The Impact of "Innovation and Creation", "Research and Development" and "Intellectual Property Rights" on Jordanian Pharmaceutical Manufacturing Industry's Business Performance.

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Abstract:

Purpose: The purpose of the study is to investigate the influence of Innovation and Creation (I&C), Research and Development (R&D) and Intellectual Property Rights (IPRs) on Jordanian Pharmaceutical Manufacturing (JPM) Industry's Business Performance (BP), through examining the managers' perceptions regarding significance and potential use of IPRs indicators to leverage JPM Industry's' BP.

Design/Methodology/Approach: The study surveyed executives, top and middle managers working at the 15 JPM Organizations by means of a questionnaire. Practical data were used in the empirical analysis collected from 101 managers out of 250 managers of the mentioned organizations. Statistical techniques such as descriptive statistics, t-test, ANOVA test, correlation, multiple regressions and 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.

Findings/Results/Conclusions: The results of the study indicated a positive significant relationship between R&D and IPRs with JMP organizations' BP. However, the results showed that Innovation and Creation, and R&D have positive and significant effect on performance, while IPRs has negative but not significant effect on performance. The results also indicated that the managers in JPM organizations were having high preference of Innovation and Creation, and R&D indicators, while they have low preference of IPRs indicators. Moreover, findings suggest that the JPM organizations performance can clearly explain productivity and profitability more than market valuation.

Key Words: Innovation and Creation (I&C), Research and Development (R&D), Intellectual Property Rights (IPRs), Jordanian Pharmaceutical Manufacturing (JPM) Industry, Business Performance (BP).

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Introduction:

A major factor influencing the supply of new knowledge is the quantity and quality of research and development (R&D) performed by public and private sector organizations (Globerman, 2012), at the same time, the traditional knowledge has played a significant role in the R&D programs of industry and continues to be a substantial factor in the commercialization of natural products (Mposhi, et. al. 2013). Nowadays, R&D in nanotechnology impacts every aspect of all industries. Nanotech is the catalysts which can spurt the growth of firms and make them break even faster and sustain a regular economic improvement (Vishwakarma, 2012).

In medical industries, R&D depends on a full range of intellectual property rights (IPRs) (Gibson, 2012). R&D includes industrial design and research services provided by design houses, R&D companies and approved R&D institutes/research companies (MIDA, 2012). During the R&D process for a particular medicine, a number of "inventions" may result at different stages of this process, which may need patent protection of these different inventions (UNDP, 2012). The R&D is usually mediated by the protection and subsequent exchange of IP between the public and private sectors (Taubman and Ghafele, 2012). Based on the fact that high investment is required to develop new genetically modified technologies and products, stronger IP protection is necessary to stimulate research and to allow recovery of investment (Prasad, et. al. 2012), and without strong patent protection there would be less incentive for developmental drug companies to spend a large amount of money on R&D (Kalter, 2012). It is often assumed that copyright protection is essential to fostering investment and ensuring optimal R&D of resource allocations (NSW Young Lawyers, 2012). Moreover, the conventional economic rationale for IP is linked with the hedging of risk associated with R&D (Ghafele and Gibert, 2012), and IP laws are driven by an invention incentive motive, which remunerates new knowledge (Siriwardane, and Winands, 2013). Finally, people working in the National Health Services continuously generate IP. It arises from both within and outside R&D activities (Cooper and Standen, 2013). The objective of R&D activities is to make innovations possible, innovations that may result in new products or in lowering costs of existing products (Nathan and Sarkar, 2013).

The Global Pharmaceutical Market has found itself among the most stable and profitable industries, experiencing an accelerated growth pattern over the past decade (Ayoub and Qadoumi, 2007). A small number of transnational companies dominate global production, trade and the sales of medicines. Ten of these companies account for almost half of all sales. While 10 developed countries were classified as having high R&D capabilities and 17 countries were identified as having some innovative capability, and about 97 countries were identified as having a domestic medicines industry included a number of low developed countries (LDCs) (UNCTAD, 2011). Pharmaceutical firms in LDCs are generally not involved in drug discovery; their interest lies more in being able to access new drugs that would help meet the health needs of their population, or in innovations that tailor existing drugs to local needs (Kalter, 2012). Developing countries generally do not have the capacities to manufacture their own drugs, and usually depend on medicines developed and produced in wealthy countries to meet local needs. Nevertheless, some developing countries are able to produce pharmaceuticals locally, primarily generics that cover some percentage of local drug need (Amara and Aljunid, 2012). Generic pharmaceuticals provide the public with the opportunity to purchase low cost medications after these medications' patents have expired (Kalter, 2012). Finally, the global pharmaceuticals, biotechnology, and life sciences industry generated total revenues of more than USD 1.1 trillion in 2011, representing a compound annual growth rate of 6.7 percent between 2007 and 2011 (Deloitte, 2013). In 2010, five of the 10 leading global R&D firms were pharmaceutical companies. Accordingly, the research-

