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Corporate Governance-CSR-Financial Performance Nexus: Evidence from Pakistan

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Abstract

This is a quantitative study which aimed to investigate and scrutinize the relationship between corporate social responsibility (CSR) and corporate financial performance (ROA, ROE, and Tobin's Q) with the moderating impact of corporate governance (CG) measured as a proxy of board size. A total of 50 Pakistani firms registered in Pakistan Stock Exchange (PSX) were selected as participants using purposive sampling; there were 343 observations years-firms (2010-2016). The results of this study showed that CG is an imperative factor in assessing the association between CSR and corporate financial performance. Moreover, this study found that CSR exerts a negative impact on financial performance; whereas CSR and CG combined have a significant and positive impact on firms' financial performance. CG also supports this positive association.

1. Introduction

For several decades, researchers and academicians have been debating on how firms must engage in corporate social responsibility (CSR), what establishes top corporate governance (CG) policies, and does CG really affect CSR and Financial Performance (FP) of firms. These topics had been addressed by several scholars through their researches since around the 1960s (Harjoto & Jo, 2011). In spite of the increasing attentiveness about CSR and CG in financial markets, there is still a need to emphasize the importance of CSR, CG, and corporate financial performance (Harjoto & Jo, 2011). In the twenty first century, technological advancement and society's growing awareness resulted not only in greater number of opportunities but also higher extent of competition. Every organization is trying to withstand and remain in this competitive environment in order to maintain relationships with the society. One of the ways to connect with the society is through CSR.

In simple terms, CSR can be described as a social involvement, including ethical performance (Friedman, 2007); but in a broader level, CSR is defined as the intentional and voluntary support of a company to the sustainable progress of humanity (Crane & Matten, 2007) which helps in creating and maintaining a healthy society. CSR has been labelled as a paradigm that is in a ''state of emergence'' (Crane & Matten, 2007); it evolved due to the advancement of businesses in overcoming the needs of humanity and providing sustainable environment for growth. Organizations invest in CSR activities in order to create a positive image among their stake holders (Kanji & Chopra, 2010). Investors, customers, employees, suppliers, and government agencies all over the world are increasingly becoming focused on CSR activities. These

activities are extremely necessary in the current years, following the high number of publicized disgraces associated with well-known companies like Nike (1997) and Volkswagen (2015).

Every company sets different objectives for CSR. These objectives are based on several aspects such the size of company, business culture, stakeholders' demand, industry involvements, and management of CSR-related activities (Mahtab, 2015). Some companies prefer to prioritize a single particular area of CSR that provides them with the highest impact and profitability; while others focus on several dimensions of CSR at a time, which help in improving all types of operations. It is necessary for companies to include CSR as part of the corporation's values and strategic planning, so that every individual related to the company will feel self-motivated and committed. According to the KPMG survey in 2015, 56% of the 100 largest international corporations based on 45 different countries have disclosed information on CSR-related accomplishments in their records and annual reports. In addition, several countries such as France (2001), USA (2003), UK (2006), Malaysia (2007), China (2008), and Denmark (2008) have made CSR disclosures obligatory.

Understanding the effects of CSR activities is significant not only for researchers but also for companies and regulatory authorities. Companies are currently facing difficulties in wealth maximization due to strong world market competition; thus, it is necessary to evaluate profit and loss scenarios before companies invest in CSR activities, since these involve utilization of an array of scarce financial resources (Kabir & Thai, 2017). Previous researches on the impact of CSR on firms' financial performance had obtained varied results. Studies by Van Beurden and Gössling (2008) and Oeyono, Samy, and Bampton (2011) noted that a positive relationship exists between CSR activities and firm's financial performance; while studies by Smith, Yahya and Amiruddin (2007) and Crisóstomo, de Souza

Freire, and Cortes de Vasconcellos (2011) noted a negative relationship. Wang, Dou, and Jia (2016) observed that the relationship was insignificant. Some corporate managers want to invest in CSR activities mainly for personal gains. This is when effective CG mechanism becomes important in order to prevent expropriation of resources and to direct managers to invest in projects that can upsurge the firms' financial performance (Kabir & Thai, 2017)

Various researchers have worked on the direct relationship between CSR and firm performance; but very few have considered the moderating effects of several CG dynamics such as board size, and ownership structure. Therefore, this paper aims to understand the influence of effective CG on the relationship between CSR and financial performance of a firm.

This study analyzed CSR information of 50 organizations registered in Pakistan Stock Exchange from 2010 to 2016. Data on CSR activities and CG were gathered by analyzing the annual reports of the firms and from Bloomberg data terminal. Correlation and fixed effect model, and random effect model were utilized; then, Hausman test was used to assess whether to accept or reject the developed hypothesis. This study involves understanding the relationship among CSR, firm's financial performance, and CG in Pakistan. Several previous studies on corporate social performance and firm's financial performance have been conducted, but only a few have explored other factors affecting firms' performance; thus, this study aims to focus on identifying the moderating effects of CG on the relationship between CSR activities and firms' financial performance.

This paper is divided into different sections: section 2 includes the review of literature and development of hypotheses; section 3 defines the methods and the variables of this study in detail; section 4 illustrates the sample and data collection process with the empirical results; and section 5 includes the conclusion based on the result obtained.

2. Literature Review

2.1 Corporate Social Responsibility

The emergence of corporate social responsibility (CSR) dates back to mid-twentieth century and has had different additions with the passage of time. Bowen (1953) provided the primary definition of CSR which is *"the responsibilities of businessmen to follow those guidelines, to make those decisions, or to track those lines of action which are essential in terms of the values, objectives and standards of our society"*. Following Bowen's initial definition, Davis (1960) and McGuire (1963) underscored the extensive obligations of corporations toward the society beyond economic and legal responsibilities.

In the 1980s and 1990s, detailed interpretations of CSR started to develop with more refined and alternative approaches. For example, Carroll (1979) presented a refined framework by stating that the scope of CSR includes economic, legal, ethical, and discretionary responsibilities. Further, two concepts of CSR became prominent which are corporate social responsiveness, and corporate social performance (CSP). The former highlights the processes and strategic responses of CSR, while the latter underscores the outcomes and impact of CSR in a more 'operational' context (Wood 1991, 2010).

The main theme of the social impact hypothesis is that companies can increase financial performance by meeting the needs of stakeholders. According to Parket and Eibert (1975), the benefit derived from fulfilling CSR outweighs the cost, enhancing company value. Fulfilling CSR by protecting the welfare of employees can improve productivity, enhance company image, and build public confidence, thereby enhancing brand image and competitiveness. A company should not only work for the benefit of shareholders, but also for the interests of the stakeholders in business practices through the enactment of CSR (Mahrani & Soewarno, 2018)

CSR has been acknowledged as a substantial means to steadily uphold and strengthen the relationship between companies and the society, in addition to promoting sustainable progress and growth (Oh, & Park, 2015). Companies can instigate customer loyalty, boost sales, receive media attention, and meet stakeholders' obligations by getting involved in diversified corporate social responsibilities. CSR activities are multidimensional and generally represent a pool of uncoordinated initiatives (Hasan et al., 2018).

Recent studies have explored the relationship between CSR and financial performance of firm; however, the outcomes were moderately indecisive and ambiguous (Margolis & Walsh, 2003; Vogel, 2005; Mishra & Suar, 2010). Most have concluded that a positive relationship exists between CSR and firm performance (e.g. Van Beurden & Gössling, 2008; Roshayani et al., 2009; Oeyono et al., 2011); however, according to Kabir & Thai (2017), this finding should be handled with care as few aspects such as period, measures of CSR and financial performance, and research design could create variations in results, such as a negative or no correlation (e.g. Aupperle et al.,1985; Smith et al., 2007; Crisóstomo et al., 2011). Awareness among the customers regarding their rights and claims of CSR, may also have an impact to corporate performance (Sharma & Talwar, 2005; Belal & Owen, 2007; Khan et al., 2009).

2.2 CSR in Pakistan

CSR is in its evolutionary stage in many developing countries, particularly in Pakistan. Currently, Pakistan is facing several corporate difficulties, especially when competing in the world market; one strategy to overcome these difficulties is to promote and implement different CSR activities (Malik & Kanwal, 2018). Yawar (2009) found that around 60% of the national and international firms in Pakistan are focusing on social work such as assistance, community services, and endowment in the form of cash on religious and humanitarian grounds;

however, there are still many companies operating locally whose main priority are not related to CSR and view CSR differently. Pakistan has great potential for developing new business opportunities while considering CSR, since the country has a big population; a huge population means that there is huge demand and great opportunities. This great potential allows Pakistani companies to fulfill consumer demand and satisfy stakeholder's interest. Therefore, by applying CSR strategies, these companies can create awareness, and knowledge about ethical practice and social responsibility standard among business organizations. The corporate social responsibility is a voluntary action in Pakistan. The contribution rate in CSR activities is high in Pakistan's commercial banks and the performance of commercial banks is remarkable in Pakistan (Sharif & Rashid, 2014). Companies that include CSR strategies in their operations tend to create a positive image and reputation in the market. Further, brand identity is obtained by producing good quality products, ultimately increasing customer loyalty (Qazi et al., 2015). The CSR concept is still underdeveloped in Bangladesh and Pakistan. There is a large number of businesses that contribute in sustainable development through CSR; but the CSR activities in Bangladesh and Pakistan are only written in documents and not that much practical (Naeem & Welford, 2009).

2.3 Corporate Governance (CG) in Pakistan

CG is not a new topic in literature, but because of low research culture in Pakistani academic and institutional areas, very few studies can be seen. East Asian countries such as Malaysia, Thailand, China, Japan, and Korea place great importance on research; thus, they have a rich and easily available literature. India has relatively more literature among other South Asian countries (Khanna et al., 1999; Singh et al., 2003). Various determinants of corporate structure and corporate growth evolution in Pakistan are in the same pattern as the CG studied by Cheema et al. (2003), which explored ownership structure and behavior similar with the capital market structure of Pakistan. According to Roe (2002), if cultural traits are deeply entrenched in the society, then various institutions carry similar set of objectives. Pakistan is a country that has a diverse culture, giving it a great potential for growth of CG. CSR reporting is positively affected by the components of CG such as institutional ownership, board size, firm size, and ownership concentration. Meanwhile, based on the study by Majeed and Saleem (2015), the two components of CG, foreign directors' representation and women involvement in board, have a negative impact on....

2.4 Hypotheses Development

2.4.1 Effects of CSR on financial performance

CSR plays a key role in measuring the value of any company, and its contribution in any economy is of significant importance. CSR activities involve education, healthcare, women empowerment, sports development, special children welfare, community building, and relief activities. Simms (2002) surveyed that more than 70% of international management measured corporate social performance as an important obligation for the companies' persistence and progress. CSR was initially discussed in a Harvard Review article in the 1930s, which described CSR activities as part of the duties and responsibilities of managers towards society (Dodd, 1932).

Corporate social disclosure includes the financial and non-financial information of an association with regards to its social and physical condition (Hackston & Milne, 1996). CSR activities have been consistently growing and continue to remain the center of attraction for all stakeholders, including shareholders, consumers, dealers, personnel, workforce, and government bodies around the globe. Further, it is currently gaining importance especially after several

public disgraces associated with international firms such as Nike (1997), BP (2010), and Volkswagen (2015).

Sarwar et al. (2012) noted that financial performance of banks in Bangladesh is strongly associated with CSR, and observed that banks with greater contribution to CSR achieved higher return of assets (ROA) than those banks that spent less on CSR. Griffin and Mahon (1997) noted that there is a mixed association among firm's financial performance, CSR and CG.

Majority of the available literature about CSR is mainly focused on developed countries, and remains questionable in developing countries; this shows that culture may have an influence on CSR (Dobers & Halme, 2009; Wood, 2010). Due to the increasing popularity and importance of CSR, various international studies have been conducted and published. Baughn et al. (2007) explored the social and environmental behavior of CSR in Asia. Meanwhile, Cummings (2008) studied the behavior and attitudes of managerial students and corporate managers across Australia, Indonesia, and China toward contemporary environmental management issues. Naeem and Welford (2009) conducted a comparative analysis of the CSR performance of companies of Bangladesh and Pakistan. Kolk et al. (2010) studied the CSR performance of Chinese retailers. Thus, the first hypothesis is proposed:

H1: Firms carrying out greater number of CSR activities experience higher financial performance.

2.4.2 Corporate governance as a moderating instrument

Zingales (1998) defined CG as a set of limitations that figure the ex-post bargaining over the quasi-rents made in the firm. Vast literature had studied the association between CG and financial performance in several aspects, although with inconsistent results (Baliga et al., 1996; Bloom & Milkovich, 1998; Dalton et al., 1998). Meanwhile, several other researches have explored how financial markets and the agents operating within them value the degree of develop-

ment of CG, and how both gradually demand entree to corporate information, which can only be provided through mechanisms of transparency such as CSR disclosure (Nieto & Fernández, 2004; Van Beurden & Gössling, 2008). Therefore, transparency is an act of accounting for responsibilities that links the corporate bodies of a company (Gibbins et al., 1990; Perera, 1994). The collaboration between good practices of CG and CSR disclosure, as a transparency mechanism, has not been extensively scrutinized, and neither the moderating effect of CG on the relationship between CSR and financial performance of firm has been studied in depth (Jain & Jamali, 2016). AsMahrani & Soewarno (2018) observed the combined positive effect of CG mechanism and CSR on firm financial performance and earnings management.

Margolis and Walsh (2003) noted that several studies only considered the direct relationship between CSR and firm performance, while some scholars (e.g. Luo & Bhattacharya, 2006; Wood, 2010; Galbreath & Shum, 2012) claimed that understanding the direct relationship between CSR and firm performance only helps in distinguishing the influential aspects in the relationship, and that the final outcomes will be unpredictable. However, in order to gain reliable results, influential variables which have been frequently ignored in previous studies should be considered and empirically scrutinized. CG creates balance among different sectors and levels of society (i.e. economics, social, community, and individual level); therefore, it involves proper utilization of resources so that the demands of stakeholder will be fulfilled. Dahya et al. (1996) stated that CG is a way to control the company, and assess their credibility and sense of responsibility to the stakeholders of the company. Nowadays, companies give importance to their reputation and started to spend on activities related to social responsibilities (Zahra & Stanton, 1988). Companies face various threats on their social status in terms of differences in viewpoint, goals' priorities,

and objectives, among owners and other stakeholders.

