European Journal of Business and Management
ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online)
Vol.5, No.10, 2013

The Impact of Structural Capital on Business Performance in Jordanian Pharmaceutical Manufacturing Companies

Dr. Kamel Mohammad Al-Hawajreh
Associate Prof. of Management, Dept of Business Administration, Faculty of Business
Middle East University- MEU, PO box 1023 Amman 11621, Jordan.
E-Mail: hawajreh66@gmail.com

Abstract

The purpose of the study was to investigate the influence of Structural Capital (SC) on Jordanian Pharmaceutical Manufacturing (JPM) Companies' Business Performance (BP). It surveyed 132 managers by means of a questionnaire. Statistical techniques such as descriptive statistics, correlation, multiple regressions, stepwise regression, were employed. To confirm the suitability of data collection instrument, a Kolmogorov-Smirnov (K-S) test, Cronbach's Alpha and factor analysis were used. The result of the study showed a positive significant relationship between SC and JMP Companies' BP. It indicated that SC performance can clearly explain productivity and profitability more than market valuation. Furthermore, the result showed that the respondents believed that S&P and R&D variables positively and directly affect the JPM Companies' BP, while the IPRs variable does not (negative) affect the JPM Companies' BP.

The use of a single industry study design limits its generalisability to other industries. Extending the analyses to other industries represent future research opportunities. The research results might help both academics and practitioners. The data suggest that a similar set of SC indicators could be developed for other organizations and industries whether government, public or private, profitable or non-profitable organizations. SC should be taken into serious consideration when formulating the JPM Companies' strategy. The current research may be considered as initiative study that highlights the effect of SC on JPM Companies' BP in Jordan. It could also be an initiative study that divided SC into three variables and focuses on the role of each variable on Companies' BP.

Keywords: Structural Capital (SC), Jordanian Pharmaceutical Manufacturing (JPM) Organizations, Business Performance (BP).

1- Introduction

Structural Capital is everything that remains in the organization after 5 o'clock (Bontis, 1999).Unlike human capital; structural capital can be owned and thereby traded (Bontis, 2000). It presents the useful information and knowledge (Talebi and Bahamir, 2012). It represents the codified knowledge bases that do not exist within the minds of employees (Bontis & Fitz-enz, 2002), it is the stock of knowledge that is codified and printed on paper (Abdullah and Sofian, 2009). It refers to using highly effective way to collect, test, organize, and integrate existing knowledge and to eliminate the impure and to retain the pure then disseminate it (Wu et. al. 2012). It refers to the non-human storehouses of knowledge in a firm that involve organizational structures, such as the organizational routines, the structure of the business and various types of intellectual property (Taghizadeh and Zeinalzadeh, 2012).. It is "the overall systems and procedures used by a company to solve problems and create values" (Chang and Lee, 2012). Finally, structural capital can be defined as the sum of capitals stemming from internal processes, relations, communication, research development and innovation (Pena, et. al. 2012).

2- Review of Related Literature

Bontis (1999) concluded that structural capital is the critical link that allows intellectual capital to be measured at an organizational level. Bontis et. al. (2000) empirical results showed that in Malaysian industries the development of structural capital has a positive relationship with business performance regardless of industry. Sofian et. al. (2004) found that in Malaysian organizations: The level of investment in organizational capital is associated with business performance, and the ability to respond to future events. Bin Ismail (2005) stated that there was a strong positive relationship between structural capital and the overall performance of Telekom Malaysia. Furthermore, Huang and

Liu (2005) concluded that in Taiwan, the innovation capital has a non-linear relationship with organization performance. Wang and Chang (2005) stated that in Taiwan Information Technology Industry, intellectual capital elements directly affect business performance.

Moreover, Ghorbani et. al. (2012) found that there is a significant relationship between structural capital management and organizational innovation**.** Also Al-Dujaili (2012) stated that structural capital and human capital have significant influence upon organizational innovation. Allameh, et. al. (2010) said that structural capital positively affects organizational learning capability. Amiri, et. al. (2011) found that structural capital is positively related to the incremental innovation, as well as, to the radical innovation. Kamukama, et. al. (2010) there is a strong relationship between innovation capital and structural capital, and strong association between structural capital and business performance. In the contrary, Kontic and Cabrilo (2009) concluded that product/process innovation development, as well as, research and development were not seen as key influencing factors in structural capital. While, MariaDiez, et. al. (2010) said that structural capital not only empowers and strengthens human capital; it also reveals the aptitude of the organization to transmit and to store intellectual material.

In addition, Gruian (2011) showed that companies with greater structural capital efficiency have better financial performance. Khalique et. al. (2011) structural capital and customer capital have positive relationship with organizational performance. Finally, Mosavi, et. al. (2012) concluded companies with greater structural capital efficiency have higher ratios of market-to-book value, and have better financial performance.

3- Research Purpose and Importance:

This research intends to answer the following question: Is there a direct impact of structural capital (SC) on Jordanian pharmaceutical manufacturing(JPM) Organization's business performance (BP)? The main objective of this research is to provide sound recommendations about performance measurement within SC context by identifying and defining the main attributes of quality and productivity of SC, i.e. to point out critical factors of SC and find suitable ways for measurement and management in that context.