based pharmaceutical industry globally spent over USD 120 billion on pharmaceutical R&D in 2008-09 and 2010 (IFPMA, 2011), and almost USD 200 billion are spent on R&D in science-driven sectors such as healthcare, life sciences, consumer products or chemicals (Aruzelski, et. al. 2012). For example, in 2011, Canada expenditure on higher education R&D was USD 11.4 billion (Howitt, 2013).

Jordan joined the World Trade Organization (WTO) in 2000 and later on the Trade Related Aspects of Intellectual Property Rights (TRIPS) and the Free Trade Agreements (FTA). Over the last few years, Jordanian companies have established licensing relationships with pharmaceutical companies from the Unites States, Japan, Korea, Italy, Switzerland and the United Kingdom (Ayoub and Qadoumi, 2007). Since 1991, Jordan's exports in this sector have increased from JD35 million to reach JD255 million in 2006 (Ayoub and Qadoumi, 2007). In 2006, Jordan's total production equals USD 450 million, 75% of production was for export (Jordan's Competitiveness Report, 2007). While, Jordan imports of medical equipment and pharmaceuticals exceeded USD 370 million in the year 2008 and are expected to grow to USD 519 million by 2013, representing a compound annual growth rate of 7.01% (US Commercial Services, 2012). The main weaknesses of Jordan's pharmaceuticals industry are it is a small and fragmented local market, the lack of direct government incentives for R&D, and its underdeveloped cluster of supporting institutions and supplier networks (Afram, et. al. 2004), as well as, R&D has played a limited role in Jordan, with less than 2 percent of sales spent on R&D versus 20 percent or more in the North American and European markets (Desai, 2012). For example Hikma Pharmaceuticals PLC Group's investment in R&D during 2008 represented 3.8% of group revenue (Hikma Pharmaceuticals PLC Annual report, 2008). Finally, according to Mohammad Ali Shahin, representative of healthcare-related industries and medical supplies at the Jordan Chamber of Industry, the pharmaceuticals' exports rose to USD 643 million in 2012 from USD 503 million in 2011, an increase by $140 million i.e. 20% (The Jordan Times, 2013), 81% of production is exported to foreign markets, and 90% of the exports are going to Arab countries (JAPM, 2013).

Because of the importance of pharmaceutical industry to Jordanian economy, it is worth to carry out a research about the relationship among "innovation and creation", R&D and IPRs from one side and organization's business performance from other side.

Literature Review:

Many authors and practitioners believe that we have to evaluate (measure) what we are going to manage, we have to find indicators for evaluation and from which perspective we have to evaluate what we are going to manage. Wilson (2012) clarified that: The most commonly used quantitative metrics of innovation can be divided into three types. Input metrics describe financial, labor, and other inputs to the innovation system and innovation processes (like R&D). Output metrics describe defined products of the innovation system and innovation processes. Outcome metrics describe broader sector or economy-wide impacts of the successful diffusion of innovations into the marketplace. Ramos (2013) stated that: R&D is increasingly driven by diverse citizen and stakeholder needs. Therefore, the current study tries to evaluate "innovation and creation", R&D and IPRs and study their impact on organizations' business performance.