In an economic perspective, it is difficult to differentiate CG and CSR. In practical applications, CG is concerned with moral principles and standards, while CSR involves the existing corporate practices that deal with social issues responsibly. This conveys that a positive relationship between CG and CSR exists (O'Dwyer, 2002). Coffey and Wang (1998) used correlation method and found that there is a significant association between society and management in terms of social responsibility. In addition, they noted that improving the company's CG is the best strategy to boost corporate social performance.

The aim of this paper is to analyze the moderating impact of CG practices on the relationship between CSR disclosure, as a transparency mechanism, and firm's financial performance of socially responsible companies. This study expects to provide vital information on the relationship between good CG practices and financial performance. The role of CG as a mediating element between CSR and the performance of socially responsible companies determined through financial markets and observations of different stakeholders will be explored.

2.4.2.1 Moderating effect of board of directors

The board of director is an important governing body considered by many researchers when exploring CG (Ferrero-Ferrero et al., 2015). It plays a crucial role in defining the socially responsible behaviors of the firm through strategic decision-making (Michelon & Parbonetti, 2012; Cuadrado-Ballesteros et al., 2017; Cucari et al., 2018). The board of directors helps managers in strategy formulation and implementation (Kabir & Thai, 2017). They also play a regulatory role by preventing managers from taking advantage of the company to promote their personal interests. The board can also prevent improper utilization and assist in efficient maximization of valuable organizational resources by personally supporting CSR activities, which could provide

the company with various financial and non-financial benefits. The size of the board has great importance in monitoring and supporting managers. A larger board size can be more effective, as the workload of monitoring managers can be divided between different board members (Kabir & Thai, 2017). In addition, a larger board size can help in arranging external funding and may better address the concerns of the stakeholders in terms of CSR, which will ultimately lead to better financial performance. Therefore, the following hypothesis is proposed:

H2: A Large board size could strengthen the positive impact of CSR on financial performance.

3. Research Methodology

This section discusses the sources of data, methods of data collection, sample size, and analysis of data. Dependent and independent variables are defined separately in this portion including the statistical analyses of all three models.

3.1 Sample and Data Collection

This study utilized purposive sampling to obtain 50 companies registered in the Pakistan Stock Exchange (PSX) as samples. Secondary data for the dependent and independent variables were extracted from Bloomberg terminal including return on equity (ROE), return on assets (ROA), Tobin's Q, and data of control variables. Due to the unavailability of data, CSR was used as a dummy variable to divide the samples into two groups. The first group includes the 25 companies that had been awarded at the 9th Corporate Social Responsibility (CSR) Summit due to their rigorous involvement in CSR activities; while the second group comprises the remaining 25 companies that had not been involved in any CSR activities. Companies with CSR award had been assigned with "1" and the non-awardee with "0". Data for the 50 companies were taken for the period of seven years from 2010 to 2016.

3.2 The Dependent Variable

3.2.1 Measures of corporate financial performance

This study employed three accounting indicators to measure corporate financial performance which are: ROA, ROE, and Tobin's Q.

3.2.1.1 ROA

ROA is a financial performance indicator which shows how profitable an organization or firm is relative to its total assets. It is computed by dividing the net income by average total assets. Total assets represent the total investment of the firm including all its debt and equity investments. Obtaining ROA can help analyze the effectiveness of the management in generating profits from the firm's investments.

It presents the income generated from the investments of the firm; thus, it is a comparative measure. The higher the ratio of the ROA is, the more favorable it is for the investors; it indicates that the firm is utilizing its assets more efficiently. It is an effective financial measure for analyzing the financial performance of the firm. Positive ROA indicates that the firm is earning profits; thus, its revenues are greater than its expenses. On the other hand, a negative ROA indicates that the firm is bearing loses and it is not generating any profit from its investments.

3.2.1.2 ROE

ROE is a financial performance indicator which shows how much the firm is generating profit for its equity holders. This is a profitability indicator ratio and is computed by dividing the net income by average shareholders' equity. It shows the amount earned by the firm in the common stock holders' investment. A positive ROE means that the firm is earning profits from its shareholders' investments.

3.2.1.3 Tobin's Q

The Tobin's Q is derived by James Tobin and has been extensively used by researchers as a proxy for financial performance. It is computed by dividing the total market value of the firm by the total asset value of the firm.

3.3 The Independent Variable

3.3.1 Corporate social performance

This study used a dummy variable (CSR) as a measure for corporate social performance. The value "1" was assigned to companies that have received the CSR award for being involved in several CSR activities, and the value "0" to those that have not been involved in CSR or have participated very little on it. The CSR awardees have large contributions in social sectors such as health, education, environment, welfare projects, and socio-economic development. A total of 25 companies with readily available data have been randomly selected. CSR was utilized as a dummy variable because there was no proper information available as to how much each company had contributed towards the society; in most cases the companies did not have any separate account for CSR activities.

3.3.2 Corporate Governance (CG)

CG was measured by the board size, i.e. the number of full-time directors in the board. This study included CG to explore how the firm's management influences the decision to contribute in CSR. The data for CG were taken from the Bloomberg terminal.

3.4 Control Variables

To analyze the impact of CSR on the firm's financial performance, the leverage ratio was taken as the control factor to systematically upset the financial performance of the firms. Debt to asset ratio was used as the proxy measure for leverage ratio (percentage), which is the total amount of debt divided by the total assets expressed in terms of percentage.

3.5 The Model

To test and quantify the relationship between CSR and the firm's financial performance, the fixed effect (FE) and random effect models (RE) were utilized. The bias

of RE estimator was tested by the Hausman test. If the implied null hypothesis is not rejected, and both FE and RE gave roughly the same results, then RE should be preferred over FE since it is the most efficient estimator. However, rejection of the null suggests superiority of FE estimator (Deev & Khazalia, 2017). The functional form of the models is as follows:

$$ROA_{it} = f(CSR_{it}, BS_{it}, DA_{it})$$
$$ROE_{it} = f(CSR_{it}, BS_{it}, DA_{it})$$
$$TQ_{it} = f(CSR_{it}, BS_{it}, DA_{it})$$

The empirical equation is shown below:

$$ROA_{it} = \beta_0 + \beta_1 CSR_{it} + \beta_2 BS_{it} + \beta_3 CSR_{it}BS_{it} + \beta_4 DA_{it} + \mu_{it}$$
$$ROE_{it} = \beta_0 + \beta_1 CSR_{it} + \beta_2 BS_{it} + \beta_3 CSR_{it}BS_{it} + \beta_4 DA_{it} + \mu_{it}$$
$$TQ_{it} = \beta_0 + \beta_1 CSR_{it} + \beta_2 BS_{it} + \beta_3 CSR_{it}BS_{it} + \beta_4 DA_{it} + \mu_{it}$$

where:

ROA_{it} is the return on assets,

ROE_{it} stands for return on equity,

TQ_{it} is the Tobin's Q ratio,

CSR_{it} represents corporate social responsibility,

BS_{it} is the board size which is the proxy for CG,

DA_{it} is the total debt to total assets which is the control variable,

μ_{it} is the white noised error term.

4. Results

4.1 Descriptive Statistics

The mean, median, and standard deviation were obtained first in order to define the general properties of the data set and variables, and to determine whether there is an outlier and other basic statistical problems which may affect the validity and reliability of the results. The descriptive statistics of all variables representing the 50 companies for this study are shown in Table 1 for the period of 2010 to 2016.

Because CSR is a dummy variable, which has two values, "0" or "1", and in order to prevent misrepresentation of various statistics values, it was excluded from Table 1. The three indicators, ROA, ROE and Tobin's Q represent the firm's financial performance with mean values of 8.51%, 21%, and 1.93% respectively. The moderating variable CG, whose proxy is board size has a mean of 9.26%. The control variable which is the leverage ratio or debt to asset ratio has a mean value of 15.53%.

If the value of skewness is zero, it shows symmetrical distribution. A positive value of skewness indicates that the data is skewed to the right, and a negative value implies that the data is skewed to the left. All the variables including ROA, ROE, Tobin's' Q, Debt to asset, and board size obtained positive values of skewness and are therefore, skewed towards the right. Kurtosis index indicates whether the data is heavy-tailed or light-tailed when compared to a data with normal distribution. An exact value of "3" indicates normal distribution; a value less than 3 indicates a heavier tail than a normal distribution and a value more than 3 indicates a lighter tail than a normal distribution.

Table 1: Descriptive Statistics

	ROA	ROE	TOBINS_Q	DEBT_TO_ASSET	BOARD_SIZE
Mean	8.511961	21.00687	1.926258	15.52584	9.25816
Median	6.80135	18.9806	1.162	9.9668	9
Maximum	41.3196	120.5405	14.9048	214.8849	17
Minimum	-8.4408	-62.3814	0.2777	0	5
Std. Dev.	8.304258	21.05798	1.976502	18.72778	2.364507
Skewness	0.808861	0.704164	3.232677	4.164846	0.657533
Kurtosis	3.221293	7.268711	15.29439	39.45616	2.52998
Jarque-Bera	37.99045	287.0833	2757.619	19985.97	27.38573
Probability	0	0	0	0	0.000001
Sum	2911.091	7163.344	660.7064	5325.364	3120
Sum Sq. Dev.	23515.6	150769.2	1336.043	119949.6	1878.54
Observations	342	341	343	343	337

Note: CSR refers to corporate social responsibility, which is measured through dummy variable. ROA stands for return on assets, ROE stands for return on equity, and TQ refers to Tobin's Q; all are measures

of financial performance. DA stands for Debt to Asset or leverage ratio, which is a control variable, and BS refers to board size which is the proxy for CG or corporate governance.

4.2 Empirical Results

To examine the impact of CSR on the firm's financial performance with the moderating effect of CG in the presence of control variables (leverage ratio), this study applied correlation matrix, and FE and RE models; then, Hausman test was conducted to identify which model is the most appropriate. For Hausman test, the null hypothesis is *RE model is appropriate*; and the alternative hypothesis is *FE model is appropriate*. If the p-value is statistically significant then, the alternative hypothesis is supported, that is, the FE model will be used; otherwise, the RE model will be utilized. The leverage ratio (debt to equity ratio) was chosen as the control variable because it may impact the performance of the companies when compared to their sector. FE and RE are used to determine the cause and effect of the independent variable on the dependent variable.

4.2.1 Correlation Matrix

Table 2 shows the correlation matrix which determines the existence of multicollinearity in this study's model. A coefficient of correlation equivalent to '1' or '-1' indicates that there is a perfect positive or perfect negative correlation between the independent variables. A larger value of correlation coefficient implies stronger relationship between variables. In this study, the correlation coefficient of CSR and firm's financial performance shows that they have a moderate relationship with CG and debt to asset ratio.

Table 2: Correlation Matrix

	ROA	ROE	TOBINS_Q	Debt to Asset	Board Size
ROA	1				
ROE	0.706583	1			
TOBINS_Q	0.499125	0.41878	1		
Debt to Asset	-0.19074	0.059275	0.050384	1	
Bard size	-0.02512	0.102242	-0.15179	0.073341	1

4.2.2 Random Effect (RE) and Fixed Effect (FE) model analysis

This study employed two models which are RE model and FE model, then both were compared using Hausman test. A low p-value indicates that the FE model should be used; whereas, a high p-value implies that the RE model is the better choice.

Table 3 shows the results of the RE model which was further divided into three models. The results illustrate that all CSR (ROA = -0.80, p = 0.001; ROE = -0.20, p = 0.01; Tobin's Q = -0.03, p<0.5) have a significant, negative impact on the financial performance of companies operating in Pakistan. Board size and leverage also showed significant, negative impact on the profitability of firms. Meanwhile, the combined effect of CSR and board size across all three models (ROA = 0.09; ROE = 0.02; Tobin's Q = 0.001) have a significant, positive impact on financial performance of the companies.

Table 3: Random Effect (RE) Model

Independent Variables	M1 $\ln ROA$	M2 $\ln ROE$	M3 $\ln TB$
CSR	-0.80(-3.93***)	-0.20(-2.48**)	-0.03(-0.56)
LnDA	-0.68(-3.70***)	0.05(0.74)	0.04(0.65)
BS	-0.04(-2.58***)	-0.01(-0.78)	-0.01(-2.37**)
CSR*BS	0.09(4.09***)	0.02(2.71***)	0.001(0.53)
Constant	6.41(7.35***)	4.56(13.08***)	2.41(9.17***)

Independent Variables	M1		M2		M3	
	ln *ROA*		ln *ROE*		ln *TB*	
R-squared		0.08		0.04		0.03
Adj: R-sq		0.07		0.02		0.02

Note: values in parenthesis are t- stats. *, **, *** indicate the p-value and its significance at 10%, 5%, and 1% respectively.

Table 4 shows the results of the FE model which was also divided into three models. Similar with the results of the RE model, all CSR (ROA = -0.77; ROE = -0.19; Tobin's Q = -0.01) have a significant, negative impact on the financial performance of companies operating in Pakistan.

Table 4: Fixed Effect (FE) Model

Independent Variables	M1	M2	M3
	ln *ROA*	ln *ROE*	ln *TB*
CSR	-0.77(-3.81***)	-0.19(-2.37**)	-0.01(-0.24)
LnDA	-0.63(-3.37***)	0.07(0.98)	0.08(1.38)
BS	-0.04(-2.56***)	-0.004(-0.78)	-0.01(-2.38**)
CSR*BS	0.08(3.95***)	0.02(2.59***)	0.001(0.18)
Constant	6.16(6.96***)	4.47(12.68***)	2.21(8.56***)
R-squared	0.10	0.06	0.09
Adj: R-sq	0.07	0.03	0.06

Note: values in parenthesis are t- stats. *, **, *** indicate p value and its significance at the 10%, 5%, and 1% respectively.

The board size and leverage also have a significant, negative impact on financial performance. On the other hand, CSR and board size combined (ROA = 0.08; ROE = 0.02; Tobin's Q = 0.001) have a significant, positive impact on financial performance.

