 2004, P 58).
2. **Risk Assessment:** Units face internal and external risks that might adversely affect its capability to log, operate, summarize and report financial statements in a way that matches the financial statements of those units. The management is to intrinsically look into those risks and the probability of their occurrence. (Al – Abbadi, 2014).
3. **Control Activities:** They are the policies and procedures that help in ensuring the execution of the management's procedures. For example, taking the necessary procedures to handle the risks that threaten the achievement of the institution's objectives. Therefore, the control activities, whether within the information technology systems or the manual systems, have diverse goals and are applied at different organizational or functional levels. (Jum'a, 2015, P 213 – 215).
4. **Information and Communication:** This component is interested in identifying the appropriate information to realize the institution's objectives in addition to specifying the manner of getting the information and transferring it from information processing systems to financial report preparation systems, and the auditor has to understand the procedures of the institution in order to assimilate the manner in which the information moves especially which is used in preparing financial reports. In addition, the open communication channels help in assuring the report of exceptions to be taken into consideration. The auditor must also be familiar with issues like preparing financial reports, communication between the management and those in charge of control and external communication like those with the organizational authorities, and those communications could be electronic or verbal. (Jum'a, 2015, P 212).

5. **Monitoring (supervision and guidance):** This includes the needed procedures to monitor the application of the various control aspects to make sure that they are acting as planned. It stands for a periodical evaluation for the different internal control components to determine if they were working properly and to identify the need for conducting the required development and modernization to keep up with the circumstances as they may become irrelevant with the passage of time and the commitment to them may be weakened as the information needed to arrange for the evaluation and modernization comes from different sources such as saying the reality of internal control, the exceptional reports about the control activities, the feedback and the external auditor' report. (Zneibat, 2015). (Al – Hijjawi, 2006: 48).

Definition of Public Funds: The Jordanian financial system No. (3) of 1994 defined public funds as: The movable and immovable property related to any public department or institution including revenues.(Al – rifa'i, Khalil et al., 2013: P 53).

Public Funds and Internal Control: The rise of internal control goes back to the origination of the state and its ownership to public funds and running it on behalf of the people. Internal control is one of the pillars of organization and planning in the modern state whereupon the internal control evaluates performance and arranges correction measures in case of any defect. The internal control also protects public funds from loss, theft, speculation and misuse.

10. The Study Methodology

In this study, the researcher depended on using the descriptive analytical approach concerning the field survey of the components of the study population which consisted of all the workers at the Jordanian Ministry of Justice (North Province) from the internal control and accounting departments employees. A questionnaire was designed for this purpose. As for the analytical part of this study, it was conducted to get the results of hypotheses tests to reach at conclusions about the role of internal control at the Jordanian Ministry of Justice (North Province) in maintaining public funds.

10.1 The Study Population, Sample, Sampling Unit

The study population consisted of all the workers at the accounting and internal control departments at the Jordanian Ministry of Justice (North Province) who counted (81) employees.

10.2 The Study Sample

(70) questionnaires were distributed to the employees of the internal control and accounting departments at the Jordanian Ministry of Justice. (66) Questionnaires were recollected and (3) questionnaires were excluded for lack of information. This led to the final form of the sample at (63) male and female employees. The following tables show the circulation of the study variables: (job title, age, academic qualification, years of experience, specialty).

Table 1. The distribution of the sample members according to job title

In terms of Job section	Number	Percentage
Workers of internal control	8	%12.7
Workers of accounting departments	55	%87.3
Total	63	%100

Source: Information collected by the researcher (2017)

Viewing table No. (1) which shows the distribution of the sample members according to the job section, we find that the sample contained (%12.7) of the workers in the internal control department counting (8) employees, and (%87.3) of the employees counting (30) employees who work in the accounting departments which means that the majority of the sample members are of the accounting department's employees.

Table 2. The distribution of the sample members according to age

In terms of Age	Number	Percentage
Less than 25 years	3	%4.8
From 25 – 35 years	18	%28.6
From 36 – 45 years	33	%52.4
46 year and over	9	%14.3
Total	63	%100

Source: information collected by the researcher (2017)

Viewing table No. (2) which shows the distribution of the sample members according age, we find that the sample contained (%4.8) of the employees whose ages were less than 25 years counting (3) employees, (%28.6) of the employees whose ages ranged between (25) and (35) years counting (18) employees, (%52.4) of the employees whose ages ranged between (36) and (45) years and (%14.3) of employees whose ages were over (46) years counting (9) employees.