Many studies and researches indicated that R&D directly and indirectly impacts the organizations' business performance and country economic growth. Bilich et. al. (2005) demonstrated that improving innovation management for strategic R&D consequently improves organizations' market value. European Commission (2006) revealed that knowledge accumulated through investment in R&D, innovation and education, is a key driver for long-term growth. Myles (2007) stated: Organizations spend on R&D to secure profitable

innovations. Republic of Estonia Report (2008) indicated that increases in R&D expenditure and rapid economic growth have had a positive impact on producing a more knowledge-intensive economy. Bekele and Muchie (2009) concluded: Good infrastructure and financing facilitate for R&D activities have positive effect in reducing the cost of operation. Sharabati, et. al. (2010) showed that R&D significantly affects organizations' business performance. Khalique, et. al. (2011) findings showed that intellectual capital has positive relationship with organizational performance of the pharmaceutical companies in Pakistan. Agrawala, et. al. (2011) study revealed: The presence of in-house R&D capacity and expertise in companies can enable them to assess risks and implement adaptation more easily. Nordicity (2011) said: R&D is the essential precursor to the development of innovative products and processes. Stephan (2012) Innovation is fundamental to improving productivity growth. One of the major determinants for innovation output is R&D intensity. Aggrey et. al. (2012) R&D capital is meant to try to indicate whether a firm has the capacity to develop the products with its own plans by conducting in-house R&D. Darku et. al. (2013) the difference in productivity growth among countries could be explained by difference in resource endowment, R&D expenditures and the resulting technological progress, and the accumulation of HC. Perrot, et. al. (2012) analysis results indicated that the real economic significance of R&D lies not in spending, but in the results achieved, and are measured in terms of contribution to innovation as a key determinant of economic and social wellbeing, productivity, and growth and development. Loof and Savin, (2013) study results indicated that: A country's ability to create new innovation is not just dependent on how many billions it is investing in R&D but also how effectively that money is used. Ukwuoma, et. al. (2013) concluded that the effective management of R&D activities is crucial for wealth creation and national development. It is therefore important that efforts should be aimed at encouraging successful management of R&D outcomes for commercialization. Loof and Savin, (2013) study results found that: There is a significant and systematic difference in R&D productivity in the same industries across Europe, which suggests that the most successful countries are those best able to develop and adapt their institutions to the needs of their innovation activities.

Other studies and researches showed that the government support and academic centers are crucial for R&D activities, which in turn support countries' economic growth. Government expenditure on R&D is an external factor, which determines the government's investment in innovative technologies (Topalova 2012). Developed innovation culture depends on the government which should create an environment which enables innovation in the private sector, as well as, in the public sector (Kurtic and Đonlagic 2012). Intermediate institutions differ from universities and other academic centers whose main mission is a mix of fundamental research and teaching, they provide applied R&D, technology and innovation services to enterprises (Estibals 2012). Moreover, Short et. al. (2012) found a positive relationship between real GDP and government expenditure on R&D, this positive correlation could signify that more investment in R&D may generate better economic growth. Carlino et. al. (2012) found a strong empirical relationship between a country's investments in R&D, the resulting innovations, and productivity growth. Chen and Lee (2012) revealed that: The innovation (R&D) has a direct effect on organizational performance. Mehralian et. al. (2012) showed the importance of positive climate, ratio of investment in R&D and numbers of R&D projects for business development. Carolan et. al. (2012) revealed that: R&D spending is a driver of innovation in the economy, which has a direct bearing on the rate of productivity growth. Szewczyk and Sabadash (2012) found that increased R&D investment in the information and communication technology sector may have considerable impact on economic performance and growth. Perrot et. al. (2012) indicated that the real economic significance of R&D lies in the results achieved and is measured in terms of contribution to

innovation as a key determinant of economic and social wellbeing, productivity, and growth and development. Tyson and Linden, (2012) results indicated that investment in R&D is a significant driver of economic growth and R&D investment by one firm can speed knowledge creation by other firms. Suzuki, et. al. (2012) empirical result confirmed the positive impact of the intensity of collaborative research between universities and firms on the location decisions of foreign research activities, but not on those of development activities. Mina and Probert, (2012) study evidence showed that R&D indicators are the main drivers for collaboration and location decisions. Ling and Li, (2012) results reported that all individual variables were positively related to R&D creativity, and there is no significant difference in R&D creativity between contract employment type and permanent employment type. Ukwuoma, et. al. (2013) findings showed that a significant relationship exists among implicit factors, explicit factors, technology brokering and R&D management structure.