Table 5: Results of the Hausman Test

Hausman Test	M1		M2		M3	
	ln *ROA*		ln *ROE*		ln *TB*	
Probability		0.3455		0.5687		0.0001

This study employed the RE and FE models and compared them using the Hausman test to determine which model is better to use. For Hausman test, the null hypothesis is RE model is appropriate; and the alternative hypothesis is FE model is appropriate. If the p-value is statistically significant then, the alternative hypothesis is supported, that is, the FE model will be used; otherwise, the RE model will be utilized. Table 5 shows the results of the Hausman test. The probability values for ROA (M1) and ROE (M2) are significant and are greater than the alpha; therefore, the null hypothesis is accepted, that is, the RE model is appropriate for ROA and ROE. On the other hand, the value for Tobin's Q (M3) is lower than the alpha; therefore, the alternative hypothesis is accepted, which means that the FE model is appropriate.

5. Conclusion

This study explored the impact of financial performance and CSR activities with the moderating effect of CG. Since most of the previous studies concerning CSR activities focused only on developed countries, this study chose to concentrate on developing countries, particularly Pakistan, which has numerous diverse institutional policy structures. Pakistan has a large population, enhanced economic progress, increasing foreign investments, and expanded culture. In current years, Pakistan has improved its responsiveness on CSR activities

and started to focus on ethical standards and practices in the corporate sector.

Empirical analysis was done using correlation matrix, and FE and RE models. By investigating a moderate sample of registered firms in PSX, this study found that CSR, by itself, exerts a significant, negative impact on financial performance of firms in Pakistan.

This research also investigated the moderating role of CG, including board size, in relation to CSR and firm performance. The results showed that CSR and board size combined exert a significant, positive impact on firm performance. Several factors, such as the country's political system, corporate environment, economic status, and culture, influence CSR and CG. Future studies may consider investigating the cross-culture and cross-country variations in the moderating effect of CG in the relationship between CSR and firm performance.

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Decoupling CO$_2$ Emissions from Economic Growth in Russia

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Abstract

This paper examined the validity of Carbon Kuznets Curve (CKC) hypothesis within an Emission-Energy-Output (EEO) framework for the period of 1991 to 2016 in Russia. Russia has large mitigation potential to play a major role in the development and implementation of international climate policy as it is the 5th largest carbon emitter country in the world. For the EEO model, the cointegration test results showed that a long-run equilibrium relationship exists among carbon emissions, energy consumption, and real GDP. The estimation results showed that emissions for real GDP are negatively inelastic, implying that the decoupling effect has already occurred and that there is no evidence to support the CKC hypothesis. The Russian economy has passed the turning point of the inverted U-shape. The results of this study may help Russia realize that real GDP growth will tend to curb carbon emissions; thus, making a significant contribution to combating global warming.

Keywords: Carbon Kuznets Curve (CKC), carbon emissions, Gross Domestic Product (GDP), Russia

1. Introduction

Climate change has potential long-term effects on residential environment and on economic development, especially in countries with large territories and long coastal line, such as Russia. The Russia Federation is a transcontinental country with 11 time zones and a great range of environments and landforms, from deserts to semi-arid steppes, to deep forests and Arctic tundra. The greenhouse effect is the main cause of climate change, while energy-related carbon dioxide (CO$_2$) emissions account for the majority of greenhouse gas emissions. Russia is the world's fifth largest CO$_2$ emitter, and one of the most important fossil fuel producers in the world (Climate Action Tracker, 2016). As a consequence, Russia has large mitigation potential, and should play a major role in international climate policy.

The argument that human society can decouple environmental pressure from economic growth is very attractive. If this decoupling is possible, it means that Gross Domestic Product (GDP) growth is a sustainable social goal. Absolute decoupling is the only way to achieve a truly sustainable growth (Ward et al., 2016). Decoupling CO$_2$ emissions from economic growth is usually investigated under the Carbon/Environmental Kuznets Curve (CKC/EKC) hypothesis (Riti et al., 2017; Marques et al., 2018; Pao & Chen, 2019). The CKC/EKC hypothesis assumes that CO$_2$ emissions initially increase in tandem with output, but decline at higher levels of output; an inverted U-shaped relationship between per capita CO$_2$ emissions and per capita income (Müller-Fürstenberger & Wagner, 2007; Kaika & Zervas, 2013). Due to the strong relationship between emissions and energy consumption, the study of the CKC hypothesis (decoupling) is important for the development and implementation of green economy policies under the framework of Emissions-

Energy-Output (EEO) model, which incorporates energy consumption with CO_2 emissions (Ang, 2007; Pao & Tsai, 2011a,b). In general, EEO can be framed as:

CO_2 = f (GDP, GDP^2, energy consumption)

The validity of the CKC hypothesis can vary depending on the country's attributes, research frameworks, or sample periods. In Russia, there is very little literature on CKC hypothesis, and few studies have investigated long-term data (10 years or more). This paper aims to fill this gap because of the disparities between the recent 10-year compound annual growth rate (CAGR) of emissions, energy consumption, and real GDP, and the recent 15-year or 20-year CAGR.

In the next section, the literatures on decoupling/EKC/CKC and EEO are examined. In the third section, the data sources and summary statistics used, and the current study's research hypotheses are presented. In the fourth and fifth sections, the research model and methodology, and the empirical results are described respectively. In the last section, the study's conclusion is provided.

2. Literature Review

One of the main goals of the 2030 Sustainable Development Agenda is to achieve absolute decoupling of environmental pressures and economic growth. Continued CO_2 emissions from energy use for economic growth are the main sources of environmental stress. In recent years, there has been a lot of literature discussing the issue of decoupling/CKC/EKC. Most studies done in G7 and European countries have found evidence of CKC, including those by Luo et al. (2017) in G20 panel, Shuai et al. (2017) in 164 countries panel, Can and Gozgor (2017) in France, Shahbar et al. (2017) in G7 (except Japan) and Dogan and Seker (2016) in top renewable countries panel; only the study by Dogan and Ozturk (2017) did not find evidence of CKC in the US. For the BRICS countries, Alam et al. (2016) and

Nasr et al. (2015) did not find any evidence of CKC relations in India and South Africa respectively. Liu et al. (2016) found evidence of an N-shaped CKC in China and Yang et al. (2017) found evidence supporting the CKC in Russia during the period of 1998 to 2013.

For the EEO framework, Pao and Chen (2019) found evidence supporting the CKC hypothesis in G20. Meanwhile, Al-Mulali and Ozturk (2016), Dogan and Seker (2016), Bento and Moutinho (2016), and Kasman and Duman (2015) have found evidence in support of the CKC hypothesis in G7 and European countries. For the BRICS countries, Dong et al. (2018) and Riti et al. (2017) in China, Dong et al. (2017) in BRICS panel, Solarin et al. (2017) and Wolde-Rufael and Idown (2017) in China and India have found evidence of CKC. Pao et al. (2011) found no evidence of CKC in Russia during the period of 1990 to 2007.

Recent literatures on the linkage between Emissions, Energy, and Economy (3Es) (without discussing CKC) for sustainable development have also shown fruitful results. These studies include those by Han et al. (2018) in China, Saboori et al. (2017) in China, Japan, and South Korea, Saidi and Mbarek (2016) in 9 developed countries panel, Al-Mulali et al. (2015) in 23 European countries panel, Pao et al. (2015) in US, Pao and Fu (2015) in Mexico, and Pao et al. (2014) in the MIST countries panel. The present study explored Russia's CKC which may be particularly useful for the Russian government in terms of policy development for emissions reduction and environment and climate protection.

3. Data

This study collected annual per capita data for the period of 1991 to 2016 on Russia's real GDP from World Development Indicators (WDI), and CO_2 emissions and energy consumption from BP Statistical Review of World Energy (2017). Real GDP was measured in US dollars at 2010 prices; while CO_2 emissions, which are by-products

of fossil fuel burning and cement manufacturing, were measured in metric tons of carbon dioxide ($MtCO_2$). Energy consumption was measured in metric tons of oil equivalent (Mtoe).

As shown in Figure 1, the trends in Russia's CO_2 emissions and energy consumption as well as real GDP started to decline beginning 1995 and continued to decline up to 1999; then, steadily increased starting year 2000. Table 1 shows the descriptive statistics of Russia's emissions, energy consumption, and real GDP. Table 2 shows the average percentage growth rate of each series before 2017. Different periods of growth rates were computed including 2001 to 2016 (15 years), 2006 to 2016 (10 years), and 2011 to 2016 (5 years). During the 15-year period (2001-2016), Russia's compound annual growth rate (CAGR) for per capita real GDP was 3.27%, which was considerably higher than the world trend (1.58%). In the same period, Russia obtained a CAGR of 0.09% per capita emissions, and 0.52% per capita energy consumption; both were smaller than the world

CAGR of 0.90% for emissions and 1.15% for energy consumption, despite being the world's fifth-largest emitter of GHG after China, US, the European Union, and India. In addition, during the 10-year period (2006-2016), Russia's CAGRs per capita emissions and energy consumption were negative, while the rest of the world obtained positive values; and Russia's CAGR per capita GDP was higher than the world. Russia's negative CAGR per capita emissions and positive CAGR per capita GDP, imply that decoupling has already occurred. This shows that Russia has made huge progress in promoting sustainable development and in achieving the goals of the 2030 Agenda.

Based on Russia's descriptive statistics, the three hypotheses are proposed:

H1: There is no evidence that support CKC.

H2: There is a significant and negative correlation between real GDP and emissions.

H3: There is a significant and positive correlation between energy consumption and emissions.

| (a) | (b) |

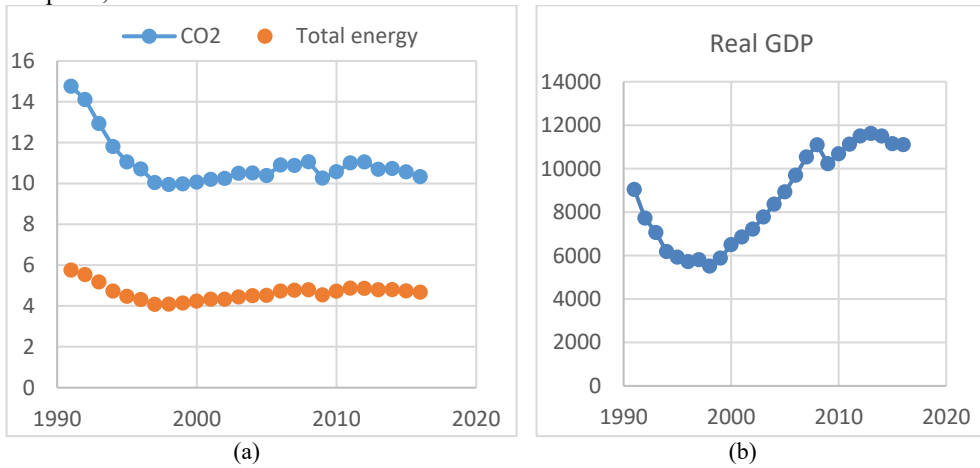Figure 1: Trends in the (a) Emissions and Energy Consumption, and (b) Real GDP of Russia, 1991-2016.

Table 1: Descriptive Statistics of Emissions, Energy Consumption, and Real GDP in Russia, 1991-2016

Variables	Mean	S.D.	Min.	Max.
Per capita Emissions ($MtCO_2$)	10.97	1.20	9.94	14.76
Energy (Mtoe)	4.65	0.40	4.07	5.75
Real GDP	8637.84	2216.03	5505.63	11493.73

Table 2: Average Growth Rates in Emissions, Energy Consumption, and GDP (shown in percentages): Russia *vs.* The World

	Russia			The World		
	Emissions	**Energy**	**GDP**	**Emissions**	**Energy**	**GDP**
15-year growth rate (2001-2016)	0.09	0.52	3.27	0.90	1.15	1.58
10-year growth rate (2006-2016)	-0.54	-0.12	1.37	0.07	0.56	1.25
5-year growth rate (2011-2016)	-1.26	-0.80	-0.04	-0.57	0.16	1.40

4. Research Model and Methodology

4.1 Model

Following the empirical literature in energy economics, the long-run relationship among CO_2 emissions, energy consumption, and economic growth in linear logarithm quadratic form can be calculated using Equation 1 to test the validity of the CKC hypothesis.

$$LCO_t = \beta_0 + \beta_1 LEC_t + \beta_2 LGDP_t + \beta_3 LGDP_t^2 + u_t \quad \text{Eq.1}$$

where:
t represents the time period (from 1991 to 2016,
LCO represents natural logarithm of per capita CO_2 emissions
LEC represents natural logarithm of total energy consumption
LGDP represents natural logarithm of real GDP
β_1, β_2, β_3 represent the elasticity of emissions to be estimated

Using Equation 1, if $\beta_2 > 0$ and $\beta_3 < 0$ then, the CKC hypothesis is said to be valid, and an inverted U-shape exists between per capita emissions and GDP, where the turning point of per capita GDP is -$\beta_2/2\beta_3$ in log-level. If the resulting value of LGDP is negative but significant, and $LGDP^2$ is negative and non-significant then, a monotonic relationship between per capita CO_2 emissions and per capita income exists (Halicioglu, 2009). It is expected that the value of LEC is positive because a high level of EC can lead to higher CO_2 emissions. Using this model, the long-run equilibrium among variables was examined.

4.2 Cointegration Methodology

To test the CKC/EKC using Equation 1, this study determined first the order of integration by performing three different unit root tests on each variable namely Augmented Dickey-Fuller (ADF, 1981), Phillips-Perron (PP, 1988), and Kwiatkowski-Phillips-Schmidt-Shin (KPSS, 1992). The null hypothesis for ADF and PP is expressed as *the series is I (1)*; while for KPSS, *the series is I (0)*. The KPSS was used to complement the widely used ADF and PP tests to obtain robust results.

If all variables integrated in the same order, say I (1) then, they should be tested for cointegration. The presence of cointegration could avoid the spurious regression problem and could provide important economic information including the existence of a long-run equilibrium relationship among variables. The Johansen procedure is used to test cointegration among variables in Equation 1 (Johansen & Juselius, 1990).

5. Empirical Results

The results for the three unit root tests are shown in Table 3. All of the time series integrated at order one (i.e., *I* (1)); thus, this study conducted the Johansen cointegration test. Based on the results of the Johansen cointegration test shown in Table 4, per capita CO_2, energy consumption, and GDP are co-integrated, implying that there is a long-run equilibrium relationship among the three variables. The results are also consistent with the estimations for Equation 1.

