

**The impact and function of research and development on the activity of oil companies
Study the case of France's Total compound for the period 2015**

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Abstract:

This paper aimed to study the impact of job search and Alttaiwiraly Activity petroleum enterprises during the period between 2011 and 2015, was chosen as France's Total compound to test the variables of the study by measuring R & D activity calculates the input index and outputs, where includes output index of the proportion of the company's spending the activity of research and development as well as the ratio of the number of workers, research and development of the company's total workers, while the output index includes the number of patents obtained by the company as well as sales volume, the study concluded that the function of research and development a major impact on the activity of TOTAL Foundation and this is due to the size of incomes which increases year after year, as well as the number of patents that are also increasing year after year.

Key words: research and development, measurement of research and development, petroleum enterprises, sales volume, number and function of research and development workers.

Jel Classification Codes : M12, M21,O3, O32.

Introduction:

The search function and development of the most important functions within the organizational structure of any institution petroleum, they started the organization pushing for the expansion of the market and gain a competitive advantage, The importance of this function is shown by the amount of financial expenses allocated by each petroleum Foundation for this job, so you may find large institutions have a section actively research and development but the size of the financial allocations for this weak position, so that do not lead to help the organization to devise new technologies and the development and expansion in the market, function of research and development need to be important elements in order to add to the crisis of the activity of any institution petroleum provisionthe first of these is the size of the fiscal expenditure private assigned to this function, where through these financial expenses organization can conduct research and global experiences on any new technology, as well as the development and modernization of some of the products, and the second element is to this post workers where to be for those who are active in this function to be possessed of scientific and intellectual capacities what it takes to assist the institution in economic activity, it is during this preface we asked the following formats:

How much effect the function of research and development on the activity of petroleum enterprises?

To answer the following formats for the study were divided into the following points:

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First: previous studies of the subject.

Second: the theoretical framework.

Third: Applied aspect of the study.

1-the previous studies:

1-1 Mesut Savrul·Ahmet Incekara, article about*The Effect of R&D Intensity on Innovation Performance: A Country Level Evaluation, year 2015.*

This study aims to determine the effect of the intensity of research and development on economic performance and innovation of a country, with the reasons that led to this, and to reach the goals of the study the researchers display and analysis of the proportion of spending on the function of research and development for a range of countries from 2000 to 2012, the proportion of the number of researchers in the field of research and development in these countries of the same year, where researchers used the rate of spending and the number of researchers as an indicator of the inputs, while the output index was represented by a number of innovations.

Through these indicators They found a range of results, including:

*It has spent huge amounts of money for research and development, but the results and the number of innovations is weak and an example of Israel, and this is due to the shortcomings of the ruler goals.

1.2 Jackie Di Vito, Claude Laurin, article about* Corporate Ownership, R&D Investment and Performance of Canadian Firms.*

This research paper examines the relationship between corporate ownership and investment in R & D activity and its impact on the overall performance of companies And through the model on B: Performance and religion, as well as voting rights, age and cash and other indicators used in this study, which are considered indicators as ownership of individual elements in the companies, it is through these indicators is the study of its impact on investment in the function of research and development, where researchers reached in the end the results of the group, including:

* Results of the study showed that the ownership of the companies negatively affected by the intensity of R & D activity and thus the overall performance of companies despite the fact that many previous studies have shown that corporate ownership positively affect investment in the activity of the function of research and development and thus the overall performance of the company.

1.3 Abdellah Hajiheydari, Mohsen Dastgir, Asghar Soltani, article about* The Effect of Research and Development Costs on the Profitability of Pharmaceutical Companies, year 2010.*

This paper aims to examine the impact of research and development costs on the profitability of more than 20 institutions for the pharmaceutical industry around the world, the researchers used the model linear regression to test the variables of the study and of research and development costs as a variable independent, nonprofit institutions as the dependent variable, it is through the test variables of the study, the researchers reached the conclusion that spending on the function of research and development by the pharmaceutical industry organization, the beneficial by increasing the profitability of these institutions and the expansion of the market, as is the function of research and development as a tool to help organizations increase profitability and expansion in the market as opposed to a lot of managers who see it as an additional cost to the institution to win from behind.

1.4 Erkan ÖZTÜRK, Feyyaz ZEREN, article about*THE IMPACT OF R&D EXPENDITURE ON FIRM PERFORMANCE IN MANUFACTURING INDUSTRY: FURTHER EVIDENCE FROM TURKEY, year 2015.*

This study aims to clarify the impact of R & D activities on corporate performance, it was chosen as the group active in the field of manufacturing industries in Turkey institutions, using panel co-integration as well as the institutions and of spending on R & D activity volume of data and the

corresponding evolution of or reduction in the size sales, it is through the test variables of the study researchers found the results to a group including:

* That the activity and function of research and development had a positive impact on increasing corporate sales, where this effect may last for a full six months, and this is consistent with previous studies.

