CORPORATE GOVERNANCE AND INNOVATION: EVIDENCE FROM BAHRAIN BOURSE

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Abstract

The study aims to assess corporate governance and innovation in selected listed companies at Bahrain Bourse. The study sample included 39 companies in the year 2013. The study built one Linear Regression Model to study the relationship between corporate governance and innovation. After testing the first hypothesis, there is an accepted level of corporate governance in selected listed companies at Bahrain Bourse. And after testing the second hypothesis, there is no relationship between corporate governance and innovation in selected listed companies at Bahrain Bourse, whether the corporate governance is strong in selected listed companies at Bahrain Bourse or not, it has no relationship to Innovation. In Kingdom of Bahrain the innovation is weak due to the fact that Bahrain imports innovation from other countries. The study recommends that all companies listed in Bahrain Bourse to send their employees for special courses on corporate governance, which shows its benefits and to increase their awareness and advises to conduct a workshop of innovation in companies listed in Bahrain Bourse by professional institutes.

Keywords: Corporate Governance, Innovation, Bahrain

1. INTRODUCTION

Countries at international level have become more interested in implementing good corporate governance practices with the increased global challenges and competition to be able to participate in the global economy, attract foreign investments and build a foundation for sustainable economic growth. Bahrain is also one of those countries that have placed a great interest in the existence of corporate governance state, and it has placed a great effort in issuing the Corporate Governance Code.

The Government of Kingdom of Bahrain is keen to promote good corporate governance principles in Bahrain in order to enhance investor confidence and foster economic development. Over the past several years, the Ministry of Industry and Commerce, in cooperation with the Central Bank of Bahrain, has worked with the National Corporate Governance Committee to develop a Corporate Governance Code through a consultative process and recognizing the great effort of many stakeholders (Bahrain Code of Corporate Governance, 2010).

The Ministry of Industry and Commerce (MOIC) has drafted a new Commercial Companies Law, which incorporates numerous corporate governance provisions and rules. The MOIC has also issued a booklet and CD which provide guidance to directors as to the various laws which govern financial reporting requirements and other obligations to the different stakeholders. The Central Bank of Bahrain (CBB) is also very active in reviewing new corporate governance-related requirements for listed companies, and its licensees. MOIC, with the CBB, created National Steering Committee on Corporate Governance primarily to develop the new Company Law and in 2006 the Committee began its work to create Code of Corporate Governance (CCG). The committee was formed from representatives of various interested stakeholder groups. The committee developed a code of corporate governance, with the aim to support and strengthen Bahrain's corporate governance framework for all companies. The draft code was presented at a public conference on 6 May, 2008 and the code was officially issued by the MOIC in 2010. All companies are required to adopt it starting from January 1, 2011, where full compliance required by end of the year 2011 (Kukreja, 2013).

Corporate governance broadly refers to the mechanisms, processes and relations by which corporations are controlled and directed. Governance structures identify the distribution of rights and responsibilities among different participants in the corporation (such as the board of directors, managers, shareholders, creditors, auditors, regulators, and other stakeholders) and include the rules and procedures for making decisions in corporate affairs. Corporate governance includes the processes through which corporations' objectives are set and pursued in the context of the social, regulatory and market environment. Governance mechanisms include monitoring the actions, policies and decisions of corporations and their agents. Corporate governance practices are affected by attempts to align the interests of stakeholders.

Deschamps (2012) mentioned that innovation governance can be thought of as a system of mechanisms to align goals, allocate resources and assign decision-making authority for innovation, across the company and with external parties. Many have gone further by allocating specific responsibilities and setting up dedicated mechanisms to manage cross-functional processes, for example new product development. But how can they stimulate, steer and sustain innovation, an ongoing transformational endeavor that is increasingly becoming a corporate imperative. Certainly, innovation consists of several cross-functional processes from generating ideas to taking technologies to market. It deals with "hard" business issues like growth strategy, technological investments, project portfolios and the creation of new businesses. But it also relates to "softer" challenges, like promoting creativity and discipline, stimulating entrepreneurship, accepting risk, encouraging teamwork, fostering learning and change, and facilitating networking and communications; in short, it requires a special type of organizational culture. Like marketing, innovation is a mindset that should pervade the whole organization.

Current innovation management techniques and organizational solutions tend to focus on many – not all – of the hard aspects of innovation, but much less on its softer elements. The scope of innovation is so broad that few companies appear to have thought deeply about what it takes now and will take in the future to steer and manage innovation in an integrated way, across all its aspects, hard and soft (Deschamps, 2012).