Table 3: Unit Roots Tests Results, 1991-2016

	ADF		PP		KPSS	
	Level	**1ˢᵗ diff.**	**Level**	**1ˢᵗ diff.**	**Level**	**1ˢᵗ diff.**
LCO	-1.00	-2.88***	-1.42	-2.88***	0.15**	0.29
LEC	-1.32	-2.54**	-0.91	-2.40**	0.20**	0.27
LGDP	-0.22	-3.09**	-0.75	-3.09**	0.20**	0.29
LGDP²	-0.21	-3.12***	-0.73	-3.15**	0.15**	0.21

Note: Significance at the 1% and 5% levels are denoted by *** and ** respectively.

Table 4: Johansen's Cointegration Test Result

No. of CEs	Eigenvalue	Trace Stat.	5% critical value	Max Eigen. Stat.	5% critical value
r = 0	0.77	56.40***	47.86	36.84***	2.58
r ≤ 1	0.40	19.56	29.80	12.91	21.13

Note: *** indicates rejection of the null hypothesis at the 1% level; r is the cointegration rank.

The values of both R² and JB statistic (Jarque & Bera, 1980) in Table 5 imply that Equation 1 can be used. In panel A, the coefficients of GDP and GDP² are statistically insignificant, and the variance inflation factors (VIF) for GDP and GDP² are also high, indicating the existence of multi-collinearity. The GDP² is then deleted from Equation 1 and the estimated results are shown in panel B of Table 5. The VIFs for LEC and LGDP are less than 2. Also, the LGDP coefficient is negative but statistically significant, implying that H1 and H2 are supported. Further, the LEC coefficient is positive and statistically significant, implying that H3 is supported. This means that emissions for energy consumption are positive, elastic, and emissions for real GDP are negative, inelastic. In addition, the results illustrate that an increase in real GDP will tend to curb carbon emissions and that there is no evidence to support the CKC hypothesis.

Table 5: Coefficients of Equation 1

	LEC	LGDP	LGDP²	Intercept	R²	JB	p-val.
Panel A	1.38***	-0.61	0.02	3.88	0.991	3.25	0.20
	(44.71)	(-0.72)	(0.49)	(1.02)			
	[1.60]	[12264.56]	[12264.20]				
Panel B	1.38***	-0.19***		2.03***	0.991	3.75	0.15
	(49.21)	(-22.05)		(29.77)			
	[1.36]	[1.36]					

Notes: JB represents the test statistic for the Jarque-Bera test under the null hypothesis of normality; figures in parentheses indicate *t*-statistics; figures in brackets indicate VIF statistics; *** indicates rejection of the null hypothesis at the 1% level.

6. Conclusion and Implications

This study investigated the CKC and the decoupling of environmental pressure and economic growth in Russia. Also, the literature on the emission-growth nexus of Russia was extended to the emission-energy-growth nexus. The descriptive statistical analysis suggested that the decoupling effect seemed to have occurred with the decrease in related environmental pressure and the continuation of economic growth. This study found that within an EEO framework, a long-run equilibrium relationship exists among carbon emissions, energy consumption, and real GDP. The estimation results suggested that decoupling exists between economic growth and CO₂ emissions, but not CKC, and that economic growth was found to have beneficial effects on the environment. In addition, the energy consumption per capita elasticity of CO₂ emissions demand was found to be greater than 1.

Russia, the world's 5ᵗʰ largest CO₂ emitter and 1ˢᵗ energy producer, has enormous potential to mitigate carbon emissions and play a significant role in the development and implementation of international

climate policies. The main policy implication of our finding is that Russia should actively promote economic development to benefit the environment. Also, Russia should further increase their efficiency in energy consumption and improve their technologies to reduce the intensity of their CO_2 production. Through this, Russia can make a significant contribution in combating global warming and achieving the goals of the 2030 Agenda.

In the future, the methodology of this paper may be helpful to countries with high carbon emissions when proposing policies and strategies to decouple environmental pressures from economic growth for environmental sustainability.

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Examining Social Needs Satisfaction and Gamer Loyalty in the Massively Multiplayer Online Role-playing Game (MMORPGs) Context: From the Perspective of Social Capital

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Abstract

Massively Multiplayer Online Role-playing Games (MMORPGs) are popular, team-oriented online games. Such games provide gamers opportunities to immerse themselves in a virtual social world. The social side of gaming is an important incentive for gamers to engage in. Gamers get together to form a gaming community, which could develop into strong friendships and social ties. Because social capital is a substantial resource in establishing a community (Lin & Lu, 2011), this study aims to explore the social capital that develops within gamers in the MMORPG context. Based on the empirical analysis of the data from 619 MMORPG gamers of Taiwan, the results revealed that social capital (including social ties, social trust, and shared goals) can significantly affect social needs satisfaction; also, social needs satisfaction was found to influence gamer loyalty. Moreover, team norms play a moderating role between social needs satisfaction and gamer loyalty. The research framework and the findings of this study could be applied to team-based online games, teamwork, and team norms phenomenon.

Keywords: MMORPGs, social capital, social needs satisfaction, gamer loyalty, team norms

1. Introduction

In recent years, the online game market of the Asia/Pacific region excluding Japan (APEJ) is growing steadily. The online game revenue in APEJ is projected to reach US $30.39 billion in 2018, and the number of online gamers is projected to increase to 150 million in 2018. China, Taiwan, and Korea are the top three markets across the APEJ region, generating 95.56% of the APEJ online game revenue (CTIMES, 2015).

In Taiwan, 41.4% of the population has played online games (Han, 2014). The number of online gamers continues to rise in Taiwan due to the government's support on the online game industry, as well as the development of information technology and Internet infrastructure. On October 12, 2012,

Taipei Assassins (TPA), a Taiwanese team, won the championship title of the famous PC multiplayer game, *League of Legends World Championship Finals*, defeating teams from the USA, Europe, and Southeast Asia; the team took home US $1 million as prize money (Benedetti, 2012). This good news roused Taiwan's online game industry and the community's interest in world online game competitions. Some companies begun to sponsor and train potential teams. Further, a lot of young individuals formed teams and devoted their time in online game training in order to pursue their dream of becoming the best team in the world and eventually winning the world championship title. The *League of Legends* has become the most played PC game in Taiwan and in the world in the past few years (Statista, 2015).

Online games in Massively Multi-player Online Role-playing Games (MMORPGs), such as *League of Legends*, are continuing to expand and grow in popularity. MMORPGs enable numbers of gamers to simultaneously play together in a specific virtual game world. The gamers can play MMORPGs over network-capable platforms such as gaming consoles, personal computers, and other mobile devices. MMORPGs are team-based games, wherein several teams compete with each other, with the goal of destroying the opponent's base. A team is composed of several players assuming the role of their chosen characters, each with distinct abilities. To form a competitive team, players should discuss and formulate their real-time strategy and playstyle as a group, and designate necessary roles and responsibilities for the game. Each gamer has to consider the needs of the team and has to choose a character that will complement other members' characters to benefit the team as a whole and create an efficient team composition (Nagygyörgy et al., 2013; League of Legends, 2015). Each gamer has to accomplish character-based activities, as well as the team's large-scale activities; therefore, team members have to interact and communicate with each other, and work together to complete the tasks of the game (MMO Worlds, 2015).

Because MMORPGs are team-based games, gamers usually join a gaming community where they cultivate their ambition to defeat the opposing team and win. Players encounter numerous difficulties during the competition; thus, they have to cooperate with their team and support each other. To improve the team's skill level and become a coordinated team, the members usually get together and devote a lot of time and effort to train and accumulate experience and capabilities. Through this, team members gradually form affection and friendship, and build strong attachments with each other; thus, their social needs are satisfied through team participation (Ommundsen et al., 2005; Yee, 2006). Online games offer a place for gamers to meet other people, and develop social relationships within the community where they can seek support, companionship, and belongingness from others (Chiu et al., 2011). Since gamers have to administrate and coordinate team activities, these experiences facilitate social interactions and form social capital for the team. Hau and Kim (2011) found that social capital (including social ties, social trust, and shared goals) could reinforce online gamers' free sharing of innovation-conducive knowledge in the online game community.

Trepte et al. (2012) found that online games could result in strong social ties. The physical and social proximity as well as familiarity among gamers could foster the formation of online bridging social capital and bonding social capital, which could then generate offline social support. Cole and Griffiths (2007) indicated that MMORPGs provide highly social interactive environments in which gamers may create emotional relationships and close friendships. Social interactions are essential in MMORPGs because these games entail teamwork and require team players to depend on each other to complete the different challenges of the game. Such social interactions may occur both within and outside of MMORPGs, and prompt gamers to make both online and real-life friends. Therefore, online games have become popular leisure time activities. The social interaction that occurs in online games is an important motivator for players to participate in the games (Trepte et al., 2012). Because social capital is a substantial resource in establishing a community (Lin & Lu, 2011), this study aims to explore the social capital that develop within gamers in the MMORPGs context. Teng and Chen (2014) indicated that social interactions and social needs fulfillment are critical for online gamers to repeatedly play a specific game and generate gamer loyalty; therefore, the purpose of this study is to investigate the relationship between social needs satisfaction and gamer loyalty.

The MMORPG gamers frequently get together to play a specific game, and these

gamers generally have a constant group of partners. Winning an online gaming competition does not only involve the efforts of the individual gamer, but it is the result of the team's joint efforts. In order to win, gamers have to offer constructive advice, share ideas, and exhibit gaming-related knowledge and task-solving skills with other teammates in order to design effective game strategies. They also need to provide necessary assistance for others to defeat their opponents. That is, each gamer not only pursues personal benefits but may also need to comply with the team's norms and goals. The members of the team are governed by the rules and regulations of the team's norms. Team norms guide the member's behavior, reduce role confusion, and increase team cohesiveness (Teng & Chen, 2014). Such a norm-oriented gaming community induces gamers' civic behavior.

As gamers contribute to the team, they receive social satisfaction from each other. This may lead to enduring relationships and create loyalty towards a specific game. Typically, most members cooperate and obey the team's norms; however, some members contribute little to the team's output (Fehr & Fischbacher, 2004). Those gamers who cooperate and contribute highly to the team generally receive more reciprocal feedback and social interactions from other members, satisfying their social needs and making them more willing to play the same game in the future. Such effects, in contrast, would not be significant for low contributors.

Gamers usually get tired of old and present games, and get fascinated by new and novel ones; therefore, gamer loyalty seems to be a critical factor for the online game providers to retain their customers. Prior studies mentioned above have investigated the social capital of online games on various dimensions; however, no study has constructed a framework to examine the relationships among social capital, social needs satisfaction, and gamer loyalty. Further, prior studies have ignored the effect of team norms; thus, this study aims to fill these research gaps. The objectives of this study are as follows:

1. To identify how the social capital theory can be applied in the MMORPGs context.
2. To explore how the social capital among MMORPGs gamers could enhance gamers' social needs satisfaction.
3. To investigate the relationship between social needs satisfaction and gamer loyalty.
4. To understand how team norms could mediate the relationship between social needs satisfaction and gamer loyalty.

2. Literature Review and Hypotheses Development

2.1 Social Capital

Social capital is established, developed and strengthened through members' social interactions; and it can facilitate mutual benefits for the group or network members (Riedl et al., 2013). Nahapiet and Ghoshal (1998) defined social capital as ''the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit'' (p. 243). They suggested that social capital includes structural, relational, and cognitive dimensions. The structural dimension is described as the actors' overall pattern of connections; the relational dimension is defined as the personal relationships developed through long-term interactions; and the cognitive dimension is referred to as the actors' resources of shared representation, interpretations, and meaningful systems.

Prior studies have applied social capital theory into several online games contexts. Tseng et al. (2015) found that social capital could form significant switching cost for gamers; thus, gamers can have greater continuance intention toward their online game communities. Molyneux et al. (2015) indicated that when gamers develop gaming social capital in multiplayer video games, they are more likely to develop face-to-face social ties with other gamers in real-world

communities. Trepte et al. (2012) found that in e-sports clans, physical proximity, social proximity, and familiarity could foster gamers' clan bridging social capital and clan bonding social capital. In addition, online game activities could facilitate gamers in engaging with other clan members off line; through this, gamers receive additional offline social support from others. Following the above study, Reer and Krämer (2014) indicated that physical proximity, social proximity, and familiarity could lead gamers to communicate more with their fellow players, and to show self-disclosure behavior toward their fellow players. Consequently, bridging social capital and bonding social capital are developed within the gaming-communities. As mentioned above, social capital plays a critical role for online game players….

In MMORPGs, gamers share the same interests, needs, and goals when playing games. Most gamers arrange a steady group of partners for team activities and establish lasting relationships and friendships with them; therefore, social capital is accumulated and jointly owned by the members of a team. This study follows Nahapiet and Ghoshal (1998) in classifying social capital in three dimensions namely, structural, relational, and cognitive. Furthermore, this study adopts Hau and Kim's (2011) manifestations of each dimensions which include social ties (structural dimension), social trust (relational dimension), and shared goal (cognitive dimension), because their research background also focused on MMORPGs context. The hypotheses of this study are based on these three dimensions of social capital.

2.2 Social Ties

Nahapiet and Ghoshal (1998) indicated that the fundamental facets of the structural dimension are the network ties among individuals. Strong and symmetrical ties could induce individuals to develop emotional relationships among each other; such relationships could further reinforce individuals' social interactions. Social ties refer to a set of social interactions between individuals (Wang & Chang, 2013), including the

amount of time spent, the communication frequency, the affective intensity, and the reciprocal feedback among individuals (Chiu et al., 2006; Granovetter, 1973). Blanchard and Markus (2004) suggested that social ties play an important role in generating a favorable attitude and attachment to a certain online community.

Since MMORPGs are team-based, gamers get together to build their own group to contest with other teams. During competitions, cooperation among team members is vital while participating in heavy battles to defeat their opponents. Under such intense interactions, the gamers may feel a strong sense of belongingness, forming strong social ties and establishing intimate friendships with each member of the team. These positive feelings make playing online games enjoyable for gamers, satisfying their social needs and generating positive reinforcement for further participation (Teng & Chen, 2014). Therefore, this study proposes the following hypothesis:

H1: Social ties positively influence gamers' social needs satisfaction.

