Science Journal of Business Management
ISSN: 2276-6316
http://www.sjpub.org/sjbm.html

Published By
Science Journal Publication
International Open Access Publisher

Research Article **Volume 2012 (2012), Issue 2, 15 Pages**

Competitive Intelligence: concept, context and a case of its application

Tsokanas Nikolaos (researcher) ,Fragouli Evangelia (Visiting Lecturer, Hellenic Open University)

Accepted 15 February, 2012

Abstract
This paper focuses on the concept and context of Competitive Intelligence (CI) as well as its application in the Pharmaceutical Industry. Extensive literature is referenced for the appropriate and most accurate definition of CI and a thorough overview of the Pharmaceutical Industry is performed, concentrating on its financial aspects. Finally, the paper analyzes the uniqueness of the Pharmaceutical Industry as opposed to other industries and reviews the presence of CI in this industry.

Keywords: Competitive, Intelligence, Pharmaceutical, Industry, financial.

Introduction

Competitive Intelligence

We live in a world driven by hyper-competition where the supply of businesses exceeds the demand. In order for an organization to survive in such an aggressively competitive environment, a better understanding of its competition and competitive forces that affect its success is required. Companies should know how to remain competitive and how to anticipate and react to changes inside and outside of their industries. In order to manage such an achievement firms should have a process in place for turning data into actionable intelligence, from which strategic and tactical decisions can derive. The utilization of such knowledge is known as Competitive Intelligence (CI[1]).

The Strategic and Competitive Intelligence Professionals (SCIP) organization, as cited in Sharp (2009), defines CI as "*a necessary, ethical business discipline for decision making based on understanding the competitive environment*" (p.17). Moreover, CI is a management discipline that enables executives to make smarter, more successful decisions, thereby minimizing risk, avoiding being blind-sighted, and getting it right the first time. Executives are always surprised when their decisions or strategies do not produce the desired results. The CI process enables executives within every area in their firms, from R&D to divisions that invest in tactics and long term business strategies, to make the correct decisions[2].

Firms often get surprises indicating early warnings for business change. Companies that are able to identify such changes early, have the opportunity to assess them, think what they mean for their business and take appropriate actions, if necessary. Effective CI is a continuous process that involves the gathering of raw data, matching of data to create information, and the analysis of the information to generate actionable intelligence for the decision makers[3].

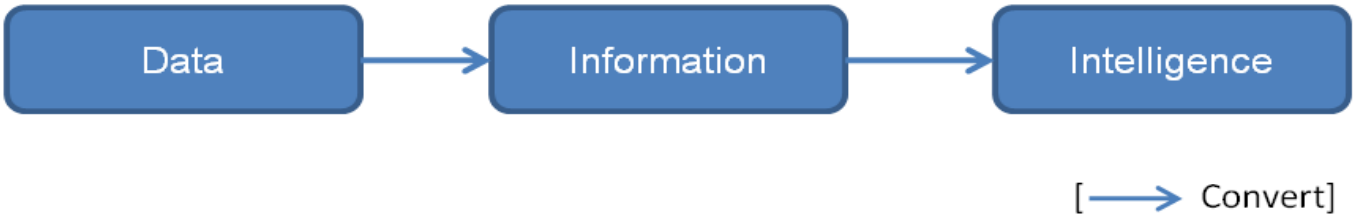

Figure 1: The process of Competitive Intelligence
[Source: Evans M.H., 2011]

Furthermore, CI is not a process that attempts to collect, analyse and convert information to intelligence and provide management with the exact answer they are after, but it attempts to collect enough information to draw a reasonable conclusion for immediate action. CI's objective is to provide management with intelligence they can act upon[4].

Priporas (2005) mentions, that CI can be considered as both a product and a process. The product is data on the industry's competitors that is used as the foundation for action. The process is the methodical acquisition, analysis and evaluation of data for competitive advantage over known and potential competitors. This data helps executives, to understand their competitors and make strategic decisions . For the purpose of this study, CI is approached solely as a process.

The evolution of Competitive Intelligence

CI is becoming a fundamental area for more and more large organisations. The development of CI has been stimulated by global competition, the emphasis of quality management and the realization by managers that actionable intelligence can be a key competitive advantage[6].

Corresponding Author: Dr. Fragouli Evangelia (Hellenic Open University, Greece)
Email: fragouli_evaggelia@yahoo.com

The field of CI exists since the middle of 1960, only involving CI in the collection of competitive data. According to Prescott (1999), CI was primarily a library function and the involvement of top management in CI towards the decision making process was limited[6].

Bergeron (2002) presents Michael Porter's work on strategic management as the catalyst that fostered renewed interest in CI as a concept and practice in the early 1980s . During that time, significant emphasis was given on the analysis of the industry structure and competitors, making the transition from data collection to data analysis apparent. Moreover, Prescott (1999) mentions that this transition faced three challenges. Firstly, the work that had been performed before the 80s gave employees in leading edge firms the advantage to pilot the creation of business cases for CI in order to illustrate to top management what CI was, why CI was essential and how CI could assist in decision making. Secondly, workers in appeared to be more interested in espionage and breaches than the CI process, and thirdly the challenge for developing skills in order to transform data into intelligence[6].

During the last decade, an increased emphasis has been given to the strategic implications of CI efforts. In most cases, these efforts require the involvement of other initiatives such as quality improvement. The usage of CI within organizations has significantly contributed towards the sharing of ideas, addressing competitive dynamics, identifying new opportunities and avoiding surprises[6].

The development of Competitive Intelligence within organisations

The presence of CI in a firm as a formal activity is essential, since organisations need to be aware of their competitors' behaviour. It is therefore, necessary to understand the forces that drive companies to be knowledgeable and analytical towards competitors and dedicate resources to practise CI. However, having access to information on competitors is not the same as structured intelligence programs . As it is explained later on, CI is not a process that occurs as a single step, but it is performed over a period of time. During this time there is growing awareness of the requirements to have a competitive strategy, which is as important as an organisation's need to have a strategy in place for its customers. Figure 2 illustrates the three stages companies go through in terms of their use of CI.

A firm enters the first stage, the *competitor awareness stage*, when the company is formed. In this, the company identifies its key competitors, their products, their prices, the market sectors they service and their employees. As companies grow, they enter into the second stage, the *competitor sensitive stage*, where they need to be aware of the damage competitors can inflict on their business and the need to gain market share by competing more effectively. Finally an organization enters into the third stage, the *competitor intelligence stage*, when it needs resources to study its competitors and anticipate their actions[8].

In addition, it should be mentioned that many organisations recognize the need of CI, but some have no knowledge of how to fulfil it; others collect information but they do not know how to create competitor strategy[8].

Competitive Intelligence and its relation to other fields

Sharp (2009) states, that although data and information can be simple and basic, CI is neither of them2. CI requires analysis and human thinking to put data together to produce information and generate intelligence. Hence, it is not a task that anyone can simply perform. It requires maturity in thinking and business experience in order for someone to assess and determine where the CI process fits in with the strategy of an organisation.

As mentioned above, CI is a continuing process that is carried out as part of the business strategy. Some firms may use CI on an ad hoc basis, while other organisations that conduct CI regularly to gain the greatest benefits. The CI process should be updated with new data and information to support the new decisions and changes in strategy. Failing to do so, could risk intelligence being undermined. Effective CI is the result of good decisions, which are the characteristics of good leaders who are expected to think broadly and predict outcomes[2].

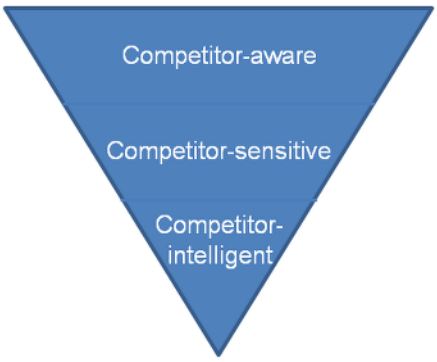

Figure 2: The path to CI
[Source: West, 2001 (p.26)]

Ethical Intelligence

Various definitions exist in the literature about the term ethics. Ferrell (2008), defines ethics as an "*inquiry into the nature and grounds of morality where the term morality is taken to mean moral judgements, standards and rules of conduct*" (p.7)[9]. In addition, ethics has been mentioned to be the study and philosophy of human conduct, giving an emphasis on determining the right and wrong. One difference between an ordinary decision and an ethical one lies in "*the point where the accepted rule no longer serves, and the decision maker faced with the responsibility for weighing values and reaching a judgement in a situation which is not quite the same as any he or she has faced before*" (p.7)[9]. Another difference relates to the amount of emphasis that decision makers place on their own values and accepted practices within their company. Consequently, values and judgement play a critical role when we make ethical decisions. Decisions need be ethical and consequently CI is important to follow ethical policies, especially since "*issues of ethics are less clear cut than adherence to laws*" (p.16)[10].

