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Teaching Competitive and Technological Intelligence methodology in Engineering School

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Abstract— This article was the result of a Competitive and Technological Intelligence (CTI) project with a group of Students in UniLaSalle France. The aim of this study is to propose a teaching CTI methodology applied to the energy cake case. Thus, the study of this case show the free monitoring tools used by the UniLaSalle students group and the important results about the competitive environment of energy cake.

Index Terms— *Competitive and Technological Intelligence, Methodology, Monitoring tools, UniLaSalle France.*

I. INTRODUCTION

Competitive Intelligence is regarded as a specialized branch of Business Intelligence. Solberg Soilen [1] proposed the classification of intelligence studies in order to help us to place different forms of intelligence and to show how they related to each other. The first concept aims to collect and analyze data on specific and generic competitive environments, while the second focuses on the current competitors and analyze areas such as potential acquisitions-mergers and evaluate specific country risks [2].

Technological intelligence is defined as a process to determine patent and innovation trends [3], [4].

To propose a simple definition for these two concepts we propose:

Competitive Intelligence serve to identify, monitor competitors and decrypt their strategy. Technological Intelligence is to follow a technical and scientific domain in the time and, to monitor developments (www.ie.bercy.gouv.fr).

The growing of CTI tools to be used in different domain remains a challenge for the private and public organization. We present some tools taught and used in UniLaSalle¹ to show how to teach CTI methodology by using these tools and analyzing the important results of the energy cake project.

The students have decided to work on the Lacatlis group, leader in the dairy industry, it has recently created a new line of sportive nutrition: Apurna.

The specificity of this range lies in its composition. All products contain "PROLACTA" which is a patented concentrate of milk protein. This ingredient has been developed by "Lactalis Ingredients" and target sports by answering three specific needs:

- Strength
- Endurance
- Recovery.

Lactalis launches a new range of energy (hyper protein) cakes named APURNA, how can it differentiate itself from its competitors on the cakes for sportive nutrition? A CTI system has been set up by students to resolve this problem.

To better understand the contribution of this paper, we propose how to teach the Competitive and Technological Intelligence methodology. Secondly, we discuss the methodology used, then we analyze the results depending on the tools used. This work has allowed us to identify the competitors and the technological trends in energy cake sector. Finally, we offer some recommendations to Lactalis Group depending on the CTI results.

II. TEACHING CTI METHODOLOGY

As defined by the Association of Information and Documentation [5], the watcher is one who "feeds the makers of a company selected and processed information to alert them to changes in the environment (technical, competitive, economic, regulatory, etc.) of the company and help them in their decision making process. "

In the literature of strategic intelligence, several definitions have been proposed, we cite as examples: i) the watcher is just one "who is able to set up a monitoring unit"[6]. ii) "to listen, able to anticipate environmental trends and endowed with an

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¹ The « Institut Polytechnique LaSalle Beauvais » merged on the beginning of January 2016, another high school for the training of engineers focused on academic programs in Agriculture sciences: ESITPA in Rouen, and became UniLaSalle.

insatiable curiosity" and a "tracker warning signs of the future" [7]. iii) the watcher is both an expert synthesis of records, a leader in his community, a facilitator of decision making and a flagman of threats and opportunities [8]. We selected these thesis definitions of Kislin (2007) [9] because it sums up the role of a watcher in establishing cell. This thesis models the interaction and collaboration between decision maker/ watcher in the form of a model called WISP (or "Watcher-Information-Search-Problem") to show the passage of the decision to issue informational problem.

The thesis of Palazzoli in 2011 [10] is a case that showed the double competence of the researcher in the field of Technology intelligence and biotechnology, as well as the usefulness of exploitation of patent information in a public research laboratory in order to identify technology development and biomanufacturing niches in gene therapy and help decision making researchers in this direction. This researcher has developed his skills as an analyst on industrial property in the life sciences and not just a watcher who seeks patent information available in specialized databases (Espacenet, Patentscope) or commercial tools which allow to access to databases open or closed to facilitate the automated processing and improve the quantity of exploited patents (QPAT, Matheo Patent, Questel,...). Following this thesis, technological monitoring responded to several types of problems: How can we define technology development niches? ; What are the rules of the game between the market players and how to propose collaborative open source projects to promote the publication and sharing of knowledge or develop disruptive technology,...?

This literature review has enabled the construction of a Competitive and Technological Intelligence plan (Figure 1 and 2).