2.3 Social Trust

Trust refers to the perception of trustworthiness of the exchange partners, and is generally comprised of particular beliefs such as honesty, integrity, reliability, credibility, and competence (Kim et al., 2012). People are more likely to engage in cooperative interactions and social exchanges under trusting relationships. Moreover, gamers believing in their partners' competence, capability, reliability, and openness signify their confidence in them (Nahapiet & Ghoshal, 1998). Nonaka (1994) mentioned that inter-personal trust plays an important role in teams, and that trust is a critical foundation for collaboration (Ward & Smith, 2004). Furthermore, a trusting environment could make individuals more satisfied (Hsu et al., 2015).

While playing MMORPGs, each gamer serves a specific role and responsibility. They are also expected to cooperate closely and provide assistance to their team-

mates; therefore, social trust among members is necessary for the team. When teammates trust each other, this means that they believe in each other's support and capability in completing collective tasks. A trusting atmosphere is helpful for gamers to join forces during the game to resist an invasion. Because every gamer has to be accompanied by another gamer of the team during competitions, this create emotional interactions which are likely to fulfill gamers' social needs. Based on these arguments, this study proposes the following hypothesis:

H2: Social trust positively influences gamers' social needs satisfaction.

2.4 Shared Goals

Shared goals are not to be held individually; they are generally possessed in a common group and must be achieved with others (Fowers, 2004). Interpersonal relationships could supply social support to facilitate and assure goal attainment (Huang et al., 2015). When individuals are interdependent and collaborative, shared goals will lead the group to persist in order to accomplish their mutual goals (Koster et al., 2007). Hau and Kim (2011) mentioned that members of online communities are bound together through shared goals, common norms, or values.

Online games are goal-directed leisure activities (Neys et al., 2014). Teng and Chen (2014) suggested that since online gamers form teams to overcome difficult tasks, such task-focused interactions and team participation serve as positive reinforcements to satisfy gamers' social needs through gaming. While playing MMORPGs, teammates share the common goals of combating the opposing teams and winning the final victory. The members have to constantly cooperate with each other to ensure the achievement of their goals. These intense interactions lead gamers into forming strong attachments with the team; thus, satisfying their social needs. Accordingly, the following hypothesis is suggested:

H3: Shared goals positively influence gamers' social needs satisfaction.

2.5 Social Needs Satisfaction and Gamer Loyalty

Oliver (1997) defined loyalty as "a deeply held commitment to rebuy or repatronize a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, *despite* situational influences and marketing efforts having the potential to cause switching behavior" (p. 392). In this study's research context, loyalty means gamers expressing continued motivation to play the same game with their partners. There are numerous online games in the market, and gamers can easily switch between different games. Therefore, it is important for game providers to constantly attract gamers and attempt to make them attached to their games (Teng & Chen, 2014).

The relationship between satisfaction and loyalty has been examined by a great many studies. Szymanski and Henard's (2001) meta-analysis found that satisfaction has a positive effect on customer loyalty. To match the MMORPGs research setting, this study adapted the relationship between satisfaction and customer loyalty to social needs satisfaction and gamer loyalty. Teng and Chen (2014) suggested that the social needs of online gamers include acceptance and affiliation, and that social needs satisfaction involve online gamers' needs for socialization, relationships, and teamwork which can be obtained in a gaming team or community. When gamers experience social satisfaction through playing a particular online game, such positive emotion may strengthen gamers' motivation to keep playing the same game and become loyal to it; therefore, social needs satisfaction is positively related to gamer loyalty, as observed by Teng and Chen's (2014) study results. Based on this, the following hypothesis is asserted:

H4: Social needs satisfaction positively influences gamer loyalty.

2.6 Team Norms

MMORPGs gamers take collective actions to achieve team goals and interests; thus, these gamers gradually form a steady

virtual community. The team norms work to enhance members' cooperative behavior and support efficient outcomes. Norms are socially shared beliefs and guidelines for members to express expected and accepted behavior. Moreover, norms are regular behavior patterns developed by members; therefore, these patterns are expected by members and are relatively stable (Pillutla, & Chen, 1999).

During online game competitions, each gamer is not only expected to contribute to one's own success, but also to provide complementary and necessary efforts to help partners. Collective actions such as cooperation, social support, and contribution to others could lead members in considering games as important to them (Lin, 2011). When members follow the team's norms and connect efforts to create group synergy and collective values, they experience a sense of belongingness to the team. Gamers share innovation-conductive knowledge through interactions and feedback to enhance their team's collective knowledge (Hau & Kim, 2011), as well as to develop real-time strategies to respond to evolving competitions; through this, team performance and effectiveness could improve considerably (Teng & Chen, 2014). Such interpersonal interactions could satisfy gamers' social needs, and could further serve as

positive reinforcement to motivate them to repeatedly play the same game, thereby generating gamer loyalty (Teng & Chen, 2014).

Although most gamers follow team norms, express expected cooperative behavior, and contribute to the team at high levels, there are still low contributor gamers. In general, gamers ultimately decide whether or not to comply with team norms (Teng & Chen, 2014). Those who follow team norms and devote themselves to the team are more likely to enjoy collective achievements attached to a specific game. However, gamers who are not restricted by the team norms and contribute little may have weaker reinforcement to engage in team-based games. This implies that the two types of gamers may have different degrees of social satisfaction and ability to nurture different levels of loyalty towards the game; thus, compliance with team norms plays a moderate role in the relationship between social needs satisfaction and loyalty in the MMORPGs context. Based on these arguments, this study proposes the fifth hypothesis. The conceptual model of this study is shown in Figure 1.

H5: Team norms positively moderate the relationship between social needs satisfaction and gamer loyalty.
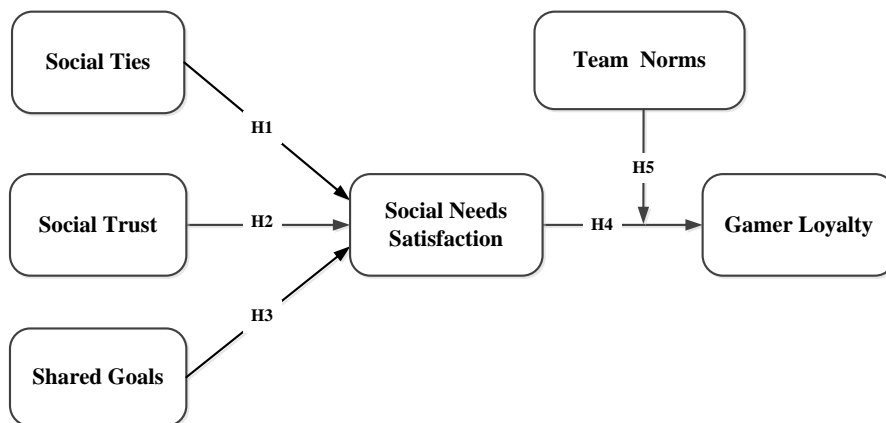

Figure 1: Conceptual Framework

3. Research Methodology

3.1 Measurement Development

This study conducted an empirical investigation for MMORPGs gamers. The questionnaire is comprised of two parts: the first part presented questions pertaining to the research model; while the second part solicited the demographic information and online game playing behavior. All the measurement items used had been validated in previous studies. Questionnaire items were adapted from previous studies as well with slight modifications to meet the MMORPG context. Items for social ties, social trust, and shared goals were adapted from Hau and Kim (2011); items for social needs satisfaction and gamer loyalty were based on Teng and Chen (2014); and items for team norms were adapted and developed from Nambisan and Baron (2009). The five-point Likert scale was utilized, with "1" being *"strongly disagree"* and "5" being *"strongly agree"*. In addition, some industry experts and online gamers were invited to revise and refine the questionnaire. The validity of the scale items were also improved through pre-testing.

3.2 Data Collection and Profiles of the Respondents

A large number of young people and students in Taiwan play online games. Many gamers prefer to get together to play MMORPGs because these games are exciting, intense, and highly interesting. The *League of Legends* is one of the most popular MMORPGs in the world, and in Taiwan; therefore, this study selected the gamers of *League of Legends* as participants for this study. They were recruited from January 28 to February 1, 2015 during the Taipei Game Show which was held in Taipei International Convention Center in Taiwan. The Taipei Game Show is the biggest game show in Taiwan and is being held annually. This show always attracts numerous gamers because it brings together several exhibitors from online game providers and computer equipment companies. Gamers who attended the show and who had played *League of Legends* were recruited to answer the study's survey questionnaire. To encourage participation, participants were offered a gift as an incentive. A total of 730 questionnaires were distributed, and a total of 619 valid responses were returned for subsequent analysis.

The majority of the respondents were males (83.0%). In Taiwan, the gender proportion of general online gamers is around 50% for males and 50% for females. However, approximately 80% of the eSports participants are males (Yahoo Kimo, 2017). Since *League of Legends* belongs to the eSports category, the gender profile of this current study resembled Taiwan's online game market. Most of the respondents were single (95.8%), and were mostly less than 20 years old (62.8%) and between 21 to 30 years old (33.1%). Nagygyörgy et al. (2013) reviewed a large number of previous studies and found that most MMORPG gamers in Asia were single males, aged 21 years and below, and were mostly students; thus, the demographic background of the current study's respondents is similar with the previous studies.

Over half of the respondents had played *League of Legends* for 1 to 3 years (34.9% for 1-2 years and 27.8% for 2-3 years). Further, 41.5% of the respondents had played this game almost every day while, 38.0% had played this game several times a week. In addition, most of the respondents had played *League of Legends* for 1 to 5 hours each time (47.7% for 1-3 hrs and 31.5% for 3-5 hrs). Further, 35.4% of the respondents reported playing this game less than 10 hours per week while, 33.8% between 11 to 20 hours per week. Meanwhile, the financial expenditure on this game was not significant; most respondents spent less than 20 USD on games monthly. The demographic characteristics and gaming-related profiles of the respondents are shown in Table 1.

Table 1: Demographic Profiles of the Respondents

Variables	N	%
Gender		
Male	514	83.0%
Female	105	17.0%
Marital Status		
Single	593	95.8%
Married	26	4.2%
Age		
20 and below	389	62.8%
21-30	205	33.1%
31-40	19	3.1%
41-50	3	0.5%
51 and above	3	0.5%
Experience of playing *League of Legends*		
Less than 1 year	100	16.2%
1-2 years	216	34.9%
2-3 years	172	27.8%
More than 3 years	131	21.2%
Frequency of playing *League of Legends*		
Almost every day	257	41.5%
Several times a week	235	38.0%
Several times a month	78	12.6%
Several times half one year	49	7.9%
Time spent on *League of Legends* (each time)		
Less than 1 hr	54	8.7%
1-3 hrs	295	47.7%
3-5 hrs	195	31.5%
5-10 hrs	55	8.9%
More than 10 hrs	20	3.2%
Time spent on *League of Legends* (hr/week)		
Less than 10 hrs	219	35.4%
11-20 hrs	209	33.8%
21-30 hrs	106	17.1%
31-40 hrs	51	8.2%
More than 41 hrs	34	3.2%
Monthly gaming costs[a]		
20 dollars or less	559	90.3%
21 dollars or more	60	9.7%

Note. [a] USD

3.3 Data Analysis and Results

Partial least square (PLS) can analyze the relationships among the principal constructs and their underlying items. Results of the PLS can be used to examine whether the theoretical hypothesized relationships could be empirically accepted, as well as to evaluate whether the measures are well related to their constructs (Chin, 1998; Pavlou & Chai, 2002). PLS is suitable for exploratory studies because the relationships among social capital, social needs satisfaction, gamer loyalty, and team norms have not been previously verified in the MMORPGs context. This study utilized the Smart PLS V.2 software developed by Ringle et al. (2005) to test the hypotheses (Hulland, 1999; Ainuddin et al., 2007). The two-step approach recommended by Anderson and Gerbing (1988) was performed to examine the measurement model and the structural model.

To test the structural model for the direct effects (H1, H2, H3, and H4), this study used 619 respondents as the data set. Several teams compete against each other in MMORPGs, with each team composing of several gamers. In a team, some members highly obey team norms, while others do not. Such differences not only affect team performance, but also affect team relationships. In order to examine the potential moderating effect of team norms (H5), the 619 respondents were divided into two groups (high team norms vs. low team norms) based on the mean of team norms. The moderating effect was verified by two-group comparison procedure. Team norms comprised four items; the mean for the total respondents (N=619) was 3.90 (using the five-point Likert scale). The group with high intention for compliance in team norms included 361 respondents, and the group with low intention for compliance with team norms included 258 respondents. The classification result showed significant differences in the degree of team norms between the two gamer groups as shown in Table 2.

Table 2: The Degree of Compliance to Team Norms

	High group[a]	Low group[b]	Mean difference t-value (p-value)[c]
1. I help teammates by promptly answering their gaming-related problems. [d]	4.36	3.19	20.815 (< 0.001)
2. I offer beneficial ideas and suggestions to the team. [d]	4.42	3.28	19.434 (< 0.001)
3. I try to be a responsible and contributing member of the team. [d]	4.39	3.23	18.993 (< 0.001)
4. I consistently convey gaming-related knowledge and task-solving skills to other teammates. [d]	4.35	3.19	19.545 (< 0.001)

[a] All values are means; N=361.
[b] All values are means; N=258.
[c] Two tailed t-test for independent samples.
[d] Five-point rating scale: 1 strongly disagree; 5 strongly agree.

3.4 Measurement Model for Total Group

The internal reliability of the measurement items was assessed through Cronbach's α using SPSS software. All Cronbach's α values ranged from 0.827 to 0.891, which indicate that the items have good internal validity. Consequently, confirmatory factor analysis was conducted to examine the measurement model by determining the convergent validity and the discriminant validity of the measurement items. According to the study by Hau and Kim (2011), the following three criteria must be satisfied in order to have a good convergent validity: (1) the composite reliability (CR) should exceed 0.7 (Chin, 1988); (2) the average variance extracted (AVE) should exceed 0.5 (Chin, 1988; Fornell and Larcker, 1981); and (3) the t-value should exceed 1.96 (Gefen & Staub, 2005). Based on the results, the CRs ranged from 0.884 to 0.925, AVEs ranged from 0.626 to 0.755, and t-values ranged from 21.645 to 64.373. As shown in Table 3, the convergent validity was verified because the criteria for CRs, AVEs, and t-values were all satisfied.

The discriminant validity was analyzed by examining whether the square roots of the AVEs from the constructs were greater than other correlation coefficients in the research model (Fornell & Larcker, 1981). Table 4 shows that each construct's square roots of the AVEs along the diagonal line was greater than other correlation coefficients in the lower triangle area; thus, the scale has good discriminant validity. Overall, these statistics show that the measurement constructs were appropriate for subsequent structural model estimation.

