

The Role of Intellectual Capital in the Development of Business Organizations: A Case Study of the IBM

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Abstract

The Intellectual capital is a contemporary topics, which focuses on energy innovation and creativity in when working in the organization, is the latest production which recognized as a key resource to create wealth and that his agents (intellectual capital) role in the prosperity of organizations as a result regarded as a competitive advantage and great wealth and factor the survival of her, making intellectual capital management an urgent demand in light of the Organization's presence in an environment of rapidly change. We came through this research that intellectual capital is the essential foundation for the construction of economic progress in general excellence and organizations in particular.

Key words: intellectual capital, human capital, modern organizations, knowledge management, IBM Corporation.

I. Introduction

The intellectual capital is considered the core resources of modern companies in the knowledge economy, it is another form of recognized capital in the new economy, and there is no better case study than IBM when it comes to show how the organization matches the changing technology continuously through its capital intellectual property, and how they had been able to face various challenges over the previous years through the investment of the assets of the intellectual property.

Based on the foregoing, the features of the problematic search shows within the following question:

- How could IBM create a wealth the by intellectual capital ?

In order to answer the search problematic we split it into three themes as follows :

The first theme: intellectual capital, **The second theme:** overview of the IBM, **The third theme:** The study and evaluation of intellectual capital in the IBM.

II. The intellectual capital conceptual framework

No organization, whatever its size is, can achieve competitive advantage without the intellectual capital, after the material resources had been the real wealth to organizations, the intangible capital (intellectual) became consequently a focal point for each modern strategies in managing business. The interest in intellectual capital is one of the topics that has emerged since the early 1990's, when Ralph Stayer Johnson Philly Foods Director announced the word "intellectual capital". He said: "In the past the natural sources were the most important component of national wealth and the most important assets to the companies, then the consisted capital of cash and fixed assets has become the most important components of companies and community, but now intellectual capital has replaced the natural sources, The cash and the fixed assets, which is the most important component of the national wealth and the organizations' assets.¹

1) The intellectual capital definition

There are several definitions to the concept of intellectual capital, including:

The first definition: Stewart known as a researcher defines the intellectual capital as the knowledge that can be employed. Knowledge is not considered a capital unless it had been found then employed so that it can be used for the benefit of the company, the worker in a factory may have a great idea to improve production, but that idea remains useless if it is not taken into practice.²

The second definition: Ulrich sees that intellectual capital is the set of available skills in the organization whit knowledge, that makes it a universal organization through its response to the customer's needs, and the opportunities offered by technology.³

The third definition: The researcher **Spindersees** the intellectual capital in the institution elite workers at all levels, this elite has the capacity to handle flexibly the productive developed system and has the ability to re-install and set up this system in a distinct way.⁴

¹ *High-Abdul Hamid Aref, effective training in the development of intellectual capital with application on the center to support the adoption of the resolution in the Arab Republic of Egypt, available on the web site: <http://sams.edu.eg/crdc/item/174-effective-on-10-12-2015>*

² Stewart.T, **A intellectual capital: the new wealth of organization**, New York Dovbleday, 1999,p57

³ Ulrich, a **new manages for human resources**, Harvard business review January-February, 1998,p02.

⁴ Azawi Aamar, BoubekourBenbouzidSaih, **therole of intellectual capital in**Enhancing feature

2) The components of intellectual capital

Many researchers differed in identifying the components of intellectual capital, this difference is due to their way of thinking and studying the topic for example (Sveiby) has split the assets of intellectual capital, into¹ :

First: the capital internal structure assets .

Secondly: the capital external structure assets.

Thirdly: the capital human structure assets.