Hence, the organisation of Strategic and Competitive Intelligence Professionals has developed its own code of ethics to be applied to and followed by all its members[3].

- *"To continually strive to increase the recognition and respect of the profession"*
- *"To comply with all applicable laws, domestic and international".*
- *"To accurately disclose all relevant information, including one's identity and organization, prior to all interviews".*
- *"To avoid conflicts of interest in fulfilling one's duties".*
- *"To provide honest and realistic recommendations and conclusions in the execution of one's duties".*
- *"To promote this code of ethics within one's company, with third-party contractors and within the entire profession".*
- *"To faithfully adhere to and abide by one's company policies, objectives and guidelines".*

Ethical damage should not occur within the intelligence cycle and CI professionals must apply ethical standards when researching for data, gathering intelligence information and analysing the information to support decision makers. However, ethical damages do occur within the intelligence cycle and there is rarely any effort to communicate the internal ethical obligations of the analyst to their CI clients[11].

Good ethics practices could also be proven very beneficial both from a psychological and a financial perspective. With a strict code of ethics enforced, the employees of a company are never in doubt where the boundaries lie, and therefore the element of stress is eliminated. Moreover, a company that values and enforces ethics strengthens its credibility and enhances its public profile. Finally, one of the most important reasons why a code of ethics should be followed by all companies is cost. Legal proceedings, court cases and lawyers fees can be very expensive[12].

Ferrell (2008) also points out the importance of ethics and brings the perspective of profitability into light. According to several studies in the US, companies that commit to ethical behaviour or emphasize compliance with their code of conduct have better financial performance. In addition companies that are perceived by their employees as having a high degree of honesty and integrity have a much higher average total return to shareholders than did companies perceived as having a low degree of honesty and integrity[9].

Based on the above, one can safely state that good ethics goes beyond proper behavior. Therefore, ethical CI can be the vehicle for achieving higher profitability and a competitive advantage.

The terms "intelligence" and "information"

People often get confused with the term "intelligence" in the context of CI, due to the existence of related fields, i.e. business intelligence (BI), market intelligence (MI), knowledge management (KM) and environmental scanning (ES).

BI is not the same as CI. When talking about BI, people refer primarily to data mining, a process that is highly driven by information technology to gather sale statistics, customer satisfaction, and historical/current views of business operation, rather than providing a wide understanding of quantitative and non-quantitative issues[2].

Lackman (2000) is referring MI as the information relevant to a company's market which is generated to make accurate decision making in determining market opportunity and market penetration strategy, rather than in any other business aspect. Furthermore, ES refers to the internal and external information that is required to keep a firm aware of opportunities and threats[13].

Sharp (2009) argues that there is a strong association between CI and Knowledge Management (KM) since both fields rely on information. However, KM focuses more on the information that exists within an organisation while CI obtains information from both the internal and external environment of a firm. KM is similar to CI, but KM cannot replace CI as it is not research. However, KM must be part of the overall CI process for capturing and sharing relevant information[2].

The Intelligence Cycle

Sawka (2008), states that effective CI programs are typically composed by a number of projects, such as market analysis, war games, other, as well as ongoing intelligence activities, including the collection and reporting on specific competitors and the monitoring of the marketplace for early warning indicators. These ongoing activities are part of the traditional intelligence cycle, the process by which information is converted into intelligence, and is made available to decision makers. The main scope of the intelligence cycle is to provide useful knowledge to the decision makers in advance of their decision. The intelligence cycle, illustrated in Figure 3, has four stages: planning & direction, collection, analysis & production and dissemination[11].

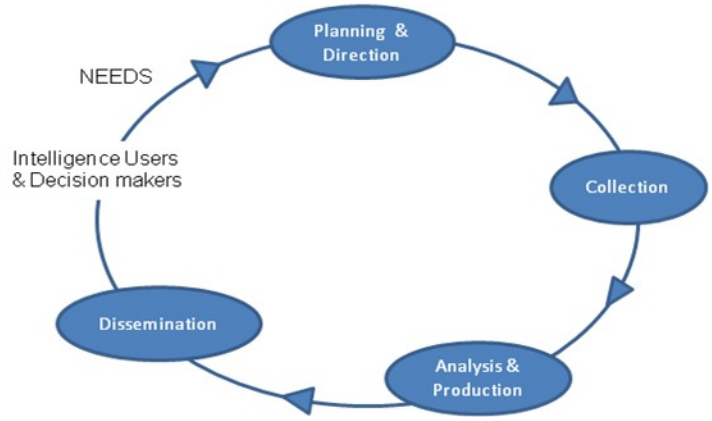

Figure 3: The Intelligence Cycle
[Source: Sawka, 2008 (p.34)]

Planning & direction: This is the first stage of the intelligence cycle, which requires the identification of the key intelligence topics and the determination of the course the CI practitioner should take in completing the analysis. The planning & direction step can also be thought as the other end of the intelligence cycle, since once the desired intelligence is delivered to the decision makers the subsequent actions will prompt further intelligence requirements[12].

Collection: The collection phase involves the gathering of raw information from which the required intelligence should be generated. A large amount of the collected information comes from publicly available materials, which include periodicals, annual reports, books, internet sources, newspapers, other. Most CI practitioners find all the information they require ethically and legally. This phase also includes the processing of information so that it can be easily transmitted and electronically stored. Once the data is in electronic form, it can be manipulated into a form that allows for it to be analysed[12].

Collection: The collection phase involves the gathering of raw information from which the required intelligence should be generated. A large amount of the collected information comes from publicly available materials, which include periodicals, annual reports, books, internet sources, newspapers, other. Most CI practitioners find all the information they require ethically and legally. This phase also includes the processing of information so that it can be easily transmitted and electronically stored. Once the data is in electronic form, it can be manipulated into a form that allows for it to be analysed[12].

Analysis and Production: The analysis phase is known to be the most challenging part of the intelligence cycle, since it requires high skilled CI practitioners. More specifically, the person performing such an analysis needs to weight information, look for patterns and come up with different scenarios based on what the analyst has discovered[12].

Dissemination: This is the last stage of the intelligence cycle. It is the step where the CI practitioner communicates the results of the analysis to the decision makers. The analyst must be able to suggest possible courses of action based on the work analysis and provide useful recommendations which must be supported by logical arguments, if requested[12].

The intelligence cycle does not represent the intelligence production process, i.e. the transformation of raw information into intelligence. Sawka, (2009), states that the complete intelligence procedure is a complex process with a number of feedback circles. Furthermore, each element in the process must exist to generate and run an intelligence program and to cumulatively produce actionable intelligence. However, by establishing and applying these elements of the cycle, the program can perform all the important intelligence operations. Furthermore, such a program is capable of producing a range of products and

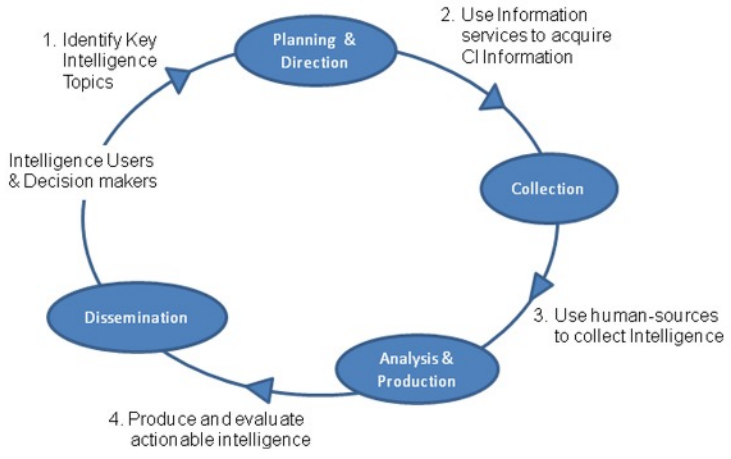

Figure 4: The cycle's processes and operations
[Source: Sawka, 2008 (p.34)]

Even though all processes and operations of the intelligence cycle are essential, the most critical factor for success is the identification of the user's needs . The identification and determination of the user's real intelligence requirements is important in order to accomplish the right CI operations and produce the appropriate intelligence. The customers' requirements can be easier identified, firstly, by being responsive and secondly by being proactive. The former is achieved by showing the potential CI customers how to request intelligence products and services, and the latter by meeting with customers and discussing their current needs and assist them in identifying their intelligence requirements[11].

