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Pharmaceuticals and life sciences: Role of Competitive Intelligence in Innovation.

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Abstract

This chapter goal is to analyze the concepts of innovation, knowledge and competitive intelligence (CI). Besides these concepts, the focus will be on the role of innovation profiles defined by Sousa (2009, 2013). The innovation profiles include the creation, capture, organization, and integration of knowledge into the innovation process. The CI variable will be analyzed demonstrating the potential for creating a context of competition for companies. A case study is presented about the pharmaceutical (pharma) industry with the application of the concepts of competitive intelligence, knowledge, and innovation to a real context.

Keywords: Competitive Intelligence, Innovation, Organization, Knowledge, Knowledge Profiles, Pharma industry.

1. Introduction

Most of the pharmaceutical companies continue to face crescent competition in the operating markets from different sources. Some of the solutions to overcome the current difficulties and barriers may be a constant search of new R&D methods and new operations mechanisms in order to obtain economic scale and gain new commercial capabilities that can drive or improve effectiveness from R&D investments.

Currently, Pharmaceutical companies are searching for new disruptive strategic methodologies through innovative methods of business models, in a quest to reduce the business risks and prepare the commercial models to a more ready technological approach.

There is no doubt that the pharmaceutical landscape and drivers for growth are changing, with new patterns around a crescent aging worldwide population, technological advancements, products innovation, new standards of living and transformed health care access systems.

While pharmaceutical companies continue to face substantial difficulties resulted from a crescent competition, decreasing revenues, product patents expiring and limited access to physicians, most of the competitors such as Medical technology companies, personalized medicine, diagnostic technologies, medical devices, and biotechnology companies continue on maintaining their good momentum, with strong predictors of continued success.

Increasing the complexity of pharmaceutical effectiveness operations it's evident the constant pressure and increased regulatory scrutiny from the official authorities with severe impacts from

health care reforms and fewer drugs approvals across all world but particularly in Europe, where the escalating costs of products forces the global authorities and local governments to impose new pricing rules, fair trade conditions and price decreases. Therefore is not only crucial for today's pharmaceutical companies to continue leveraging and growing geographic scale, creating strong positions in dominant markets and acting as global serving points on global needs, is also crucial and critical for those same companies to have long-term supporting processes and monitoring capabilities to face the constant business influential factors.

Although global life sciences sector persists in exhibiting some resilience in such market conditions and crescent constraints, the need for reinvention of the current business models continues to be one of the most significant market demands and patients expectations for more efficient products.

The way that global life sciences sector can project new research and developments (R&D) efforts and step back in some ongoing projects to add fragmented pieces of scientific innovation is a capability that not all the companies can adopt.

The chapter includes a brief study of innovation fundamentals and theories. Its contribution is to review basic ideas about innovation process in the pharma industry, allowing future discussion about the main issues to potentiate the competitive intelligence in the pharma industry. Innovation allows managers to implement successful organizational practices and processes, resulting in efficient new business models (Kalakota & Robinson, 2001; Kearns & Lederer, 2003; Takeuchi & Nonaka, 2004). This can deliver results in complex scenarios with different strategic design and execution pathways.

2. Literature Review

2.1 The concept of Innovation

The innovation theory literature gives the idea that innovations occur mostly within the national system of innovation (Freeman 1987; Lundvall 1992; Nelson 1993; Edquist 1997). However, another perspective was studied by organizational studies in innovation in organizational microsystems (Van de Ven 1986; Aldrich & Fiol 1994; Van de Ven et al. 1999; den Hertog & Huizenga 2000).

Literature shows that the concept of innovation is very complex, which makes it difficult to have a single definition. The Green Book on Innovation from the European Commission (1996) defines innovation as "the successful production, assimilation, and exploration of something new." More recently, Mulgan and Albury (2003) made their contribution to the concept pointing out the importance of the innovation implementation results: "new processes, products, services and methods of delivery which result in significant improvements in outcomes efficiency, effectiveness or quality."

Leadbeater (2003) exposes the complexity of the concept including the interactive and social dimensions: he argues that "the process of innovation is lengthy, interactive and social; many people with different talents, skills and resources have to come together."

On the other hand, the literature assumes various categorizations of innovation. OECD (2002) structures the concept around three areas: the renewal and broadening of the range of products and services and associated markets; the creation of the production, procurement, and distribution methods; and the introduction of changes to management, work organization and workers' qualifications.

Baker's (2002) typology also differentiates three types of innovation: Process; product/service; and strategy/business.