Table 3: Internal Reliability and Convergent Validity – Total Group

Construct	Cronbach's α	Composite reliability (CR)	Average variance ex-tracted (AVE)	Item	Loading	Mean	Stand-ard er-ror	t-value
Social ties	0.827	0.884	0.656	Tie1	0.818	3.96	0.037	40.320
				Tie1	0.853	3.72	0.039	52.933
				Tie1	0.746	3.99	0.035	21.933
				Tie1	0.819	3.77	0.038	32.653
Social trust	0.868	0.905	0.655	Trust1	0.796	3.84	0.038	27.442
				Trust2	0.844	3.86	0.037	44.372
				Trust3	0.759	3.50	0.043	24.796
				Trust4	0.839	3.53	0.042	43.661
				Trust5	0.806	3.48	0.043	33.702
Shared goals	0.852	0.900	0.693	Goal1	0.822	3.86	0.037	39.361
				Goal2	0.830	3.91	0.036	35.768
				Goal3	0.860	3.79	0.036	49.096
				Goal4	0.816	3.82	0.035	33.745
Social needs satisfaction	0.891	0.925	0.755	Satisfaction1	0.881	3.66	0.039	64.373
				Satisfaction2	0.899	3.75	0.037	58.332
				Satisfaction3	0.885	3.78	0.038	70.167
				Satisfaction4	0.808	3.90	0.034	32.445
Gamer loyalty	0.850	0.893	0.626	Loyalty 1	0.754	3.83	0.040	26.008
				Loyalty 2	0.784	4.01	0.034	23.720
				Loyalty 3	0.793	4.06	0.030	27.660
				Loyalty 4	0.863	4.02	0.033	58.757
				Loyalty 5	0.758	3.78	0.038	21.645

Table 4: Square Roots of AVE and Correlation Matrix – Total Group

| Construct	Social ties	Social trust	Shared goals	Social needs satisfaction	Gamer loyalty
Social ties	**0.810**				
Social trust	0.632	**0.809**			
Shared goals	0.644	0.537	**0.832**		
Social needs satisfaction	0.456	0.442	0.414	**0.869**	
Gamer loyalty	0.167	0.083	0.537	0.450	**0.791**

Note. Diagonal elements in bold are the square roots of the average variances extracted (AVE)

3.5 Structural Model for Total Group

The results of the test for the structural model for the direct effects (H1, H2, H3, and H4) using the overall sample size (N=619) are presented in this section. Based on the bootstrapping method, this study employed a resampling technique to test the structural model. The bootstrapping procedure was set at 500 random samples repeatedly drawn from the data (Gefen et al., 2000).

Figure 2 shows the statistical results of the PLS model. H1 to H3 described the relationship between MMORPG gamers' social capital and social needs satisfaction while, H4 described the relationship between social needs satisfaction and gamer loyalty. This study included three components for social capital namely social ties, social trust, and shared goals. The results showed that social ties, social trust, and shared goals could significantly affect social needs satisfaction ($\beta_1 = 0.232$, t = 4.042, p < 0.001; $\beta_2 = 0.165$, t = 2.670, p < 0.001; $\beta_3 = 0.187$, t = 3.033, p < 0.001). Furthermore, social needs satisfaction could significantly affect gamer loyalty ($\beta_4 = 0.450$, t = 10.196, p < 0.001). As expected, the results supported H1, H2, H3, and H4.
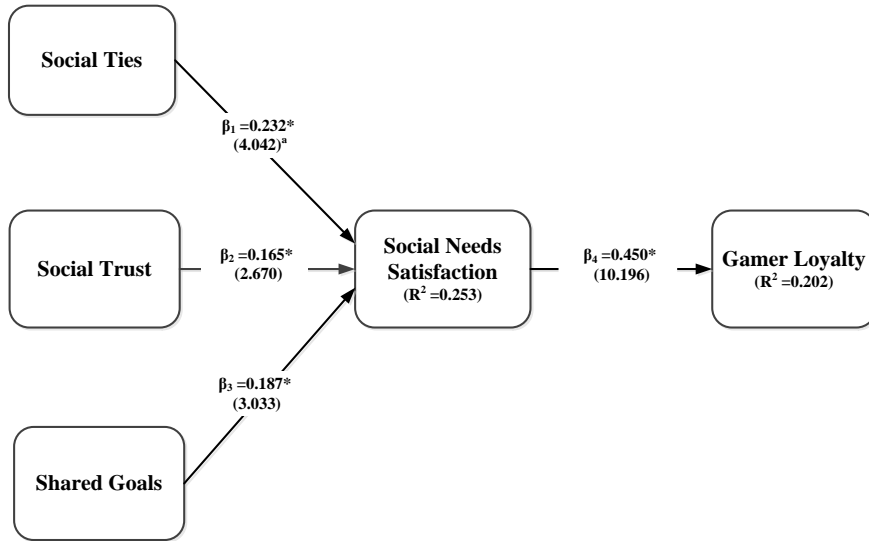
Note. [a] Path coefficient with its t-value in parenthesis; [*]The coefficient is significant at the level of 0.001; R^2 is the amount of variance explained.

Figure 2: Results of the PLS Path Scheme – Total Group

3.6 Measurement Models for Subgroups

The previous analysis procedures and the same criteria were utilized to test the measurement models for the two subgroups for team norms. For the group with high intention for compliance in team norms (N=361), all Cronbach's α values ranged from 0.797 to 0.911, CRs ranged from 0.865 to 0.938, AVEs ranged from 0.610 to 0.791, and t-values ranged from 13.424 to 83.146; all of which exceeded the recommended levels. In addition, the statistics revealed good discriminant validity. Consequently, for the group with low intention for compliance in team norms (N=258), all Cronbach's α values ranged from 0.761 to -0.832, CRs ranged from 0.843 to 0.882, AVEs ranged from 0.537 to 0.653, and t-values ranged from 2.117 to 53.371; correspondingly, all of which exceeded the recommended levels. Also, the results showed good discriminant validity. Based on this, the measurement constructs of the two subgroups were considered appropriate for further structural model estimation.

3.7 Structural Model for Subgroups

To examine whether team norms could moderate the relationship between social needs satisfaction and gamer loyalty (H5), the structural model was tested based on the data of the 361 gamers with high intention for compliance in team norms, and the 258 gamers with low intention for compliance in team norms. The results were derived from the bootstrapping procedures. For the group with high intention towards team norms (N=361), the results indicate that social ties, social trust, and shared goals, could significantly affect social needs satisfaction (β_{1H} = 0.242, t = 4.113, p < 0.001; β_{2H} = 0.149, t = 2.346, p < 0.05; β_{3H} = 0.145, t = 2.208, p < 0.05). In addition, the results showed that social needs satisfaction could significantly affect gamer loyalty (β_{4H} = 0.706, t = 18.261, p < 0.001). For the group with high intention for compliance in team norms, all hypotheses were supported.

Moreover, for gamers with low intention towards compliance in team norms (N=258), the results indicate that social ties, social trust, and shared goals could significantly influence social needs satisfaction

(β_{1L} = 0.202, t = 3.959, p < 0.001; β_{2L} = 0.136, t = 2.449, p < 0.01; β_{3L} = 0.188, t = 3.505, p < 0.001). However, social needs satisfaction does not have any influence on gamer loyalty (β_{4L} = 0.100, t = 1.053, p > 0.1). In summary, the results showed that social capital (social ties, social trust, and shared goals) for both groups could significantly affect social needs satisfaction. Furthermore, social needs satisfaction of gamers with high intention for compliance in team norms could positively reinforce their game loyalty; however, this effect was not significant for gamers with low intention for compliance in team norms. The findings indicate that team norms could indeed moderate the relationship between social needs satisfaction and gamer loyalty especially for gamers with high compliance; thus, H5 is verified. Figure 3 summarizes and compares the results of testing for the structural model for groups with high and low intention for compliance with team norms, and Table 5 lists the hypotheses testing results.
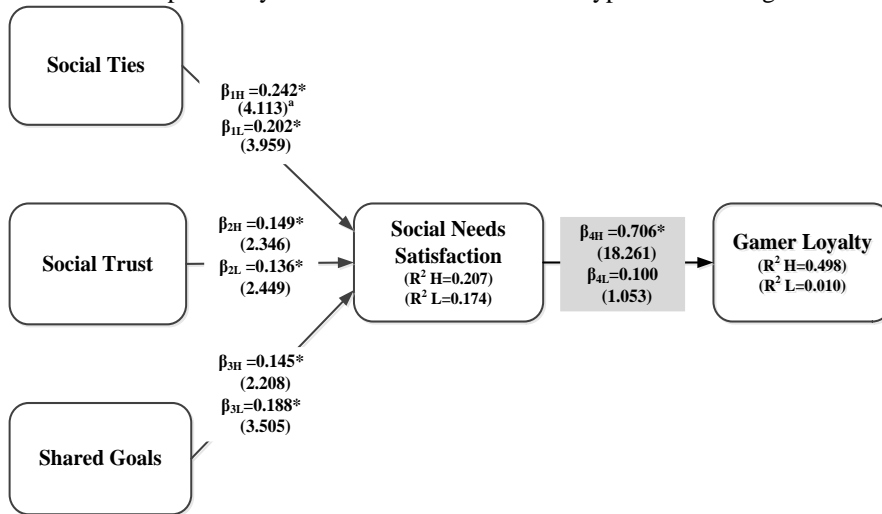
Note. [a] Path coefficient with its t-value in parenthesis; * the coefficient is significant at the level of 0.01; R^2 is the amount of variance explained; H represents group of gamers with high intention for compliance in team norms; L represents the group of gamers with low intention for compliance in team norms.

Figure 3: Results of the PLS Path Scheme – Comparison of High and Low Groups

Table 5: Summary of Hypotheses Test Results

Hypothesized path	Hypothesized direction	Result direction	Path coefficient
H1: Social ties → Social needs satisfaction (total group, N=619)	+	+	5rt6
H2: Social trust → Social needs satisfaction (total group, N=619)	+	+	0.165*
H3: Shared goals → Social needs satisfaction (total group, N=619)	+	+	0.187*
H4: Social needs satisfaction → Gamer loyalty (total group, N=619)	+	+	0.450*
H5: the mediating effect of team norms Social needs satisfaction → Gamer loyalty (high group, N=361)	+	+	0.706*
Social needs satisfaction → Gamer loyalty (low group, N=258)	+	+	0.100

* Denotes p < 0.001.

4. Discussion

Massively Multiplayer Online Role-playing Games (MMORPGs) are popular, team-oriented online games. Such games provide gamers opportunities to immerse themselves in a social world (MacManus, 2012). The social side of gaming seems to be an important incentive for gamers to engage in (Trepte et al., 2012). Gamers get together to form a gaming community, which may gradually develop into strong friendships and social ties. This study examined the relationship between gamers' social needs satisfaction and loyalty in MMORPG gamers by utilizing social capital as the theoretical foundation. It is argued that social capital, which is developed by team members, is likely to satisfy members' social needs, which could further result in loyalty towards a specific game. Since teamwork is governed by team norms, and team norms could influence members' behavior and psychology, this study also investigated the moderating effect of team norms on the relationship between social needs satisfaction and loyalty. The research framework and the findings of this study could be applied to team-based online games, teamwork, and team norms phenomenon.

There are various types of online games; one possible reason why people choose to play MMORPGs is because these are team-oriented games which offer social opportunities for gamers to meet other people. While playing, gamers will not feel alone because they are a part of a group of people with similar interests and goals. Because of this, gamers receive emotional support from each other, and feel a sense of belongingness, which may gradually develop into close and stable friendships. Such social needs for intimate relationships and sense of belongingness are important factors for gamers to continuously participate in games, and for team-oriented games to bond individual gamers tightly. Furthermore, social capital indicates the value of social relations within a social network, which could facilitate members to produce individual and collective benefits (Riedl et al., 2013). Because social capital is accumulated through members' interactions, this study proposed social capital as the antecedent factor for online gamers' social needs satisfaction. The results of this study revealed that all three sub-dimensions of social capital (social ties, social trust, and shared goals) have a positive and significant influence on social needs satisfaction; therefore, H1, H2, and H3 are supported.

At present, most people spend a significant portion of their time online every day. Some people also allot a certain amount of time for playing online games, which now has become a popular activity during leisure time (Trepte et al., 2012). There are numerous novel and interesting online games on the markets. Individuals get easily attracted by various online games and they can effortlessly transfer to different online games with a little switch cost. This study therefore, examined the factors that could induce gamers to remain loyal to a specific online game. The empirical findings verified that gamers' social needs satisfaction could positively influence gamers' loyalty towards the same game, thereby supporting H4.

Online game communities are informal networks formed by a group of gamers; thus, team norms play a critical role in governing the members of a team. This study proposed that compared to gamers with lower intention towards team norms, gamers who highly comply with team norms could perceive higher level of social needs satisfaction, which could consequently result in a higher degree of game loyalty. The empirical findings of this study demonstrated the moderating effect of team norms; therefore, H5 is supported.

5. Conclusions

The online game industry has developed rapidly, resulting in stronger market competition. Online game providers both need to continuously improve their online games to attract new customers, and to design strategies to satisfy and retain their current customers. The findings of this research

shed light on several areas that could be of advantage to online game providers. For instance, because teamwork is an essential characteristic of MMORPGs (Teng & Chen, 2014), MMORPG providers should design teamwork mechanisms that would enhance opportunities for gamers to communicate, interact, share information, cooperate, and create collective goals. Through this, gamers could develop intimate social networks and create social capital.

MMORPGs offer platforms for numerous gamers concurrently playing the same games. Under the teamwork mechanism, team members have to work together and design team strategies to defeat the opposing team. Increasing the degree and level of interaction and cooperation opportunities could strengthen social ties among members of the team. Since the empirical findings of this study have shown that social ties could positively influence social needs satisfaction, online game providers should design a more large-scale team tasks for collective activities. Furthermore, Trepte et al. (2012) indicated that online games could foster strong social ties for gamers; also, social capital formed by gamers in online contexts could be transferred to offline settings for offline social support and offline friendships. Therefore, online game providers should not only design online activities to enhance gamers' virtual social ties, but also include offline activities for gamers to strengthen real life social ties. The synergy of virtual and real-life social ties is likely to greatly satisfy gamers' social needs, which could strengthen game loyalty.