4- Problem Statement, Elements and Hypotheses:

Bontis (2004) stated that there has never been an intellectual capital development report published especially for the Arab region, nor for any of the Arab countries individually. Seleim et. al., (2004) said that no empirical research had been conducted at the organizational level in the field of intellectual capital in the Arab countries. Sharabati et. al., (2010) said the concept of intellectual capital is newly emerging concept, and until now, it is not fully understood by most organizations in Jordan or the Arab word. According to study purpose, the study problem can be perceived by having detailed and scientific answers to the following hypothesis:

Main Hypothesis: There is no statistically significant impact structural capital (SC) on JPM Organization's BP.

The SC hypothesis can be divided into three hypotheses according to SC variables as follows:

H_o-1: There is no significant impact of systems and programs (S&P) on JPM Companie's BP.

H_o-2: There is no significant impact of research and development (R&D) on JPM Companie's (BP).

H_0-3: There is no significant impact of Intellectual Property Rights (IPRs) variable on JPM Companie's BP.

5- Study Model

The research divided structural capital (SC) into three components (variables): "Systems and Programs" (S&P), "Research and Development" (R&D) and "Intellectual Property Rights" (IPRs), as shown in figures (1): The current research studies the effect of SC variables on JPM Companies' BP as shown in the study model figure (1).

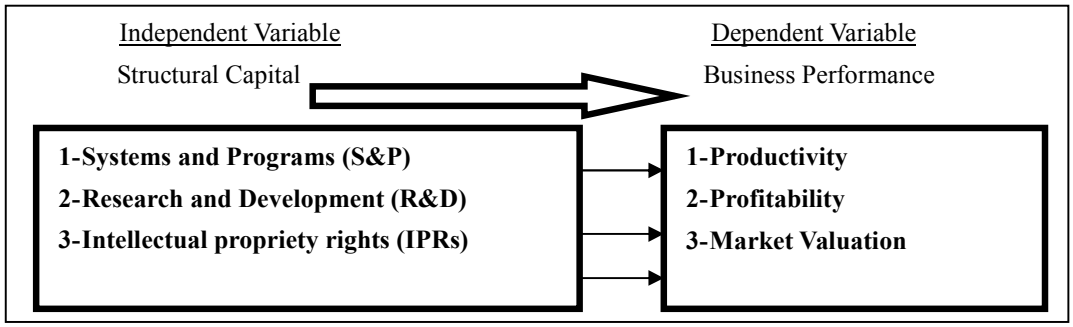

Figure (1): Study Model

6- Methods and Procedures

This study is considered as a casual study. It started with literature review and experts' interviews to develop the currently used instrument. Then, a panel of judges was conducted to finalize questionnaire items. Moreover, a pilot study was carried out to confirm reliability and validity of the questionnaire. At the time of study, the JPM Organizations were only fifteen organizations. The entire population was chosen for the research, thus negating any need for sampling. The survey unit of analysis was composed of all managers drawn from these Organizations. Finally, the data were collected from the managers in the JPM Organizations, and verified through the SPSS.

6.1. Data Collection Methods

Secondary data were collected from Companies' annual reports, journals, books, researches, articles, working papers, and the Worldwide Web. While, primary data flowed to the research from expert interviews, content analysis, panel of judges, pilot study and the survey. The actual number of questionnaires analyzed was 132 out of 200 managers, representing 66% of the total unit of analysis. The Questionnaire: Independent Variables: Structural capital has been divided to three components: (S&P); (R&D); and (IPRs). Each was tested by 10 questions. Dependent variable: Ten indicators were used to measure JPM Companies' BP. All variables were measured by five-point Likert-type scale to tap into the individual's perceptions, ranging from value 1 (strongly disagree) to value 5 (strongly agree) used throughout the questionnaire.

6.2. Kolmogorov-Smirnov Z Test for Normal Distribution

Table (1) shows that all the independent and dependent variables are normally distributed, if the significance level was more than 5 percent, normality was assumed (Bollen et. al. 2005).

Table (1): Normality Test: One-Sample Kolmogorov-Smirnov (Z) Test

Variables	**(K-S)Z**	**Sig.**
S&P	0.665	0.769
R&D	0.594	0.872
IPRs	0.709	0.696
SC	0.371	0.999
BP	0.393	0.998

6.3. Reliability Test (Cronbach's Alpha)

Table (2) shows that the results of Cronbach's alpha were more than 0.75, so registered acceptable. If Alpha Coefficients were above 0.75, they were accepted (Bollen et. al. 2005), while Bontis (2001) stated that Alpha coefficients above 0.7 are accepted.

Table (2): Cronbach's Alpha for Pilot and Research Studies:

Variables	**Alpha**
S&P	0.87
R&D	0.89
IPRs	0.92
SC	0.93
BP	0.90

6.4. Validity

Two methods were used to confirm content validity: First, multiple sources of data were used to develop and refine the model and measures. Then, Pearson's Principal Component Factor Analysis was conducted. All dependent and independent variable items were valid, since their factor loading values were more than 0.4 as shown in the following tables (3, 4).