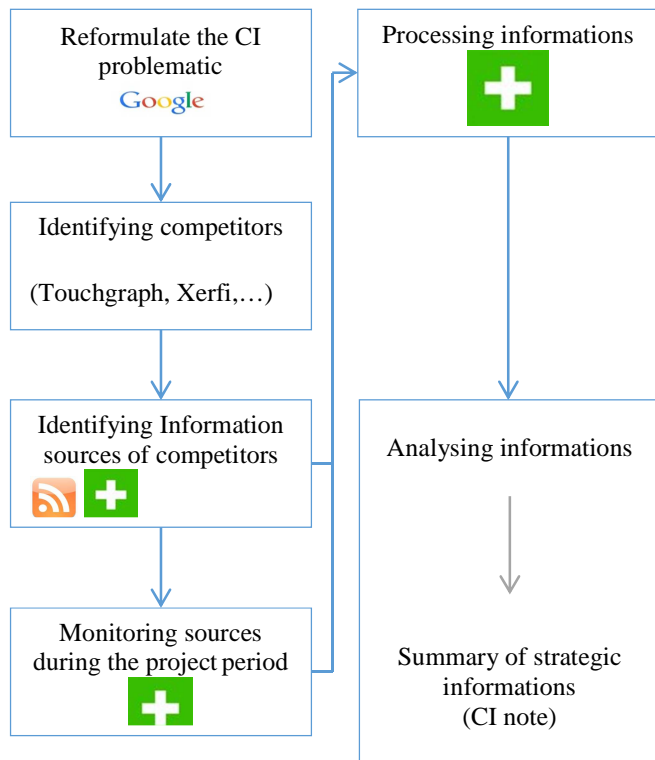


Fig. 1. The teaching Competitive Intelligence (CI) Methodology.

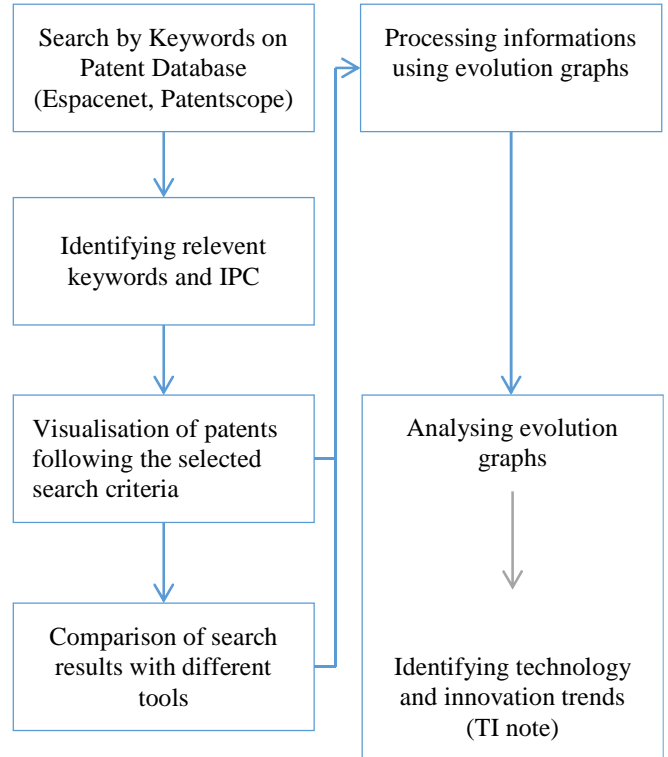


Fig. 2. The teaching Technology Intelligence (TI) Methodology.

After presenting the two methodologies, we have showed students with different functionalities of free two processes have been applied by the group of students, the results are presented in the following section.

III. METHODOLOGY APPLIED BY STUDENTS

In order to conduct our Competitive Intelligence, we have implemented in a first step, a monitoring system for the Lactalis Company by using Netvibes. This study was released in the period from 22.09.2016 to 22.10.2016 by using free monitoring tools.

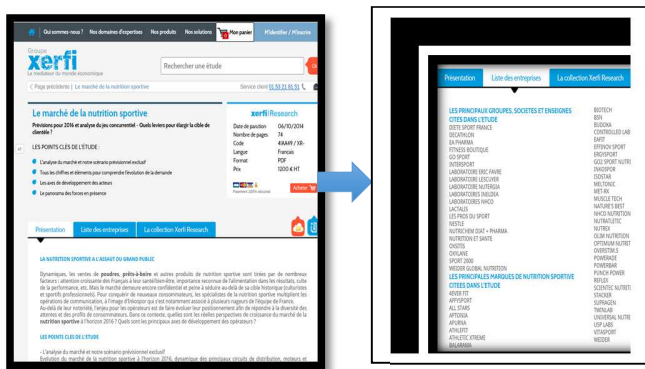


We have added widgets to create our page on Netvibes and made the most relevant information possible in real time. We have selected specific keywords targeted to the maximum of our subject and have chosen to look the following keywords:

APURNA, PROLACTA CAKE, etc for information on our subject. However, we have also set up a competitive intelligence on key competitors.