1.5 Wen-Shwo Fang, Hsiu-Kan Lin, article about* Do R&D expenditure, royalty and technology licensing expenses increase operational performance of the biotech industry in Taiwan?, year 2010.*

This paper aims to find out the relationship that combines the biotechnology industry, institutions, employers, and expenses of the license and return on equity with the expenses of R & D activity in the period between the years 1996 to 2007, and test variables of the study was the use of linear regression model, where they were to reach a group results, including:

* R & D expenditures have a negative impact on equity unlike the license fees.

* There is no effect of R & D activity on the market value in a short period of time.

*That the activity and function of research and development had a positive impact on the market value in the big period.

2-Theoretical framework:

We will look at this element to the concept of the activity and function of research and development, and also to the process of measuring research and development activities, and the way in which we can see the extent of the research carried out by the organization through the standard output quality process measurement is a necessary process of each institution, before addressing the measurement method R & D activities within the institution must show some special process measurement concepts.

2- 1 Concept of R & D activity

We will look at this element to the concept of research and development as a function within the organization.

Known for Economic Cooperation and Development (OCDE) and the function of research and development as: "The sum of the methodology and creative work aimed at increasing the knowledge to know whether the individual or enterprise culture, which are used in new applications"¹

Also known as the Arab Institute for Planning and function of research and development as: "Search in fabricated scientific knowledge and practical work on the development of the search results to be used in the generation of new products or the application of new production to serve the business goals fabricated methods"²

Manifested to us through previous definitions that the function of the research and development of a set of organized and systematic acts aimed at increasing the knowledge of the individual and the institution where the balance of this knowledge be used to issue new products or new ways of production to serve the business objectives of the institution .

2.2 Measuring the function of research and development activities:

It is measured in R & D activities in the institutions through two important indicators: Input Index and outputs.

2.2.1 Input Index:

$\frac{\text{Overall spending on the function of research and development}}{\text{Total sales value of the institution}}$

Is measured inputs R & D activities through two indicators, with the financial index and the index of human resources, the larger the ratio of these two indicators High humiliation on the effectiveness of performance, and whenever they have forgotten these two indicators Low humiliation on the poor performance.

-The proportion of total spending on research and development function: This ratio refers to the value of the total expenses for research and development on the value of sales.

The proportion of total expenditure on the function of research and development:

-The proportion of human resources: This percentage refers to the number of active workers in the function of research and development on the total number of enterprise workers.³

- The proportion of human resources:

$$\frac{\text{The number of active workers in the function of research and development}}{\text{The total number of enterprise workers}}$$

2-2-2Output indicator:

This index includes the results of the function of research and development where this indicator is measured from two factors:

- The number of patents: This factor includes the amount of invention patents granted to the Corporation during the period of its activity the more the institution of a large number of patents indicates that the quality of the completed research and the quality of performance as well..

-Sales value: the enterprise value of sales of the new product includes the worker, the more humiliation was a great value on the effectiveness of R & D activities⁴.

3-The practical side:

We will work in this element to study the effect of R & D activity on Total's global compound activity in the period from 2010 to 2015, a period where we will from which to answer the problem posed in this study.

3-1 The study sample:

Total's history began in the 1920s, with the establishment of the French company Palace Pétroles (CFP). At a time when the oil produced in the Middle East, Over the years the company has expanded internationally and versatile in the refining and marketing of petroleum products, and chemicals. After nearly 100 years of growth and development, and is now the world's leading energy company, at the forefront of innovation.

3-2 Measuring R & D activity:

Depends measuring function of research and development on two indicators input index includes total spending on R & D activity, as well as on the number of workers R & D activity of the total number of workers, while the output index includes sales volume and the number of patents.

3-2-1input index

Table n01 : Spending shows the R & D activity and the number of workers this function during the period from the year 2011-2015

years	total expenditure R&D	Number of workers R&D
2011	0.33	4.10
2012	0.34	4.23
2013	0.55	4.74
2014	0.63	4.82
2015	0.74	4.68

Source: from the preparation of the student depending on the company Total reports.

It is seen from Table 01 that the Foundation spent on the activity and function of research and development is growing from year to year, reaching the year 2011 0.33% of the value of sales ratio, as the year 2013 0.55% stood up in 2015 to peak at 0.74%, and this explains why the attention of the big Almassh actively and function of research and development, with which the institution has achieved large incomes and profits, see Appendix No. 01.

Clear interest as well as the organization and actively search function and development through volume of specialist workers, who are employed annually in R & D activity

As this table shows that the proportion of workers R & D activity is increasing every year starting from the year 2011 until the year 2015, where the percentage of workers R & D activity of the total workers the size of the institution in 2015 of 4.68%, the highest in six years, see Supplement No. 02 .

3-2-2output index:

Table n02: It illustrates the evolution of the size of income, as well as patents volume during the period from the year 2011-2015.

years	Revenues from sales	Number of patents
2011	166,550	250
2012	182,229	250
2013	98,779	250
2014	100,307	190
2015	96,019	200

Source: from the preparation of the student depending on the company Total reports.

Table 02 shows the evolution of the size of the incomes of France's Total Foundation from 2011 until 2015, as the number of patents obtained by the organization during this period shows.