Table 01 shows the intellectual capital assets division as follows:

Table No.(01): components of intellectual capital

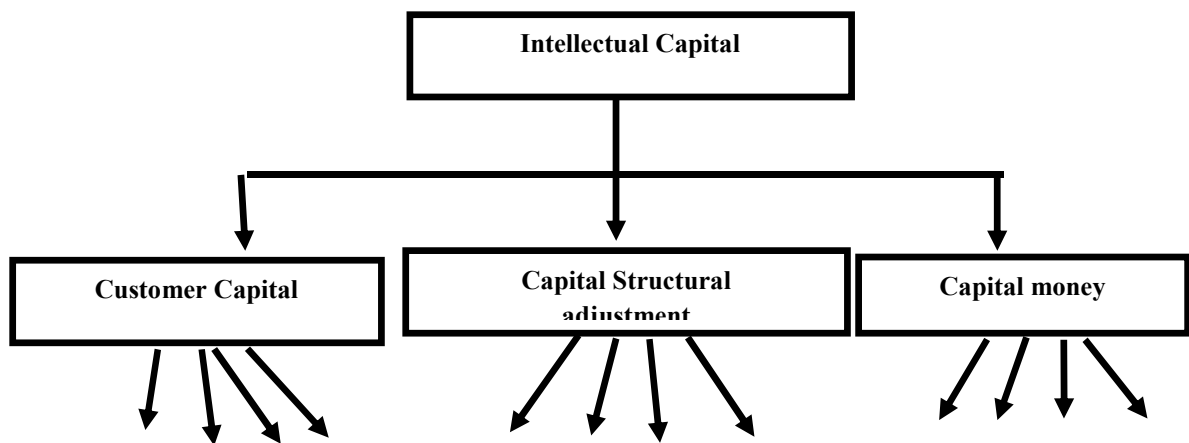
The type of capital	The Components
The external structure	Relations and alliances with customers, partners, suppliers, investors and strategists , the local community and all that concerns reputation and distinction .
Human Structure	Capacity-building, knowledge, skills, individual and collective experiences, and solving problems capacities remain with the individuals in the company.
The internal structure	Processes and regulations that raise competition and information technology, the models of how to do the work, the data bases, documents, copyrights, and other encoded knowledge .

Source: the Verna-Park (Allee, The Future of Knowledge, Butter orth Hienemann, Amsterdam, 2003, p. 158

Brooking 1997 also divided the intellectual capital into four elements :²

- **Market assets:** these include all abstract aspects associated with the market such as: brands, customers, distribution outlets of the accumulated commands ;
- **Human assets:** It is the accumulated experience, and innovation capabilities and solving problems and indicators on the individual's ability to perform in certain positions such as working groups or work under pressure.
- **Intellectual property assets:** these include trade relations, trade secrets, patents for invention and rights to knowledge and education.
- **Infrastructure assets :** contains all the elements that determine how the Organization works, such as the Organization culture, and risk evaluation methods sale management methods , the financial structure , clients databases the rules and communication systems.

The most common division classified intellectual capital as shown in the figure below:



working individuals)) (Regulatory organization capacities) (the organization's relations with customer))

Figure (01) : components of intellectual capital

Source: HusseinAglan Hassan, strategies for knowledge management business organizations, enrich the publication and distribution of the first edition, Amman, 2008, p. 133.

The skills of the experiences to know the invention patent information on the Rights of the assets of satisfaction loyalty to maintain cooperation

competitiveness, studies magazine Economic branch University of Amman Dif Allah Hasan Thleiji, Laghouat", No.15A, January 2011, p. 144

¹ Abdul Sattar Hussein Yusuf, study and evaluation of intellectual capital in companies , is available on: <http://www.hrdiscussion.com/hr169> Date of access 17.12-2015

²Ahmed Mr. Kurdi, intellectual capital, is available on: <http://kenanaonline.com/users/ahmedkordy/> 1 On (17.12-2015)

Through the figure, it is clear that:

A) Human capital: is the tacit knowledge, expertise and skills existing in the employers minds, and it is an income supply for the Organization but it does not belong to her.¹

We wonder if the workers information are considered an intellectual capital? To answer we say: no, workers information and skills are not an intellectual capital as far as they did not apply to two criteria:²

First: Distinct: None have those skills or the same information in competitors.

Second: To be a strategic: Should have a real value to the Organization and its customers.

Both criteria help the Organization to know which of the human resources represents an origine to the organization by contributing to its intellectual capital, and which represents a burden that must be disposed of.

B) Capital structural adjustment (Structural Capital): It makes honest knowledge that is retained in the Organization procedures and structures; it represents all the values which remain in the Organization when all is off at the last day work.³

M.W. McElroy refers to capital structural adjustment by saying that it is all things that support human capital but still remain in the Organization when the individuals leave their organization to go back home, and because the capital structural adjustment is described as correct encoded knowledge, it represents what exudes from individual experience and knowledge to transfer it to databases, work proofs and procedures and software remain in the organization .