This study is based on corporate governance and innovation management in selected listed companies at Bahrain Bourse (BB) according to the prevailing corporate governance environment and strategies to sustain or have potential competitiveness to meet the standards of the ever changing market. Organizations are considering innovative ideas as their potential informational resource along with financial and non-financial resources. Approximately, most of the sectors in Bahrain have embedded the innovation concepts in their organizational hierarchy to get optimum utilization of resources and benefits through market and organizational performance. Innovation is the core competency factor for every market oriented approach.

Saxena (2012) stated that real success of the different sectors reforms will however depend primarily on the organizational effectiveness of these sectors, for example the commercial banks sector that include cooperative banks, for which initiatives will have to come from the banks themselves. With elements of good corporate governance, sound investment policy, appropriate internal control systems, better credit risk management, focus on newly-emerging business areas like micro finance, commitment to better customer service, adequate automation and proactive policies on house-keeping issues, definitely would be able to grapple these challenges and convert them into opportunities.

1.1. Statement of the problem

When companies efficiently mobilize and allocate funds, this lowers the cost of capital to firms, boosts capital formation and stimulates productivity growth. Thus, weak governance of different sectors reflects throughout the economy with negative consequences for economic development. This research study is important because it will analyze the corporate governance and innovation in selected listed companies at Bahrain Bourse. Recent academic and policy analysis gives insight into the governance problems exposed by the financial crisis and suggests possible solutions. Thus, this study is conducted due to no previous work on this subject. Kingdom of Bahrain is an emerging market, so the study should examine the corporate governance and its impact on innovation in selected listed companies at Bahrain Bourse.

Specifically the study will answer the following:

a) Is there accepted level of corporate governance in selected listed companies at Bahrain Bourse?

b) Is there relationship between corporate governance and innovation in selected listed companies at Bahrain Bourse?

1.2. Objective and significance of the study

The study aims to assess corporate governance and innovation in selected listed companies at Bahrain Bourse. The specific objective of the study is to analyze the corporate governance and innovation of many sectors and its importance in the economic expansion. Kingdom of Bahrain is a small island and has limited resources, at the same time when multiple needs of its population are growing continuously, it seeks to use its available resources in most efficient way and reach the optimal allocation of resources.

This study is significant because the centrality of corporate enterprises for allocating resources in the economy has sparked the recent debate among economists about the manner in which corporations should be governed to enhance economic performance. The process through which resources are developed and utilized is central to the dynamic through which successful enterprises and economies improve their performance over time as well as relative to each other. The leading theories of corporate governance - the shareholder and stakeholder theories - do not, however, incorporate a systematic analysis of innovation in their analytical frameworks. Both of these theories, in fact, rely on concepts of resource allocation, borrowed from neoclassical economics that contradict what we know about the innovation process.

To deal with the economics of innovation, a theory of corporate governance must come to terms with the developmental, organizational and strategic dimensions of innovative resource allocation. This study describes an organizational control theory that demonstrates the implications of innovation for corporate governance.

2. LITERATURE REVIEW AND HYPOTHESIS

Tseng *et al* (2013) noted that the Report of International Institute for Management Development (IMD) mentions two indicators about corporate governance, efficiency of board directors supervising ability to management and efficiency of shareholder value. Recently, Taiwan Government worked hard on enhancing the efficiency of corporate governance and realize the concept and system of corporate governance. Under the knowledge-based economy, effective management of knowledge and innovation thus has become important for corporate. Innovation ability of corporate usually is evaluated by input of Research and Development and new technology form foreign companies. Moreover many studies employed patent count to examine innovation ability of corporate.

In previous study Lacetera (2001) suggested an original interpretation of some organizational settings, as the increased importance of skilled scientists within firms and the development of inter-organizational alliances for the division of scientific labor. Following recent theorizing on corporate governance issues, which points out the intrinsic organizational and relational dimensions of the resource allocation processes and strategic decision-making, the author propose a role of the organizational practices on corporate governance, and, in turn, an influence of different governance arrangements on innovative activity. Wang and Miozzo (2002) noted that corporate governance refers to the system, by which companies are controlled, directly or indirectly, by shareholders and other stakeholders. A system of corporate governance shapes who makes investment decisions in corporations, what types of investments they make, and the decisions on Research and Development expenditures and how returns from investments are distributed. Innovation, on the other hand, is the process through which productive resources are developed and utilized to generate higher quality and/or lower cost products than had previously been available. Both concepts are central to the interaction through which successful economies and firms improve their performance over time as well as relative to each other. In Chinese companies some unique corporate governance mechanisms such as the two-tier board structure designed to enhance a company's smooth strategy implementation and performance may instead impede a company's innovative outcomes by distracting top manager's attention to crucial innovative initiatives (Chen *et al*, 2015).

The corporate governance regime in the Gulf countries is still being developed. Regulators, investors, corporate managers, and professional accounting bodies need to support new initiatives in corporate governance if the region is to enhance its competitiveness and to become a regional financial and commercial centre. The challenge is to develop effective practices which will facilitate innovation and support business operations. Ensuring greater transparency to address the problems of information asymmetry is crucial if shareholders are to influence the decision making process in their companies (Baydoun *et al*, 2013).

