

COMPETITIVE INTELLIGENCE FOR BUSINESS AND INTERCULTURAL COMMUNICATION – A CASE STUDY OF ROMANIA

Daniel-Gabriel DINU*, Claudiu DIACONU*, Adrian PÂRLOG**

*Research and Development – R&D, THE Q AGENCY, Bucharest, Romania, **“Mihai Viteazul” National Intelligence Academy, Bucharest, Romania

Abstract: *We are living in an age of technological and scientific development, a digital era where information is the raw material or the base knowledge. An easy and open access to information and an unprecedented development of communication paths, have caused, in a very short time, profound changes in human relations, a phenomenon that knows no precedent in human history. The large volume of information has become the most complex problem and the ability to extract a meaning and knowledge represents a great challenge in the domains of business, intelligence and defense. In today's business environment, the key to success is also represented by the speed with which the information is extracted from the informational noise and also by the ability to react and communicate quickly and customized with the social segment, that is very well defined. We want to present our four years experience in Competitive Intelligence for business, intercultural communication and marketing solutions using cognitive computing elements. Although the domain isn't new in Romania, there is a small but dynamic niche market with an increasing demand, but also with a series of obstacles. Our experience has demonstrated the usefulness of neuromarketing and cognitive computing in finding innovative and customized solutions for solving complex problems in business and intercultural communication. The conclusion of our study is that, in order to have an advanced and competitive European Union, it is absolutely necessary to develop innovative solutions for Competitive Intelligence that would include elements of neuromarketing and advanced Artificial Intelligence (Cognitive Business?).*

Keywords: *intercultural communication; competitive intelligence; cognitive business; neuromarketing; neuroscience*

1. INTRODUCTION

Information is the foundation of the contemporary world, being the most valuable capital the company holds. Information is a modern exchange currency. Through his power, she is the master of all fields of activity. Information is a fearsome weapon in the hands of people who know how to use it, and at the same time, it is also an attractive target for competitors through collection operations. Companies need to collect information efficiently and process it quickly, otherwise it disappear because of the aggressive competitive environment.

Many managers work with large amounts of data, not being trained to make a difference between data and information that adds value. Their decisions are based, as a rule, on some knowledge from previous experiences and much "intuition". During stable periods, making

decisions is much based on previous experience, as there are not many changes and the environment is relatively constant. In the meantime, during periods of great and dynamic transformation, past experience is no longer justified and decision-makers need relevant and quick information to help them make the best decisions. Tversky and Kahneman (1974) consider that decisions are often based on options related to the likelihood of occurrence. The role of these subjective probabilities is not insignificant because people tend to make decisions based on past experiences.

In “*Knowledge Management in the Intelligence Enterprise*”, Edward Waltz explains the transformations that he has gone through since the antiquity. Alvin and Heidi Toffler define the three waves of civilization and transition in the creation of value: the first wave – agrarian, until 1700, was based on the production of the earth; The second wave – industrial, between 1700 and

2000, was based on mass production of goods and the third wave was informational, after 2000, where production of goods and services is based on knowledge. We are in this third wave of civilization and transition and Toffler argues that in the future the focus will be on human knowledge, decision-making and influence. This idea is not new; since ancient times, people have been fascinated to find out what others think, how they think, and what decisions they take to be able to defend or attack. However, in this digital age, information and knowledge gain a special interest and great value because the level of human communication has reached unprecedented odds due to the unprecedented evolution of technology. Everything that surrounds us is information. Knowing how the human mind works can have different goals: from influencing decisions to improving life, through medical applications and devices. In this logic, we can say that the human mind is the last frontier of knowledge.

2. THE NEW APPROACH OF COMPETITIVE INTELLIGENCE

2.1 Competitive Intelligence in the *Cognitive Era*. Radical changes in Intelligence are attributed to IT development through advanced information technologies. IT support for intelligence is at the level of each stage of the intelligence cycle: collecting data, information and knowledge from different sources, processing the collected results to facilitate the operation of analytical methods, analyzing data and information in accordance with well-defined analysis methods and dissemination of results in the form of a intelligence report or graphic presentation.