Inter-personal trust is important for team collaboration. When an individual gamer of a team playing MMORPGs believe that group members are competent and reliable, and are willing to provide necessary assistance, all members may want to devote themselves to the team resolutely and work together to win the game. The empirical findings of this study suggested that social trust could positively affect social needs satisfaction. To cultivate a trusting climate in the virtual gaming environment,

the online game providers should build sufficient communication channels for gamers to communicate instantly and efficiently. When gamers can share their ideas for gaming strategies, offer beneficial suggestions and information, and provide instant feedback for teammates through one-to-one, team-wide, or in-game public communication channels, misunderstanding and mistrust among members could be avoided; therefore, multiple communication channels are helpful for cultivating a trusting atmosphere, further satisfying gamers' social needs.

Compared to gamers who play single-player games for personal enjoyment, gamers who play MMORPGs immediately become part of a team and of a virtual community. Since MMORPGs are meant to be social, gamers become one with the team, sharing with them the ultimate goal of defeating the opposing team. When gamers share the same goals, they are likely to adhere to team norms and are willing to cooperate and help each other in game battles. The empirical results of this study indicated that shared goals could positively influence social needs satisfaction. In order to induce gamers to pursue the team's shared goals, online game providers could improve their teamwork-related reward systems. When precious artifacts or gems can only be obtained through specific teamwork performances, gamers will have a stronger incentive to accomplish common goals. Such teamwork-related reward systems enhance the value of shared goals among team members, further satisfying their social needs.

In playing single-player games, gamers enjoy greater freedom and take on fewer social burdens. On the contrary, although playing MMORPGs and joining a specific team could allow gamers to form intimate social ties with other members, the gamers have to comply with other members' schedules or preferences, as well as adhere to certain team regulations and display cooperative behavior. Because team members are connected and governed by team norms, gamers are restrained with certain limits and

must fulfill their responsibilities to play specific roles in the team. The empirical findings of the present study revealed that gamers who adhere to team norms could perceive higher social needs satisfaction and have stronger intention to engage in the same game, which generates game loyalty. Because the gaming teams are not formal organizations, most of the team norms are informal, invisible, and unwritten. The online game providers could offer a bulletin board platform for gaming teams to announce team regulations and important information. Such function could make team norms more tangible and could facilitate gamers to easily understand the requirements of the team and their individual responsibilities. This could increase the likelihood of gamers' compliance in team norms thus, improving team interaction and collaboration.

6. Directions for Future Research

Since social capital is critical for MMORPGs gamers, future research could explore the antecedent factors that may reinforce social capital. Firstly, social support involves the exchange of verbal or non-verbal messages between individuals, expressing information, referral, or emotion to decrease others' stress or uncertainty (Lin & Bhattacherjee, 2009). Social support could be actual, perceived instrumental, or indicative provisions provided by the social network, communities, or trusted partners (Lin, 1986; Li et al., 2015). Song et al. (2011) suggested that social support is highly related to social capital. To successfully compete in team-oriented gaming, the gamers have to supply necessary social support to help members defeat their opponents. Such support can help maintain intimate social networks and further foster social capital. Social support includes various aspects such as emotional support, information support, instrument support, and socializing support (Lin & Bhattacherjee, 2009). In additional, since social capital includes multiple dimensions (social ties, social trust, and shared goals), future research could propose a framework to clarify the complex relationships between social support and social capital.

Secondly, one of the common goals of MMORPGs gamers is the ongoing quest to level-up and see their characters progress through game play and interaction. When gamers possess higher skill levels, they obtain the abilities to engage in more difficult game activities. Higher skill levels also mean that gamers could contribute more to the team, as well as help team members attain shared goals (MacManus, 2012); therefore, self-efficacy vital in role-play and team-based games. Self-efficacy refers to one's belief in his or her own capabilities to perform a target behavior to accomplish a goal (Bandura, 1977; Hau & Kim, 2011; Kim et al., 2011). When gamers have greater self-efficacy for game play, they are likely to have greater confidence and abilities to participate in team activities and help other members to achieve the team goals, thereby strengthening the team's social capital. Consequently, self-efficacy may function as a determinant of social capital; hence, future research could the effect of self-efficacy on social capital.

The results of this present study have revealed that social capital could directly affect gamers' social needs satisfaction, which could further motivate gamers to remain loyal to a specific game. Moreover, gamers who express higher intention to comply in team norms also have greater game loyalty. It is hoped that the theoretical model and the practical results of this study may lead to a better understanding of the effects of social capital in the MMORPG context. Future research may consider additional predictors and extend the research framework of this study.

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A Study on Self-Disclosure Behavior in Social Network – The Effects of Privacy Concerns and Incentives

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Abstract

The explosive growth of information and communications technology has also led to changes in the way of business and academic conduct surveys. The popularity of the Internet is a powerful driving force. In the past, it took a long time for the paper questionnaires to be delivered to the informants. Now, electronic questionnaires can be quickly sent to and fro with the informants through e-mail. It is inevitable that disclosures of private information are encountered in the process.

Regardless of paper-based or electronic questionnaires, most past researches on self-disclosure in surveys have focused on the design format and items of the questionnaires, and the incentives provided by the investigator. With the rises of social network services, the power of the masses on the Internet is growing. Many studies have employed social network communities, such as Facebook, as a channel to distribute survey questionnaires. In such cases, could "peer pressure" (or group pressure) become an antecedent of self-disclosure?

This study attempts to explore the effects of group pressure, incentives and privacy concerns on self-disclosure behaviors through a model based on the Theory of Planned Behavior. Through a quasi-experiment, a simulated scenario was designed to manipulated levels of incentives and group pressure from peers, and assessed their influence on resulting self-disclosure. Results reveal that privacy concerns and incentives both affect self-disclosure, while group pressure moderates the influence of incentives on self-disclosure. The means that questionnaire administrator can consider providing appropriate incentives and group pressure to the subjects in real life, and thus improve the recovery rate and authenticity of the surveys.

Keywords: Privacy Concern, group pressure, incentives, theory of planned behavior

1. Introduction

The General Data Protection Regulation (GDPR), which is known as the "most stringent Personal Data Protection Law in history," has been officially launched on May 25, 2018 (Wikipedia, 2019). GDPR requires EU residents to have the highest personal privacy data control in any service content that accesses the privacy of individual users. It also regulates the strict personal privacy and the rights which are forgotten, that is, it is necessary to make it easier for the user to understand what effect it will have, and the user's private information cannot be stored on the web server for a permanent or long time unless he or she agrees, once the user does not want personal privacy to remain on the network service, service provider must offer an option to fully remove user privacy when the service content is used for any user privacy information. For example, as Apple's user privacy policy updated in 2018, in addition to enabling users in Europe to delete, and download data that has been used by Apple services in the past, such as account and device information, or even the backup data syncs to iCloud, and operation records in Apple Music, App

Store, even Apple-Care and online shopping records on Apple Store can be packaged and downloaded, as well as will be extended to allow users worldwide to easily remove personal information from Apple services (Apple Inc., 2018).

Most of the research on self-disclosure in the past focus on the user's own influence of self-disclosure, and less on the impact of self-disclosure to the network platform. Therefore, this study is based on the users of the social business website, "Fashion Guide," (a Fashion Makeup Media) to explore the personal social presence and the network characteristics on the situational phase, including the impact level of the self-disclosure from network power and the centrality of the Internet, and further explore the commitment of self-disclosure to the platform from the perspective of exposing the decision model. Through the questionnaire survey, this study collects a total of 303 valid questionnaires and the result shows that social presence, network centrality and network power would positively affect the depth of self-disclosure; social presence and network power would positively affect the extent of self-disclosure; the depth and breadth of self-disclosure would enhance the users' awareness of the virtual community and further enhance the commitment to the platform. (Li, Jiaying, Dai, Wangru, 2018)

Today's era can be called the information age, and everyone can easily receive or transmit any information as long as they are connected to the Internet. Compared to the past, there was no Internet, but now you can accomplish things that took a lot of resources before with a little cost. Many Internet users have started to use social networking services such as Facebook and Twitter, etc. and those social networking services have become one of the ways for individuals to conduct social network activities.

Goodwin (1991) has pointed out that companies have a lot of applications for social networking services in the market, the most common is to develop new marketing

techniques through social networking services, e.g. the Coca-Cola fan page. Business could also collect consumers' information in a faster and cheaper way from social networking services, either interact with web users by fan pages or view other people's information from social networking services. One of the incentives for the subjects to fill out the e-questionnaire was "anonymity" because the willingness to fill would raise relatively when a subject was in an anonymous environment. Anonymity could increase the sense of security of respondents, eliminate social pressure, reduce wariness and anxiety, and increase self-disclosure (Siegel et al., 1986).

In this research question, I want to know whether these group pressures will also affect the self-disclosure behavior of Internet users. In real life, there are many people with different levels of privacy and manufacturers need to recycle questionnaires to have different countermeasures for network users with different privacy concerns. This study thus attempts to understand these effects, and try to enhance the response rate for business questionnaires.

2. Literature Review

2.1 Privacy Concern

Privacy Concern is an important and often considered construct in the field of self-exposure. It refers to the general feeling of individuals who are depressed about information privacy (Li, Sarathy & Xu, 2011). Awad and Krishnan (2006) have done the research that the intent of information sharing based on the privacy concerns of Internet users and found that although the website provides many privacy protection mechanisms, the willingness of Internet users with highly sensitivities to reveal themselves was very low still.

2.2 Incentives

According to the social exchange theory, when a network user gains more benefits on the Internet than his cost, he or she will have self-disclosure behavior (Kankan-

halli, Tan, & Wei, 2005). One is more willing to fill out the questionnaire if they get more benefits than pay (Paxson, 1995). In the study of the entity questionnaire, Paxson (1995) also indicates that the higher the value of the perceived benefit of the respondent, the higher the questionnaire recovery rate. When collecting questionnaires, most of the incentives offered to respondents emphasize substantial material feedback or actual monetary gifts, such as discounts, gift vouchers, etc. (Trice & Layman, 1984).

2.3 Group pressure

Conformity research stems from psychology, and modern exploration for conformity mostly focus on social psychology or consumer behavior. Allen (1965) has defined conformity as a behavior of an individual being influenced by other members of the group. Deutsch and Gerard (1955) have stated that conformity mentality consists of Informational Influence and Normative Influence in Social Influence. Normative influence is the impact of an individual's perception of the group. It means one's behavior or attitude changes when individual desires to be liked, accepted, or rewarded from a group (Ross, Bierbrauer, & Hoffman, 1976). A famous research for the behavior of conformity in a group can be tracked to Solomon E·Asch (1955-1956). The "Line Segment Experiment" has been conducted in his research and the results of the experiment is stunning. Even though the answer was obvious, in one-third of the cases, the subjects will follow the incorrect answers of the group, and 75% of the subjects will follow at least once, and even in a group which is not big also have such a conformity behavior. When a group has 1 to 2

persons, as long as there are 3 to 4 experimenter's assistants in it, conformity behavior will be effective under the group pressure. Therefore, the conformity behavior results in the group pressure. This study tries to observe the behavior of the respondents through the group pressure.

2.4 Theory of Planned Behavior

The Theory of Planned Behavior is an extension of Theory of Reason Action, which was proposed by Ajzen and Fishbein in 1975. Fishbein and Ajzen (1975) points out the basic premise of Theory of Reason Action is that individuals are rational in their behavior and can be controlled under their own will. It is advocated that the behavior results from intention, and the behavioral intention will be affected by the attitude of the individual (Attitude) and the subjective norms of the society (Subjective Norm). The premise of Theory of Reason Action is that individuals can control their behavior by their will, but they cannot escape from real life when human behavior is interpreted. People's behaviors result from external factors such as time, money, and ability. Therefore, Ajzen (1985) has proposed the theory of planning behavior as Figure 1, based on the theory of rational behavior and increased the variable, Perceived Behavior Control, to explain the easiness of an individual behavior. In addition to affecting intentions with attitudes and subjective norms, Cognitive Behavioral Control also affects attitudes and subjective norms and directly affects behavior (Ajzen, 1989). However, Perceptual Behavioral Control depends on the resources and opportunities required for action, consists of control faith, convenience, and perception (Ajzen, 1991).
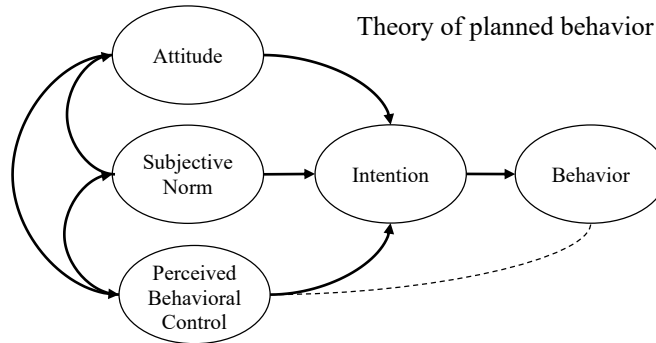
Figure 1: Theory of Planned Behavior (Ajzen, 1991)

3. Research Model and Hypothesis

This study is based on the theory of planned behavior to develop the research structure as shown in Figure 2 by summarizing the past literature. The attitude of the theory of planning behavior is replaced by privacy concerns; the perceptual behavioral control of the theory of planned behavior is performed by incentives; the behavioral nature of the theory of planned behavior is carried out by self-disclosure behavior. According to the theory of planned behavior, attitudes and perceived behavioral control may also influence each other. In this study, the subjective norms of the theory of planned behavior are beyond the scope of this study.
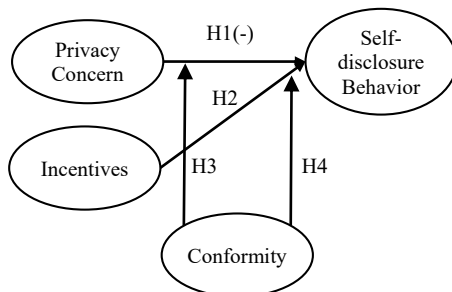

Figure 2: Research Model

3.1 The Impact of Privacy Concerns on Self-Disclosure Behavior

Privacy concerns affect the self-disclosure behavior of Internet users and make them feel that they will have to pay tangible or intangible costs. Therefore, when a web user is asked to fill out a questionnaire, he or she will refuse to provide personal information and avoid additional costs. A web user has high privacy concerns when filling out a questionnaire, probably the questionnaire comes from an untrusted website, or the online user has high privacy concerns about the questions in the questionnaire itself and think the information, which is filled in the questionnaire, will be collected by third parties for use in other ways, so further psychological anxiety, uneasiness, etc. will lead to a significant decline in the willingness to fill out the questionnaire. Therefore, this study proposes the following hypothesis:

H1: Privacy concerns have a negative impact on self-disclosure behavior.