Information Intelligence

Information collection involves obtaining raw information which needs to be turned into intelligence to support decision making. According to Short (1998), information collection for planning and decision making should be a systematic process . The concept of the process is similar to the one used in factories where raw materials are transformed to finished products in a series of stages. Figure 5 illustrates a simple model of information collection. Each step requires specific knowledge, skills and behaviours[16].

When faced with a decision that should be made, the CI practitioner decides whether new information is needed and, if so, what that should be. The practitioner should check first the internal environment to find out what data exists and determine the new data that should be obtained. Failure to gather the right type of information at this stage will inhibit the ability to make appropriate decisions about a problem or situation.

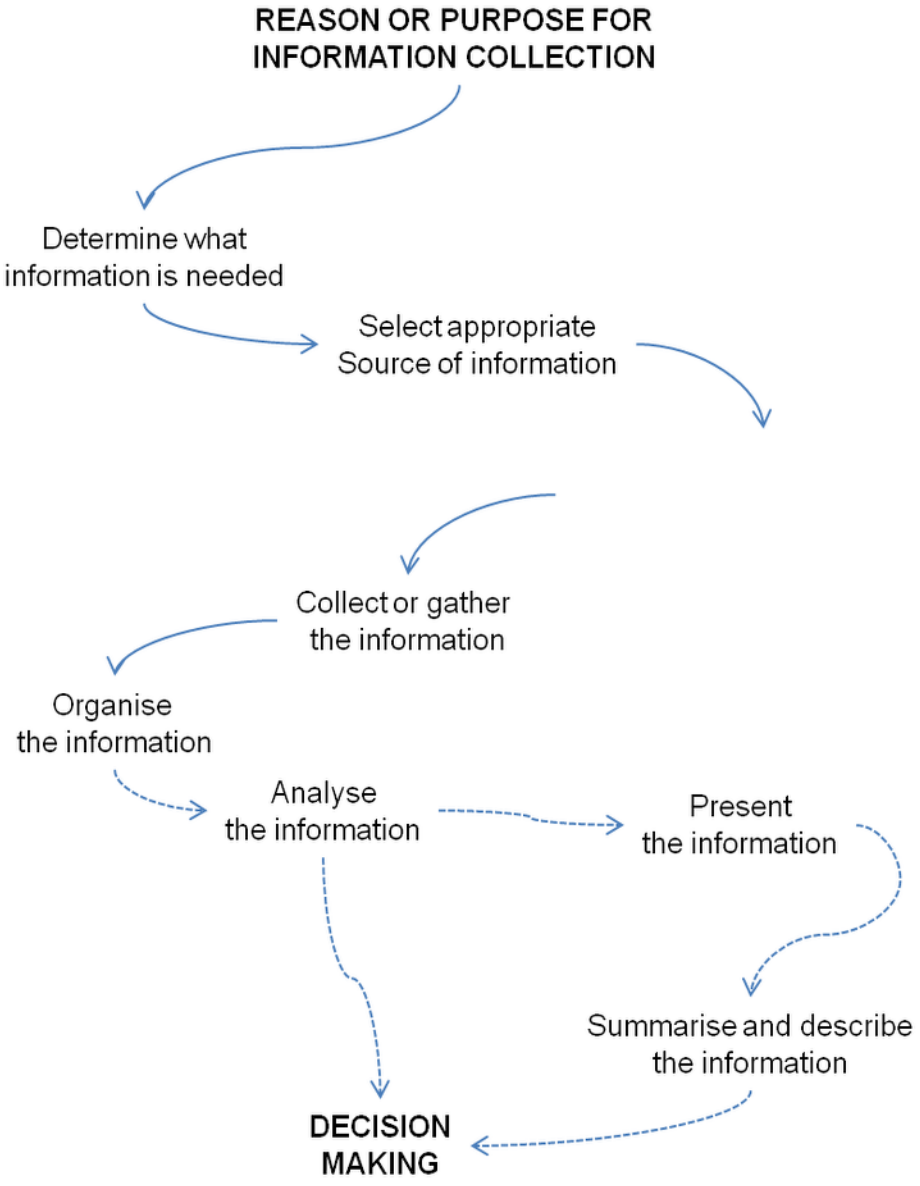

Figure 5: Model of the information collection process
[Source: Thomson, 1993, (p.40)]

CI categorises the information collection process into two types/phases based on the sources the information is collected from, the secondary (Phase I) and the primary (Phase II) information research. However, both phases need to follow the information collection model as described in Figure[5].

Information originating from primary sources is obviously different from the information that comes from secondary sources in a sense that primary sources provide raw, unchanged material and usually in its entirety. However, secondary sources are selectively picked from larger information or provide an opinion on something that has already been stated[12].

***Phase I*: Gathering data from secondary sources**

Secondary sources provide information that has been presented elsewhere. This type of information is collected from press releases, trade journals, analyst reports, books, newspapers, referenced material, online databases, encyclopedia, regulatory findings, and transcripts of speeches and other published sources of information.

Secondary data is further classified as quantitative and qualitative. In general, secondary sources involve generalization, analysis, synthesis, interpretation, or evaluation of the original information.

There are advantages and disadvantages of the secondary search, which the CI practitioner should be aware of, when collecting information. The collection of the secondary data in most cases is cheap and can be accessed easily via libraries, internet, etc. Sometimes secondary sources are the only information available and the only way to examine large scale trends. However, the information obtained from such sources can include inaccuracies that cannot be checked. Often, information that is available in one place presents inconsistencies and published statistics raise more questions than the answers they provide[12].

***Phase II*: Gathering data from primary sources**

Primary sources are the original sources of information. It is information that has not been changed or affected by opinions. Some examples of primary sources include "*human intelligence networks, observations, and participations in shows. Human intelligence networks can include a multitude of contacts such as clients, employees, experts, competitors, market analysts, journalists, university professors, government officials, shareholders and suppliers*" (p.362)[7].

Unless the information comes from a deliberately lying source, primary sources can be considered absolutely accurate.

Analysis techniques & methods

The analysis step is the most important element of the CI process. Kahaner (1996) describes analysis in the CI process as the step that takes information and transforms it into intelligence12. CI borrows techniques and insights from many other disciplines; including management, marketing, economics, other.

Porter's Five Forces Model

Porter's Five Forces (1980), a model for industry analysis, provides a framework which models an industry as being influenced by five competitive forces :

- The rivalry that exists in an industry
- The barriers of entry to new competitors
- The substitutes of products
- The power of suppliers
- The power of buyers

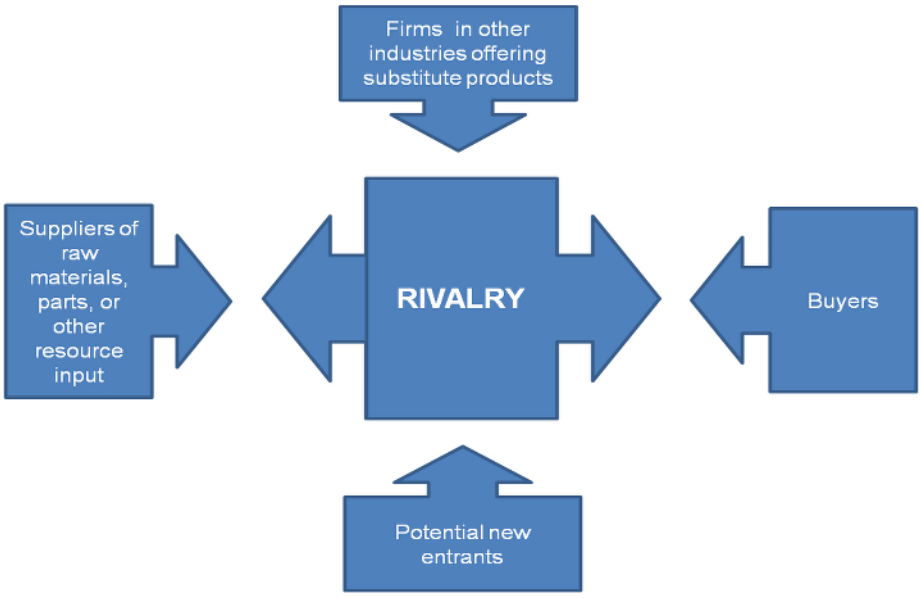

Figure 6: The Five-Force Model of competition
[Source: QuickMBA.com, 2010]

Porter's five force model, illustrated in Figure 6, is a powerful tool for systematically diagnosing the principal competitive pressure in a market and assessing how important each one is. It is an easy to understand and apply technique on competition analysis.