Table (3): Factors Loading for SC Variables:

SC Variables	**Extraction**	**Factor**
S&P	0.661	0.813
R&D	0.797	0.893
IPRs	0.543	0.737

Table (4): Factor Loading for Variable items

Variable Items	**Factor S&P**	**Factor R&D**	**Factor IPRs**	**Factor** BP
Succession training	0.686			
Culture atmosphere	0.714			
Recruitment programs	0.795			
Reward system	0.709			
Skills & education support	0.841			
Employees influence over decisions	0.724			
Not bureaucratic nightmare	0.672			
S&P affect productivity	0.731			
S&P affect profitability	0.757			
S&P affect market valuation	0.756			
Research leader		0.802		
Work processes development		0.801		
Development and re-organizing		0.708		
Latest scientific & technical development		0.773		
Innovation's systems & programs		0.712		
R&D budget		0.775		
Board trust & support R&D		0.797		
R&D affect Productivity		0.706		
R&D affect profitability		0.743		
R&D affect market valuation		0.789		
IPRs strategies & procedures			0.803	
Monitors IPRs portfolio			0.794	
Multiple strategy of licensing IPRs			0.805	
Encourage & reward creation			0.844	
IPRs considered for value creation			0.816	
Utilization of IPRs to maximum level			0.815	
High no. of IPRs			0.717	
IPRs affect productivity			0.714	
IPRs affect profitability			0.699	
IPRs affect market valuation			0.717	

Industry leadership				0.679
Future outlook				0.649
Overall response to competition				0.696
Success rate in new launches				0.783
Overall BP and success				0.822
Employee productivity				0.625
Process (transaction) productivity				0.676
Sales growth				0.796
Profit growth				0.806
Company market valuation				0.741

7. Data Analysis and Results

7.1. Study Variables Analysis

Structural Capital Variables**:** Table(5) shows that the average means of the respondents' perception about the implementation of SC variables were ranging from 2.80 to 3.20, with standard deviation that ranges from (0.688 to 0.910). The result indicates that there is low implementation of the SC variables, where (t=1.034 < 1.645).

Table (5): Means, Standard Deviation and One-Sample T-Test Results for SC Variables.

SC Variables	Mean	Std. deviation	T value	T tabulated
S&P	3.17	0.688	2.897	1.645
R&D	3.20	0.809	2.905	1.645
IPRs	2.80	0.910	**-2.544**	1.645
*** SC**	**3.06**	**0.654**	**1.034**	**1.645**

1. Systems and Programs Variable Items: Table (6) shows that the average means of the respondents' perception about the implementation of S&P variable were ranging from 2.39 to 3.95, with standard deviation that ranges from (0.894 to 1.129). The result indicates that there is a significant implementation of S&P variable, where (t= 2.897 > 1.645). Results also show that the respondents moderately agree that S&P affect JPM Companies' productivity, profitability and market valuation.

Table (6): Mean, Standard Deviation and One-Sample T-Test Results for S&P Variable Items

No.	S&P Items	Mean	Std. Deviation	T value	T tabulated
1	Succession training	2.48	1.015	**-5.831**	1.645
2	Culture atmosphere	3.11	1.089	**1.199**	1.645
3	Recruitment programs	3.11	1.072	**1.137**	1.645
4	Reward system	2.39	1.103	**-6.393**	1.645
5	Skills & education support	2.95	0.944	**-0.646**	1.645
6	Employees influence over decisions	2.73	0.966	**-3.245**	1.645
7	Not bureaucratic nightmare	3.53	1.129	5.398	1.645
8	S&P affect productivity	3.95	0.894	12.174	1.645
9	S&P affect profitability	3.89	0.922	11.048	1.645
10	S&P affect market valuation	3.61	1.047	6.653	1.645
*	**Mean Total**	**3.17**	**0.688**	**2.897**	**1.645**

2. Research and Development Variable Items: Table (7) shows that the average means of respondents' perception about the implementation of R&D variable were ranging from 2.77 to 3.90, with standard deviation that ranges from (1.010 to 1.222). The result indicates that there is a significant implementation of the R&D variable, where (t=2.905 > 1.645). Results also show that respondents moderately agree on that R&D affect JPM Companies' productivity, profitability and market valuation.

Table (7): Mean, Standard Deviation and One-Sample T-Test Results for R&D Variable Items

No.	R&D Items	Mean	Std. Deviation	T value	T tabulated
11	Research leader	2.77	1.203	**-2.242**	1.645
12	Work processes development	3.03	1.041	**0.335**	1.645
13	Development and re-organizing	3.02	1.059	**0.247**	1.645
14	Latest scientific & technical development	2.90	1.010	**-1.120**	1.645
15	Innovation's systems & programs	2.86	1.085	**-1.524**	1.645
16	R&D budget	2.83	1.160	**-1.650**	1.645
17	Board trust & support R&D	3.10	1.222	**0.926**	1.645
18	R&D affect Productivity	3.90	1.132	9.154	1.645
19	R&D affect profitability	3.86	1.203	8.249	1.645
20	R&D affect market valuation	3.77	1.214	7.311	1.645
*	**Mean Total**	**3.20**	**0.809**	**2.905**	**1.645**

3. Intellectual Property Rights Variable Items: Table (8) shows that the average means of the respondents' perception about the implementation of the IPRs variable were ranging from 2.14 to 3.22, with standard deviation that ranges from (1.126 to 1.315). The result indicates that there is no significant implementation of the IPRs variable, where (t= -2.544 < 1.645). Results also show that respondents agree on that IPRs have low effect on JPM Companies' profitability, productivity and market valuation.