Process innovation (i.e., work organization, new internal procedures, policies and organizational forms) and the strategic and new business models (i.e., new missions, objectives, and strategies) are called organizational innovation.

Following OECD (2002), organizational innovation includes three broad streams: 1) the restructuring of production and efficiency processes, which include business re-engineering, downsizing, flexible work arrangements, outsourcing, greater integration among functional lines, and decentralization; 2) human resource management (HRM) practices, which include performance-based pay, flexible job design and employee involvement, improving employees' skills, and institutional structures affecting the labor-management relations; and 3) product/service quality-related practices emphasizing total quality management (TQM) and improving coordination with customers/suppliers (Table 1).

Table 1 – Types of Organizational Innovation

Production and efficiency practices	Human resources management practices	Product/service quality
<ul style="list-style-type: none"> • Business re-engineering • Downsizing • Flexible work • Outsourcing • Greater integration among functional areas • Decrease degree of centralization 	<ul style="list-style-type: none"> • Performance-based pay • Flexible job design and employee involvement • Developing skills • Labor-management cooperation 	<ul style="list-style-type: none"> • Total quality management (TQM) • Improving coordination with customers/suppliers • Improving customer satisfaction

Source: Wulong Gu & Surendra Gera (2004)

The analyses of organizational and innovation literature point out innovation as one of the most critical strategic/management dilemmas. Organizations survival requires that they became more and more competitive, and organizational innovation can be a key solution. Currently, the organizations invest in a very consistent way in an innovation strategy. The answer for this phenomenon is itself a fundamental and complex dilemma because the importance of innovation for competitiveness is not explicit and the choice between investing in technology and investing in people always raises some questions about short and long term survival of the organizations. In this context Sousa (2009, 2013) has created several profiles intending to understand the potentialities of each profile as a tool to help employees develop their competencies and become

more skillful along the innovation process. The set of competencies associated with each innovation profile are identified in the following table (2), according to Sousa (2009; 2010; 2013; 2016) methodology:

Table 2 – Knowledge Profiles Competencies

Profile	Competencies
Innovator	<ul style="list-style-type: none"> • Ability to use creative techniques • Ability to use schematization and simulation techniques • Ability to use content analysis • Ability to create new knowledge • Ability to innovate
Integrator	<ul style="list-style-type: none"> • Ability to apply the accumulated technical knowledge into new projects • Ability to apply organizational knowledge • Ability to use individual knowledge in problem-solving • Ability to work in a team
Organizer	<ul style="list-style-type: none"> • Ability to create and organize organizational memories • Ability to create and manage knowledge centers • The ability for knowledge mapping • Ability to create and manage knowledge networks
Facilitator	<ul style="list-style-type: none"> • Ability to organize learning processes • Ability to share best practices • Ability to organize spaces of share, like seminars or workshops • Ability to develop young talents • Ability and knowledge to shape behavior • Ability to encourage subordinates and co-workers to innovate and change • Ability to help subordinates and co-workers to participate and accept change

Source: Sousa (2009, 2013, 2016)

According to Sousa (2009, 2013, 2016), these four knowledge profiles (defined as sets of attitudes and behaviors) can be defined as the following:

1. *The Innovator* is an organizational actor that focuses on experiments to develop new knowledge and new solutions. He or she makes things happen and creates results using existing knowledge through experimentation.

2. *The Organizer* is an organizational actor who prefers to create structures that make explicit, collect, combine, and analyses knowledge. He or she creates mechanisms that transform tacit knowledge into explicit knowledge for future application.

3. *The Integrator* is an organizational actor that uses and integrates the knowledge developed and shared by all organizational actors, including him or herself.

4. *The Facilitator* is an organizational actor that promotes reflection, learning and tacit knowledge sharing processes. He or she makes sure that the right competencies are present when knowledge is applied in a controlled process.

2.2 Types and Sources of Innovation

In the last years, several types of research has produced new concepts, and benefit analysis to innovation contributed significantly to academic and corporate knowledge. It is a concept of great relevance that influences not just the corporate procedures but also various products and services obtained from business dynamics and models.

It is a process that includes techniques, conceptions, development and work tools, which originate improved products or procedures, which are then readily available for promoting and selling.

Innovation can be identified through 4 distinct levels:

1. Incremental: Considers the improvement in products and procedures that upgrade the quality and still can reduce costs and increase productivity. Identifying the role that technology plays, specifically in equipment compatibility.
2. Radical: Discontinuous result of actions regarding R&D in corporate, academic or state environments organizations.
3. Modification of the "Technological System": Technological changes that affect certain economic sections and originate completely new sectors.
4. A shift in the "Tech-economic paradigm" (Tech revolution): Result from the evolution of technological systems, such as new products, procedures, changes in the economic and social structure and the behaviors of the leading economic agents.