Consequently, we have achieved much information sources, we then found ourselves relevant informations.

Xerfi research has allowed us to find competitors at Lactalis and its APURNA brand. Many companies in this market are specialized on sportive nutrition, but few of them are direct competitors, so we chose to retain only 5, which we will detail later.



markets, which allows this product to be easily accessible (specialty store, appropriate GMS rays,...). This product is easily positioned in marketing with notoriety: Lactalis is highly known in the nutrition market. Moreover Lactalis specializes in milk and not in cake making protein, hence its low diversity in taste compared to its competitors (Figure 3).

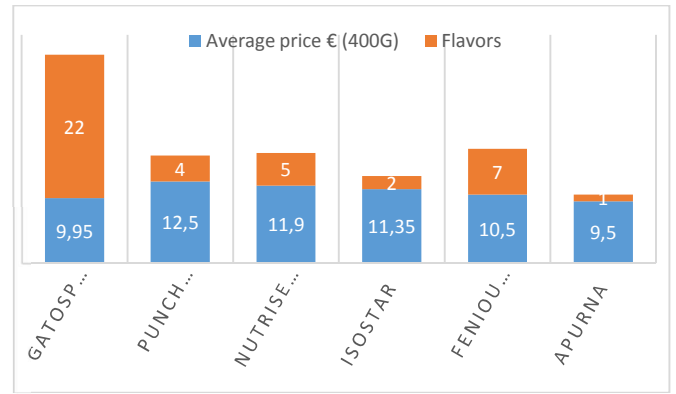


Fig. 3. Positioning the main competitors of APURNA.

In a second step, we present the key phases to conduct our Technological Intelligence:

- Keywords search by using Espacenet²:
 - Energy cake, cake high protein, milk protein, sportive nutrition, milk protein mix, PROLACTA
 - Patent Searching filed by Lactalis
- Selection of International Patent Classification (IPC):
 - A23L: associated with patent Lactalis
 - A23C: Milk Protein
 - A23J: Protein
 - A21D: Energy cake
- Keywords search by using Patentscope³ (crossing keywords and IPC) and patent Analysis

IV. RESULTS OF STUDY

A. The Competitive Intelligence results

The market for vitamin nutrition (protein cakes) is already requisitioned by several competitors as OVERSIM'S, POWER PUNCH, Nutrisens, ISOSTAR and FENIYOU MULTIPORT. We have studied the range of widths of each competitors that we used in our Xerfi study. Competitor products are more diversified, some brands offer over twenty different flavors notably "without gluten" or completely organic. Lactalis is therefore placed on the market by focusing on a single product: a single taste, one recipe but is positioned at the best price. The Lactalis brand is positioned on a different

Protein cakes of APURNA aimed the high level athletes in order to increase and improve their performance. Today, 5 million of people have used protein products. Appendix 1 shows competitors sales of Lactalis, we have noted that all these companies are specialized only on sportive nutrition. They have a turnover of less Lactalis is a highly diversified company and present in many markets. The competitors are growing, such as Isostar that has a turnover in constant increase, + 46.64% between 2012 and 2013 and that has quickly become known in the international market. We have noted that Isostar is a competitor that is growing in innovation. Even if Lactalis is an international company and leader in the food market, it needs to innovate its products. Since its inception, Isostar is investing every day to be ever closer to the sport, whatever their level, in order to bring themselves to the best nutritional solutions to help them achieve their goals.

For this, Isostar surrounds itself with experts, such as doctors and nutritionists, National Technical Directors, sports coaches, engineers in R&D, high-performance athletes, who work on optimizing existing ranges and actively participate in new product development. The strength of this company is that it focuses primarily on: Nutrition and Health.

After the presentation of companies' competitive environment, we have moved to their technological environment.