Malla (2004) suggested that one of the biggest challenges to global corporate governance is convergence of corporate best practices as well as convergence of global corporate legal systems. Political will is absolutely crucial to the developing of means and methods to integrate domestic corporate practices with the best standards followed internationally. Only then can integrity of a country's economic system get reflected properly and foreign investment in domestic business increase.

In different study Okeahalam (2004) claimed that the corporate governance in Africa does not mean that a different standard of corporate governance applies to Africa. What makes the African situation difficult is the fact that African economies are very much transition economies. Some of the peculiarities include: the existence of a large number of state-owned enterprises, the culture of corruption or the pursuit of easy wealth, the weak nature of institutions, the lack of transparency in the business environment and low financial intermediation.

In Ghana, political and legal governance on corporate governance challenges include an inadequate legal framework, mainly dominated by the Companies Code of 1969. The Institute of Directors in the country has recommended the need for enhancement of laws that demand more transparency; clarify governance roles and responsibilities, the enactment of competition and solvency laws and strengthening of enforcement mechanisms. The Securities and Exchange Commission, since it took over the responsibilities and powers of the Corporate Law Authority in 1999, has been acutely alive to the changes taking place in the international business environment, which directly: and indirectly impact local businesses. As part of its multi-dimensional strategy to enable Pakistan's corporate sector meet the challenges raised by the changing global business scenario and to build capacity, the SEC has focused, in part, on encouraging businesses to adopt good corporate governance practices. This is expected to provide transparency and accountability in the corporate sector and to safeguard the interests of stakeholders, including protection of minority shareholders' rights and strict audit compliance (Ameer, 2013).

The major problem of this study is reflected in its attempt to find answers for the following questions: Is there a relationship between corporate governance and innovation in selected listed companies at Bahrain Bourse?

The hypothesis can be written based on the question as follows:

H_{o2}: There is no relationship between corporate governance and innovation selected listed companies at Bahrain Bourse

Corporate governance philosophy lies in the separation of ownership of the company's capital and management, process control and supervision within these companies, is the famous theory of the agency, which was found to have positive effects on various aspects of corporate performance.

When separated from the property lease with the increase in size of the company and its transformation into a public company highlights the importance of efficient governance system and the need that the company is managed in the best interests of the owners (Hamdan et al, 2013), not only ensure the interests of owners but all parties related to the company.

Emphasize the importance of the principles of corporate governance has been after the recent financial crises and the collapse sequence in major international companies from making the necessary framing these rules and laws, And developed in order to protect the interests of all parties in the facility (Hamdan, 2011). Hamdan and Al-Sartawi (2013) stated that corporate governance characteristics can be define as: ownership of the largest shareholder in the company that should not exceed 20%; the size of board of directors must be at least 7 members but not more than 13 members; the ownership of the three largest shareholders in the company should not exceed 50% of the shares; and the board of directors should be controlled by more than 50% independent outside directors; and finally, the chairman and CEO duties must be separated. These characteristics are independent variables and the dependent variable is innovation. Ayyagari et al (2011) defined that innovation process broadly include not only core innovative activities, such as the introduction of new products and new technologies, but also other types of activities that promote knowledge transfers, such as joint ventures with foreign partners or new licensing agreements, and other actions that affect the organization of the firm's business activities, such as opening a new plant or outsourcing a productive activity. Based on Rogers' definition of the diffusion of innovation, there are four main elements in the diffusion of innovation process: (1) the innovation's characteristics, (2) the channels used to communicate the benefits of the innovation, (3) the time elapsed since the introduction of the innovation, and (4) the social system in which the innovation is to diffuse (Zolait, 2014). Dutz (2007) also argues that innovation in emerging markets is less of shifting outward the global technological frontier and rather more of improving practices across the entire economy and includes innovations in processes and organizational models.

3. RESEARCH METHODOLOGY

This section describes the research methods of the study, including sample description, data collection, how the dependent and independent variables are operationalized, and the analysis used to test the two hypothesis.

3.1. Sample selection and data sources

Multiple sources have been use in this study to generate the data set employed in the analysis. Innovation information and the information about the factors of corporate governance regarding the companies are compiled from the publicly available database of the Bahrain Bourse. The corpus of the study is composed of selected listed companies at Bahrain Bourse includes nine sectors are: Commercial Banks, Investment, Services, Insurance, Industrial, Hotels and Tourism, Preferred Share, Closed Company and Non Bahraini Co. The final sample consists of 39 companies. The ability to get to the information depended on the annual reports of selected listed companies at Bahrain Bourse to conduct the analysis of the relationship between corporate governance and innovation. This research study uses cross sectional data, because corporate governance depends on the end of the year data and in this study the year 2013 is chosen, because annual reports are issued at the end of the year, while this study is conducted at the beginning of the year.