Radical innovations can frequently create or destroy specific market niches and client segments, or even profoundly change a market or sector, resulting in new paradigms, skills, abilities, and knowledge in the same market.

Reversely to the incremental model, radical innovation usually follows along technology-push, which is to say that new concepts and paradigms are created inside the corporations, many times being led by researchers or professionals dedicated to research and development of new products.

On the other hand, radical innovations are very rarely altered or changed while in their development stage, mostly to protect the main idea, which does not give way to accepting new concepts or developments in this stage.

Presenting radical innovations to the market implies a great deal of effort, which is exponentially higher than in incremental innovation, we are not always positive outcomes are obtained, regardless of the quality of the innovation.

Innovations is a new way to do things, which can be marketed. The various types of innovation are Product Innovation & Technological Innovation; Innovation of Procedures; Innovation in the organizations; Marketing Innovation.

Innovation models can be presented the following way: Push-pull Model; Funnel Model; Disruptive Innovation Model; Closed Innovation & Open Innovation.

We can also perceive innovation through four types of innovation: management innovation; strategic innovation; product/service innovation and Operational innovation. Each of the innovation levels results in asymmetrical levels of competitive value outcome, all though not all the levels necessarily originate competitive advantage. Some innovations can be incremental, where the competitive advantage is strongly dependent on the changes made.

Innovation has in its core different new concepts and ideas, which can come from numerous places. Several innovation sources can play a significant role in creating new ideas and exploring innovation opportunities. These sources can be internal and external to the organization and also formal and informal.

The external sources are:

- Internet and the Media;
- Specific studies;
- Client Surveys;
- Market Surveys;
- Opponent companies benchmarking;
- R&D entities or design.

- Distributors and Partners advice;

For formal internal sources:

- Innovation programs;
- Informal brainstorming,
- Internal processes;
- R&D Departments;

The informal external source is:

- Internet and the Media;
- General surveys;
- Customers Feedback;
- Competitor's products and services;

As far as Informal internal sources we have:

- Associates ideas;
- Products;
- Procedures;
- Services;

It is therefore essential that the organization arranges its activities and procedures to identify market tendencies and opportunities, in order to reinforce its competitive advantage. Having the ability to develop tools to monitor the competitor's competitive advantage, clients and social

context surrounding is very relevant. This surrounding can be defined as contextual, transactional and intracompany.

The contextual surrounding incorporates economic factors, technological, political, social and cultural factors. The Transactional surrounding includes the clients, opponents, suppliers and the community. Relating to the Intracompany surrounding is the knowledge of the organization when compared to its opponents and its sector.

Innovation is a result of the investigation and development procedures, focused mainly on development. We will consider however that innovation is the center of these interactions where R&D is considered a source of procedures directed at innovation and as one of the processes that itself catalyzes innovation.

As far as influencing innovation outcomes, we have Organization location, a specific region, pertaining sector, dimension of the organization, globalization level and relation in environments with catalyzing abilities. Continuous innovation in a company has as crucial factors of influence the external and internal sources of data and information, along with client, supplier and partner relationships.

Innovation sources are miscellaneous, but consumers, products, and suppliers are the most relevant. It is crucial to emphasize the useful sources of innovation, where the role of each source is actually inside innovation and is related to the implementation goals. The functional sources of innovation include the organization or the people that will directly benefit from the products innovation, procedures or services. These same organizations or people are not passive bystanders of innovation; they vary according to the innovations analysis, due to the functional relationship between the innovator, the user, and the innovation. Given the right conditions, any functional class can be a potential source for innovation. The manufactures can explore many innovation sources, be it in an internal or external context, having a strong influence by the economic market, cultural and social factors, clients, suppliers, opponents, stakeholders or partners. One of the biggest challenges that life sciences companies faces are the methods to efficiently and productively turn innovation into commercial products. Many of the solutions can be explained through the use of multidisciplinary activities around collaboration and cooperation between internal and external teams. The main characteristics of these life sciences companies are the risk-sharing activity models.

Life sciences sector currently needs to support the innovation efforts with a multi-prolonged strategy to cope with the current market environment and constraints, preventing the future decline in sales revenues by a decreasing potential market or directly with patent expirations of some of the drugs available in a pipeline.