The distinction between human capital and capital structural adjustment is that the human capital is increasing in use and is self-generate. Unlike the capital structural adjustment whose explicit knowledge of procedures, rules and regulations is out of date structural adjustment that its knowledge become obsolete explicit knowledge of procedures , rules and regulations.

C) **Customer Capital :** It appears in the value of the institution's relationship with its clients.⁴

III. Overview of the IBM

IBM is one of the old companies in the field of computers, was famous of big computer industries and was dealing with governmental authorities and giant companies in several countries. At the beginning of the 1980's it entered the world of small computers, it produced and developed the device (PC), the abbreviation of personal computers.

1) The IBM concept and definition :

IBM is a global multinational force operating in the field of manufacturing and developing. The word IBM computers and softwares. It is the abbreviation for International Business Machines. IBM has been engaged in this activity since 1911. Its head office is in Armonk city in New York, The United States of America.

The trademark of the company is in the following symbol:⁵



The company founder Thomas Watson had termed this name to be more brilliant than the former director of the National Cash Registers, giving the international character to his company thus called it the International Business Machine.⁶

To combine his previous company machines he recorded The National Influence and the company has been renamed International Business Machines.

The company began in 1911 with the integration of three companies for electronic industries. In 1924 it started to use the name of IBM. In 1937, the company began producing tools for the government to organize the staff; during the Second World War it translated the army codes.

In 1969 the company helped the NASA by providing them with a computer to control their first trip to land the people on the moon, sending the first vehicle in a trip to Mars.

In the period between 1964 and 1978 the company produced the first group of computers IBM System/360 to large companies and scientific research.

On August 12th 1981 IBM stunned the world and produce the first personal computer. It was the first

¹Jean-yvesprax, **le guide du knowledge management**, dunod, France, 2003 , p13

² Thomas Stewart: **of intellectual capital and wealth of new organizations**. The Summaries of the magazine, the issuance of the Arab Company for scientific information (radiation) Cairo. The fifth year, No. 19. 1997. R3

³MarkW.McElroy, **The New Knowledge Management**, Butterworth Heinemann, Amsterdam, 2003,p 170

⁴AmritTiwana, **gained through community-based des connaissances**, Campuspress, France, 2001 , p 326

⁵ Available on the <http://www.ibm.com/us/en/> Date of access 10 - 12 - 2015.

⁶ Available on the <http://www.3kfk.com/page-471.html> Date of access 10 - 12 - 2015.

device produced by the company on behalf of the IBM PC 5150; the company achieved a great success because of the success of the new invention.

In 2005 the company sold the PC and laptop division to Lenovo Company to devote more time in the producing the mainframe, space and scientific research equipments.

The IBM message is to be the first company in the world to offer their clients integrated information systems. When one of the managers in the company was asked "what kind of products do you sell?" His answer was "we do not sell products but we sell solutions for customers." This answer is a strategic approach to each institution trying to determine the area of its work, is to make the consumer the centre of its concerns.¹

2) The IBM emergence :

The company did not start of such magnitude that we see today but started small, like all other companies. The company's founder is Thomas Watson of Scottish parents. IBM was born officially on June 15th, 1911 in New York and carried the name of CTR²

3) The IBM success story

IBM dominated computer industry for several decades thanks to the major computer systems that were used by each institution and governmental agency, but with the end of the 1980's decade, other companies such as Amdal and Hitachi started providing alternatives major computers at lower prices, while the other companies such as Dell and Compaq controlled the trade of personal computers gradually. Meanwhile, the price of IBM shares degraded to (12) dollars per share in (1993) after it was discussed at a price of (43) in (1987).

4) Changing the culture of IBM company:³

Gerstner says that in the first two years has pentnearly (40%) of his time in holding direct meetings with staff in the company for the purpose of urging them, mobilizing and making them feel the need to provide a short-term plan to be implemented, he refers to it by saying: "I was very rude, very franc, very honest, I have affected their pride, their competitive motivation, and their economic necessities". He told them that the time has come to return to the basics such as: talking to customers, selling products rather than just developing them. He rebuilt the culture so as it focuses on performance.