3.2. Study model

To examine the relation between innovation and corporate governance after controlling the factors that are associated with both or either of the two variables, we estimate the following Linear Regression Model:

$$InNva_i = \beta_0 + \beta_1 \text{OwLShi} + \beta_2 \text{ SBoardD}_i + \beta_3 \text{OwThLSh}_i + \beta_4 \text{IndepBD}_i + \beta_5 \text{ChCEO}_i + \beta_6 \text{CoSize}_i + \beta_7 \text{FLeverage}_i + \beta_8 \text{FirMAgE}_i + \beta_9 \text{MarCap} \sum i \quad (1)$$

Where:

InNvai: is a continuous variable; the dependent variable innovation, that measured by the total of intangible assets, for the company (i).

β_0: is the constant.

β_{1-9}: is the slope of the independent and controls variables.

OwLShi: is dummy variable, coded 0 if a shareholder owned more than 20% and 1 otherwise, for the company (i).

SBoardDi: is dummy variable, coded 0 if the board of directors' members is not between 7-13 members and 1 otherwise, for the company (i).

OwThLShi: is dummy variable, coded 0 if the ownership of the three largest shareholders more than 50% and 1 otherwise, for the company (i).

IndepBDi: is dummy variable, coded 0 if the board of directors is not controlled by more than 50% independent outside directors and 1 otherwise, for the company (i).

ChCEOi: is dummy variable, coded 0 if the chairman is also the CEO and 1 otherwise, for the company (i).

CoSizei: is a continuous variable: the company size, by natural log of total assets for the company (i).

FLeveragei: is a continuous variable: Financial Leverage is the ratio of total debt to the book value of total assets, for the company (i).

FirMAgEi: is a continuous variable: is the number of years since the firm first appeared in the BB database, for the company (i).

MarCapi: is a continuous variable: Market Capitalization is the aggregate value of a company or stock and it's calculated by multiplying a company's shares outstanding by the current market price of one share, for the company (i).

$\sum i$: random error.

3.3. Measuring of variables

The selection of variables is based on previous empirical studies, table 1 summarize the dependent variable, independent variables in terms of corporate governance, and the control variables employed for all estimated models of the study.

Dependent Variable

The dependent variable in the study will be the innovation which was measured by the total of intangible assets. In previous study Chen *et al* (2015) mentioned that innovation has been found to be positively associated with the number of patents granted (Kaplan, 2008), entrepreneurial orientation (Cho and Hambrick, 2006), and innovative actions. Zolait (2014) indicated that innovation stems from the confluence of both physical assets, which include both tangible assets and intangible assets.

Independent Variables

The independent variables of the study are the corporate governance characteristics which were measured using the dummy variables and are coded one if the companies complied with corporate governance standards and zero if otherwise. Based on previous study, Hamdan *et al* (2013) stated that corporate governance characteristics can be defined as: ownership of the largest shareholder in the company that should not exceed 20%; the size of board of directors must be at least 7 members but not more than 13 members; the ownership of the three largest shareholders in the company should not exceed 50% of the shares; and the board of directors should be controlled by more than 50% independent outside directors; and finally, the chairman and CEO duties must be separated.

Control Variables

The study will use some control variable such as the size of the company by its natural log of total assets; the financial leverage by the ratio of total debt to total assets; the age of the company since it was established (Hamdan and Al-Sartawi, 2013). Finally, the study will use the market capitalization that is measured by the aggregate value of a company.

Table 1. The Measurement of the Variables

Variables	*Acronym*	*Measurement*
Dependent variable		
Innovation	InNva	Measured by the total of intangible assets.
Independent variable		
Corporate governance characteristics		
Ownership of the largest shareholder	OwLSh	Dummy variable coded 0 If a shareholder owned more than 20% and 1 otherwise.
Size of the board of directors	SBoardD	Dummy variable coded 0 if the Board of Directors members are not between 7-13 members and 1 otherwise.
Ownership of the three largest shareholders	OwThLSh	Dummy variable coded 0 if the ownership of the three largest shareholders more than 50% and 1 otherwise.
Independency of Board of Directors	IndepBD	Dummy variable coded 0 if the board of directors is not controlled by more than 50% independent outside directors and 1 otherwise.
Posts of chairman and CEO	ChCEO	Dummy variable coded 0 if the chairman is also the CEO and 1 otherwise.
Control variables		
Company size	CoSize	Natural log of total assets.
Financial leverage	FLeverage	The ratio of total debt to total assets.
Firm age	FirMAgE	Is the number of years since the founding of the company.
Market capitalization	MarCap	Is the aggregate value of a company, by multiplying a company's shares outstanding by the current market price of one share.