B. The Technological Intelligence results

In order to know the position of Lactalis with its energizing cakes, we have first focused our Technology Intelligence on

² Espacenet : BDD de l'OEB (<http://www.epo.org/searching-for-patents/>)
³ Patentscope : BDD de l'OMPI (<https://patentscope.wipo.int/search/>).

patents concerning high protein cake. For this, we used Patentscope database that we seemed fuller in the results. For research, we have used the keyword "high protein cake" when we meet with these two IPC: A21D and A23L (identified earlier).

Using Patentscope database, we have found 11 relevant patents (Figure 4). We have observed while filing energizing cake in terms of patents is relatively new and is evolving in recent years. We suppose that it is a growing market.

After qualitative analysis, we also found that patents are very different from each other's. The used processes in the manufacture of energizing cake are varied and do not necessarily concern Lactalis uses of milk protein in their product.

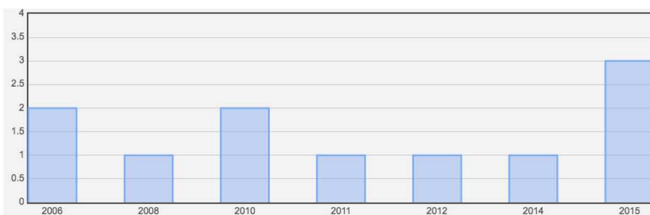


Fig. 4. Number of patents related to high protein cakes published between 2006-2015.

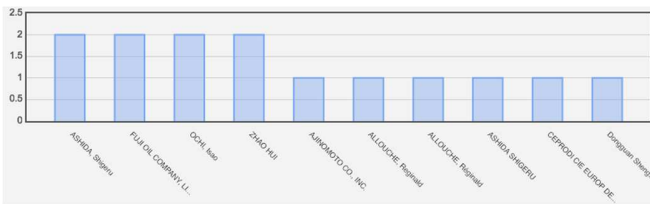


Fig. 5. Main applicant related to high protein cakes.

Finally we have noted that the patents do not concern any large food group or competitors mentioned before in Competitive Intelligence (Figure 5), making it difficult for us to position the energizing cake face competition. Therefore, we were interested in a second time to Prolacta innovation, detailed below.

For this second research, we used the keyword "Mix protein milk" and these two IPC: A23C and A23J. We found 35 patents (Figure 6).

We can see that the innovations of milk protein mixtures tend to stagnate. Among the major groups of the food industry in this market, Danone has filed several patents on those products, and thus seems to be a leader and innovator in this market. The actors in this area are few and this type of product is difficult to develop (Figure 7). This is probably an anticipation on the part of industry with regard to new diets of the population. Indeed, there is an emergence of intolerance and food allergies and special diets, such as vegan diets and without lactose.

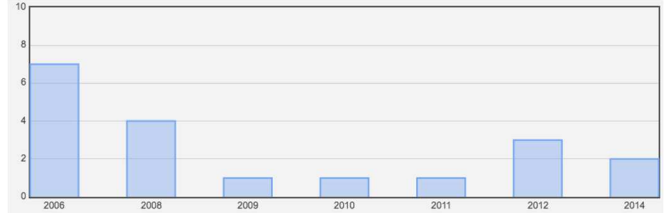


Fig. 6. Number of patents related to Prolacta published between 2006-2015.

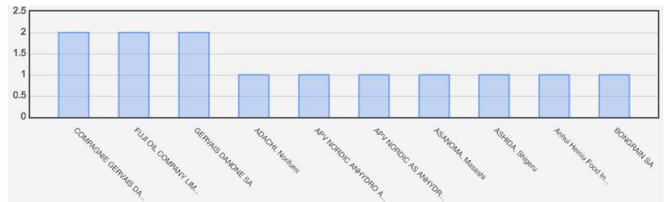


Fig. 7. Main applicant related to milk protein mixtures.

The CTI results that we can further show consistent development of new trends in this field.

V. COMPETITIVE AND TECHNOLOGICAL INTELLIGENCE NOTES

To compose our Competitive Intelligence note, we propose three ones :

- The high-protein cakes are currently developing. Athletes want to be efficient while having fun, which leaves room for new opportunities for innovation in sportive nutrition. The industrial group Lactalis has anticipated this trend by proposing a new type of product to sweet trend based milk protein: the chocolate cake in the Apurna brand. With the specificity of its product, the group stands out from its many competitors.
- A favorable sociocultural evolution in sport, there is more and more messages advocating public health and welfare research.
- The products are more and more designated for large public, they develop new standards, and continuously improve convenience in packaging.