In 2001 IBM was described as accompanying the largest full transformation witnessed by the century, its net revenues rose to 7.7 billion dollars in 2001 after incurring a loss of 8.1 billion dollars in 1993. The revenues rose to 85.9 billion dollars after they were 62.7 billion dollars, and about (100,000) new staff were employed over the past seven years.

In the same year, Queen Elizabeth II gave Gerstner the knight of the British Empire because of the efforts he made in the field of general education; in addition to his work achievements.

IV. The intellectual capital study and evaluation in the IBM

1) Interest in the intellectual capital in IBM company⁴

Like any sales team anywhere in the world The IBM Software Company sent its sales members to the banks in the morning and the same members to hotels in the afternoon so as to persuade those institutions to buy IBM computers but the sales' level was unsatisfactory.

The company sales men were perfectly aware of the marketing and sales art but were not enough experienced in hotels and banks working system. Their role was not to know these areas as much as their full attention on the sales distribution and increase, advertising and marketing of the product that is why the company took a different step, it appointed sales employees with bank work experience (already worked in this sector) to deal with banks and convince them to buy the company produced computers. It also appointed staff with expertise in the tourism and hotels areas to deal with hotels, tourist facilities and persuade them to buying. Once those employees (with experienced relations in their fields) work in the company, it has achieved a big jump in sales in the same period of time.

IBM adopted an organizational construction model, it developed its operations in the form to :⁵

- Facilitate the transmission of information between the departments and the workers.
- The per worker does more effective and expeditious integrated operations.
- Activate information system thanks to the Indian entrance to abstain the company linking machines costs in order to transfer documents quickly.

2) Restructuring in the IBM

¹ Ahmed Maher, **the director guide step by step in the Strategic Management**, University of Casablanca, Alexandria, Egypt, 2005, p.57 disposition.

² Available on [Http://startwithgoogle.blogspot.com](http://startwithgoogle.blogspot.com) Date of access 14 - 12 - 2015.

³ Available on [Http://startwithgoogle.blogspot.com](http://startwithgoogle.blogspot.com) Date of access 14 - 12 - 2015.

⁴ Available on <http://www.arageek.com/> (2012/08/12/crazy-marketing- Date of access 14 - 12 - 2015

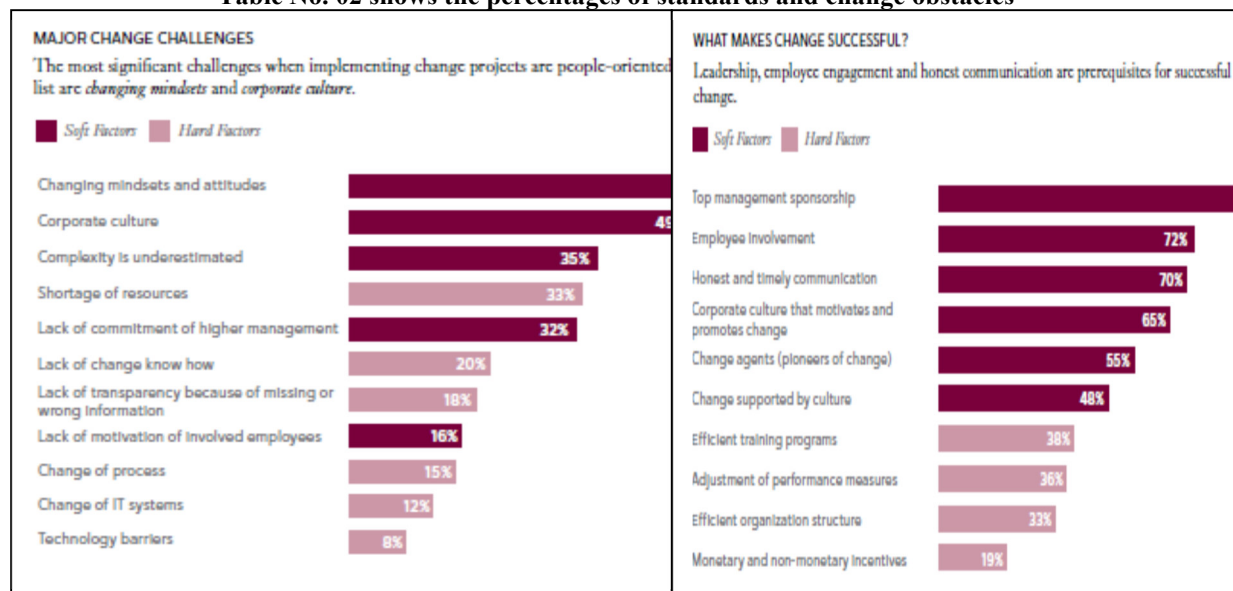
⁵ Abdel Wahab, Mohammed, **re-engineering of the administration**, intervention within the 8th annual conference, the Center and endorsed the service management consulting firms and Administrative Development, Cairo, 1998 is available on the web site: <https://ar-ar.facebook.com/almoahasb1/>. Date of access 10-12-2015