In more depth, the five forces impacting an industry, according to Thomson (2003), are[18]:

The rivalry that exists in an industry: In industries that perfect competition exists, the competition among organizations drives profits to zero. However, perfect competition does not exist and firms strive for a competitive advantage over their rivals. In order for a firm to become more competitive within an industry, the company can follow several competitive strategies:

- Make change to the price of the products
- Formulate differentiated products
- Create new distribution channels
- Develop new or improve the relationships with its suppliers

In addition, the intensity of the competition within an industry is an important factor, which is influenced by the following characteristics:

- If the number of competitors within the industry increases, rivalry increases.
- The rivalry increases, when growth of the market is slow.
- The rivalry increases, when companies are forced to reduce their prices by industry conditions.
- The low cost in switching among products, increases rivalry.
- When companies decide to improve their market position in the industry and make strategic moves at the expense of the other firms, rivalry increases.
- Rivalry becomes more intense, when the cost to get out of business is more than to stay in it.
- Rivalry becomes more unpredictable when the diversity of competitors increases in terms of their vision, objectives, strategies, other.
- When strong organizations outside the industry acquire weak companies in the industry and move aggressively to transform their newly acquired competitors into major market contenders.

The barriers of entry to new competitors: Competition is affected by the entry of new organizations into an industry. In theory, any company can enter and exit an industry and if the entry and exit is free, then profits are nominal. In reality, industries possess characteristics that protect the high number of firms in the market and inhibit additional companies from entering the market. There are several kinds of entry barriers in an industry:

- Economies of scale
- Cost and resource disadvantages dependent of size
- Expenses of learning
- Inability to compete the technology and know-how of companies that are already present in the industry
- Customers' loyalty for products
- Capital needs
- Difficulties in accessing distribution channels
- Regulatory legislation
- Tariffs and restrictions

***The substitutes of products*:** According to Porter's model (1980), substitute products refer to products of other industries17. Threats of substitutes exist when the demand of a product is affected by the price change of a substitute product. The threat of substitutes typically impacts an industry due to:

- the availability of substitutes with attractive prices
- whether buyers view the substitutes as being adequate in terms of quality, performance, other
- whether buyers can change to substitutes easily

***The power of suppliers*:** Each industry requires raw materials, products, services, labour and other supplies. Whether there is a strong relationship between suppliers and sellers represents a weak or a strong competitive force, it depends on whether suppliers can apply influence on the industry and also, the extent of the collaboration between suppliers and sellers in the industry[19].

***The power of buyers*:** The effect of customers on an industry is considered as the power of buyers. Whether the relationship between sellers and buyers represents a strong or weak competitive force, it depends on whether buyers can apply a bargaining influence on the terms and conditions of sale in their favour. In addition, this depends on the extent and competitive importance of seller – buyer strategic partnership in the industry[19].

SWOT Analysis

The knowledge of the external and internal environment of a company is certainly considered essential for the firm's strategic planning process. The factors that affect an organisation's internal environment can usually be classified as Strengths (S) or Weaknesses (W). However, the factors affecting the external environment of a firm can be classified as Opportunities (O) or Threats (I). This type of analysis is referred to as the SWOT analysis whose main scope is to assist firms with understanding their competitive advantage in respect to the competitive environment in which the company operates[4].

Strengths (S) refer to the a company's characteristics that give the capability of developing competitive advantage over the company's rivalries

Weaknesses (W) refer to the absence of certain strengths within a company that obstruct the firm from being competitive

Opportunities (O) refer to new opportunities that could lead a company to profit and growth

Threats (T) refer to changes in the external environment of an organization that represent threats

Business War Gaming

According to the Institute for Competitive Intelligence, Business War Gaming (BWG) is a structure orientated approach that firms use for strategic development. The method is applied to predict possible changes of industries as well as competitors' activities. Based on the findings of the BWG approach, firms develop effective strategies for competition. By means of the BWG approach, the following goals can be achieved[20]:

- Better understanding of the industries and the rivalries
- Development of future scenarios for the industries and the rivalries
- Identify early warnings to avoid surprises

Benchmarking

Benchmarking is the process of comparing a company's business processes against identified competitors or top performing organizations in order to find areas of improvement. Benchmarking involves management identifying the best companies in their industry (or any other industry where similar processes exist) and comparing the results and processes of those studied to one's own results. In addition, benchmarking enables a company to learn how well its rivals perform[21].

Scenario analysis

Scenario analysis is a forecasting model that aims to match a series of specific options with a variety of potential, plausible situations, outcomes or scenarios. The methodologies and techniques used in scenario analysis, such as Volume, Value, Growth (VVG) and Competing Hypothesis Analysis, allows CI professionals to discuss and estimate the relative importance of future events and/or if-case scenarios that may occur in the future.

Overview of the Pharmaceutical Industry

The pharmaceutical industry is complex and multifaceted. This sector is characterized by the long development cycles and high expenditures in order to deliver new medicinal products into the market. Furthermore, the firms producing new and innovative medicinal products need to recover their investments before generic drugs enter into the market. Most companies that invest millions of euros in their R&D for new drugs are global and gain benefits from economies of scale. Such benefits enable them to obtain high earnings of growth which on average can be in excess of 25% before income tax[11].

More specifically, the pharmaceutical industry is highly competitive since it is dependent on innovative Research & Development (R&D). As it is illustrated in Figure 7, the cost of the R&D in this sector is huge and the risk of "no success" is high. However, the successful development of a new drug can generate sales of multi-billion euros for a period of time. In addition, firms with successful development of new medicinal products and recognized contribution to medical science receive great praise[12].

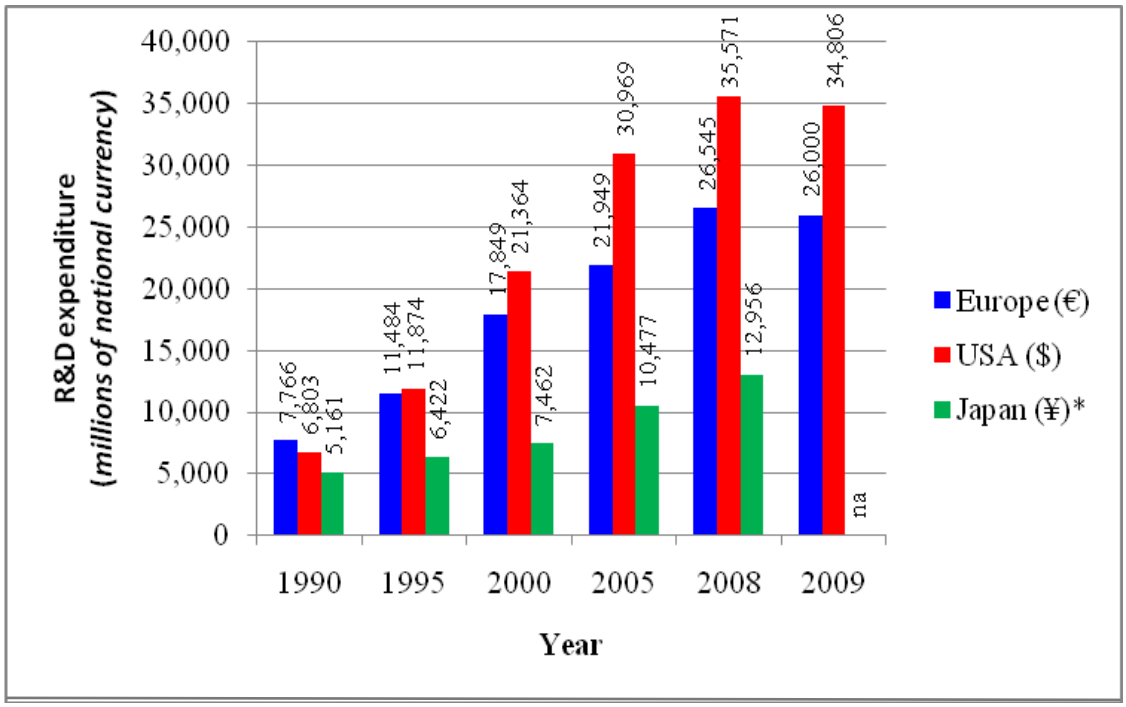

Figure 7: The cost of R&D in the pharmaceutical industry for Europe, USA and Japan (*million x 100) [Source: European Federation of Pharmaceutical Industry Association (EFPIA), 2010, p.2)]

The pharmaceutical industry is one of the most dynamic sectors of the world economies. Over the period 1995 – 2005, the pharmaceutical market has grown twice as fast in the US compared to the one in Europe resulting in a significant shift of economic and pharmaceutical research activity towards the US. In the last few years, there is further migration of economic and research activities outside Europe due to the growth in the pharmaceutical market in emerging economies, such as India, China and Brazil. These new markets have been estimated to continue growing at a 14-17% rate through to 2014 compared with a 3-6% growth in the already developed markets, according to Intercontinental Marketing Services (IMS) Health[23].