4. DATA ANALYSIS AND TESTING OF HYPOTHESIS

This section includes three sections. The first section is validity tests applied to validate the data used for the research. The second section is the descriptive statistics followed by the third section which is empirical analysis and testing the hypothesis of the study.

4.1. Data validity tests

This study belongs to General Linear Model (GLM) which requires certain conditions before applying it. The tests that were conducted to validate the data of the study are Normal Distribution Test, Multicollinearity Test, Autocorrelation Test and Heteroscedasticity Test.

Normal distribution test

Jarque-Bera, *p*-value, Kurtosis and Skewness were conducted to test the Normal Distribution of data as shown in table 2 To test the data (Jarque-Bera) test was conducted and results showed that the data of the study was normally distributed as p – value is more than 5% except three variables which are the innovation, company size and market capitalization where p – value is less than 5%. To solve this problem, natural logarithm of these variables was taken.

Table 2. Normal Distribution

Variables	*Acronym*	*J.B*	*p-value*	*SK*	*KU*
Innovation	InNva	440.270	0.000	3.930	17.460
Company Size	CoSize	157.260	0.000	95.200	10.860
Financial Leverage	FLeverage	2.980	0.220	0.420	1.940
Firm Age	FirMAgE	1.460	0.480	-0.160	2.110
Market Capitalization	MarCap	279.020	0.000	3.160	14.460

Multicollinearity test

The strength of the General Linear Model (GLM) depends on the independency of each variable of the independent variables used in the model. If this condition was not met, then the GLM is not considered to be good to be used and applied. To test the independency of the independent variables, Collinearity Diagnostics Test was used by measuring the Tolerance of each independent and control variables and then finding the Variance Inflation Factor (VIF) as this test is used as a measure of the effect of correlation between the independent variables. If the value of VIF is more than 10, this indicates that there is a problem with the Multicollinearity of the measured independent variable (Gujarati, 2003). From table 3, the study notices that VIF is less than 10 for all the independent variables, which means that the study model does not suffer from multicollinearity problem. The independent variables (Posts of Chairman and CEO) were excluded from the validity test and testing of hypothesis as the study was found to be 100% complied.

Table 3. Multicollinearity test

Variables	*Acronym*	*Tolerance*	*VIF*
Ownership of the largest shareholder	OwLSH	0.362	2.762
Size of the board of directors	SBoardD	0.833	1.200
Ownership of the three largest shareholders	OwThLSh	0.319	3.138
Independency of board of directors	IndepBD	0.805	1.242
Company Size	CoSize	0.332	3.016
Financial Leverage	FLeverage	0.630	1.586
Firm Age	FirMAgE	0.644	1.553
Market Capitalization	MarCap	0.328	3.046

Autocorrelation test

Autocorrelation problem appears in the model when following observations are related which will affect the validity of the model as the independent variables will be affecting the dependent variables in a high degree because of that correlation. To test the presence of that correlation (Durbin Watson D-W) test was used. From table 4 the study notices that Durbin Watson test result is 2.042, and this indicates that DW is located in the range between (2 – 2.5), so the study model is accepted.

Heteroscedasticity test

When using Ordinary Least Squares (OLS), variance of random error should be constant and the average of it should equal zero, and if the variance is not constant, then the model has heteroscedasticity (Awad, 2000). So to solve this problem, there are some statistical methods are used, one of them is (White test) which is used automatically when using programs like (E-views) when detected by the program itself. From table 4, *p*-value for White test is more than 5% for the study model (0.446 is more than 0.05), which means that the study model has heteroscedasticity, to solve this problem, White test method will be taken.

Table 4. Durbin Watson and White tests

Durbin Watson	2.042
White Test	0.446

4.2. Descriptive statistics

In this section, refer to table 5; descriptive analysis was done for the corporate governance characteristics. This variable is dummy variable and is coded one if the companies are complied with corporate governance standards and zero if otherwise.

Table 5. Descriptive Statistics of Corporate Governance

	Frequency of 1's		*Frequency of 0's*	
Corporate Governance Characteristics	*Frequency*	*Percentage, %*	*Frequency*	*Percentage, %*
Ownership of the largest shareholder	12	30.800	27	69.200
Size of the Board of Directors	34	87.200	5	12.800
Ownership of the three largest shareholders	17	43.600	22	56.400
Independency of Board of Directors	18	46.200	21	53.800
Posts of Chairman and CEO	39	100.000	0	0.000