Table 3. The distribution of the sample members according to the academic qualification

In terms of Academic qualification	Number	Percentage
Average diploma	21	%33.3
Bachelor's degree	36	%57.1
High diploma	0	0
Master's degree	6	%9.5
Ph. D	0	0
Total	63	%100

Source: information collected by the researcher (2017)

Viewing table No. (3) Which shows the distribution of the sample members according to the academic qualification, we find that (%33.3) of the employees have average diploma at (21) employees, (%57.1) of them have a Bachelor's degree at (36) employees and (%9.5) of the employees have Master's degree counting (6) employees. The sample did not include employees who have the high diploma or ph. D. This indicates that most of the study sample members have Bachelor's degree and these points out the importance of the role performed by the accounting and internal control departments at the Jordanian Ministry of Justice (North Province).

Table 4. The distribution of the sample members according to years of experience

In terms of Years of experience	Number	Percentage
Less than 5 years	9	%14.3
From 5 – 15 years	45	%71.4
16 year and over	9	%14.3
Total	63	%100

Source: information collected by the researcher (2017)

Viewing table No. (4), which shows the distribution of the sample members according to the years of experience, we find that (%14.3) of the employees have less than 5 years' experience at (9) employees, (%71.4) of them have from 5 – 15 years of experience at (45) employees and (%14.3) of the employees have more than (16) years of experience at (9) employees. This indicates that the majority of the study sample members have high experience in the field of accounting and internal control.

10.3 Information Sources

In order to achieve the study objectives, the researcher depended on two types of information sources namely the secondary sources and the primary sources as follows:

- a. The secondary sources: They are the data which was obtained from desk sources and the literary review of the previous studies to establish the scientific foundation and the theoretical framework of the study whereby the following were referred to:
 - Books and sources and the written and published scientific material related to the topic of the research.
- b. The primary sources: They are the data which will be obtained from the questionnaire which was especially prepared for this study and which covered all the aspects of the theoretical framework and the questions and hypotheses on which the study was based.

10.4 The Study Tool

To realize the objectives of the study, the researcher used one main researching tool which was a questionnaire consisted of thirty items based on the pattern of Likert Quintet and composed of two axes:

First Axis: The personal information about the study sample concerning gender, age, academic qualification, years of experience and specialty.

Second Axis: A number of clauses that are intended to identify the role of the internal control components at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds which is accomplished through several domains as follows: The components of internal control at the Jordanian Ministry of Justice (North Province) to mountain public funds, and this dimension consisted of (30) clauses divided on several domains: The components of internal control at the Jordanian Ministry of Justice (North Province) to maintain

public funds, and this dimension consisted of (30) clauses divided on several domains:

First domain: The internal control environment as one of the internal control components counting (6) clauses.

Second domain: Risk assessment as one of the internal control components counting (6) clauses.

Third domain: The internal control activities as one of the internal control components counting (6) clauses.

Fourth domain: Information and methods of communication as one of the internal control components counting (6) clauses.

Fifth domain: Monitoring by the Jordanian Ministry of Justice (North Province) counting (6) clauses.

Considering that the verbal assessment scale used in this study was as follows:

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
5	4	3	2	1

10.5 Reliability of the Tool

The reliability coefficient of the study tool was calculated using (Cronbach's Alpha) equation of internal consistency after applying the tool on the study sample members which consisted of (63) male and female employees where the reliability coefficient of the tool was (0.709).