The implications of the recent economic downturn have different dimensions for the research-based pharmaceutical industry in Europe. The combination of fixed prices, currency exchange rate volatility and additional cost containment measures, increases the pressure on companies' bottom lines, and hence the cash flow needed to feed in the R&D engines is suffering too. Furthermore, the innovation uptake remains slow on most European markets[24].

According to IMS Health, the sales of new medicinal products launched during the period 2005 – 2009 on the world market were as shown in Table 1[25].

Market	% of Sales
USA	61
Europe	29
Japan	4
Rest of the world	6

Table 1: Percentage of sales of new medicinal products during 2005 - 2009
[Source: EFPIA, 2010, p.3

The pharmaceutical industry in Europe is not just an asset to scientific and medical process. It also plays an important role in the European economy. The research-based pharmaceutical industry accounts for approximately 3.5% of the total EU manufacturing value added and for the 17% of total European Union (EU) business R&D investments.

Each new medicinal product that enters the pharmaceutical market is the result of a long, risky and very expensive R&D process. DiMasi (2007) conducted a study to estimate the R&D cost associated with the discovery and development of new therapeutic drugs . He estimated that the average cost of R&D for a new chemical or biological entity is €1,059 million. The reasons for the high cost of the R&D process are the high probability of unsuccessful rates, the increasing amount of work for the clinical trials and the sources required to get involved in each project for getting approval by the regulatory authorities. There are occasions when a candidate new drug reaches an advanced stage in clinical trials, but, it does not succeed getting into the market. The chances of a new substance to become a marketable drug range from 1 to 2 in 10,000. Figure 8 illustrates the process of the R&D within the pharmaceutical sector for a medicinal product.

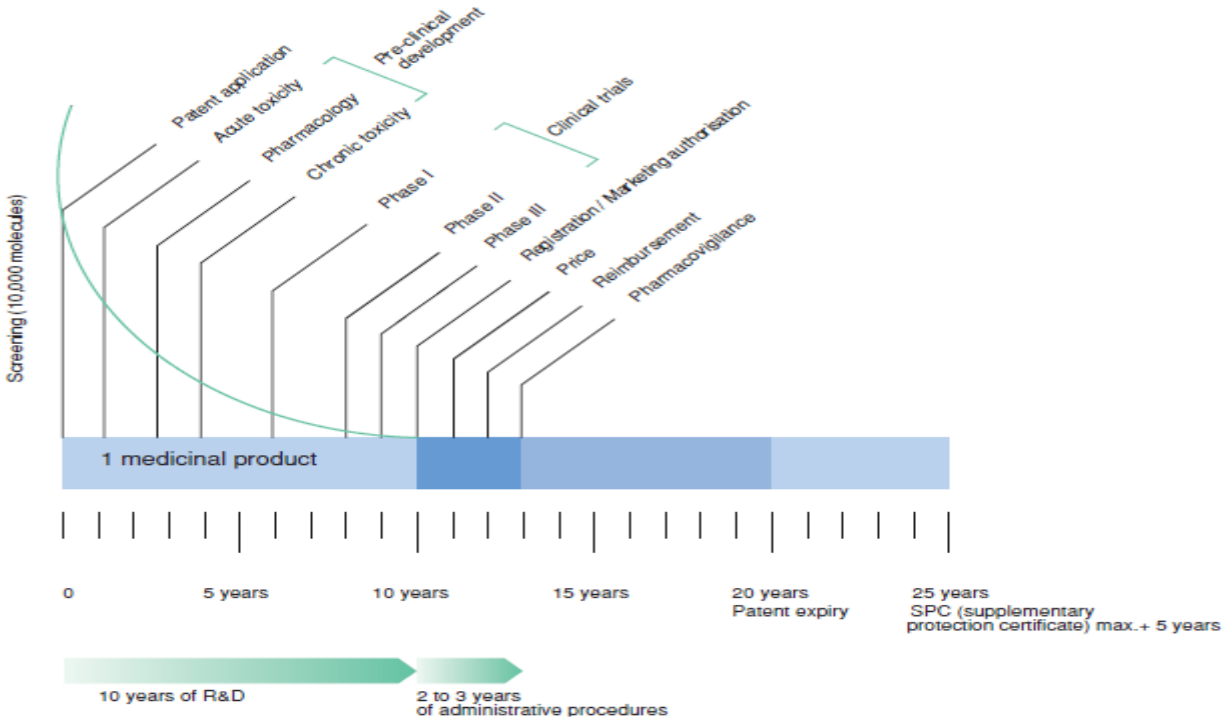

Figure 8: The R&D lifecycle of a new medicinal product
[Source: EFPIA, 2010, p.7]

In the year 2008, about 26,500 million was invested in R&D by pharmaceutical companies in Europe. This investment accounts for about 18% of the sales of the pharmaceutical industry in Europe and 1.9% of the European Union's Growth Domestic Product (GDP) of the year 2008. As Figure 9 illustrates, firms spend on average 27% of their R&D budget on pre-clinical research, 53% on the clinical (Phase I: 8.2%; Phase 2: 12.9% and Phase III: 32.5%), 4.7% on the approval process and 14.4% on additional trials, such as Pharmacovigilance, the science of collecting and analysing safety data, Phase IV.

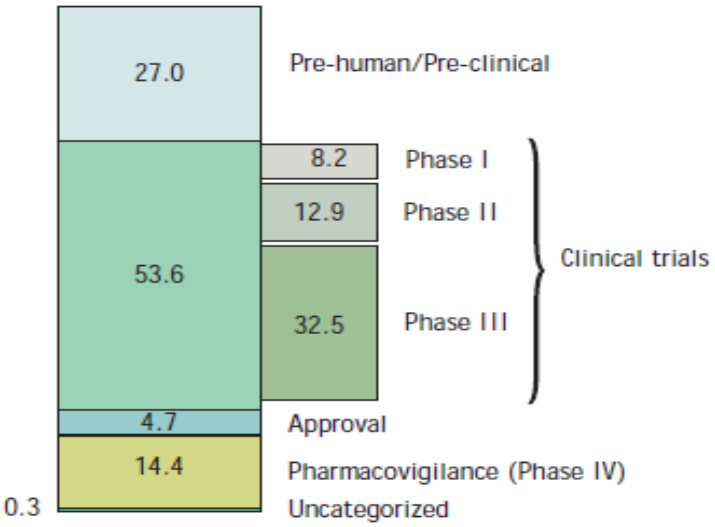

Figure 9: Percentage of R&D investment by function
[Source: EFPIA, 2010, p.8]

The major challenges that Europe faces in the pharmaceutical industry is the innovation of new technologies. The application of human genomics and proteomics to clinical practice and drug development will allow predicting a patient's response to treatment and create new personalized drugs. This will affect the global burden of disease, the pattern of care and management of the patients and will result in shifting from acute treatment to prevention and cure. Therefore, research that enables organisations to be competitive is the key to the development of a strong and viable pharmaceutical industry in Europe.

In the manufacturing area of the pharmaceutical industry, the USA holds the first position with an estimated share of 38.1% of the world's production according to the data for the year 2007, as it is shown by Figure 10. Europe and Japan follow with an estimated share of 36.1% and 7.7%, respectively. In 2008, the thirty two countries that are members of EFPIA produced approximately €196,300 million worth of medicines. For more information about EFPIA and its members, refer to Appendix A[24].