Descriptive analysis of Corporate Governance

The first corporate governance characteristic is the ownership of the largest shareholders. After analyzing the data, the study indicates that only 12 companies listed in Bahrain Bourse out of 39 companies had their shareholder with less than 20% ownership of total shares with a percentage of 30.8%. Regarding the international rules no shareholders can exceed owning 20% of total company shares, while 27 companies listed in Bahrain Bourse with 69.2% had their shareholder with more than 20%. The second corporate governance characteristic is the size of the Board of Directors. After investigating the data, the study mentioned that 34 companies listed in Bahrain Bourse out of 39 companies had their Board of Directors members between 7-13 members with a percentage of 87.2% and this percentage is the highest compared with other corporate governance characteristics, and regarding the international rules the Board of Directors members must be between 7 to13 members, while only 5 companies listed in Bahrain Bourse with 12.8% had their Board of Director less than 7 members or more than 13 members. The third corporate governance characteristic is the ownership of the three largest shareholders. After analyzing the data, the study indicates that 17 companies listed in Bahrain Bourse out of 39 companies had their ownership of the three largest shareholders less than 50% of total shares with a percentage of 43.6%. Regarding the international rules the three largest shareholders should not exceed 50% of total company shares, while 22 companies listed in Bahrain Bourse with 56.4% had their three largest shareholders with more than 50%. The fourth corporate governance characteristic is the Independency of board of directors. After analyzing the data the study notes that 18 companies listed in Bahrain Bourse out of 39 companies the board of directors is controlled by more than 50% independent outside directors with percentage of 46.2%. Regarding the international rules the board of directors it must be controlled by more than 50% independent external directors, while 21 companies listed in Bahrain Bourse with 53.8% had their board of directors controlled by less than 50% outside directors.

The last corporate governance characteristic is the Posts of chairman and CEO. After investigating the data, the study mentions that all the 39 companies listed in Bahrain Bourse with percentage of 100% the chairman is not the Chief Executive Officer as the international rules states that the chairman is not also the CEO.

In different study Hamdan *et al* (2013) noted that the ownership of the largest shareholders in Kuwait Stock Exchange, only 65 companies out of 222 companies had their shareholder with less than 20% ownership of total shares with percentage of 29.3%, while 157 companies with percentage 70.7% had their shareholder with more than 20%. The study also mentioned that there is a high variance between the two percentages and it is the same as the companies listed in Bahrain Bourse. The size of the Board of Directors, the study mentioned that 116 companies out of 222 companies had their Board of Directors members between 7-13 members with percentage of 52.3% while 106 companies with percentage 47.7% had their Board of Director less than 7 members or more than 13 members. The ownership of the three largest shareholders, the study notes that 98 companies out of 222 companies had their ownership of the three largest shareholders less than 50% of total shares with percentage of 44.1%, while 124 companies with the rate of 55.9% had their three largest shareholders with more than 50%. Regarding Independency of board of directors, the study indicates that 118 companies out of 222 companies the board of directors is controlled by more than 50% independent outside directors with percentage of 53.2%, while 104 with 46.8% had their board of directors controlled by less than 50% outside directors. Finally, the Posts of chairman and CEO, the study found that 142 companies out of 222 companies the chairman posts differ than the Chief Executive Officer posts with the rate 64% and 80 companies with the percentage 36% the chairman is also the Chief Executive Officer.

Table 6. Descriptive Statistics of Innovation and Control Variables

Variables	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
Innovation	0.000	337.000	18816.000	67192.000
Company Size	5949.000	12310.000	1216291.000	2755679.000
Financial Leverage	0.035	0.896	0.392	0.273
Firm Age	7	56	29	13
Market Capitalization	4480.000	15480.000	175214.000	288915.000

Descriptive analysis of innovation

The innovation was measured by the intangible assets, the maximum intangible assets between the listed companies was analyzed to be BD337 thousands, while the minimum value of intangible assets was BD0, the results indicate that there is high variance between the maximum and minimum amount, the mean of the total intangible assets of the company's are BD18816.31 thousands, and the standard deviation is BD67192 thousands.

4.3. Path analysis

Referring to table 7, the study used path analysis by dividing the firm corporate governance into firms with high corporate governance and low corporate governance based on the value of the median (60%) to compare between firms according to corporate governance. When doing so the study ends up with two groups, 22 companies are the high corporate governance and 17 companies are the low corporate governance, and then the study finds the mean and standard deviation for the variables. To identify the significance in the variance between the means of the two samples *t*-test was used. The results are summarized in table 4.6 and showed that all *p*-values were more than 5%, which means that the relation is not statistically significant.