2.3 Knowledge as a Driver for Innovation

The analyses of organizational and innovation literature point out innovation as one of the most essential strategic/management dilemmas. Organizations survival requires that they became more and more competitive, and organizational innovation can be a key solution. However, very few organizations invest in a very consistent way in an organizational innovation strategy. The answer for this phenomenon is itself a fundamental and complex dilemma because the importance of organizational innovation for competitiveness is not explicit and the choice between investing in technology and investing in people always raises some questions about short and long term survival of the organizations.

In microanalysis, there are some dilemmas arise concerning interactions between organizational actors and whether their knowledge affects the organization's dimensions.

This research analyses knowledge management dilemmas that emerged from the literature review, and will conceptualize them in order to identify situations where organizations continuously face dilemmas, determine their responses to these situations, and, over time, how they succeed:

1st Dilemma: "Literature emerges the idea that the use of individual knowledge accumulated through life and professional experiences is a competitive advantage for the organizations' success. However, sharing and transferring inexpressible knowledge is almost an impossible task to accomplish."

Knowledge sharing and transference requires specific competencies of interaction. One of the main factors of successful knowledge sharing is a trusting climate among workers. This makes them more participative and more involved.

Concerning workers' interactions, the assumption is that the individual learns and then affects the group with the new knowledge acquired, but needs to be inserted in an organization which purpose is developing individuals and producing skills and innovation for the organization (Jacobs & Washington, 2003).

On the other hand, transforming tacit knowledge to explicit knowledge, namely life and work experiences and all the knowledge that workers develop and store along the years, seems to be a challenging activity because it represents knowledge that people possess, but which is inexpressible because it incorporates both physical skills and cognitive frameworks.

However, when the knowledge becomes explicit, it can be passed on and acquired by another person (Morris & Beckett, 2004). Several research works about workplace learning also imply the assumption that individuals acquire knowledge, for example, by listening to information presentation and when this becomes standard practice, they become more open to sharing it with other colleagues.

2nd Dilemma: "The use and sharing of employees' knowledge is an essential factor in solving problems and strengthening performance. However, several organizational and individual barriers condition the process."

Organizations use particular processes in order to solve problems - testing new and different ideas on how to achieve success is one of these processes and employee's knowledge can perform a relevant role in it.

However, employees cannot always use their knowledge to help their organization to solve problems and respond to challenges because organizations do not always give them space to think, act, make informal contacts, gain experience, experiment and take risks. In many situations,

employees and even managers find it difficult to use the knowledge that they have developed in other working experiences just because it was not requested.

To stimulate the use of individual knowledge and strength the core competencies of an organization, top management can promote a learning attitude, intensive knowledge exchange, and internal entrepreneurship. It is also possible to use an approach to problems through precise routines, procedures and methods like brainstorming, problem-solving cycles and risk management.

Jashapara (2007) suggests that "organizational routines provide the contingent condition or 'spark' to activate organizational knowledge processes." The processes can be initiated and guided by existing or expected problems that are seen as a chance to learn or innovate.

Managers can focus themselves on developing and mobilizing employee's knowledge to innovate and introduce new practices using tools like mapping out the individual competencies of each employee - it will help to understand which employees have valuable knowledge and what the existing knowledge gaps are in order to take some measures to narrow and eliminate them. They can also create more "communicative knowledge-accomplishing activities, which frame and respond to various problematic situations" (Kuhn & Jackson, 2008).

Nevertheless, organizations need to have a high level of openness to risk and tolerance to mistakes and failures instead of penalizing employees for them. Only this perspective allows organizations to create a culture of innovation.

3rd Dilemma: "Using and sharing individual knowledge is crucial to organizational innovation processes, but organizational culture and management resistance makes it very difficult to promote employee's involvement and participation."

Organizations can promote and invest in a learning environment characterized by positive thinking, self-esteem, mutual trust, willingness to intervene preventively, taking responsibility for business performances and rewarding the employees who continually study their work and give ideas to better it when needed.

Skilled workers are more open to innovation and change because accepting new work practices is easier when the skill level of the workforce is higher. A skilled labor force will accelerate the introduction of organizational changes because skilled workers are more able to analyze and synthesize new pieces of knowledge (Caroli & Reenen 2001).

However, knowledge and learning competencies need to be a part of every employee's competence profile, and organizations can have an essential role in stimulating employees to think about, identify and solve common problems; to let go of traditional ways of thinking; to continually develop their own skills, and let them acquire experience and feel responsible for organization and team performances.