10.6 Statistical Treatment

The researcher used the following:

After the termination of data collection, the researcher is going to use the statistical analysis program (SPSS) through the computer to perform the following:

1. Conducting (one sample T – test).
2. Simple linear regression analysis.

11. The Results of the Study Hypotheses Test

First main hypothesis: There is no statistically significant role at (a = 0.05) for the internal control components at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds. To test this hypothesis, the researcher used (T – test) and derived the following criterion to compare the means relying on the number of the study tool clauses and the adopted verbal assessment scale:

The comparison criterion of the main hypothesis mean:

- 1- From (30) to less than (70) low role
- 2- From (70) to less than (110) medium role
- 3- From (110) to (150) high role

The comparison criterion of the sub – hypotheses means:

1. From (5) to less than (13.33) Lowrole
2. From (13.33) to less than (21.66) Medium role
3. Form (21.66) to (30) Highrole

Table 5. The results of (T – test) of the role of internal control components at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds

No.	Arithmetic mean	Standard deviation	T	df	Sig (2 – tailed)
63	103.47	20.10	23.58	62	0.000

Table (5) shows that the significance level of (T) which is (0.000) was less than Alpha (0.05) and leads to the conclusion that there is a statistically significant role for the internal control components at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds, and viewing the arithmetic mean we conclude that this role falls within the medium effect category.

First Sub – hypothesis: There is no statistically significant role at (a = 0.05) of the internal control environment at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds.

Table 6. The results of (T – test) for the role of the internal control environment at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds

No.	Arithmetic mean	Standard deviation	T	df	Sig (2 – tailed)
63	21.52	5.40	18.23	62	0.000

Table (6) shows that the significance level of (T) which is (0.000) was less than Alpha (0.05) and leads to the conclusion that there is a statistically significant role for the control environment at the Jordanian Ministry of

Justice (North Province) in the maintenance of public funds, and viewing the arithmetic mean we conclude that this role falls within the medium effect category.

The researcher also used the simple linear regression analysis to measure the effect of the internal control environment in the maintenance of public funds, and the results were as follows:

Table 7. The results of the simple linear regression analysis to investigate the effect of the internal control environment in the maintenance of public funds

Independent variable	R	R ²	F	Sig F	DF	T	Sig t
Internal control environment	0.509	0.259	6.655	0.018	1 19	2.580	0.018

Table (7) shows that the internal control environment at the Jordanian Ministry of Justice (North Province) affects the maintenance of public funds where the correlation coefficient value was (0.509) which is a medium correlation degree. The rate of the internal control environment impact in the maintenance of public funds was (0.259). This correlation is statistically acceptable as the calculated (F) value which is (6.655) is higher than the tabular value of (F) which is (4.38) statistically significant at a confidence degree of (%95) and significance level of ($\alpha = 0.05$).

T – Test value reveals the linear significance of the independent variable in the regression model. The significance level of (T) reached at (0.018) which is less than Alpha (0.05) which means the presence of linear significance of the internal control environment in the maintenance of public funds.

With this result, the null hypothesis of the study is rejected which means the acceptance of the alternative hypothesis i.e. the effective role of the internal control environment in maintaining public funds as one of the internal control components.

Second Sub – hypothesis: There is no statistically significant role at ($\alpha = 0.05$) of risk assessment as one of the internal control components at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds.

Table 8. T – Test results for the role of risk assessment as one of the internal control components at the Jordanian Ministry of Justice (North province) in the maintenance of public funds

No.	Arithmetic mean	Standard deviation	T	df	Sig (2 – tailed)
63	21.33	6.39	15.28	62	0.000

Table (8) shows that the significance level of (T) at (0.000) was less than Alpha (0.05) meaning that there is a statistically significant role for risk assessment as one of the internal control components at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds, and viewing the arithmetic mean, we conclude that this role falls within the medium effect category. The researcher also used the simple linear regression analysis to measure the effect of risk assessment as one of the internal control components in the maintenance of public funds where the results were as follows:

Table 9. The results of simple linear regression analysis to investigate the effect of risk assessment as one of the components of internal control in the maintenance of public funds

Independent variable	r	R ²	F	DF	Sig f	t	Sig t
Risk assessment	0.716	0.513	19.97	1 19	0.000	4.47	0.000

Table (9) shows that the risk assessment at the Jordanian Ministry of Justice (North Province) affects the maintenance of public funds where the correlation coefficient value was (0.716) which is a high correlation degree. The rate of the internal control environment impact in the maintenance of public funds was (0.513). This correlation is statistically acceptable as the calculated (F) value which is (19.97) is higher than the tabular value of (F) which is (4.38) statistically significant at a confidence degree of (%95) and significance level of ($\alpha = 0.05$).