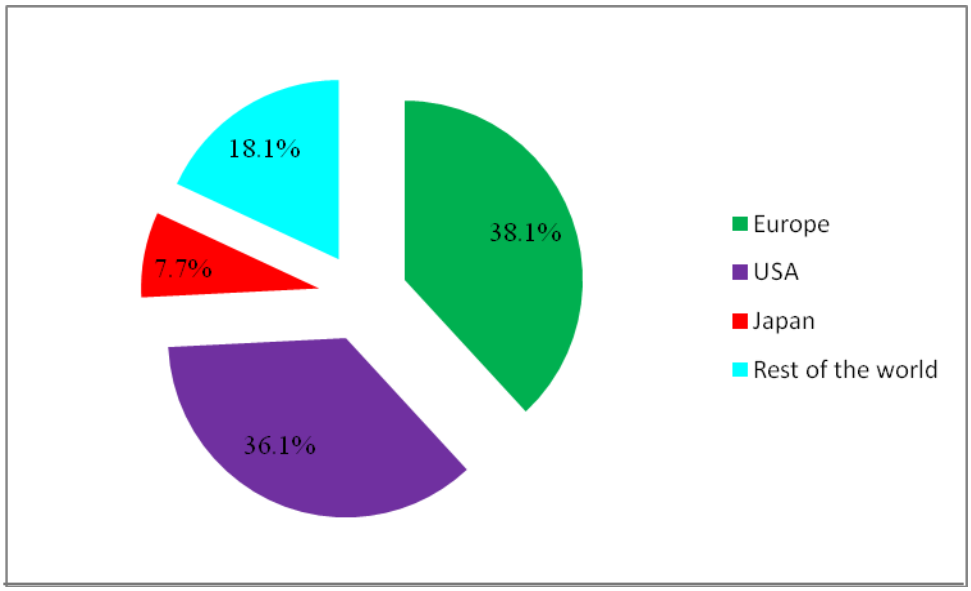

Figure 10: The percentage of the pharmaceutical production by region
[Source: EFPIA, 2010 (p.17)]

Furthermore, the world's pharmaceutical market was estimated to €579,510 million at ex-factory prices in 2009. Again, as it is illustrated in Figure 11, the market of the USA and Canada (North America) holds the first position in the market with a 39.8% share, however, Europe holds the second place with a 30.6% share. For the same year the Asian region was the fast growing market with an estimated growth of 15.9% followed by the North American and European markets with an estimated growth 5.5% and 4.8% respectively[24].

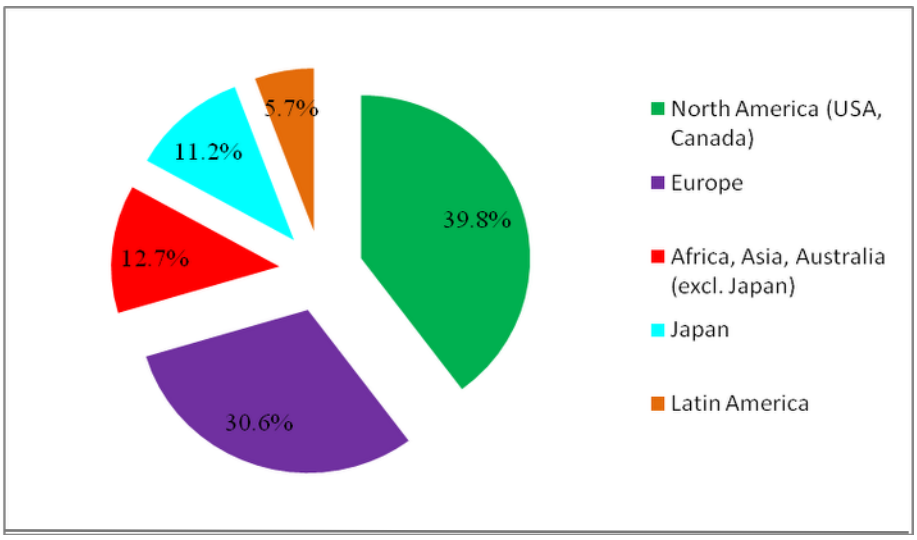

Figure 11: Percentage of market share by region, based on sales in 2009
[Source: EFPIA, 2010 (p.19)]

Since 2000 many changes have been occurring in the European manufacturing and distribution pattern of medicines. During this time firms have reorganized their manufacturing and distribution services which resulted in a significant increase of trade exchanges between European countries. In 2008 the estimated total pharmaceutical exports was worth €203,800 million. This figure includes the trade flows among EFPIA countries (€124,300 million). Pharmaceuticals in Europe represent 5.6% of the total manufacturing exports in 2008 against 2.1% in 1990[24].

The Greek pharmaceutical market

The pharmaceutical market in Greece accounts for 2.33% of the country's GDP in 2008. This value corresponds to pharmaceutical sales equal to €5,573 million, at ex-factory prices, through all distribution channels, i.e. pharmacies, hospitals, etc. Figure 12 illustrates the evolution of the market value from 2003 to 2008[24].

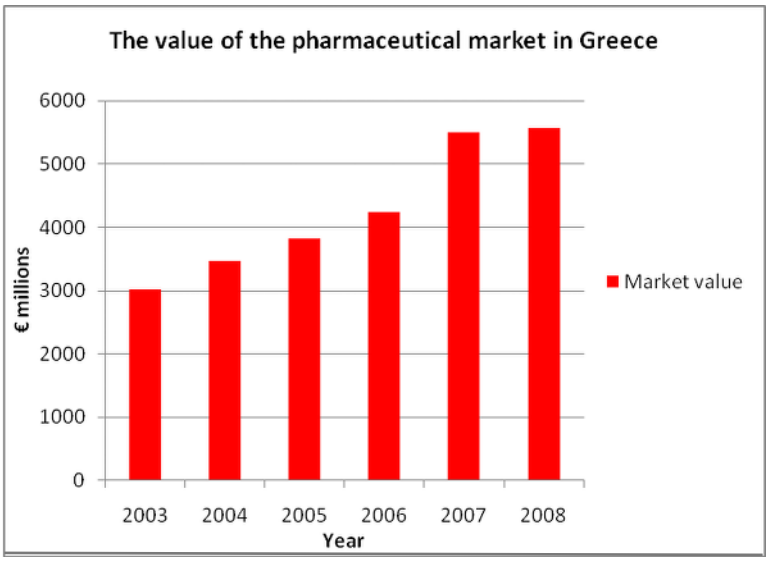

Figure 12: The pharmaceutical market in Greece
[Source: EFPIA, 2005-2010]

The market has undergone significant changes over the last decade. These changes are attributed to the regulatory framework concerned with the pricing and reimbursement of pharmaceuticals and the structure of domestic demand. As a result there has been a decrease in domestic production and a simultaneous increase in imports. In particular, the pharmaceutical trade balance for Greece has risen from €1,365 million in 2003 to €3,653 in 2008, as it is illustrated in Figure 13. This increase is due to the price-setting system which favours imports rather than promoting the production of domestic medicines[27].

In 2004, the country's total pharmaceutical expenditure was about €2.9 billion of which 77.9% were public expenses and 22.1% were private. According to Organization of Economic Co-operation and Development (OECD) Health data 2009, Greece spent about 10% of the country's GDP on health care, a percentage that positions the country close to the EU average expenditure[28].

In 1998, Greece introduced a reimbursement pharmaceutical list and the lowest reference pricing system among all the countries of the European Union (15 members at the time) in order to control pharmaceutical expenses. The reimbursement of pharmaceuticals refers to the share of the drug cost paid by the government through the social security system or by health insurance companies and the patients, according to the national system. Unfortunately this measure failed since the pharmaceutical expenditure continued increasing similarly as before the list was introduced[28].

In May 2006, a new pharmaceutical legislation introducing a new system was published. According to a publication by Hellenic Association of Pharmaceutical Companies (SFEE) in 2008, the main advantage of the new system is that all prescriptions will be reimbursed to patients by Social Security, which allows doctors and patients to choose the best possible medicine without worrying about its cost. Moreover, the scope of this new law was to have a greater access to medicines, protecting public health and maintain a long term viability of the insurance system[30].