Stuart says "to change the tendencies of thousands of people and their behavior is extremely difficult, you cannot simply say speeches or reviews of a new doctrine of the company and announce that a new culture had replaced the old one, and you cannot impose and engineer it, the only thing you can do is to create the appropriate conditions for the transformation and the motives."¹

As for the process of changing he says: "re-engineering is similar to the process of putting out the fire by the hammer "

The following table shows the study conducted by the IBM on the process of change:

Table No. 02 shows the percentages of standards and change obstacles



Source : Federal body of human resources, the **strategies for change at the launching of the Program of rewards and praise**, monthly message Club Human Resources No. (3), the State of the Arab Emirates available on :<http://www.fahr.gov.ae/portal/assets/e9ed079> on 12-28-2015

The Source: www-07.ibm.com/au/pdf/making_change_work.pdf Date of access 22-12-2015

Managed by IBM that Thanks to the Re-engineering of procedures the IBM could achieve areal improvement reducing time, cost, and improving quality through:

A- The method of innovation:

IBM receives annually a billion dollars because of the revenue implications of the patents, and the cost of its intellectual capital investment is high, this is justified because the sustainability of the organizations depends on it. IBM has published ² about 4 thousands of technical invention in 2009 instead of seeking to obtain the protection of patent, allowing others inventions freely. The company released such publications as part of its commitment to strengthen the quality of inventions. As a result patents are freely available in a public database, patent offices can mention them to determine the patent applications field. The company's efforts in publishing can drive more innovation which allow more dynamic business growth.

It is noted that the intellectual property and patents experts in IBM have used and developed the patent Software more than a decade to help analyzing, evaluating and managing efficiently its collection of more than 30,000 patent in the United States. Thanks to the patent management software and the prestigious experience the company has, The IBM could balance its patent strategies and intellectual property with its business needs to get new ways to extract more value from those patents.

B- The management of talent

Over than 19 years IBM lead in the number of patents this critical indicator indicates the success of the company in conserving the innovation, the following shape explains :

¹ Available on the web site: <http://elenburg.pbworks.com/f/Review-Elephants.pdf> Date of access 10-12-2015

² Mahmoud al-Russan Mahmoud Mohamed Al Ajlouni, **the impact of intellectual capital and creativity in the Jordanian banks (field study)**, op., CIT.44.