In recent years, technological development in IT has led to the development of systems that can teach, even without external help. These systems, called A.I. - Artificial Intelligence perceive the environment and learn to maximize chances of success. In 1997, IBM developed a computer that plays chess, called Deep Blue, a computer that defeated world champion Chess Gary Kasparov. In 2011, IBM tested the skills of the supercomputer Watson, developed through the project called DeepQA, in a question competition. Watson defeated the two champions he competed with. The processing capacity of this computer is 500 gigabytes per second, equivalent to one million books. At the end of 2015, Ginni Rometty, IBM CEO, announced the launch of the IBM Watson platform, a *Cognitive Business* platform. With the launch of this platform, we virtually entered a new era of development - the *Cognitive Era*.

Cognitive era is defined as the era in which advanced computing is used on platforms based on scientific disciplines of Artificial Intelligence (A.I.) and Signal Theory. Thus, starting from Toffler's thesis, the third wave of civilization, the informational era, will end in the period 2015-2020, and the next wave of civilization, the fourth one, will be the cognitive era. It will be based on the understanding of both the human mind and the way of thinking but also on the phenomena of business. Dario Gil, Director of Symbiotic Cognitive Systems at IBM Research, thinks that cognitive computing is "an innovation so sweeping that it's ushering in a new age of computing, along with a new partnership between humans and computers, one where we bring together skills and collaborate to produce better results." Also, Ray Kurzweil, Google's Director of Engineering, says that "*Cognitive Computing* is more than a repackaging of artificial intelligence" and describes cognitive computing as the "ultimate long-term solution for many of the challenges that face businesses today." If we look at Competitive Intelligence as an intelligence-based activity in relation to the idea of an adversary and competition, and Business Intelligence as an intelligence-based activity that gathers data from the organization's internal work, implemented with the help of computing systems, the two areas of reflection are differentiated by the environment on which it concentrates: Competitive Intelligence focuses on the company's external environment and Business Intelligence focuses on the company's internal environment. If Business Intelligence solutions migrate from local stations to more powerful cloud-computing systems, which are specific to the *Cognitive Era*, namely, *Cognitive Business* solutions, then a new approach to Competitive Intelligence is needed, along with technological development and with the new way of thinking.

Competitive Intelligence in *Cognitive Era* is the process of transformation of intelligence through the use of techniques and technologies for evaluation and intervention that are based on neuroscience. The whole process of intelligence: collection, processing, analysis and dissemination of information can be enhanced by using the technologies and tools provided by cognitive neurosciences both through gathering high-quality data on consumer experiences and perceptions with integration of Cognitive Business solutions for processing and analyzing data and information, as well as by increasing the cognitive abilities of analysts with the help of cognitive technologies such as cognitive augmentation through neurofeedback.

2.2 Technologies and Applications of Cognitive Neuroscience in Business. The main advantage of cognitive neuroscience technologies is that intercultural barriers and communication are eliminated because the inter-behavior or the way the brain works is the same in the world.

Contributions of neuroscientific methods in research are considerable, because the benefits of physiological measurements have many advantages. For example, self-evaluation methods commonly used in marketing research to improve communication are entirely based on respondents ability and willingness to accurately relate their attitudes and behaviors (Petty and Cacioppo, 1983). On the other hand, physiological responses can be collected when respondents are exposed directly to messages or participate directly in consumer behavior and can be hardly controlled by them. Although there are individual differences between physiological responses, it seems that variations in social situations and stimuli have a strong effect on individuals (Cacioppo and Petty, 1985). Neuroimaging techniques most commonly used in neuromarketing are taken from medicine: electroencephalography, functional nuclear magnetic resonance, galvanometer, magneto-electroencephalography, eye-tracking equipment (Pop et al., 2014). Electroencephalography (EEG) records the alpha and beta rhythms of neural activity under the scalp. In particular, lowering the alpha rhythm and replacing it with the beta betrays a cognitive activity determined by will. Galvanometer (GSR) indicates the intensity of emotional reactions by measuring changes (occurring in skin conductance) induced by the vegetative nervous system. However, this technique does not indicate the value of the emotional reactions, but only their intensity, so there can be no difference if, for example, the states of surprise are positive or negative. Functional Nuclear Magnetic Resonance (NMR) records the level of oxygen concentration in the blood. Active neurons consume a higher amount of oxygen, so the oxygen level in the rest of the body decreases. This allows the recording of oxygen concentration changes in the body's blood (decreases concentration in the other parts of the body and increases for active neurons) and their output by the blood oxygen level dependent signal (BOLD).