Moreover, many authors indicated that IP protection can accelerate the R&D and innovation. Neeraj and Seema (2012) findings indicated that agricultural yields grew significantly during the last two decades due to the combination of public investment in hybrid breeding programs that generated new materials offering substantial yield gains, and biological IPRs conferred by hybridization that conveniently need for substantial productivity growth in agriculture. Anuar, et. al. (2012) study indicated that: The relationship between internal R&D and operational performance moderated by IPR would encourage the betterment of the company in the future. Hottenrott and Lopes-Bento, (2012) study showed for a large sample of R&D-active manufacturing firms that collaborative R&D has a positive effect on firms' patenting in terms of both quantity and quality. Isaka, (2013) concluded that: It has been observed that patents can play a key role as an engine for innovation and as a source of information regarding innovation trends in R&D intensive sectors, such as pharmaceutics. Campi and Nnuvolari, (2013) concluded that: the mean of the index score has been increasing all over the period reflecting the tendency towards tighter IP regimes. Campi and Nnuvolari (2013) concluded: The progressive adoption of tighter IPRs regimes by developing countries has spurred the interest of economists on the possible effects of this policy shift on innovation and economic development. Yamabhai and Smith, (2012) study revealed that: In Thailand, with respect to patent impact on price, both Thai and international evidence confirm that patenting shifts prices up and has an effect on the price of the new registration of medicines. The evidence found also confirmed that policy stimulating patent protection does have a positive impact on trade flows.

Finally, the debate about the effect of implementation of IP on Jordan economy is increasing specially its effect on pharmaceutical industry. Sharabati, et. al. (2010) showed that R&D significantly affects organizations' business performance, while IPRs does not significantly (negative) affect pharmaceutical organizations' business performance in Jordan. Again Sharabati (2013) result confirmed that the respondents believe that only systems and programs variable positively and significantly affects the JPM organizations' BP, while the R&D variable positively but not significantly affects JPM Organizations' BP, finally, respondents believe that IPRs variable neither positively nor significantly affect the JPM Organizations' BP. Nesheiwat (2012) concluded that Jordanian IP laws lack a meaningful social and economic texture, and have failed to be evenly enforced in Jordan, essentially because they do not fit the Jordanian culture and are not compatible with Jordan's economic stage of development. The laws, therefore, are unable to produce tangible results for the Jordanian people, or help meet their economic interests. Abu Ghahm, (2012) study results revealed that: The Jordanian experience in the pharmaceutical sector argues that a strong patent protection has not been conducive to the promotion of technological innovation and the transfer and dissemination of technology.

Study Purpose and Objectives:

The aim of this research is to investigate the effect of Innovation and Creation, R&D and IPRs on JPM organizations' business performance. More specifically, this study directed to answer the following question: Is there a direct impact of employee Innovation and Creation on R&D at JPM organizations? Is there a direct impact of R&D on IPRs at JPM organizations? Is there a direct impact of IPRs on JPM organizations' business performance?

The main objective of this research is to provide sound recommendations to JPM organization, other industries and decision makers regarding further development and improvement of "innovation and creation", R&D and IPRs to improve organizations' business performance.

Study Importance and Scope:

A better understanding of the effect of Innovation and Creation, R&D and IPRs on the JPM organizations' business performance will be beneficial not only for JPM organizations but also to other organizations, institutions and policy makers. The study also may be of an interest to academicians who concern about the effect of "innovation and creation", R&D and IPRs on business performance. This study may be considered as initiative that investigates the effect of "innovation and creation", R&D and IPRs on Pharmaceutical Industry's business performance in Jordan.

Problem Statement and Elements:

The debate about the effect of IPRs on organizations' performance and economic growth has been started since long time, different studies concluded different results. Myles (2007) stated that organizations spend on R&D to secure profitable innovations. Sharabati, et. al. (2010) found R&D significantly affects organizations' business performance, while IPRs does not significantly (negative) affect JPM organizations' business performance. Prasad, et. al. (2012) stated to promote R&D in agricultural biotechnology; IPRs are one of the primary tools. Kalter (2012) indicated innovation is powered by entrepreneurship and patent system which allows innovation to move with continuous acceleration. NSW Young Lawyers (2012) concluded the economic benefits of copyright law are sometimes questioned. Chen and Lee, (2012) study revealed the innovation (R&D) has a direct effect on organizational performance. Anuar, et. al. (2012) found that the relationship between internal R&D and operational performance moderated by IPR. Nesheiwat (2012) concluded that Jordanian IP laws lack a meaningful social and economic texture. Finally, Abu Ghahm (2012) findings suggested that the Jordanian experience in the pharmaceutical sector argues that strong patent protection has not been conducive to the promotion of technological innovation and the transfer and dissemination of technology. Therefore, it is worth to investigate the effect of "innovation and creation", R&D and IPRs on JPM organizations' business performance. Accordingly, the study problem can be perceived by having detailed answers to the following questions:

Main question: Is there a direct impact of employee Innovation and Creation, R&D and IPRs on JPM organizations' business performance?

This question can be divided into three questions according to mentioned above variables as follows:

1. Is there a direct impact of employee Innovation and Creation on JPM organizations' business performance?
2. Is there a direct impact of R&D on JPM organizations' business performance?

3. Is there a direct impact of IPRs on JPM organizations' business performance?

Study Hypotheses:

Based on the above-mentioned questions about the problem statement and its elements, and according to the current study model, the following hypotheses can be developed:

Main Hypothesis: Employee Innovation and Creation, R&D and IPRs do not have a direct impact on JPM organizations' business performance.

This hypothesis can be divided into three hypotheses according to the mentioned above elements as follows:

Sub-Hypothesis 1: Employee Innovation and Creation does not have a direct impact on JPM organizations' business performance.

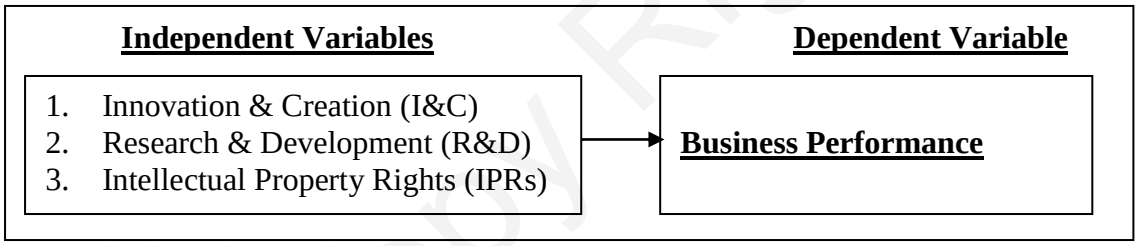
Sub-Hypothesis 2: R&D does not have a direct impact on JPM organizations' business performance.

Sub-Hypothesis 3: IPRs does not have a direct impact on JPM organizations' business performance.

Study Model

Based on the above mentioned questions and hypotheses, the current research studies the effect of employee Innovation and Creation, R&D and IPRs on JPM organizations' business performance as shown in the study model figure (1).

Figure (1): Study Model



Methods and Procedures:

The primary data has been collected from the managers working at the JPM organizations, by means of questionnaire. The entire population was chosen to explore the topic of this study, thus negating any need for sampling. The collected data were analyzed by using SPSS 20 software focusing on the correlation among independent variables and their relationships with JPM organizations' business performance.

Data Collection Methods:

Secondary data were collected from different resources, while primary data flowed to the researchers from expert interviews, content analysis, panel of judges and the survey.

The Questionnaire: First, the questionnaire was designed and developed based on previous literatures, then validated through expert interviews and a panel of judges. Questionnaire Variables: Independent Variable employee Innovation and Creation, R&D and IPRs (items 1 to 30 in the questionnaire): Each was tested by 10 questions which designed to measure the employees' perception about actual implementation of each item. Dependent variable (items 31 to 40 in the questionnaire): Dependent variable of the study is related to JPM organizations' business performance. It is measured by 10 indicators (as shown in the analysis). All variables and elements 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.

Data Collection and Analysis:

Data have been gathered from 101 out of about 250 managers by means of questionnaires representing 40.4% of the total unit of analysis. Then responses were coded against SPSS 20 for further analysis.

Kolmogorov-Smirnov Z Test for Normal Distribution: All dependent and independent variables and elements were tested for normality. Table (1) shows that all the independent and dependent variables are normally distributed, since the significance level was more than 5 percent for each variable.