Table (8): Mean, Standard Deviation and One-Sample T-Test Results for IPRs Variable Items

No.	IPRs Items	Mean	Std. Deviation	T value	T tabulated
21	IPRs strategies & procedures	2.67	1.209	**-3.169**	**1.645**
22	Monitors IPRs portfolio	2.86	1.147	**-1.442**	1.645
23	Multiple strategy of licensing IPRs	2.81	1.127	**-1.931**	1.645
24	Encourage & reward creation	2.74	1.189	**-2.489**	1.645
25	IPRs considered for value creation	2.66	1.158	**-3.382**	1.645
26	Utilization of IPRs to maximum level	2.58	1.126	**-4.252**	1.645
27	High no. of IPRs	2.14	1.153	**-8.528**	1.645
28	IPRs affect productivity	3.15	1.293	**1.346**	1.645
29	IPRs affect profitability	3.22	1.315	1.919	1.645
30	IPRs affect market valuation	3.15	1.299	1.340	1.645
	Mean Total	**2.80**	**0.910**	**-2.544**	**1.645**

Business Performance Indicators (BP): Table (9) shows that the average means of the respondents' perception about the role of BP indicators were ranging from 3.30 to 3.95, with standard deviation that ranges from (0.737 to 0.946). The result indicates that there is a significant role of BP indicators, where (t=8.173 > 1.645).

Table (9): Mean, Standard Deviation and One-Sample T-Test Results for BP Indicators

No.	BP Indicators	Mean	Std. Deviation	T value	T tabulated
31	Industry leadership	3.48	0.886	6.186	1.645
32	Future outlook	3.95	0.927	11.734	1.645
33	Overall response to competition	3.39	0.889	5.092	1.645
34	Success rate in new product launches	3.30	0.931	3.647	1.645
35	Overall BP and success	3.54	0.833	7.422	1.645
36	Employee productivity	3.37	0.785	5.430	1.645
37	Process (transaction) productivity	3.38	0.737	5.909	1.645
38	Sales growth	3.39	0.946	4.691	1.645
39	Profit growth	3.45	0.944	5.442	1.645
40	Company market valuation	3.33	0.904	4.141	1.645
	Mean Total Performance	**3.46**	**0.641**	**8.173**	**1.645**

7.2. Relationships between the Study Variables:

Bivariate Pearson's Correlation Coefficient: Before testing the hypotheses, Pearson correlation (r) was carried out to test the correlation among the responses of SC variables, then between them and BP indicators. See table (10).

Table (10): Pearson's Correlation (r) Among SC Variables, Variables and BP Variable

	Variable	1	2	3	4
1	S&P				
2	R&D	**.631***			
3	IPRs	**.339***	**.517***		
4	**SC**	.769*	.874*	.796*	
5	**BP**	.598*	.550*	.258*	**.557***

*Correlation is significant at 0.01 levels (2-tailed)

Structural Capital Variable: Pearson correlation matrix table (10) shows that the relationships among the SC variables are strong, where (r) ranges from 0.339 to 0.631, and indicates that the SC variables are strongly related to each other. The matrix also shows that the relationship between the SC variables and JPM Companies' BP is strong, where r ranges from 0.258 to 0.598. For the SC variable r equals 0.557 which indicates a very strong relationship between the SC variable and JPM Companies' BP. The matrix also shows that the relationship between the S&P variable and JPM Companies' BP is strong, where r equals 0.598, and the relationship between the R&D variable and JPM Companies' BP is also strong, where r equals 0.550. Moreover, the relationship between the IPRs variable and JPM Companies' BP is moderate, where r equals 0.258.

8. Hypotheses Testing

Main Hypothesis: There is no statistically significant impact structural capital (SC) on JPM Organization's BP.

Table (11) shows the results of the multiple regression analysis that regress the three variables of the SC together against BP explained 40.9 % of the variance, where (R^2=0.409, F=29.53, Sig.=0.000). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, this indicates that the SC variables affect the JPM Companies' BP.

Table (11): Results of Multiple Regressions Analysis: Regressing SC Variables against BP.

Variable	**R**	**R^2**	**ANOVA F- Value**	**Sig.**
SC Variables	0.640	0.409	29.53	.000

Table (12) shows the significant effect of each variable within the SC variable. It shows that the S&P variable has the highest effect on JPM Companies' BP, where (Beta=0.418, sig.=0.000). Thus, it indicates that the S&P variable is the most significant and it positively and directly regresses to the JPM Companies' BP, followed by the R&D variable, where (Beta=0.309, sig.=0.002). While the IPRs variable has a negative effect on JPM Companies' BP, where (Beta = -0.044, sig.=0.580).

Table (12): Un-standardized and Standardized Coefficients of Multiple Regression Model for SC Variables.