For the Technological Intelligence note, we observed a stagnation of innovation on the side of mixtures based on milk protein. This development is met by the appearance of new protein enrichment means lactose. Some competitors are already using new alternative protein sources in their ranges as PunchPower, which commercializes its cake of rice flour. Danone, has a strong presence on the dairy market, has previously focused its products to the general public. By this strategic choice Danone is not in competition to face Lactalis with Apurna.

VI. RECOMMENDATIONS AND CONCLUSION

The CTI results suggest that Lactalis, on the managerial level, can develop new flavors and differentiate the range (gourmet products and formats...)

The implementation of this monitoring system has shown the pervasive role of students/watchers in the organization and coordination of steps in this process, from receipt of the request to the dissemination of results.

To conclude this study, the application of CTI methodology and the use of free monitoring tools allowed understanding of the evolution of the energy cake/product segment on the one hand and the strategies of the actors present in competitive and technological environment on the second hand.

This development can be a new problematic which shows the evolution factors of these food industries and the usefulness of all types of intelligence (market, technological or scientific...) for actors with whom they interact (research institutions, service providers, farmers...). As an example the thesis of Guéneac (2009) [11] on methodologies for the creation of knowledge related to the Chinese market in an economic intelligence approach applied to agricultural biotechnology where it mobilized the Matheo Patent tool for achieving the Technological Intelligence [3], [4] on wheat hybridization techniques and understand both the issues of the state and the Chinese economic actors. Guéneac (2009) [11] used other tools dedicated to data mining and information retrieval ("Information retrieval" [12]) to better understand the linguistic and structural environment of Chinese scientific databases.

Our case study provides evidence that the Competitive and Technological Intelligence (e-veille⁴) was most taught to be applied to business cases for purely pedagogic education using the free watch tools (Netvibes, Google, Xerfi, Espacenet, Patentscope...) to achieve these methodologies. Finally the monitoring of open data can be a full search. This study showed us how to live a research subject on which there was a real need, and yet too many uncertainties.

APPENDIX 1: BENCHMARKING OF COMPETITORS

NUTRISENS	OVERSTIM'S	PUNCH POWER	FENIOUX MULTISPORT	ISOSTAR
53 MILLIONS €	15 MILLIONS €	1 282 600,00 €	906 900,00€	290 400,00€
International	Europe	France and île de la Réunion	France	International
A High growth 15% of turnover in the International	Including 20% for the export	A growth + 22,28 % between 2014 and 2015		A constantly increasing + 46,64 % between 2012 and 2013.

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REFERENCES

- [1] Solberg Soilen, K., "A place for intelligence studies as a scientific discipline", Journal of Intelligence Studies in Business, vol. 5, n°3, pp 34-46, 2015.
- [2] Lesca, N. and Caron-Fasan M-L, Veille anticipative, une autre approche de l'intelligence économique, Lavoisier, Paris, 2006.
- [3] Dou H., Passer de la représentation du présent à la vision prospective du futur. « Technology foresight ». Humanisme et Entreprise. N°54, pp.24-46, 2002.
- [4] Dou H., Veille technologique et compétitivité, Dunod, Colmlection Fonctions de l'entreprise, 234 p., 1999.
- [5] Association des professionnels de l'information et de la documentation, Management de l'information : Panorama des métiers, 2002.
- [6] Lopes Da Silva A., L'information et l'entreprise : des savoirs à capitaliser et à partager, Thèse en SIC, Université d'Aix-Marseille III, juillet 2002.
- [7] Cartier M., La veille intégrée. Comment gérer le changement grâce aux stratégies d'innovation, 1999. (en ligne : www.michelcartier.com)
- [8] Achard P., La dimension humaine de l'intelligence économique, Paris: Hermès, 77-92, 2005.

⁴ See the definition of "e-veille" in Lexique de Gestion et de Management sous la direction de J.P. Denis, A.C. Martinet et A. Silem, 9^{ème} édition, Dunod, 2016.

- [9] Kislin P., Modélisation du problème informationnel du veilleur dans la démarche d'Intelligence Economique. Université Nancy II, 2007.
- [10] Palazzoli F., "Double compétence": Exploitation de l'information brevets dans un laboratoire de recherche public: identification de niches de développement technologique en bioproduction et en thérapie génique. Thèse, 2011.
- [11] Guéneq N., Méthodologies pour la création de connaissances relatives au marché chinois dans une démarche d'Intelligence Économique : application dans le domaine des biotechnologies agricoles, Thèse, 2009.
- [12] Crestani F., Information retrieval research at the University of Lugano, Informer, n°29, 2009.



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