T – test value reveals the linear significance of the independent variable in the regression model. The significance level of (T) reached at (0.000) which is less than Alpha (0.05) which means the presence of linear significance of the risk assessment in the maintenance of public funds.

With this result, the null hypothesis of the study is rejected which means the acceptance of the alternative hypothesis i.e the effective role of the risk assessment in maintaining public funds as one of the internal control components.

Third Sub- hypothesis: There is no statistically significant role at ($\alpha = 0.05$) for the internal control activities at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds.

Table 10. T – Test results of the role of internal control activities at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds

No.	Arithmetic mean	Standard deviation	T	df	Sig (2 – tailed)
63	19.14	4.63	18.90	62	0.000

Table (10) shows that the significance level of (T) which is (0.000) was less than Alpha (0.05) which means that there is a statistically significant role for the internal control activities at the Jordanian Ministry of Justice (North Province) in maintaining public funds. Viewing the arithmetic mean, we see that this role falls within the medium effect category. The researcher also used the simple linear regression analysis to measure the effect of internal control activities in maintaining the public funds and the results were as follows:

Table 11. The results of simple linear regression analysis to investigate the effect of internal control activities in maintaining public funds

Independent variable	r	R ²	F	DF	Sig f	t	Sig t
Control activities	0.775	0.600	28.54	$\frac{1}{19}$	0.000	5.343	0.000

Table (11) shows that the internal control activities as one of the internal control components at the Jordanian Ministry of Justice (North Province), affect in maintaining public funds as the correlation coefficient value was (0.775) referring to a high correlation degree. The rate of the internal control activities effect as one of the internal control components in maintaining public funds was (0.600) and this is statistically accepted because the calculated (F) value at (28.54) was higher than the tabular (F) value at (4.38) which is statistically significant at the confidence degree of (%95) and a significance level of ($\alpha = 0.05$).

T – test value revealed the linear significance of the regression model of the independent variable where the significance level value of (T) which was (0.000) which is less than Alpha (0.05) which means the presence of linear significance of the internal control activities in maintain public funds, with this result, the null hypothesis of the study is rejected and the alternative one is accepted which refers to the effective role of the internal control activities in maintaining public funds as one of the internal control components.

Fourth Sub – hypothesis: There is no statistically significant role at ($\alpha = 0.05$) for the information and methods of its communication as one of the internal control components at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds.

Table 12. T – test results of the role of information and methods of its communication as one of the components of internal control components at the Jordanian Ministry of Justice (North Province) in maintaining public funds

No.	Arithmetic mean	Standard deviation	T	df	Sig (2 – tailed)
63	20.857	5.21	18.31	62	0.000

Table (12) shows that the significance level of (T) which is (0.000) was less than Alpha (0.05) which means that there is a statistically significant role for the information and methods of its communication at the Jordanian Ministry of Justice (North Province) in maintaining public funds. Viewing the arithmetic mean we see that this role falls within the medium effect category. The researcher also used the simple linear regression analysis to measure the effect of information and methods of its communication in maintaining the public funds and the results were as follows:

Table 13. Results of simple linear regression analysis to investigate the information and methods of its communication as one of the internal control components in maintaining public funds

Independent variable	r	R ²	F	DF	Sig f	t	Sig t
Information and methods of communication	0.870	0.757	59.18	$\frac{1}{19}$	0.000	7.693	0.000

Table (13) shows that the information and methods of communication as one of the internal control components at the Jordanian Ministry of Justice (North Province) affect in maintaining public funds as the correlation coefficient value was (0.870) referring to a high correlation degree. The rate of the information and methods of communication effect as one of the internal control components in maintaining public funds was (0.757) and this is statistically accepted because the calculated (F) value at (59.18) was higher than the tabular (F) value at (4.38) which is statistically significant at the confidence degree of (%95) and a significance level of ($\alpha = 0.05$).

T – test value revealed the linear significance of the regression model of the independent variable where the significance level value of (T) which was (0.000) which is less than Alpha (0.05) which means the presence of linear significance of the information and methods of communication in maintaining public funds. With this result, the null hypothesis of the study is rejected and the alternative one is accepted which refers to the effective

role of the information and methods of communication in maintaining public funds as one of the internal control components.