SC Variables	**Un-standardized Coefficients**		**Standardized Coefficients**		
	B	**Std. Error**	**Beta**	**t-value**	**P**
(Constant)	1.521	0.220		6.924	0.000
S&P	0.390	0.082	0.418	4.774	0.000*
R&D	0.245	0.076	0.309	3.214	0.002*
IPRs	-0.031	0.056	-0.044	-0.555	0.580

**Calculate Is Less Than 0.05*

The relationship between the dependent and independent variables derived by this model can thus be expressed as:

Structural Capital = 1.521 + 0.390 (S&P) + 0.245 (R&D) + (-0.031) (IPRs)

Sub Hypothesis 1: Ho-$_1$: There is no statistically significant impact of systems and programs (S&P) on JPM Organization's BP.

From table (12) above, it is concluded that there is a positive direct effect of the S&P variable on the JPM Companies' BP, where (Beta=0.418, sig.=0.000). Since (t=4.774, P < 0.05), the null hypothesis is rejected and the alternative hypothesis is accepted, which indicates that the S&P variable positively and directly affects the JPM Companies' BP at $\alpha \leq 0.05$.

Sub Hypothesis 2: Ho-$_2$: There is no statistically significant impact of research and development (R&D) on JPM Organization's (BP).

From table (12) above, it is concluded that there is a positive direct effect of the R&D variable on JPM Companies' BP, where (Beta=0.309, sig.=0.002). Since (t=3.214, *P* < 0.05), the null hypothesis is rejected and the alternative hypothesis is accepted, which indicates that the R&D variable positively and directly affects the JPM Companies' BP at $\alpha \leq 0.05$.

Sub Hypothesis 3: H0-$_3$: There is no statistically significant impact of Intellectual Property Rights (IPRs) variable on JPM Organization's BP.

From table (12) above, it is concluded that there is a negative direct effect of the IPRs variable on the JPM Companies' BP, where (Beta = -0.044, sig.=0.580). Since (t= -0.555, *P* > 0.05), the null hypothesis is accepted, which indicates that the IPRs variable does not affect JPM Companies' BP at $\alpha \leq 0.05$.

Stepwise regression: To determine which variables are important in this model, the research used stepwise regression shown in the following table:

Table (13) shows that the first stepwise regression model shows the importance of the S&P variable, where (R^2*=0.358, F=72.467, Sig.=0.000*). The second stepwise regression model shows the importance of the S&P variable plus the R&D variable, where (R^2*=0.408, F=44.372, Sig.=0.000*). Therefore, it is concluded that the second model increases R^2 with 0.050. This means that the S&P variable explains 35.8% of the variance in the JPM Companies' BP, while the second model explains 40.8% of the variance. This means that it adds only 5% to the first model. The following table shows the relation between the SC variables and JPM Companies' BP.

Table (13): Stepwise Regressions (ANOVA) for SC Variables

Model	R	R^2	F	Sig.	SC Variables
1	0.598(a)	0.358	72.467	.000	S&P
2	0.638(b)	0.408	44.372	.000	S&P plus R&D

From the table (14), the first stepwise regression model shows that there is a positive direct relation between the S&P variable and JPM Companies' BP, where beta equals 0.598. The second stepwise regression model shows that there is a positive direct relation between the S&P variable plus the R&D variable with the JPM Companies' BP, where beta equals 0.417 and 0.287, respectively. Such results indicate that the S&P variable is the most important variable, followed by the R&D variable, while the IPRs variable does not significantly impact the JPM Companies' BP.

Table (14): Stepwise Regressions Model for SC Variables

	Model 1		Model 2	
SC Variables	**Un-standardized Coefficients**	**beta**	**Un-standardized Coefficients**	**beta**
Constant	1.687		1.493	
S&P	0.558	0.598	0.389	0.417
R&D	-		0.228	0.287
IPRs	-	-	-	-

**sig. <0.05*

9. Data Results Discussion

9.1. *Structural Capital:*

The study evidence show that there is a low implementation of the SC variables, where (t=1.034 < 1.645). It appears that there is low awareness of the role of SC in JPM Companies' BP and respondents do not strongly believe that SC affect JPM Companies' BP positively. Results also show that the JPM Organizations have low interest level toward IPRs compared with S&P and R&D. This may be due to misunderstanding the value of IPRs. The current study results are also supported by Bontis (1999), Bontis et. al. (2000), Bontis (2001), Xiaojun (2004), Seng et. al. (2004) and Westhuizen (2005), while contradicted with Firer and Stainbank (2003) and Bollen et. al. (2005). As compared with previous studies in table (15), the current study result is not in line with Sofian et. al. (2004), Bin Ismail (2005), Salleh and Salamat (2007), because their studies rated higher SC than JPM Organizations did. While, Miller (1999) study conducted in Canada and Moslehi et. al. (2006) in Iran, were rated lower than JPM Organizations regarding SC. This may be due to the nature of industries included in each study.