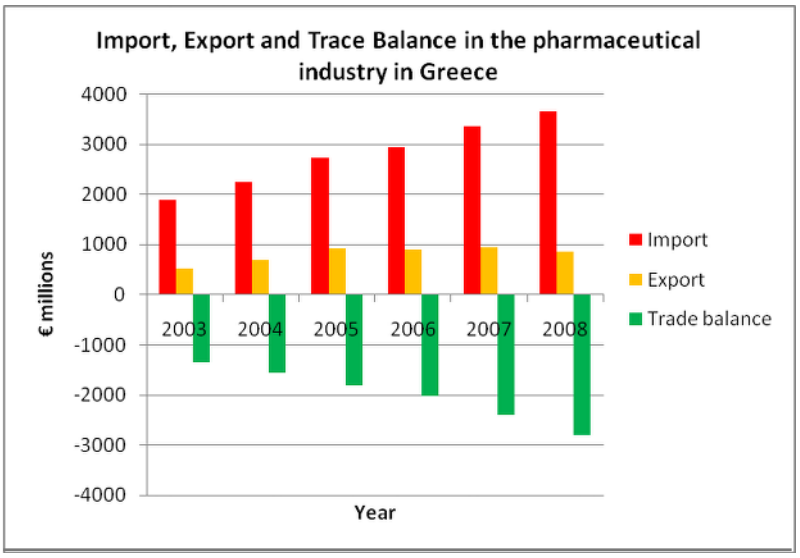

Figure 13: Import, export and trade balance for the Greek pharmaceutical industry [Source: EFPIA, 2005 - 2008]

Labrelli (2010) states that Greece's rate of pharmaceutical expenditure has increased rapidly in the last 20 years. This increase in expenditure occurs due to the demographic structure of the Greek population. This structure illustrates the proportion of the aging group over 65 years was 11% in the early 70s, increased to 16.8% in the late 90s and is further expected to rise up to 20% in 2015[31].

Another reason for the increase of expenditure is that almost the whole country's population has now got some form of coverage for health in comparison to the population covered in the early 80s. Finally, the increasing level of capita GDP, the emergence of new diseases, the relative prices of the products, the introduction of new treatments and the advances in health technology, has contributed towards the increase in health expenditure[27].

The rapid increase of the pharmaceutical expenditure has a great impact in the Greek economy. Hence, generic drug substitution may be a solution as it leads to cost savings. The term "generic drug", according to Geitona (2006), "is bioequivalent to a brand name with respect to pharmacokinetic and pharmacodynamic properties, but it is sold at a lower price and after the partern expiration of the original drug" (p.36)[32].

The pharmaceutical industry in Greece is characterised by the horizontal integration of the production process mainly due to the lack of basic pharmaceutical research. Unfortunately, the pharmaceutical industry in Greece invested only about €82 millions in R&D in 2008[27].

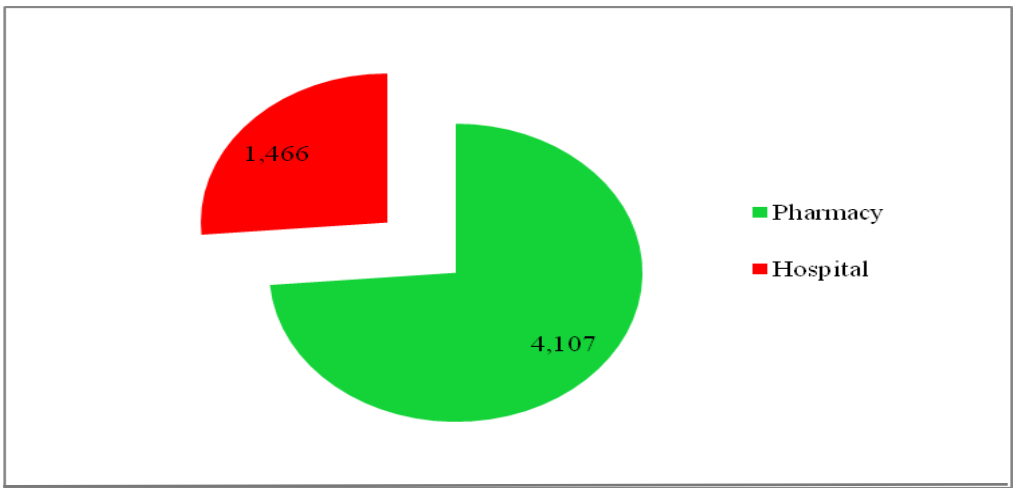

Figure 14: The pharmaceutical market value shared by distribution channels in 2008 [Source: EFPIA, 2010]

Medicinal products in the Greece are classified into three categories; the ones that are imported, the drugs that are domestically produced and the ones that are domestically packaged. As figure 13 illustrates the biggest proportion of the drugs distributed in Greece are imported. Furthermore, the medicinal products are distributed through wholesalers and less by the pharmaceutical companies. However, it should be mentioned that the public hospitals obtain their medicinal products directly from the pharmaceutical companies. Figure 14 shows the cost of the medicinal products for the hospitals, which counts for almost one third of the total pharmaceutical market value.

Competitive Intelligence in the Pharmaceutical Industry

Pharmaceutical companies are offset by regulated healthcare systems where the specifics of compliance often vary from country to country and in certain parts of the world vary on a state-by-state basis. Due to the highly regulated environment, the pharmaceutical industry has significant barriers to entry in the form of manufacturing expertise, intellectual property, technology and investment[11]. In addition, the cost of R&D is enormous, as mentioned above.
Therefore, CI in a pharmaceutical firm is different than in any other industry. This is, also, due to the following four reasons:

- The competitive set
- The regulated market environment
- The complex nature of the customers
- The technical nature of the product

Firstly, *the competitive set*. The competition in the pharmaceutical industry is complicated due to the fact that firms compete for each disease or therapy area, unlike firms in other industries which compete across product lines. In addition, companies share the cost of product development or marketing by entering into partnerships with competitors for a specific time[11].

Secondly, *the regulated market environment.* The pharmaceutical industry is a regulated environment where most of the information about competitors is available to everyone in the industry. Therefore, companies need to always consider how much information to publish or keep private in this environment of unguarded information. On one hand firms have to publicize information in order to attract investors, on the other hand if they publish information sooner than they should, the competitors can easily respond to new products, for example, or even to take pre-emptive action against them[11].

Thirdly, *the complex nature of the customers*. Within the pharmaceutical industry there are three distinct groups that make up the customer; the physician, the patient and the governments who are responsible for paying a large percentage of the medicine's cost[11].

Fourthly, *the technical nature of the product*. Medicines are very specific products, which are used in a medical environment by physicians.

Hence, the pharmaceutical industry, more than any other, should be aware of its competitive forces. Firms within this industry should have processes in place where information is collected and transformed into meaningful intelligence. This intelligence can then support the decision making process. However, the pharmaceutical industry is far behind from any other sector in practicing the advantages of competitive intelligence. Despite the fact that multinational pharmaceutical organizations have formalized CI processes in order to collect data, analyse it and derive intelligence, according to Badr (2006), there is evidence that most pharmaceutical executive decision makers do not get the right information in the right time and firms are not competent at all[22].

Hence, decision makers within pharmaceutical firms need a simplified and direct CI process that can create intelligence which would support and minimize the risk of their decisions. Moreover, CI processes should exist at corporate level within an organisation that can provide actionable

intelligence, which in turn is utilised to identify new developments, opportunities and threats .

The presence of an effective CI process in a pharmaceutical firm can significantly improve its operation in the competitive environment. More specifically, a CI process, according to DIGIMIND as is cited in Bard (2006), can[22]:

- manage the changes in competitor portfolios
- manage competitor investments
- manage the clinical studies and partner application
- identify mergers and acquisitions that may be a threat
- manage the positioning of competitive drugs
- identify competitors sale structures and commercial priorities
- manage statutory developments in the health sector
- infer on a company a high degree of "technological foresight"

To conclude, as discussed above, the pharmaceutical industry is complex, multifaceted, highly regulated and technical, and therefore a CI process can certainly provide a remarkable opportunity to create and sustain value. Moreover, a CI process can better understand the environment of the industry and deliver on the promise of a fully informed decision support tool to contribute to the production of new innovative drugs.