From the employee's perspective, it is interesting to analyze their position concerning the balance between personal ambition and the shared ambition of the organization. In the literature, there are two kinds of workers: a) Individuals who care about the organization and what it stands for; those with the vision, competences, and resources to apply what they have learned to make the company and themselves the best they can be; b) Individuals who would be satisfied with the fact that their manager takes all the responsibility, and they just do what they tell them to do.

Finally, it is essential to take a look at the leadership style - it is crucial for leaders to coach, help, inspire, motivate and stimulate; to be action-oriented and that give feedback about improvement actions undertaken. A participative style can be used as an advantage to the decentralization of decisions and the communication process to involve employees. Leaders should become facilitators instead of barriers to organizational innovation and change.

4th Dilemma: "Organizations need to promote individual knowledge sharing among all organizational actors, but organizations do not see the need to create mechanisms to promote this sharing."

Top management can have an essential role in the promotion of dialogue, creating conditions whereby people are willing to apply their knowledge, share it and exchange it with each other. Developed knowledge can be continually documented through reports, images or even metaphors, and made available to everyone in the organization.

Informal contacts, internal lectures, conferences, problem-solving and project review meetings, dialogue sessions, internal reports, and memos are an essential means to share knowledge. Organizations can also use some mechanisms that facilitate knowledge sharing: the Internet, the Intranet, the library, comfortable meeting rooms, an auditorium, an electronic archive, and even a documentation system.

To reinforce the dialogue, organizations can develop a proactive competence policy, which may include internal and external training, courses, working conferences, symposium, seminars, and informal employee contacts.

The organization can also create networks of knowledge with workers with different backgrounds for developing new knowledge using several processes to develop and share knowledge like using images, metaphors, and intuitions.

Not only do the internal actors perform a relevant role in the process of organizational innovation and change, but also external actors, like universities, consultant companies, trade unions, and others. As innovation agents, their involvement can be significant for the organizational development itself.

5th Dilemma: "Researchers and practitioners recognize knowledge as a fundamental asset to an organizations survival. However, organizations do not integrate and effectively use new knowledge created or developed by employees."

In some organizations, knowledge is continually being implemented and incorporated into new products, services, and processes. For instance, processes like benchmarking are done systematically to gain new knowledge and develop new practices or new business models.

The organization itself promotes critical thinking development and applies it in the workplace, constantly developing employees' knowledge through training, coaching, and talent development programs.

However, some organizations have difficulties in integrating and effectively using new knowledge in the job description. Even workers and managers rarely use knowledge from training courses or self-development processes.

Also, an essential dimension for knowledge integration is the need for a coherent company-wide social identity instead of a multiple community or group based social identity in order to promote useful knowledge integration in organizations (Willem et al., 2008).

2.2 Competitive Intelligence definition

Competitive Intelligence (CI) is an area of investigation and corporate applicability that is expanding, reaching a clear peak in knowledge, as can be seen in worldwide research and many of the more recent corporate procedures.

Competitive intelligence is a part of the everyday economic competition of various subjects (companies, national economies, multinational concerns, economic integrations, etc.) at both domestic and world markets. For many analysts, the critical feature of competitive intelligence is that its functions are based on strict ethical codes and standards, in other words, that it uses legal devices for collecting and analyzing data and turning them into the economic knowledge of a company or country.

Today's society is built on a complex system of information and competitiveness. It is therefore crucial for an organization survival to be able to process quickly and systematically, large volumes of data regarding the surrounding context and converting these into corporate knowledge, allowing some room to anticipate external, internal and market changes.

CI is based on gathering, analysis and processing data and information regarding the economic information about the market, competitors, current economic development, consumers, customers, suppliers, government, regulators, partners, and all the surrounding entities or factors, in order to obtain a competitive advantage in a specific organizational context.

The concept of Competitive Intelligence began drawing more attention in the 1960s, when it was mostly looked at as a corporate procedure of gathering and processing information about internal and external data, to obtain a strategic advantage to benefit the overall strategic plan. Basically, during the '60s and '70s, CI activities were associated with data gathering, informal and tactical activities.

After the 80's all the analysis around the competitors and industries became popular where CI converted from informal activities to marketing and strategic functions.

After the 1990s CI assumed a more strategic position than other functional areas such as Market Research to most of the sectors but especially to Life sciences. Market Research activities were not able to provide more strategic and decision matter intelligence, providing content with a lack of context and lack of follow up strategic items. CI receives moderate attention from top management and is often a valuable contributor to strategic decision-making.