Referring to table 7, the first variable to be analyzed was innovation. It can be mentioned from the calculated mean that companies with high Corporate Governance have more innovation than those with low Corporate Governance, because the application of corporate governance supports the creation of innovation and provides work environment that encourages innovation because each person knows the extent of his power. The second variable to be analyzed was company size. It can be noticed from the calculated Mean that companies with low corporate governance have more total assets than those with high Corporate Governance, while it was noticed that the small companies size tend to have better control in general, due to their small size and absence of complications, therefore they tend to have higher focus and control over the implementation of corporate governance than the large companies size. The third variable to be analyzed was financial leverage. It can be noticed from the calculated mean that companies with low corporate governance has more debts than companies with high Corporate Governance, because companies with low corporate governance tend to borrow huge money to pay their debts, and they do not use the available cash. The fourth variable to be analyzed was Firm Age. It can be noticed from the calculated Mean that companies with high Corporate Governance are younger in age than companies with low corporate governance, because small companies are modern and aware of corporate governance, while the big companies are resisting change. The last variable to be analyzed is market capitalization. It may be noticed from the calculated mean that the high corporate governance companies have more market capitalization than those with low corporate governance, because the companies with high corporate governance have high value and market share.

Table 7. Path analysis

Variables	High Corporate Governance			Low Corporate Governance			Independent Sample Test	
	No	Mean	S.D.	No	Mean	S.D.	T-test	p-value
Innovation	22	26755.820	87425.479	17	8541.650	22183.080	0.836	0.408
Company Size	22	830929.360	2593199.695	17	1714993.240	2956450.701	-0.993	0.327
Financial Leverage	22	0.331	0.245	17	0.473	0.294	-1.651	0.107
Firm Age	22	26.090	13.064	17	33.240	12.448	-1.728	0.092
Market Capitalization	22	182415.450	351724.699	17	165892.590	188976.306	0.175	0.862

4.4. Empirical analysis and testing of hypothesis

After validating the data used, the study used statistical tests to ensure that this data goes with the conditions of applying General Linear Model (GLM) and Ordinary Least Squares (OLS). As data is considered as cross sectional data (39 companies) that are listed in Bahrain Bourse for the year 2013.

The study hypothesis tests the relationship between the corporate governance and innovation by using Linear Regression Model, so this hypothesis was formed based on what was found in previous studies regarding the relation between corporate governance and innovation. In different study Wang and Miozzo (2002) argued that corporate governance refers to the system, by which companies are controlled, directly or indirectly, by shareholders and other stakeholders and Innovation, on the other hand, is the process through which productive resources are developed and utilized to generate higher quality and/or lower cost products than had previously been available, so they mentioned that both concepts are central to the interaction through which successful economies and firms improve their performance over time as well as relative to each other.

After testing this hypothesis (table 8), the study concludes that all independent variables were positive in t-test and statistically are not significant, because the *p*-value of all independent variables is more than 5% and these results are summarized in table 8. The results indicate that there is no relationship between corporate governance and innovation in selected listed companies at Bahrain Bourse, because whether the corporate governance is strong of selected listed companies at Bahrain Bourse or not, it has no relationship with innovation. Innovation in Kingdom of Bahrain is weak due to the fact that Bahrain Imports Innovation from other countries, as Bahrain member of GCC countries has deeply depended on their plentiful natural resources, especially petroleum and gas. Nevertheless, natural resources endowment is not a sufficient basis for economic growth; it must be accompanied by investments in technological innovation. So, Kingdom of Bahrain should seek knowledge that can facilitate technological innovation for sustainable development. Thus the study rejects the alternative hypothesis.

The types of innovations that drive productivity increases in developed and developing countries differ. Most firms in emerging markets are engaged in activities far from the technological frontier, and entrepreneurs innovate not just through original inventions but also by adopting new means of production, new products, and new forms of organization already in use in more developed countries (Ayyagari *et al,* 2011).

In related study, Allen and Gale (2000) mentioned that in emerging markets where standard corporate governance mechanisms may be ineffective, encouraging dynamic competition in product markets via globalization or foreign trade is crucial for firms to innovate. In different study, Ayyagari *et al* (2011) mentioned that in developing countries the firm characteristics – access to finance, governance, and competition have positively associated with innovation in emerging market firms.

Table 8. Linear Regression Model

Variables	Linear Regression Model	
	t.test	p-value
Independent variables:		
(Constant)	0.903	0.374
OwLSH	0.052	0.959
SBoardD	0.088	0.93
OwThLSh	0.691	0.495
IndepBD	0.996	0.327
Control variables :		
CoSize	0.555	0.583
Fleverage	0.578	0.568
FirmAgE	-1.462	0.154
MarCap	3.114	0.004
R	0.665	
R -squared	0.443	
F-statistics	2.977	
p-value (F-statistics)	0.014	

t-Critical: at df 38, and confidence level of 99% is 2.423 and level of 95% is 1.648 and level of 90% is 1.303.

F-Critical (df for denominator n-β-1 = 39-8-1 = 30) and (df for numerator =β =8 and confidence level of 99% is 3.17 and confidence level of 95% is 2.77 and confidence level of 10% is 1.88.