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

Variables	**(K-S)Z**	**Sig.**
Innovation & Creation	0.526	0.945
Research & Development	0.714	0.687
Intellectual Property Rights	0.986	0.285
All Independent Variables	**0.542**	**0.931**
Business Performance	0.845	0.473

Reliability Test (Cronbach's Alpha): Table (2), shows that Cronbach's alpha were between 0.841 and 0.928, since Cronbach's alpha were more than 0.75, so the results are acceptable and could indicate high statistical reliability of the questionnaire.

Table (2): Cronbach's Alpha

Variables	**Alpha**
Innovation & Creation	0.841
Research & Development	0.892
Intellectual Property Rights	0.927
All Independent Variables	**0.934**
Business Performance	**0.894**

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, factor analysis (Principal Component Analysis) was carried out for all variables and items included in the questionnaire. All variable items were valid, since their factor loading values were more than 0.4 as shown in the tables (3).

Table (3): Factors Loading for Variables

Variables	**Factor 1**	**Extraction**
Innovation & Creation	0.801	0.641
Research & Development	0.887	0.787
Intellectual Property Rights	0.738	0.545
All Independent Variables	**0.978**	**0.956**
Business Performance	**0.681**	**0.464**

Study Variables Analysis

This section analyzes and describes the independent and dependent variables from statistical point of view including means, standard deviations, and t-values.

Independent Variables (Innovation and Creation, R&D and IPRs):

Table (4) shows that the average means of the respondents' perception about the implementation of employee innovation and creation, R&D and IPRs were ranging from 2.840 to 3.297, with standard deviation that ranges from (0.617 to 0.917). Such results indicate that there is a varied agreement on the implementation of these variables. The overall result indicates that there is an implementation of these variables among JPM Organizations, where the total average mean was 3.126 with standard deviation 0.629 and (t=2.008 > 1.645).

Dependent Variable (Business Performance Indicators):

Table (4) shows that the average means of the respondents' perception about the role of business performance indicators were 3.447, with standard deviation (0.604). Such results indicate that there is an agreement on the role of business performance indicators. The result indicates that there is a significant role of business performance indicators, where (t=7.433 > 1.645).

Table (4): Mean, Standard Deviation and One-Sample T-Test Results for Independent and Dependent Variables.

Variables	Mean	Std. deviation	T value	T tabulated
Innovation & Creation	3.241	0.617	3.920	1.645
Research & Development	3.297	0.762	3.919	1.645
Intellectual Property Rights	2.840	0.917	-1.758	1.645
All Independent Variables	**3.126**	**0.629**	**2.008**	**1.645**
Business Performance	**3.447**	**0.604**	**7.433**	**1.645**

Relationships between the Study Variables:

Pearson correlation matrix table (5) shows that the relationships among the independent variables: innovation and creation, R&D and IPRs with JPM organizations' business performance are strong, where r equals 0.609, 0.519 and 0.233 respectively. The average of the three independent variables (r equals 0.522) indicates a very strong relationship between independent variables and JPM organizations' business performance. The matrix also shows that the relationships among the independent variables are strong, where r ranges from 0.345 to 0.596. The results indicate that the independent variables are strongly related with each other.

Table (5): Pearson's Correlation (r) Among Independent Variables, and With Dependent Variable

	Variable	1	2	3	4	5
1	Innovation & Creation					
2	Research & Development	0.596**				
3	Intellectual Property Rights	0.345**	0.582**			
4	**All Independent Variables**	0.735**	0.881**	0.833**		
5	**Business Performance**	0.609**	0.519**	0.233*	**0.522****	

***Correlation is significant at 0.01 levels (2-tailed), * Correlation is significant at 0.05 levels (2-tailed),*

Hypotheses Testing

Main Hypothesis: Employee innovation and creation, R&D and IPRs do not have a direct impact on JPM organizations' business performance.

Multiple Regressions:

Table (6) shows the results of the multiple regression analysis that regress the three independent variables together explained 41.6 percent of the variance, where (R^2 =0.416,

F=22.989, Sig. =0.000). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which states that the innovation and creation, R&D and IPRs affect JPM organizations' business performance.