CI concept and scope has been frequently studied in the last years in developed countries, being considered a subject of investigation before the organizational performance. Therefore CI is the primary influence in the strategic planning and competitive advantage in organizations, not acceptably inserted in other information models or strategic management, but, a systemic and cyclic process of corporate intelligence, being classified as a product and as a procedure.

If knowledge is the source in competitive advantage, then the access to information is used to create knowledge, and the process used to retain and transfer that same knowledge is vital for the

institution. In an efficient organization, since the moment that knowledge is absorbed and processed, it originates entirely new knowledge, and it is a force to create intelligence. This same intelligence is the result of the collective cognitive process inside the organization. The culture, society or each situation inside the culture and society, determine an individual's intelligence, which in its turn is affected by ones the values and believes and the interaction between all these factors. With the constant evolution of science, intelligence is still at the heart of many research and investigation; still, there is not a common ground or understanding as to what is intelligence. The primary or internal sources are those that can be obtained by personal contact with people and specialist (Analysts, consultants, journalists, and others), customers, suppliers, and employees. These sources are prone to direct contact and create a competitive advantage, which makes them intuitive and informal. Primary sources account for almost 90% of the analyzed information in the CI procedure. The secondary sources or external pertain to the information that is widely available publicly, such as databases, publications, legislation, radio, television, interviews, technical reports, patents, among others. These sources account for almost 10% of the information analyzed in the CI processes.

The CI system allows close monitoring of both the external and internal environment. By monitoring the opponent's external environment, it analyzes their potential, suppliers, negotiation potential with clients, new threats by new players, products or services. CI also incorporates macro environmental factors, such as political, economic and social, that directly affect the company in all the industrial segment and services. The uses of CI are very broaden: in marketing, where the constant search for new products and opponents is frequent; in the production departments, where there is a constant quest for competitive costs and procedures; in human resources, where the institution's HR policies are compared to those of the market.

Most of the pharmaceutical companies are already understanding the overlap and scope between Market Research (MR), Market Access (MA) and Competitive Intelligence activities, improving as well all the understanding around CI and how can be integrated with the other functions available for companies.

So the action to proceed with an understandable integration between MR, MA, and CI for some pharmaceutical companies should come in a structured way and having formal boundaries for each of the scopes. Nevertheless, the full understanding of each function scope and operations should be perceived as the main factor to have an efficient combination between all.

Currently, in several pharmaceutical companies, CI plays already a fundamental paper in the operating strategy, where for several cases of M&A or R&D complex processes, is CI the main responsible for the positive and effective strategic impact on those operations.

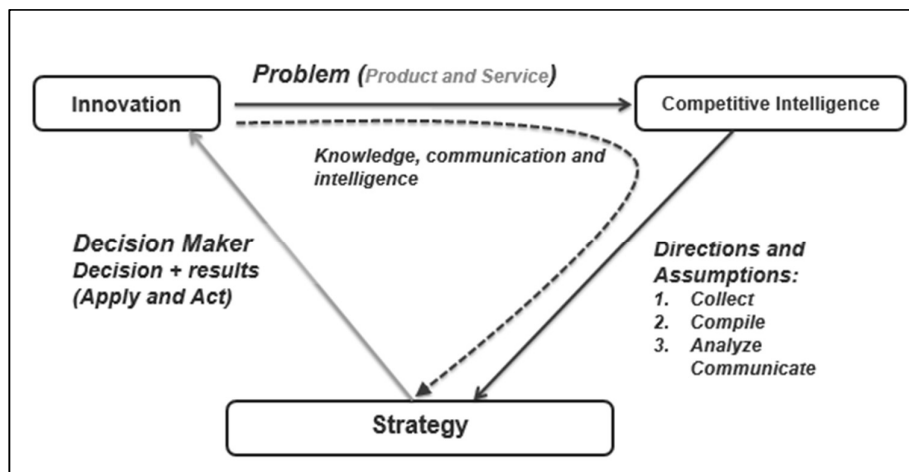
2.3 Competitive Intelligence and its influence in Innovation

Innovation is the mechanism through which new products, services, and systems arise, that are necessary to keep up with a regular market, technology, and competitiveness.

Many of the worldwide organizations have developed sophisticated CI abilities, that represents a constant search for opportunities and threats, which allows for greater corporate knowledge and promotes innovation that accompanies the organizations' strategic planning.

Many organizations support their development and their business's importance in a constant effort to differentiate, adapting to change and trying to obtain the most return on investment. Another solution is innovating procedures, products, and services, with the help of CI, to allow for a better understanding of the competitive surroundings. CI is used as an objective factor in the competitive advantage of many current organizations, where through an adequate perception of the surrounding context, better knowledge, and understanding of the various influences around and the market risks are understood (Figure 1).