Table (15): Comparison between the Variables Means of Different Studies

Variable	**Current Study**	**Miller et. al. 1999 Canada**	**Berglud et. al. 2002 Sweden**	**Sofian et. al. 2004 Malaysia**	**Bin Ismail 2005 Malaysia**	**Moslehi et. al. 2006 Iran**	**Salleh & Salamat 2007 Malaysia**
SC	**3.06**	**2.80**	**1.85**	3.58	3.39	**2.23**	3.62
BP	3.46	**3.02**	---	3.20	3.01	**2.4**	---

Study results indicate that there is a significant implementation of the S&P variable, where (t=2.897 > 1.645). It appears that the respondents are aware of the role of the S&P in JPM Companies' BP, and strongly believe that the S&P affect JPM Companies' productivity and profitability, while moderately affect market valuation. Results also show there is a significant implementation of the R&D variable, where (t= 2.905 > 1.645). It appears that the respondents are aware of the role of the R&D in JPM Companies' BP, and strongly believe that the R&D affects JPM Companies' productivity and profitability, while moderately affect market valuation. Finally, the results indicate that there is no significant implementation of the IPRs variable, where (t= -2.544 < 1.645). It seems that JPM Organizations are neither aware of the role of the IPRs in JPM Companies' BP, nor they believe that the IPRs affect JPM Companies' productivity, profitability and market valuation positively. The above results are contradicting with Bollen et. al (2005) study, which included German pharmaceutical organizations, Chen (2004) which included Taiwan's pharmaceutical organizations and Gallego & Rodrygues (2005) which included Spanish software organizations. Organizations involved in these studies oversee the importance of research & development and IPRs, and they have strategies for both of them. It seems that these three countries are more developed and they have more governmental support than JPM Organizations.

9.2. Business Performance Indicators:

Results indicate that there is a significant role of the BP indicators, where (t=8.173 > 1.645). Evidence seems to suggest an improvement in JPM Companies' BP. Therefore, the JPM Organizations are directed and strongly leaning toward performance improvement, and the respondents are aware of the role of BP indicators. As compared with previous studies, table (15) shows that Miller (1999) rated (3.02), Sofian et. al. (2004) rated (3.20), Bin Ismail (2005) rated (3.01), and Moslehi et. al. (2006) rated (2.4). However, these studies were carried out in different countries: Malaysia, Canada and Iran, all of them rated BP indicators lower than JPM Organizations. Such differences may be due to the fact that the pharmaceutical industry is more knowledge and SC intensive as compared to other industries.

10. Hypothesis Analysis Results Discussion:

10.1. Structural Capital Variables:

The results of the multiple regressions analysis show that the null hypothesis is rejected and the alternative hypothesis is accepted, which states that SC variables affect the JPM Companies' BP, where (R^2=0.409, F=29.53, Sig.=0.000) indicates that the three variable together explained 40.9% of the variance. Results also show that the S&P variable has the highest effect on JPM Companies' BP, followed by the R&D variable, while the IPRs variable does not significantly (negative) affect JPM Companies' BP. For SC variables: The S&P null hypothesis is rejected and the alternative hypothesis is accepted, which indicates that the S&P variable positively and directly affects JPM Companies' BP at $\alpha \leq 0.05$. The R&D null hypothesis is also rejected and the alternative hypothesis is accepted, which indicates that the R&D variable positively and directly affect JPM Companies' BP at $\alpha \leq 0.05$. While the IPRs null hypothesis is accepted which indicates that the IPRs variable does not affect JPM Companies' BP at $\alpha > 0.05$?

The above results are supported by the stepwise regression. It showed that the S&P variable has the highest effect on JPM Companies' BP, and has a positive direct relation with JPM Companies' BP, followed by the R&D variable, which has a positive direct relation with JPM Companies' BP, while the IPRs variable has the lowest (negative) effect among the three.

10.2. Relationships between SC Variables and JPM Companies' BP:

The Pearson correlation matrix shows that the relationships between SC variables and JPM Companies' BP are varied, where r (0.258 to 0.598). It also shows there is a strong relationship between SC variable and JPM Companies' BP, where r (0.557).

Multiple regression shows that the S&P variable has the highest effect among the SC variables on JPM Companies' BP, where (R^2=35.8 and B=0.421), followed by the R&D variable, where (R^2=30.3 and B=0.305). While the IPRs variable has a negative effect on JPM Companies' BP, where (R^2=6.6% and B=-0.044). All SC variables together explain 40.9% of variance, where (R^2 =40.9%). The above results are supported by Bollen et. al. (2005) and Bin Ismail (2005) regarding the presence of SC, but Bollen et. al. (2005) concluded that SC alone was having low significant relationship with overall scale for German Companies' BP. Moreover, Huang and Liu (2005) concluded that the investment on SC has no significant effect on BP. See table 16

Table (16): Correlation (R^2) Between SC Variables and BP for Different Studies

Variable	Current Study	Bontis 1999	Bollen et. al. 2005	Bin Ismail 2005	Wang Chang 2005
SC	0.409	**0.245**	0.535	0.337	
BP	0.557	0.560	0.192	0.568	0.528

11. Study Conclusions:

Findings of the study suggest that the respondents' perceptions concerning the implementation of the SC variables (S&P, R&D and IPRs) were varied, and the overall result seems to suggest that there is low to moderate implementation of the SC. The results indicate that there is a significant implementation of S&P and R&D variables, but there is no significant implementation of the IPRs. It seems that the respondents were aware of the role of the S&P and the R&D in JPM Companies' BP, and strongly believe that these variables affect JPM Companies' productivity and profitability, while moderately affect market valuation. While it seems that respondents were neither aware of the role of the IPRs variable in JPM Companies' BP, nor do they believe that the IPRs variable affect JPM Companies' productivity, profitability and market valuation. It also seems that the respondents agree on that the JPM Organizations have low interest level toward IPRs variable**.**

In conclusion, one may propose that JPM Organizations are still below the average when compared with the world-class organizations, in terms of the presence of SC. The current level and development of SC has a relationship with the leadership style and the overall managing and leveraging of SC in the JPM Organizations. Moreover, findings of the study support the theory that SC has the potential to become the new source of wealth in pharmaceutical organizations, and that SC has a direct and positive effect on JPM Companies' BP. These results are promising, because they revealed the possibility of investing on SC at a given point in time, might have an influence on JPM Companies' prosperity, in terms of productivity, profitability and market valuation.