19 years of IBM patent leadership

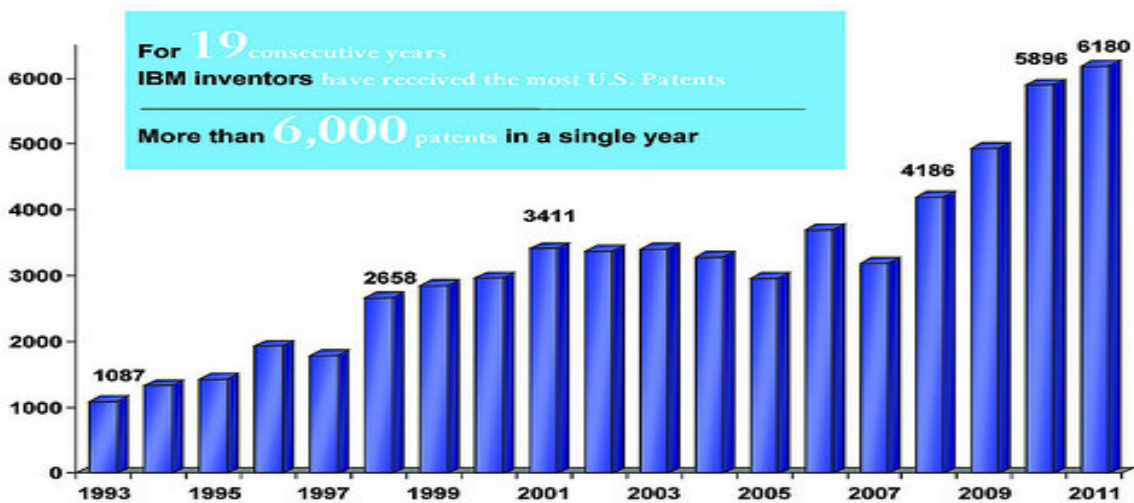


Figure 02: IBM Evolution of patents over the 19 years
 Source: <http://www-03.ibm.com/press/us/en/pressrelease/36463.wss>
 Date of access 22-12-2015

Through the figure note that IBM managed to achieve more than 6000 Patent for 19 years and this what confirms its success in the management of intellectual capital.

In May 2014 IBM announced a package of talent management software (IBM Kenexa Talent Suite) like (SaaS) service, which allows the human resources chief executives and senior management to get statistical visions that can be activated in decision-making through daily shared enormous data capitalists thus institutions can simplify the recruitment processes, renew it and give it more precision to increase the working force productivity and connect the workers in a way that would affect the activity results .

The following format shows:



Figure 03 : solutions to the program "kenexa talent management" to activate the work life
 Source: <http://fr.slideshare.net/ibmcanada/a-smarter-workforce-cloud-session-4-edmonton-and-ottawa-benoit-hardyvallee> Date of access 09-12-2015.

Human resources specialists through the use of IBM Kenexa Talent Suite can examine the huge quantities of data about the workers - such as the practical experiences , social interactions, the evolution of their skills and

¹ Available on: <http://news.tazbeet.net/2014/04/30/%D8%A8%D8%B1%D9%86%D8%A7%D9%85%D8%AC-> Date of access 10-12-2015

personal interests - to determine the specifications that lead to the success of the owners of the excellent performance, thus institutions and teams work can use these models to follow up candidates through more social marketing published on the sites of employment and social development .

3) Evaluate the IBM

IBM is still considered one of the most prominent workers in ICT sectors despite the retreat of its role in the past decades, which represent the company's abandonment of many of its sections in the forefront personal computer devices section. It is noticeable in these days that "Big Blue "was the company nickname that was in the past could improve its financial consequences in the shadow of the financial crisis prevailing in the current stage. ¹

And the following figure shows:

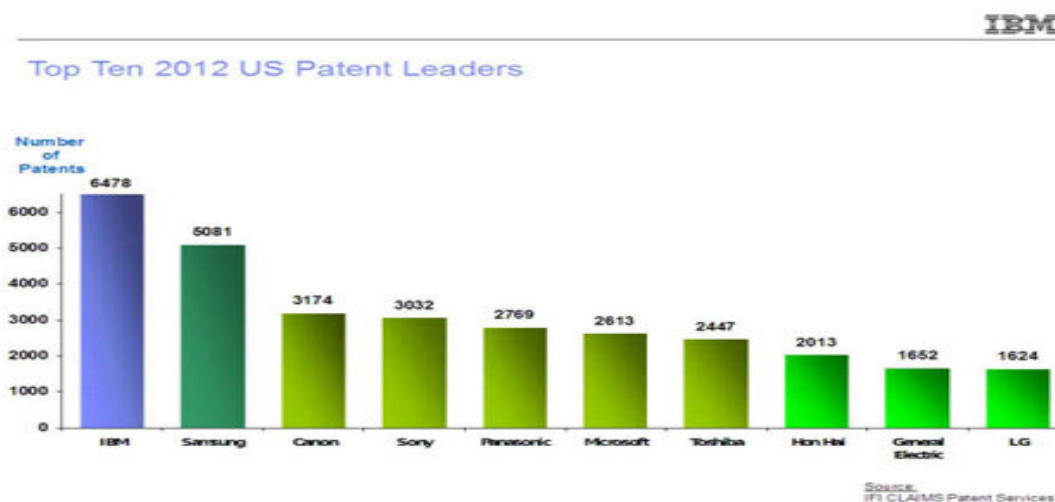


Figure 04 : The order of international companies on the basis of the number of patents

Source : <http://www-03.ibm.com/press/us/en/pressrelease/36463.wss>

Date of access 09-12-2015.