Total revenues of France's Total Foundation in 2011, 166.550 million US dollars, rising in 2012 to 182.229 million dollars, where this rise is due to the size of the enterprise expenses on R & D activity, which is growing from year to year, see Supplement No. 01, so that the greater the volume of expenditure on R & D activity whenever led to an increase in the size of income, because of the accompanied by the increase of the emergence of new innovations and technologies to help the organization in the oil industry in stages, for example, the year 2011 the enterprise reached 250 patent terms through these innovations organization can increase the size of its production of fuels and therefore increasing the volume of sales, which in turn lead to increase the size of income.

Conclusion:

We have in this study testing the existing relationship between the function of independent R & D and the activity of the French company Total as the dependent variable as the dependent variable, and the goal of this test is to know How much influenced Activity French company Total function of research and development, through test variables of the study reached the following conclusions:

1- France's Total to compound her job very interesting research and development, and shows through the volume allocated for this function in addition to the number of workers R & D activity, which is growing from year to year financial expenses.

2- France's Total to compound earnings increase from year to year, and this is due to the company's intense activity in the hydrocarbon sector.

3- Through the previous two results we can say that the function of research and development had a positive impact on the activity of French Total compound.

In the latter it must be pointed out some recommendations that could open the prospect of large-researcher, including:

-That the institution under study to increase the size of the financial allocations directed to the R & D department, taking care to exploit the best way, because the result of these expenditures benefit the company through innovations and new technologies help the company expand in the market to counter the threat of competition, with the possibility of increasing sales volume and thereby increase the volume of revenues.

-aly Institution to increase the number of workers R & D activity, and be with scientific and technical qualifications specialist.

-Should also be on the company to open new centers of formation and development of assisted in the formation and preparation of the scientific elite of engineers and scientists, as well as help them to conduct the necessary tests and scientific research.

Appendixes:

Appendix01:

1-input index: total spending:

$$1-1 \text{ Year of } 2011: \frac{776}{231830} = 0.33$$

$$1-2 \text{ Year of } 2012: \frac{805}{234.216} = 0.34$$

$$1-3 \text{ Year of } 2013: \frac{1.260}{227.969} = 0.55$$

$$1-4 \text{ Year of } 2014: \frac{1.353}{212.018} = 0.63$$

$$1-5 \text{ Year of } 2015: \frac{1.068}{143.421} = 0.74$$

$\frac{\text{Overall spending on the function of research and development}}{\text{Total sales value of the institution}}$

$\frac{\text{The number of active workers in the function of research and development}}{\text{The total number of enterprise workers}}$

Appendix02:

2- human resources:

$$2-1 \text{ year of } 2011: \frac{4498}{96019} = 4.10$$

$$2-2 \text{ year of } 2012: \frac{4840}{100307} = 4.23$$

$$2-3 \text{ year of } 2013: \frac{4684}{98799} = 4.74$$

$$2-4 \text{ year of } 2014: \frac{4110}{97126} = 4.82$$

$$2-5 \text{ year of } 2015: \frac{3946}{96104} = 4.68$$

Referrals:

¹ Mardawi Kamal, Kamal Zemmouri, **system research and development in Algeria and problematic industrial integration Academic**, University Constantine- Algeria, unknown year p 2.

² Mohamed Sayed Abu Saud, **potential technological and economic growth**, Kuwait, the fifth issue Ninety, 2010, p 5.

³ Nizar Kazem Kikhany, **the potential of research and development in selected Arab countries and its role in enhancing competitiveness**, Department of Economics-Qadisiyah-Kuwait University, Issue 01, Volume 12, 2010, p104-105.

⁴ Nizar Kazem Kikhany, *ibid*, p104-105.

References:

- 1-Mesut Savrul·Ahmet Incekara, article about The Effect of R&D Intensity on Innovation Performance: A Country Level Evaluation, year 2015.
- 2-Jackie Di Vito, Claude Laurin, article about Corporate Ownership, R&D Investment and Performance of Canadian Firms.
- 3-Abdellah Hajiheydari, Mohsen Dastgir, Asghar Soltani, article about The Effect of Research and Development Costs on the Profitability of Pharmaceutical Companies, year 2010.
- 4- Erkan ÖZTÜRK, Feyyaz ZEREN, article about THE IMPACT OF R&D EXPENDITURE ON FIRM PERFORMANCE IN MANUFACTURING INDUSTRY: FURTHER EVIDENCE FROM TURKEY, year 2015.
- 5-Wen-Shwo Fang, Hsiu-Kan Lin, article about Do R&D expenditure, royalty and technology licensing expenses increase operational performance of the biotech industry in Taiwan?, year 2010.
- 6- Mardawi Kamal, Kamal Zemmouri, system research and development in Algeria and problematic industrial integration Academic, University Constantine- Algeria, unknown year, p 2.
- 7- Mohamed Sayed Abu Saud, potential technological and economic growth, Kuwait, the fifth issue Ninety, 2010, p 5.
- 8- Nizar Kazem Kikhany, the potential of research and development in selected Arab countries and its role in enhancing competitiveness, Department of Economics-Qadisiyah-Kuwait University, Issue 01, Volume 12, 2010, p104-105.
- 9- Annual reports of Total from 2011 to 2015.

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