Finally, the results have shown that there is a strong need to investigate further the influence of SC on JPM Companies' BP. All business leaders should understand and appreciate the power of SC management effect on BP. Implementing the suggested recommendations will further enhance the overall management and performance of JPM Organizations in the future.

References:

Abdullah, D.F. and Sofian, S. (2009). Intellectual Capital: It is Time Malaysian Companies Get Acquainted. *Management and Accounting. Accountants Today*, vol.22, No.7, pp. 4-22.

Al-Dujaili, M.A. (2012). Influence of Intellectual Capital in the Organizational Innovation. *International Journal of Innovation, Management and Technology*, Vol. 3, No. 2, pp. 128-135.

Allameh, S.M., Abbasi, S. and Shokrani S.A. (2010). The Mediating Role of Organizational Learning Capability between Intellectual Capital and Job Satisfaction. *European Journal of Social Sciences,* Vol. 17, No. 1, pp. 125-136.

Amiri, A.N., Jandaghi, G. and Ramezan, M. (2011). An Investigation to the Impact of Intellectual Capital on Organizational Innovation. *European Journal of Scientific Research.* Vol. 64, No.3, pp. 472-477.

Bin Ismail, M. (2005). The Influence of Intellectual Capital on the Performance of Telekom Malaysia (Telco). *Unpublished Doctoral Dissertation,* Business & Advanced Technology Centre. University of Technology Malaysia.

Bollen, L., Vergauwen, P. and Schnieders, S. (2005). Linking Intellectual Capital and Intellectual Property to Company Performance. *Management Decision,* Vol. 43, No. 9, pp. 1161-1185.

Bontis, N., (2004). National Intellectual Capital Index: A United Nations Initiative for the Arab Region. *Journal of Intellectual Capital,* Vol. 5, No. 1, PP. 13-39.

Bontis, N. (1999). Managing an Organizational Learning System by Aligning Stocks of Knowledge. *Unpublished Doctoral Dissertation,* Faculty of Graduate Studies. Richard lvey School of Business. University of Westem Ontario. Ontario. Canada.

Bontis, N. (2000). Assessing Knowledge Assets: A Review of the Models Used to Measure Intellectual Capital. Framework Paper 00-01, Queen's University at Kingston. Canada. Published in *Queen's Management Research Centre for Knowledge-Based Enterprises*.

Bontis, N. (2001). Managing Organizational Knowledge by Diagnosing Intellectual Capital: Framing and Advancing the State of the Field. McMaster University. *Institute for Intellectual Capital Research Inc.* (IICR). Hamilton, Ontario. Idea Group Publishing.

Bontis, N. and Fitz-enz, J. (2002). Intellectual Capital ROI: a Causal Map of Human Capital Antecedents and Consequents. *Journal of Intellectual Capital,* Vol. 3, No. 3, pp. 223-247.

Bontis, N., Keow, W.C.C. and Richardson, S. (2000). Intellectual Capital and Business Performance in Malaysian Industries. *Journal of Intellectual Capital,* Vol. 1, No. 1, pp. 85-100.

Chang, C.M. and Lee, Y.J. (2012). Verification of the Influences of Intellectual Capital upon Organizational Performance of Taiwan-listed Info-Electronics Companies with Capital Structure as the Moderator. *The Journal of International Management Studies,* Vol. 7, No. 1, pp. 80-92.

Chen, M.C. (2004). Intellectual Capital and Competitive Advantages: the Case of TTY, Biopharm Company. Institute of Business Administration. *Journal of Business Chemistry*, Vol. 1, Issue 1, pp. 14-20.

Firer, S. and Stainbank, L. (2003). Testing the Relationship between Intellectual Capital and a Company's Performance: Evidence from South Africa. *Meditari Accountancy Research,* Vol. 11, pp. 25–44.

Gallego, I. and Rodryguez, L. (2005). Situation of Intangible Assets in Spanish Firms: An Empirical Analysis. *Journal of Intellectual Capital,* Vol. 6, No. 1, pp. 105-126.

Ghorbani, M., Mofaredi, B., and Bashiriyan, S. (2012). Study of the relationship between intellectual capital management and organizational innovation in the banks. *African Journal of Business Management,* Vol. 6(15), pp.5208-5217.

Gruian, C.M. (2011). The Influence of Intellectual Capital on Romanian Companies' Financial Performance. *Annales Universitatis Apulensis Series Oeconomica,* Vol.13, No.2, pp. 260-272.

Huang, C.J. and Liu C.J. (2005). Exploration for the Relationship between Innovation, IT and Performance. *Journal of Intellectual Capital*, Vol. 6 No. 2, pp. 237-252.

Kamukama, N., Ahiauzu, A. and Ntayi, J.M. (2010). Intellectual capital and performance: testing interaction effects. *Journal of Intellectual Capital,* Vol. 11 No. 4, pp. 554-574.