Testing the effect of control variables on innovation

Refer to table 8 the company size has a positive relationship with innovation as t-test appears to be 0.555, but *p*-value is not accepted, since it is more than 5%. In Bahrain big companies have a huge capital and plenty of resources, so they can support and encourage innovation. Financial leverage has a positive insignificant effect on innovation, because as debts increase, cash increase and this cash should be used to support innovation. The firm age has a negative relation with innovation as seen in table 4.8 and it is not a statistical significant. Innovation in new companies is accepted due to that the companies are now creating their culture, while old companies tend to resist change. The study proved that market capitalization has a positive significant effect on innovation, because while market capitalization of the company increases, the chance of funding increases, which motivates innovation in the company.

5. CONCLUSION, STUDY LIMITATION AND FUTURE STUDIES

The main objectives of the study were; assessing the corporate governance and innovation in selected listed companies at Bahrain Bourse, and analyzing the many sectors and its importance to the economic expansion. The study raised the following questions: Is there a relationship between corporate governance and innovation in selected listed companies at Bahrain Bourse? And is there an accepted level of corporate governance in selected listed companies at Bahrain Bourse? Many studies conducted in the Arab Countries and in Gulf Corporation Council (GCC) area about corporate governance. One of these studies is by Hamdan and Al-Sartawi (2013). The study assessed the relationship between corporate governance and innovation in selected listed companies at Bahrain Bourse to cover this gap. It is beneficial to know what really affects company innovation in this area and whether corporate governance really affects innovation. To conduct this study, 39 companies were chosen to be the whole Bahraini companies listed in Bahrain Bourse at the year 2013. Nine companies were excluded because they were non-Bahraini, suspended or closed during the year 2013. After that the study considered corporate governance as independent variable and innovation as the dependent variable. Different characteristics of corporate governance were studied. The characteristics that were chosen to represent corporate governance were: Ownership of the largest shareholder, size of the board of directors, ownership of the three largest shareholders, independency of board of directors and posts of chairman and CEO. Based on previous studies several control variables were chosen and what was believed to be affecting the variables of the study. The variables that were chosen are: the company's size, financial leverage, company's age and market capitalization.

The study built one Linear Regression Model to study the relationship between corporate governance and innovation. This model was used to capture the relationship between them and justify the conflicting results found by different previous studies and then we compared between them using statistical tools to determine the company innovation.

Different validity tests were conducted on data and the model to validate them before testing them. The data and the model were valid and any errors that were found were overcome using statistical tools. Two hypotheses were developed regarding the relation between corporate governance and innovation. The model is tested and some descriptive statistics and path analysis were defined, the following results were obtained:

a) By using the path analysis, the study divided the firm corporate governance into firms with high corporate governance and the other with low corporate governance based on the value of the median (60%).

b) The study ends up with two groups, 22 companies are the high corporate governance and 17 companies are the low corporate governance.

c) The high Corporate Governance has more innovation than those with low Corporate Governance.

d) The application of corporate governance supports the creation of innovation and provides work environment that encourages innovation because each person knows the extent of his power. The low Corporate Governance has more total assets than those with high Corporate Governance. The small companies size tend to have better control in general, due to their small size and absence of complications, therefore they tend to have higher focus and control over the implementation of corporate governance than the large companies size.The low corporate governance companies have more debts than the high corporate governance companies.

e) There is an accepted level of corporate governance in selected listed companies at Bahrain Bourse. Kingdom of Bahrain is new in applying the corporate governance standards and this percentage is accepted when they are at the beginning, so the study accepts the alternative hypothesis and rejects the null hypothesis.

f) After testing the hypothesis based on the Linear Regression Model, all independent variables were positive in the t-test and statistically are not significant. There is no relationship between corporate governance and innovation in selected listed companies at Bahrain Bourse. Whether the corporate governance is strong in selected listed companies at Bahrain Bourse or not, it has no relationship to innovation.

g) Innovation in Kingdom of Bahrain is weak due to the fact that Bahrain Imports Innovation from other countries, as Bahrain member of GCC countries has deeply depended on their plentiful natural resources, especially petroleum and gas. Nevertheless, natural resources endowment is not a sufficient basis for economic growth; it must be accompanied by investments in technological innovation, so the study rejects the alternative hypothesis.

This study although analyzed corporate governance and innovation in selected listed companies at Bahrain Bourse in terms of innovation and corporate governance. There were limitations in the study that the sample size is small, so results might not be generalizable. The other limitation of the study is that the year (2013) may be unstable, because of consequences of global financial crisis.

Also the study suggest several future studies to complete the view of the studies that include: comparing the impact of relationship between corporate governance and innovation in Bahraini companies with GCC companies, because the GCC economies are considered to be having a lot of similarities in laws, rules and nature of economy and study the impact of innovation in Bahraini companies comparing with developed countries.

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