APPENDICES

Appendix A - EFPIA Members

EFPIA MEMBER ASSOCIATIONS[24]	
Austria Fachverband der Chemischen Industrie Österreichs (FCIO)	**Belgium** Association Générale de l'Industrie du Médicament (pharma.be)
Denmark Laegemiddelindustriforeningen The Danish Association of the Pharmaceutical Industry (Lif)	**Finland** Lääketeollisuus ry Pharma Industry Finland (PIF)
France Les Entreprises du Médicament (LEEM)	**Germany** Verband Forschender Arzneimittelhersteller (VFA)
Greece Hellenic Association of Pharmaceutical Companies (SFEE)	**Ireland** Irish Pharmaceutical Healthcare Association (IPHA)
Italy Associazione delle Imprese del Farmaco (Farmindustria)	**Netherlands** Vereniging Innovatieve Geneesmiddelen Nederland (Nefarma)
Norway Legemiddelindustriforeningen Norwegian Association of Pharmaceutical Manufacturers (LMI)	**Poland** Employers Union of Innovative Pharmaceutical Companies (Infarma)
Portugal Associação Portuguesa da Indústria Farmacêutica (Apifarma)	**Spain** Asociación Nacional Empresarial de la Industria Farmacéutica (Farmaindustria)
Sweden Läkemedelsindustriföreningen The Swedish Association of the Pharmaceutical Industry (LIF)	**Switzerland** Société Suisse des Industries Chimiques (SSIC)
Turkey Arastirmaci Ilac Firmalari Dernegi (AIFD)	**United Kingdom** The Association of the British Pharmaceutical Industry (ABPI)

ASSOCIATIONS WITH LIAISON STATUS[24]
Bulgaria: Association of Research-based Pharmaceutical Manufacturers in Bulgaria (ARPharM)
Croatia: Croatian Pharmaceutical Association (CARP)
Cyprus: Association of Pharmaceutical Companies (CAPC)
Czech Republic: Association of Innovative Pharmaceutical Industry (AIFP)
Estonia: Association of International Pharmaceutical Manufacturers in Estonia (AIPME)
Hungary: Association of Innovative Pharmaceutical Manufacturers (AIPM)
Iceland: Icelandic Pharmaceutical Association (Frumtök)
Latvia: Association of International Research-based Pharmaceutical Manufacturers (AFA)
Lithuania: Association of Representative Offi ces of Ethical Pharmaceutical Manufacturers (EFA)
Malta: Maltese Pharmaceutical Association (PRIMA)
Romania: Association of International Medicines Manufacturers (ARPIM)
Slovakia: Slovak Association of Research Based Pharmaceutical Companies (SAFS)
Slovenia: Forum of International Research and Development Pharmaceutical Industries (EIG)

References

1. **Leavitt P., Prescott J., Lemons D. and F. Hasanali,** (2004), Competitive Intelligence: A Guide for Your Journey to Best-Ppractice Processes, American Productivity & Quality Centre, Texas.

2. **Sharp S.,** (2009), "Competitive Intelligence Advantage: How to Minimize Risk, Avoid Surprises and Grow your Business in the Changing World", John Wiley & Son Inc, New Jersey.

3. **Strategic and Competitive Intelligence Professionals,** (2011), About SCIP, http://www.scip.org/content.cfm?itemnumber=2214&navItemNumber=492

4. **Evans M.H.,** (2011), "Course 12: Competitive Intelligence (Part 1 Introductory)", http://www.exinfm.com/training/pdfiles/course12-1.pdf

5. **Priporas C.V., Gatsoris L. and V. Zacharis,** (2005), Competitive Intelligence activity: evidence from Greece, Marketing Intelligence & Planning, 23(7), pp. 659-669.

6. **Prescott J.E.,** (1999), "The Evolution of Competitive Intelligence: Designing a Process for Action", Proposal Management, Spring, pp. 37-52.

7. **Bergeron P. and A.C. Hiller,** (2002), "Competitive Intelligence", Annual Review of Information Science & Technology, 36(1), pp.353-390.

8. **West C.,** (2001), "Competitive Intelligence", Palgrave, New York.

9. **Ferrell O.C., Fraedrich J. and L. Ferrell,** (2008), Business Ethics: Ethical Decision Making & Cases, Mifflin Company, Texas.

10. **Dutka A.,** (1999), "Competitive Intelligence for the Competitive Edge", McGraw-Hill Companies, Chicago.

11. **Sawka K. and B. Hohhof,** (2008), "Starting a Competitive Intelligent Function", Competitive Intelligence Foundation, Alexandria.

12. **Kahaner L.,** (1996), "Competitive Intelligence: How to Gather, Analyse, and Use Information to Move your Business to the Top", KANE Associates International Inc., New York.

13. **Lackman C., Saban K. and J. Lanasa,** (2000), The Contribution of Market Intelligence to Tactical and Strategic Business Decisions, Marketing Intelligence & Planning, 18(1), pp. 6-8.

14. **Herring J.P.,** (1999), "Key Intelligence Topics: A Process to Identify and Define Intelligence Needs", Competitive Intelligence Review, 10(2), pp.4-14.

15. **Short P.M, Short R.J. and K. Brinson,** (1998), Information collection: the key to data-based decision making, Eye on Education, Larchmont.

16. **Thomson D.S.,** (1993), "Principals for our Changing Schools: The Knowledge and Skill Base", National Policy Board for Educational Administration, Virginia.

17. **Porter M.E.,** (1980), "Competitive Strategy: Techniques for Analyzing Industries and Competitors", The Free Press, New York.

18. **Thomson A.A. and A.J. Strickland,** (2003), "Strategic Management: Concepts and Cases", McGraw-Hill Companies Inc, New York.

19. **QuickMBA.com,** (2010), Quick MBA: Knowledge to power your business, http://www.quickmba.com

20. Institute of Competitive Intelligence, ICI 30 – Business War Gaming, http://www.institute-for-competitive-intelligence.com/ici-workshops/ici-30-business-war-gaming

21. **Wikipedia: The Free Encyclopaedia,** (2011), Benchmarking, www.wikipedia.org

22. **Badr A., Madden E. and S. Wright,** (2006), The Contribution of CI to the Strategic Decision Making Process: Empirical Study of the European Pharmaceutical Industry, Journal of Competitive Intelligence and Management, 3(4), pp.15-35.

23. **Gatyas G. and C. Savage,** (2010), IMS Forecasts Global Pharmaceutical Market Growth of 5-8% annually through 2014; Maintains Expectations of 4-6% Growth in 2010, http://www.imshealth.com/portal/site/imshealth/menuitem.a46c6d4df3db4b3d88f611019418c22a/?vgnextoid=4b8c410b6c718210VgnVCM100000ed152ca2RCRD

24. **European Federation of Pharmaceutical Industries and Associations**, (2010), The Pharmaceutical Industry in figures, http://www.efpia.eu/content/default.asp?PageID=559&DocID=9158

25. **Intercontinental Marketing Service Health: Intelligence Applied**, (2011), http://www.imshealth.com

26. **DiMasi A.J. and G.H. Grabowski,** (2007), "The Cost of Biopharmaceutical R&D: Is Biotech Different?", Managerial and Decision Economics, 28(4-5), pp.469-479.

27. **Kontozamanis V., Mantzouneas E. and C. Stoforos,** (2003), Pricing and Reimbursement: An Overview of the Greek Pharmaceutical Market, The European Journal of Health Economics, 4(4), pp. 327-333.

28. **Organization of Economic Co-operation and Development,** (2011), Health: Key Tables from OECD, http://www.oecd.org

29. **Yfantopoulos J.,** (2008), "Pharmaceutical Pricing and Reimbursement Reforms in Greece", The European Journal of Health Economics, 9(1), pp. 87-97.

30. **Hellenic Association of Pharmaceutical Companies,** (2008), The Pharmaceutical Market in Greece: Facts & Figures, http://www.sfee.gr/files/editions_sfee/download_pdf_file_397kb__14425_0.pdf

31. **Espicom Business Intelligence,** (2010), The Pharmaceutical Market: Greece Opportunities and Challenges, http://www.espicom.com/Prodcat2.nsf/Product_ID_Lookup/00000344?OpenDocument

32. **Geitona M., Zavras D., Hatzikou M. and J. Kyriopoulos,** (2006), Generics Market In Greece: The Pharmaceutical Industry's Beliefs, Health Policy, 79(1), pp. 35-48.

33. **Persidis A.,** (2003), "Corporate Intelligence in a 'Corporately Intelligent' World", Journal of Competitive Intelligence and Management, 1(2), pp. 87-99.