Khalique, M., bin Shaari, J.A., Isa, A.H. and Ageel, A. (2011). Relationship of Intellectual Capital With The Organizational Performance of Pharmaceutical Companies in Pakistan. *Australian Journal of Basic and Applied Sciences,* 5(12): pp. 1964-1969.

Kontic, L. and Cabrilo, S. (2009). A Strategic Model for Measuring Intellectual Capital in Siberian Industrial Enterprises (2009). *Economic Annals,* Vol. LIV, No. 183, pp. 89-117.

MariaDiez, J., Ochoa, M.L., Prieto, M.B. and Santidrian, A. (2010). Intellectual capital and value creation in Spanish firms. *Journal of Intellectual Capital,* Vol. 11 No. 3, pp. 348-367.

Miller, M., DuPont, B.D., Fera, V., Jeffrey, R., Mahon, B., Payer, B.M. and Starr, A. (1999). *Measuring and Reporting Intellectual Capital from a Diverse Canadian Industry Perspective: Experiences, Issues and Prospects*. OECD Symposium, Amsterdam.

Mosavi, S.A., Nekoueizadeh, S. and Ghaedi, M. (2012). A study of relations between intellectual capital components, market value and finance performance. *African Journal of Business Management,* Vol. 6 (4), pp. 1396-1403.

Moslehi, A., Mohagharl, A., Badie1, K., and Lucas, C. (2006). Introducing a Toolbox for IC Measurement in the Iran Insurance Industry. Tehran University. *The Electronic Journal of Knowledge Management,* Vol. 4 Issue 2, pp. 169-180.

Pena, D.N., Ruiz, V.L. and Navarro J.A. (2012). A case study of control strategy based on intellectual capital management. *African Journal of Business Management,* Vol. 6(16), pp. 5622-5632.

Salleh, A. and Selamat, F. (2007). Intellectual Capital Management in Malaysian Public Listed Companies International. *Review of Business Research Papers,* Vol. 3, No. 2, pp. 262-274.

Seleim, A., Ashour, A. and Bontis, N. (2004). Intellectual Capital in Egyptian Software Firms. *The Learning Organization,* Vol. 11 No. 4/5, pp. 332-346.

Seng, J.L., Lin, T.H. and Chaing, S.W. (2004). *An Exploratory Set of Indicators between Information Technology and Process Capital and Innovation Capital: Based on A Sample Case*. International Forum of Intellectual Capital in Taiwan (NICRC), 2004.

Sharabati, A., Jawad, S., and Bontis, N. (2010). Intellectual Capital and Business Performance in the Pharmaceutical Sector of Jordan, *Management Decision,* Vol. 48, No. 1, pp. 105-131.

Sofian, S., Tayles, M.E., and Pike, R.H. (2004). *Intellectual Capital: An Evolutionary Change in Management Accounting Practices.* Working Paper Series: Working Paper No 04/29, Produced by the Bradford University School of Management.

Taghizadeh, H. and Zeinalzadeh, A. (2012). Investigating the Role of Knowledge Management and Creativity on Organizational Intellectual Capital. *European Journal of Scientific Research*, Vol.67 No.4, pp. 532-542.

Talebi, K. and Bahamir, F. (2012). Identification of Intellectual Capital Effects on Promoting Organizational Entrepreneurship (Charmahale-E Bakhtriari Ministry of Cooperatives, Labour and Social Welfare). *ZENITH International Journal of Business Economics & Management Research*, Vol.2 Issue 6, pp. 37-48.

Wang, W.Y. and Chang, C. (2005). Intellectual Capital and Performance in Causal Models: Evidence from the Information Technology Industry in Taiwan. *Journal of Intellectual Capital,* Vol. 6 No. 2, pp. 222-236.

Westhuizen, C.V.D. (2005). Intellectual Capital Management in Retail Company in South Africa. Unpublished Dissertation, Department of Information and Knowledge Management at the University of Johannesburg.

Wu, M.F., Lee, Y.L. and Wang, G.L. (2012). To Verify How Intellectual Capital Affects Organizational Performance in Listed Taiwan IC Design Companies with considering the moderator of Corporate Governance. *The Journal of Global Business Management,* Vol. 8. No. 1, pp. 20-32.

Xiaojun, X. (2004). *Managing Intellectual Capital Transformation: The Key Issue for Mainland Firms in 21 Century* (on-line). School of Management, Fudan University, Shanghai, China.

This academic article was published by The International Institute for Science, Technology and Education (IISTE). The IISTE is a pioneer in the Open Access Publishing service based in the U.S. and Europe. The aim of the institute is Accelerating Global Knowledge Sharing.

More information about the publisher can be found in the IISTE's homepage: http://www.iiste.org

CALL FOR PAPERS

The IISTE is currently hosting more than 30 peer-reviewed academic journals and collaborating with academic institutions around the world. There's no deadline for submission. **Prospective authors of IISTE journals can find the submission instruction on the following page:** http://www.iiste.org/Journals/

The IISTE editorial team promises to the review and publish all the qualified submissions in a **fast** manner. All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Printed version of the journals is also available upon request of readers and authors.

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digtial Library , NewJour, Google Scholar