Note through this form that in 2012 IBM company issued about 6478 patent, this record number obtained by the company has become a reality thanks to the contribution of more than eight thousand Inventor working with it in the Forty-six American state and thirty-five country in the world.

4) The results of the recent IBM

IBM declared in the end of 2013 that the workforce of 431,212 employees is decreasing slightly down 434,246 employees in 2012. No company reveals the total number of its employees by the end of 2014 last year. the company worked over the past several years on the restructuring of the over ²40,000 of its workforce, where demobilized 22,832 workers in some areas, while other were employed in the business sector.³

According to some workers, the IBM will proceed in the campaign of the demobilization of the number of its employees during this year (2015). Now the number of the supposed staff to be abandoned is not clear, the company did not comment yet on the reasons for demobilization, in return, IBM intends to employ another number during the coming period to fill the new posts commensurate with their activities developed in new areas, such as cloud computing, information systems analysis, security protection programs, sacks and exceeds the number of those to be demobilized.

The company asserts that it has 15 thousand new jobs vary according to its needs and to develop its work and activities in the coming years.

Observers say that the basic working group to promote profits to the IBM has adhered to follow a strict policy for the mitigation of the expenditures and reduce labor costs with the increase of the work to be accomplished will automatically transfer centers of production to the places where costs reduced costs.

The IBM company announced its quarterly growth earnings during the IV quarter of 2014 backed up with the demand for its products where this estimated profits rose 5.81 dollars per share compared with the expectations the profits indicated by 5.41 dollars per share. ⁴

The future will not necessarily be prosperous for IBM that may find it difficult to maintain the positive results in the foreseeable future: the currently bad economic situation caused prices fierce war the company may not be able to lower their prices now; on the other hand, the IBM had renounced all unprofitable branches to mean

¹ Available on site: <http://www.accemagazine.com/article.ph6>Date of access 10-12-2015.

² Abdul Fattah Boukhamkham .Management THE competitive cooperatives in the building of the competitive advantage of the international forum on the knowledge economy and the University of Constantine - November 2005

³ Available on : <http://www.afrigenews.net/content/ibm-%D8%AA%>Date of access 11-12-2015.

⁴ Ibid.

that they can no longer continue and strengthen policy of austerity and rationalizing expenditures.

In other words, IBM achieved miraculous result in improving their results and the rationalization of its administration in a time most other firms suffered from the repercussions of the current financial and economic crisis, led to an increase in the prices of its shares in the financial markets and improve its financial position but that does not mean that IBM returned to its previous position as the first company in the world of information and communication technology, and it does not necessarily mean that it is able to maintain this good situation in the foreseeable future, but I mean, IBM has learnt how to get through a difficult stage better than others.

In summary , the IBM proved that it still know how to act under the most difficult circumstances, they have so far failed to prove that it is capable of restoring its previous position as the strongest in the ICT sector. Few years will indicate whether the company returns to what it was, or it is turned to a standard computer company only.

V. Conclusion

Through the above, we can conclude that the IBM company had been able to achieve success through the optimal use of the inherent intellectual property, the nature of the activity of the company depends mainly on the innovation and invention , that imposes providing human resources that possess the high knowledge and experience, in addition to the management of these resources effectively, this study demonstrated the strategy of IBM related to intellectual capital, which depends on the renewal and change in keeping with the requirements of a combination of abandonment of some staff, the creation of new posts commensurate with their activities developed in new areas.

Our Contribution to the elaboration of the development of our research suggest the following:

- The maintenance of intellectual capital as wealth owned by the organizations because they contribute to an increase in the market value.
- Work to attract and stimulate industry of intellectual capital and support its sustainability and its recurrence.
- Attention to studies and research on the head of intellectual capital, in order to learn more about how to invest in a manner that contribute to maximize the market value.

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