Figure 1: Dynamic tree influential level between Innovation, Competitive Intelligence and strategy.



As a result of the more excellent knowledge of the variables that surround the organization, also the internal processes regarding competitive advantage are helped by this new knowledge offered by CI. In the last few years, several corporate systems have appeared to aid the decision centers, in data analysis, market behavior and tendencies statistic models, gathering and processing of data. CI is a transversal way to answer all of them, and also, it is also completes the decision and analysis center, almost simultaneously as the market and its external variables. Therefore CI can be considered as knowledge generating tool to the innovation process, market observation, customer's strategic behavior analysis, suppliers and opponents, as well as all the external environment and market necessities. Since CI is focused on gathering and processing information to gain a strategic advantage to the leading corporate decision makers, it facilitates the creation

of strategies and solutions towards the critical stages of the innovation process, with a financial and strategic perspective of the investigations and development assumptions. The innovation is evaluated, monitored and controlled employing using the knowledge acquired by the organization, for innovation to reach its higher potential, the market must have a necessity to obtain this product or final service. This necessarily implies a duty for innovation to have the maximum possible knowledge about the market, to create these necessities in the customers or the market.

In the model above, the search for market knowledge with high potential, creates an internal and external corporate quest that allows new products to be developed, that match the markets necessities.

Even though organizations create internal market necessities, through innovated products or services, another necessity still exists as a result of the competitive markets nature. This necessity is based on the competition towards the opponents and towards the customers' needs. CI can also aid a pharmaceutical organization in helping to understand the market, as an opponent develops their unique capacities and strength in the market. Another advantage in using CI for innovation in products or services is its abilities to gather and analyze consumers' perceptions and opinions towards specific products and services available. This ability can directly change the way innovation is made and developed, allowing for information to be collected through CI in response to the consumers' specific innovation. Studies conducted regarding CI shows that organizations that have developed CI systems are better prepared for competition than others, also creating a competitive advantage through innovation. It is therefore sensible to conclude, that after this review on CI and its influence on innovation that it does play a crucial role in innovation, in organizations that intend to gain a competitive advantage in the market and to gain added value to their products and services.

Organizations that have CI procedures are capable of gaining considerable competitive gains in innovation, as compared to their opponents. This advantage results in lower costs in the overall business procedures to improve the general perspective on the market and create sustainable innovation.

Case Study: Omega Pharma and Competitive Intelligence context

As already described, the current global life sciences sector constraints and difficulties are increasing the importance of new commercial models, new sales and marketing analytics solutions, new business effectiveness methodologies, competitive and scalable systems, more efficient business processes and more flexible and agile tools.

Although it is not always clear what the best commercial model is, many pharmaceutical companies are looking at a range of options, from total re-organisation, to the use of alternative selling channels (such as e-detailing, Closed Loop Marketing (CLM), digital platforms,

telemarketing or merely a full re-organisation of the entire commercial systems) in order to engage more successfully with all their customers, physicians, payers and partners.

Currently, several pharmaceutical companies are being able to collect in a very efficient way several details from a different type of important sources by simply using Closed Loop Marketing (CLM) or digital service portals into their commercial strategies. However, the gaps exist between the collecting phase up to the decision making phase, where the focus of the decision problem falls in the analysis phase.

As a consequence, marketing teams are getting isolated from the senior management levels, IT departments, external analytical influencers, and internal or external commercial players. Is being asked to the marketing teams to react as intelligence connecting bridges with the other involved departments, being not only the brand and products management decision makers but also the intelligence and market insights experts. However, the real scenarios do not place Marketing as the strategic internal partner inside an organization.

Many pharma companies are not being fast enough in the data analysis to be able to make meaningful decisions, effectively failing to close the loop. Nowadays in some of the cases, the sector is relying on CRM solutions to capture different types of market indicators, opportunities, customer segmentation, targeting and profiling, organizational understanding and market access conditions on the various levels of activity.

Holistic CRM solutions have as main premises the joining combination of business process management (BPM), Competitive Intelligence (CI), Business Intelligence (BI), Multi-channel Marketing (MCM) and as well social CRM. There is an evident need for holistic solutions that can support the business services integrating all the offering aspects into robust customer experience and customer-centricity vision. This is particularly true when the business owner (Marketing, Sales or Market Access) is the primary driver of any solution and essential part of an initiative to shift how the enterprise interacts with customers.

From another perspective, we have today a more meaningful perspective about data information, where new forms of analysis have appeared in order to use the concept of information science with Big Data new capabilities and data science mighty analytical and statistical power.