Fifth Sub – hypothesis: There is no statistically significant role at ($\alpha = 0.05$) for monitoring as one of the internal control components at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds.

Table 14. T – Test results of the role of monitoring as one of the internal control components at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds

No.	Arithmetic mean	Standard deviation	T	df	Sig (2 – tailed)
63	20.61	5.14	18.373	62	0.000

Table (14) shows that the significance level of (T) which is (0.000) was less than Alpha (0.05) which means that there is a statistically significant role for the monitoring at the Jordanian Ministry of Justice (North Province) in maintain public funds. Viewing the arithmetic mean we see that this role falls within the medium effect category. The researcher also used the simple linear regression analysis to measure the effect of monitoring in maintaining the public funds and the results were as follows:

Table 15. The results of simple linear regression analysis to investigate the effect of monitoring as one of the internal control components in the maintenance of public funds

Independent variable	r	R ²	F	DF	Sig f	t	Sig t
Monitoring	0.901	0.812	81.84	$\frac{1}{19}$	0.000	9.01	0.000

Table (15) shows that monitoring as one of the internal control components at the Jordanian Ministry of Justice (North Province) affect in maintaining public funds as the correlation coefficient value was (0.901) referring to a high correlation degree. The rate of monitoring effect as one of the internal control components in maintaining public funds was (0.812) and this is statistically accepted because the calculated (F) value at (81.84) was higher than the tabular (F) value at (4.38) which is statistically significant at the confidence degree of (%95) and a significance level of ($\alpha = 0.05$).

T – test value revealed the linear significance of the regression model of the independent variable where the significance level value of (T) which was (0.000) which is less than Alpha (0.05) which means the presence of linear significance of monitoring in maintaining public funds. With this result, the null hypothesis of the study is rejected and the alternative one is accepted which refers to the effective role of the monitoring in maintaining public funds as one of the internal control components.

Table 16. Summary of the arithmetic means and standard deviations of the internal control components at the Jordanian Ministry of Justice (North Province) in the maintenance of public funds in descending order

Element	Arithmetic mean	Standard deviation
Internal control environment	21.52	5.40
Risk assessment	21.33	6.39
Information and methods of its communication	20.85	5.21
Monitoring	20.61	5.14
Internal control activities	19.14	4.63

Viewing the former table, we find that the internal control environment as one of the internal control components in the maintenance of public funds obtained the highest arithmetic mean at (21.52), and this indicates the more effectiveness of this element than others in supporting the internal control actions. However, the element of internal control activities received the least arithmetic mean at (19.14) which is an acceptable mean. Nevertheless, this points out the existence of an aspect of shortage or underacting in the activities of the internal control committees at the Jordanian Ministry of Justice (North Province) in the maintenance of Public Funds.

The Study Results

- 1- There is a role for the internal control components at the Jordanian Ministry of Justice (North Province) in maintaining public funds in average level.
- 2- There is an average role for each of the internal control components at the Jordanian Ministry of Justice (North Province) separately in maintaining public funds.
- 3- The internal control environment attained the highest arithmetic mean in maintaining public funds as one of the internal control components at the Jordanian Ministry of Justice (North Province).
- 4- Monitoring, as one of the internal control components, got the highest effect compared to the other internal control components while the least impact was for the internal control environment.

12. Recommendations

- 1-Concentrating on the internal control in general to raise the efficiency in maintaining public funds at the Jordanian Ministry of Justice (North Province).
- 2-Activating and developing the activities followed by the internal Control Committees at the Jordanian Ministry of Justice (North Province).
- 3-Giving more attention to the internal control environment to elevate its impact in maintaining public funds at the Jordanian Ministry of Justice (North Province).
- 4-I suggest conducting more studies about the role of internal control in the maintenance of public funds at the Jordanian Ministry of Justice on the level of the whole kingdom to verify the accuracy of the present study's results.
- 5-I suggest conducting more studies about the same subject but through the perspective of the internal auditors of other ministries in order to obtain other results that contribute in treating the shortcomings in the work of the internal Control Committees.

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