Table (6): Results of Multiple Regression Analysis: Regressing Independent Variables against BP

Variable	r	R^2	ANOVA F- Value	Sig.
Independent Variables	0.645	0.416	22.989	0.000

Table (7) shows that the "Innovation and Creation" element has the highest effect on JPM organizations' business performance, where (Beta=0.464, sig.=0.000), followed by the "R&D" element, where (Beta=0.303, sig.=0.008), finally, the "IPRs" element, where (Beta=-0.103, sig.=0.283).

Table (7): Un-standardized and Standardized Coefficients of Multiple Regression Model for Independent Variables:

Independent Variables	Un-standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t-value	p
(Constant)	1.377	0.262		5.249	0.000*
Innovation & Creation	0.454	0.095	0.464	4.797	0.000*
Research & Development	0.240	0.088	0.303	2.714	0.008*
Intellectual Property Rights	-0.068	0.063	-0.103	-1.080	0.283

**Calculate is less than 0.05*

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

Independent Variables = 1.377 + 0.454 (I&C) + 0.240 (R&D) – 0.068 (IPRs)

The following sub-hypotheses encompass the study elements and answer the questions that were raised earlier in the study problem:

Sub-Hypothesis 1: Employee innovation and creation does not have a direct impact on JPM organizations' business performance.

From table (7), it is concluded that there is a positive direct effect of the "Innovation and Creation" variable on the JPM organizations' business performance, where (Beta=0.464, sig.=0.000). Since (t=4.797, $p < 0.05$), the null hypothesis is rejected and the alternative hypothesis is accepted, which indicates that the "Innovation and Creation" variable affects the JPM organizations' business performance at $\alpha = 0.05$.

Sub-Hypothesis 2: R&D does not have a direct impact on JPM organizations' business performance.

From table (7), it is concluded that there is a positive direct effect of the R&D variable on the JPM organizations' business performance, where (Beta=0.303, sig.=0.008). Since (t=2.714, $P < 0.05$), the null hypothesis is rejected and the alternative hypothesis is accepted, which indicates that the R&D variable affects the JPM organizations' business performance at $\alpha = 0.05$.

Sub-Hypothesis 3: IPRs does not have a direct impact on JPM organizations' business performance.

From table (7), it is concluded that there is a negative but not significant effect of the IPRs variable on the JPM organizations' business performance, where (Beta=-0.103,

sig.=0.283). Since (t=-1.080, $P > 0.05$), the null hypothesis is accepted, which indicates that the IPRs variable does not affect the JPM organizations' business performance at α =0.05.

Stepwise regression:

To determine which variable is more important, the researcher used stepwise regression. From table (8), the stepwise regression (ANOVA) shows that first model includes innovation and creation variable has highest effect on business performance, where ($R^2=0.371$, $F=58.287$, $Sig.=0.000$). Therefore, it is concluded that innovation and creation variable alone could explain 37.1% of the variance in the JPM organizations' business performance, while second model shows that innovation and creation variable and R&D variable could explain 40.9% of the variance, which indicate that second variable add only 3.8% for explanation power, finally results indicate that IPRs variable does not add any explanation power to the variance.

Table (8): Stepwise Regressions (ANOVA) for Independent Variables

Model	r	R^2	F	Sig.	Independent Variables
1	0.609(a)	0.371	58.287	0.000	I&C
2	0.639(a)	0.409	33.843	0.000	I&C and R&D

In table (9) first model shows that Innovation and Creation variable affects JPM organizations' business performance, where beta equals 0.609, while second model shows that innovation and creation variable and R&D variable affect JPM organizations' business performance, where beta equals 0.464 and 2.43 respectively. Finally, results show that IPRs variable does not significantly impact the JPM organizations' business performance.

Table (9): Stepwise Regressions Model for Independent Variables

Independent Variables		Un-standardized Coefficients - B	Beta	t	Sig
Model 1	(Constant)	1.516		5.887	0.000
	I&C	0.596	0.609	7.635	0.000
Model 2	(Constant)	1.340		5.148	0.000
	I&C	0.454	0.464	4.796	0.000
	R&D	0.192	0.243	2.507	0.014

Study Discussion:

Results showed that the respondents' perception about the implementation of Innovation and Creation, R&D and IPRs were varied; it indicated that JPM organizations are implementing Innovation and Creation, as well as, R&D, while there was low implementation for IPRs variable. The results also indicated that there was an agreement on the role of business performance indicators and there was a significant role of business performance indicators. Pearson correlation matrix showed that there is a very strong relationship between independent variables and JPM organizations' business performance. Moreover, the results indicated that the independent variables are strongly related with each other. Finally, multiple regression analysis results showed Innovation and Creation, R&D and IPRs affect JPM organizations' business performance. Following studies supported that innovation and creation affect organizations' business performance: Bilich et. al. (2005) concluded improving innovation management for strategic R&D consequently improves organizations' market value, European Commission (2006) concluded innovation and education, is a key driver for long-term growth and Myles (2007) stated: Organizations spend on R&D to secure profitable innovations. Perrot, et. al. (2012) analysis results indicated that innovation is a key determinant of economic and social wellbeing, productivity, and growth and development.

Carolan et. al. (2012) revealed that: R&D spending is a driver of innovation in the economy, which has a direct bearing on the rate of productivity growth. Loof and Savin, (2013) study results suggested that the most successful countries are those best able to develop and adapt their institutions to the needs of their innovation activities. Furthermore, many studies supporting the results about the positive effect of R&D on organizations' business performance such as: Sharabati, et. al. (2010) showed that R&D significantly affects organizations' business performance. Khalique, et. al. (2011) findings indicated that intellectual capital has positive relationship with organizational performance of the pharmaceutical companies in Pakistan. Chen and Lee (2012) revealed that: The innovation (R&D) has a direct effect on organizational performance. Ukwuoma, et. al. (2013) concluded that the effective management of R&D activities is crucial for wealth creation and national development. Finally, following studies demonstrated that IPRs affect organizations' business performance such as: Anuar, et. al. (2012) study indicated that: The relationship between internal R&D and operational performance moderated by IPR would encourage the betterment of the company in the future. Yamabhai and Smith, (2012) confirmed that policy stimulating patent protection does have a positive impact on trade flows. Campi and Nnuvolari (2013) concluded: The progressive adoption of tighter IPRs regimes by developing countries has spurred the interest of economists on the possible effects of this policy shift on innovation and economic development

Results also showed that the Innovation and Creation element has the highest effect on JPM organizations' business performance, followed by the "R&D" element, while, the "IPRs" element was having negative but not significant effect on organizations' business performance. Stepwise regressions re-enforced the mentioned above results and indicated that Innovation and Creation variable has the highest effect on JPM organizations' BP. followed by R&D, while stepwise regressions excluded IPRs, because it does not have any significant effect on organizations' business performance. This result is matching with Sharabati, et. al. (2010) study which showed that R&D significantly affects organizations' business performance, while IPRs does not significantly (negative) affect pharmaceutical organizations' business performance in Jordan. Nesheiwat (2012) concluded that Jordanian IP laws lack a meaningful social and economic texture, and have failed to be evenly enforced in Jordan. Abu Ghahm, (2012) study results revealed that: The Jordanian experience in the pharmaceutical sector argues that a strong patent protection has not been conducive to the promotion of technological innovation and the transfer and dissemination of technology.

Study Conclusion:

The results of the study indicated a positive significant relationship between R&D and IPRs with JMP organizations' BP. However, the results showed that Innovation and Creation, and R&D have positive and significant effect on BP, while IPRs has negative but not significant effect on performance. The results also indicated that the managers in JPM organizations were having high preference of Innovation and Creation, and R&D indicators, while they have low preference of IPRs indicators. Moreover, findings suggest that the JPM organizations' performances can clearly explain productivity and profitability more than market valuation.

Study Recommendations:

Jordanian Pharmaceutical Organizations are future oriented and have great potential for further performance improvement. In the light of research results, the following recommendations can be suggested: First, the role of R&D and IPRs should be accurately defined in a formal way. Second, managers should build competitive strategies for managing R&D and IPRs. Third, the study recommends more co-operations among the JPM

organizations to get maximum benefit from R&D and to do joint R&D activity. Also it recommends improving the relationships between organizations and universities and other academic institutions to get benefit from basic research. Furthermore, considering global strategic options for alliances, licensing, agreements and joint ventures will help further performance development. Finally, because this study was carried on Pharmaceutical industry, further empirical work is needed to test the degree to which the findings can be generalized to other industries. Also, to generalize results of Jordanian setting to other countries, further empirical researches involving data collection over diverse countries are needed (especially Arab countries).

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