The combination of new methods of analysis for decision support system such as Big Data brought another type of value to innovation and technological development for any pharmaceutical company. Today's pharma companies can collect several patterns and data sets from the marketplace using the most recent technology available to improve traditional business methods, such as iPad platforms, where new mobile sales force automation (SFA) is having an incisive effect on overall pharma sales and marketing activities.

While new systems and new IT paradigms are bringing dramatically new capabilities into commercial and marketing interactions, there are visible signs that the ability of the sector

performing meaningful analysis and create strategic outcomes that can bring value to the decision makers is not being useful and productive.

Although the main job of competitive intelligence is to support management decision making, having a formalized competitive intelligence system in place can help any pharmaceutical company address several different issues.

Currently, pharmaceutical organizations not only have technology supporting the main critical needs but also have human resources knowledge around new powerful concepts like Big Data and Data Science to bring intelligence and insights through data and information. However, the gap resides in the connecting bridge between the Information technology systems and the human resources, where is fundamental to have processes and organizational structures to support and build consistent frameworks and methodologies to have on a systemic pattern critical insights, decision resources, analysis, and answers to support the business strategy and decision committees. Thus CI processes are strongly related and from a technologic perspective to business intelligence (BI) and from a business perspective to knowledge management (KM). BI and KM can be both perceived as critical inputs to competitive intelligence processes.

A systemic CI process allows to anticipate changes in the marketplace, anticipate actions of competitors, relocate in an efficient matter investment from R&D operations and initiatives, monitoring of new technologies, products, and processes that impacts the business and monitoring the political, legislative or regulatory changes.

CI outcomes can be described as cutting-edge data collection sets and ethical and professional human analysis that allows insightful competitor analysis to the next corporate decision-makers at a reasonable strategic point. Therefore CI should not be considered as a function, but as a process, that should appear in several aspects of the business and as one seamless process not relegated to one area, division or unit.

Omega Pharma is well positioned to evolve already existing processes with new CI capabilities or support the integration of CI with another system, allowing the organization to move to a single and unified CI strategy.

Omega Pharma understands that in order to successfully realign the business model to respond to these pressures, Life Sciences marketers must find more effective ways to reach and understand their audiences. Dynamically addressing customer needs is difficult in highly regulated industries, presenting challenges never previously encountered. Marketing success in this environment requires different thinking and different capabilities. In order to provide real value to the customer, marketing requires internal collaboration with the full spectrum of stakeholders and external collaboration with health systems, biotech, academia, payers and governments.

Omega Pharma Services Include:

Marketing Center of Excellence Strategy – Analyzing and refining business process and technology to deliver a complete view of key influencers in the healthcare network; Utilizing new sources of information and evolving technologies to deliver on the promise of a Marketing COE
Advanced Analytics – Helping teams more rapidly integrate disparate sets of data utilizing novel technologies to provide actionable insights in very short timeframes

Multi-channel Marketing (MCM) – Identifying and leveraging new channels to communicate with patients, advocates, and health care practitioners, and using knowledge gained through those interactions to evolve the customer experience to become a “human” experience

Data Harmonization and Standardization – Evaluating the acquisition and integration of data assets to ensure data is purchased and integrated once thereby minimizing cost and increasing speed to deliver

FUTURE RESEARCH DIRECTIONS

New expectations of CI and knowledge sharing are emerging as this research field is becoming strategically important for business organizations. In this context, a consistent framework needs to be developed. Further research could also be undertaken:

- Studies on CI integration across organizational functions and in other types of organizations.
- Studies that develop and test a theoretical framework that relates CI mechanisms, situational characteristics, and organizational outcomes.
- Studies that analyze the capabilities of employees' in order to achieve efficient integration of CI into work practices.

Finally, more research is needed on the facilitation of the different types of CI tools and systems and their impacts on the innovation process of organizations.

CONCLUSION

CI and knowledge are fundamental for organizations, particularly, in encouraging the innovation process and the implementation of new practices and processes.

In this context, two elements need to be managed together: people and knowledge. Assuming that people are the source of knowledge, practices such as communication, skills development and recognition are core to promote the sharing of knowledge.

It is essential to implement mechanisms for systematic involvement of employees, either through meetings, technological platforms allowing discussion forums or specific systems of knowledge management.

Also, it is necessary to highlight the importance of CI as support for problem-solving and decision-making, identifying new solutions and routines in order to develop conditions to implement new management practices and organizational changes for better and more competitive strategies.

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