3.2 The Impact of Incentives on Self-Disclosure Behavior

In this study, we mainly explore the extent to the self-disclosure behavior of Internet users, who are affected by incentives. In order to improve the recovery rate of questionnaires, many organizations have engaged questionnaire surveys with incentives to enhance the cooperation of respondents. Paxson (1995) has indicated that many previous studies have suggested that incentives can effectively improve the recovery rate of questionnaires. And people will have different view point of benefits for the same incentives due to different growth environments and personal factors. Therefore, when the investigators issue questionnaires and provide some more pragmatic benefits to the respondents in real life, the perceived benefits of the respondents are not necessarily the same. However, it can be inferred from

the literature that respondents will be more likely to do self-disclosure (fill in the questionnaire) because they perceive higher benefits. Therefore, this study proposes the following hypothesis:

H2: Incentives has a positive impact on self-disclosure behavior.

3.3 The Impact of Group Pressure on Self-Exposure Behavior

Banerjee (1992) has indicated that when people would like to know the correctness of a thing, it is easy to ignore the information they have and obey the opinions of others. Deutsch and Gerard (1955) have proposed that conformity is caused by "informational influence" and "normative influence" in social influence. This study explores the group pressure which is cause by the social influence of conformity.

When the Internet users fill out the questionnaire, the information which they obtained is only the official questionnaire information provided by the questionnaire provider, except for the past experience. Internet users determine the cost they have to pay and that is personal privacy concern, and also to distinguish their own benefits by this information. The social influence of conformity is important when information is insufficient. Internet users will perceive different levels of group pressure and change the perception of privacy concerns and incentives for this self-disclosure because of their conformity. Therefore, this study proposes two hypotheses at the same time:

H3: Group pressure has a regulatory effect on the relation between privacy concerns and self-disclosure behavior.

H4: Group pressure has a regulatory effect on the relation between incentives and self-disclosure behavior.

4. Research Process and Pre-test Induction

4.1 Experimental Process and Data Analysis Method

The main purpose of this study was to explore the impact of privacy concerns and incentives on the self-disclosure behavior of Internet users, and to discuss whether the regulatory variables, which is formed with or without group pressure, would have an impact on privacy concerns, incentives and self-disclosure behaviors. The purpose of this study was to explore the actual behavior of Internet users, therefore, the method to carry out this study was using the quasi experiment.

This study simulates the social networking service such as Facebook to conduct experiments, and the participants can browse the web-page according to their habits. The entire experimental environment is divided into 4 groups, and the subjects are randomly assigned to perform experiments in one of the situations as per all the manipulated variables. This study requires Internet users to conduct this experiment in accordance with past Internet habits.

This study used SPSS 21.0 statistical software as a data analysis tool after questionnaire recovery and did the pre-testing with manipulated variables (incentives, group pressure), and the measuring variables (self-disclosure behavior). The purpose of the pre-test is to confirm the validity of the manipulated variables and the measuring standard of self-disclosure behavior, and the sensitivity of personal privacy information.

4.2 Pre-test

This study focused on the impact of privacy concerns and incentives, in order to effectively master the incentives would work and there was no preconception, this study conducted the pre-test to ensure the effectiveness of incentives. The analysis of the 47 subjects who participated in the pre-test for the amount of the gift voucher at NTD 500, showed that 90% of the subjects will be affected by the quantity.

According to the pre-test result of group pressure, when the number of people reached 100,000, about 70% of the subjects would be affected by the experimental amount. There were a lot of population in the Internet, but 100,000 people were not a small number. The participation of 100,000

people in an activity had been considerable, so this study conducted this amount.

The first six items that were most concerned about the personal privacy sensitivity in the pre-test were: mobile phone number, current work, address, financial related items currently in existence, the average personal income per month, and the personal account used in the social networking services. They would be used as a follow-up experiment.

In order to exclude the interference of the questionnaire provider to the self-disclosure behavior, the selection of the questionnaire provider was quite important. This study proposed a virtual questionnaire provider, which could not be found with a duplicate name in the network, however, in order to ensure that the Internet users were not really impressed with "CFKSurvey", and it would not be misunderstood with some manufacturers in real life. The pre-test results showed that "CFKSurvey" made no impression on the most of the subjects.

5. Data Analysis

This experiment was conducted in 2018, and the research target is Internet users. Nowadays, not using the Internet was rare for college students. Therefore, the junior or senior students in the three universities in the north of Taiwan were targeted, the volunteers are the main subjects and they were randomly assigned to the context of realization when filled out.

The main purpose of this study was to explore the impact of incentives and privacy concerns on self-disclosure behavior, and considered the regulatory variable, group pressure, to detect the regulatory effects on incentives, privacy concerns and self-disclosure behavior. Therefore, the experimental environment of this study allowed the subjects to use their own network terminal devices to enter a simulated social networking service as Facebook, in which the subjects would see a message requesting the network users to fill out the questionnaire. However, the social networking services and the electronic forum are used as sample

sources, it is impossible to require the subjects to use the network terminal device as the actual environment of the experiment, and thus the environmental requirements of the "closed laboratory" cannot be achieved.

5.1 Questionnaire Scale Reliability and Validity

This study used SPSS 21 for confirmatory factor analysis (CFA) to determine the reliability and validity of the questionnaire. The construct of this study is that only privacy concerns are measured in the form of questions, group pressure and incentives are manipulated variables, and self-disclosure behaviors are experimental actual results. Therefore, only the privacy concerns are tested for the reliability and validity. The Cronbach's α for privacy concerns is 0.92, well above the acceptable level of 0.7.

Validity is the test of whether the scale can correctly measure the traits it wants to measure, and also the correctness of the degree of construction to be measured. The criterion of validity is judged by discriminant validity, which is determined by the square root of the average variability extraction of each construct is greater than the correlation coefficient between the construct and other constructs. The average variability extraction (AVE) of privacy concerns is 0.913, greater than the correlation coefficient between constructs.

In general, the reliability and validity is well above the acceptable levels.

5.2 Hypothesis Testing

In this study, ANOVA (Analysis of Variance) was used to determine whether there were significant differences in the self-disclosure behavior of "have no group pressure" and "with or without incentives" under different operational situations.

However, the privacy concerns construce is a continuous variables in the experiment. The average value of this variable, 4.103, is chosen as a threshold of high a low (above 4.103 is HIGH privacy concern, and LOW otherwise), convert privacy concerns into category variables. Through the presence or absence of incentives, the presence

or absence of pressure from the public, and the level of privacy concerns, the samples were divided into eight groups for ANOVA analysis. The results of the verification are shown in Table 1. There is a significant relationship between incentives and privacy concerns, so both the H1 and H2 of this study are supported.

In the regulation part of this study, the significance of the impact of group pressure on privacy concerns and self-disclosure behavior is 0.390, representing a significant relationship, and H3 is not supported. The significance of the influence of group pressure on incentives and self-disclosure behavior is less than .001, representing a significant relationship, so H4 is supported.

Table 1: Three Way ANOVA Results

Dependent variable: Self-disclosure Behavior					
Source	Type III square	df	Average of squares	F	Significance
Corrected mode	163.799	31	5.284	6.887	less than .001
intercept	238.118	1	238.118	310.361	less than .001
Conformity	16.449	1	16.449	21.439	less than .001
Incentives	11.799	1	11.799	15.379	less than .001
Privacy Concern	21.943	8	2.743	3.575	less than .001
Incentives x Conformity	25.532	1	25.532	33.278	less than .001
Privacy Concern x Conformity	5.681	7	.812	1.058	**0.390**
Privacy Concern x Incentives	6.311	7	.902	1.175	**0.315**
Privacy Concern x Incentives x Conformity	2.443	6	.407	.531	**0.785**
error	360.597	470	.767		
total	1270.500	502			
Total number after correction	524.396	501			

Table 2 is a summary of the verification results for each hypothesis of the study. The part of the pressure regulation of the masses is tested by the ANOVA analysis. Prior to the verification, the privacy concerns were converted to continuous variable variables to category variables based on their average.

Finally, it is determined whether the "Conformity" has a positive effect on the "Incentives" and "self-disclosure behavior" and "privacy concerns" and "self-disclosure behavior". According to the analysis results of this chapter, all hypotheses are supported except for H3.

Table 2: Hypothesis Testing Summary

Hypothesis	Content	Result
H1	Privacy concerns have a negative impact on self-disclosure behavior.	Supported
H2	Incentives has a positive impact on self-disclosure behavior.	Supported
H3	Group pressure has a regulatory effect on the relation between privacy concerns and self-disclosure behavior.	Not Support
H4	Group pressure has a regulatory effect on the relation between incentives and self-disclosure behavior.	Supported

6. Conclusions and Recommendation

Based on the results of the previous statistical analysis, the statistical results will be discussed and the research results of this research will be proposed for academic and practical. Finally, the limitations of this study and the recommendations for future follow-up studies are described.

6.1 Privacy Concern and Self-Disclosure Behavior

In this study, users are afraid that personal data will be disclosed or used by the organization. It is a consideration of the privacy of the user in the face of disclosure. Zeng et al. (2009) expressed a negative impact on privacy concerns and self-disclosure willingness. According to the statistical analysis of this study, there are significant

differences between privacy concerns and self-disclosure behaviors and the path coefficient is negative. According to the experimental results, when the network users fill out the questionnaire in the experimental environment, if they have high privacy concerns for the questionnaires and questionnaires, they are less willing to disclose themselves. It also means that Internet users with low privacy concerns have more self-disclosure behavior than Internet users who have high privacy concerns about the questionnaire.

6.2 Incentives and Self-Disclosure Behavior

In the simulated environment of this study, the incentives have a positive impact on self-disclosure behavior. It means that when the network user perceives the incentive, the network user is more willing to expose himself. This result is consistent with the arguments put forward by Church (1993), and respondents will increase their self-disclosure willingness because of their interests.

From the statistical analysis results of this study, the pressure of the masses has a regulatory effect on the incentives and self-disclosure behavior. It indicates that if there is pressure from the masses, there is no incentive or influence for the self-disclosure behavior of Internet users. On the other hand, if the pressure of the masses does not exist, there are incentives and no incentives for the self-disclosure behavior of Internet users. Post hoc analysis was further conducted to show the moderating effects, as shown in Figure 3.
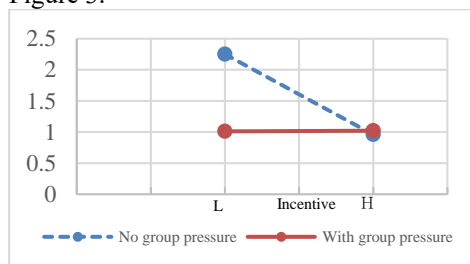

Figure 3: Self-Disclosure Behavior: Moderating Effects

This study found an interesting topic. For those who have no incentives in the situation without group pressure, the self-disclosure behavior of Internet users is more obvious than the self-disclosure behavior of Internet users. This result also shows that Internet users will think more about topics when there is no pressure from the masses and there are incentives, such as whether they will be fraudulent, whether there will be traps, and so on. So if the self-disclosure behavior of the Internet is more obvious, the provision of incentives will be a key point. This is also the result of the analysis of this study. If there is further research in the follow-up, it is recommended to consider the privacy risk into the model for research. I believe there will be other findings.

7. Management Implications

7.1 The Impact of Group Pressure on Self-Disclosure

The results of this study indicate that the privacy concerns of Internet users will affect their self-disclosure behavior, and the more people with higher privacy concerns, the more they prefer to retain their personal data. The incentives will increase the willingness of Internet users to reveal themselves. In addition, when there is group pressure in the environment (a large number of users have filled out this questionnaire), Internet users will adjust their behavior by accepting this information. In the past, research has been conducted to manipulate information providers' articles and personal evaluations to understand how information seekers influence their purchasing intentions through perceived reliability and professionalism. (Mei-Ju Chen et al., 2012)

In the results of this study, it is said that mass information will affect the relationship between privacy concerns and self-disclosure of Internet users. Deutsch and Gerard (1955) point out that people will judge the correctness of the information they receive because of the performance of the masses. In real life, Internet users often receive information from unfamiliar vendors. Therefore, the number of people will reduce the

uncertainty of the network users to the manufacturers. As predicted, Internet users may influence his privacy concerns about unfamiliar vendors because of this mass information, and further choose to expose themselves. Therefore, if in practice, manufacturers want to reduce the impact of Internet users on their concerns, and add another piece of information to indicate how many people agree with you, there are many ways to identify, in this study is to fill out the number of people is used as a basis.

In this research question, I want to know whether these group pressures will also affect the self-disclosure behavior of Internet users. As a result, as expected, Internet users may influence their concerns about unfamiliar vendors because of these pressures, and then choose to expose themselves. So in practice, vendors want to reduce the impact of Internet users' concerns. An additional piece of information can be added to indicate how many people agree with you, and there are many ways to identify them. This study is based on the number of people who have completed the survey. In summary, the manufacturer can achieve the goal more easily.

7.2 Increasing Questionnaire Response Rate

Incentives and mass information do affect self-disclosure behavior. In real life, there are many people with different levels of privacy and manufacturers need to recycle questionnaires to have different countermeasures for network users with different privacy concerns. The results of the analysis reveal that privacy concerns, incentives, and crowd pressure do affect self-disclosure behavior. In real life, there are many people with different levels of privacy and manufacturers need to recycle questionnaires to have different countermeasures for network users with different privacy concerns. Internet users themselves have higher self-disclosure behaviors because of incentives. However, in this study, it is found that there is no way for group pressure to break through the incentives, and the self-disclosure behavior is limited. So in practice, if the

vendor wants to collect as much information as possible from all network users. Regardless of their privacy concerns. It is possible to use incentives to entice web users to fill out questionnaires and to increase public interest in their privacy concerns, while also considering high privacy concerns and low privacy concerns for web users.

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