If electroencephalography records only the activity of the neurons under the scalp, the functional nuclear magnetic resonance is much deeper, recording the activity of the neurons located within the cerebral hemispheres. Magnetoencephalography (MEG) studies brain

activity in real-time (millisecond). This is possible by recording the magnetic field produced by the synchronized neurons. Eye-tracking equipment (ET) indicates eye movement and eye view. The view does not have a homogeneous course, but involves a series of short stops, called fixations. Thus, eye-tracking equipment mainly studies these fixations. This is possible by recording corneal reflections due to infrared radiation.

Because they provide different information, these techniques can be combined in order to get even more complex information. Even though processes are expensive, they have a considerable contribution to research into decision-making and marketing communication. Although it has great potential, most neuroimaging applications in the specialty literature have focused on branding and the consumer's behavior. For example, electroencephalography (EEG) has been used to investigate reactions to television advertisements on numerous occasions. Thus, it has been investigated whether particular moments in commercials are primarily responsible for capturing brand awareness and evolution (Young, 2002), or whether certain visual scenes are better recognized (Rossiter et al., 2001). These researches and many others suggest that different types of advertising generate very different types of brain activity, which may also lead to differences in efficiency. Another important aspect that neuromarketing can describe, and on which it can provide a new perspective, is trust.

Trust is an aspect whose prominence is growing increasingly in the field of communication and marketing and neuroimaging can answer questions that simple marketing and market research cannot answer. Neuromarketing can study whether trust is a simple response to a repeatedly positive stimuli or it is more than this. Neuromarketing can also tell if consumer and product trust is similar to trust between friends or family in terms of brain activity (Lee et al., 2007).

Exploring and understanding such questions about the nature of trust will lead to a greater ability to explore past confidence factors and the ability to help businesses better communicate promotional messages to a diverse audience in terms of culture and build trust for both customers and collaborators in order to achieve mutually beneficial results.

2.3 Neuromarketing, Communication and Competitive Intelligence in Romania. The latest developments in cutting-edge technologies and their impact on the domestic and international business environment show that, in order to

survive in the current digital economy, companies need a set of new registers with regard to the information they operate on the market, effective marketing strategies and the persuasive messages they send to the market.

Considering these new requirements, THE Q AGENCY integrates high-end technologies with competitive intelligence so that it can deliver convincing messages to the beneficiaries. With the help of neuromarketing technologies, the company can analyze data collected from consumers and from the perspective of internal observations of human behavior, by studying the inner processes in the brain that underlie decisions. Given the high degree of accuracy of the data obtained, THE Q AGENCY can build strategic models that can accelerate the development of any business. THE Q AGENCY is an agency that makes innovations in the field of marketing by integrating and enhancing competitive intelligence processes to create compelling strategic and communication models for companies. This approach provides the opportunity for the beneficiary companies, regardless the industry, to adapt to the current high competitiveness requirements. The keywords that define THE Q AGENCY are: marketing, innovation and intelligence - the only profit-generating segments in any business.

The experience of the last years in the field of advanced marketing combined with the competitive intelligence field was based on many challenges generated by the Romanian business environment. The market in Romania is a conservative market with a lot of reticence to the new. A study in 4452 companies in Romania, on the perception of Romanian managers in the field of collecting and using competitive information, highlights some worrying aspects.

Romanian managers do not have mechanisms to verify and analyze the quantity and quality of information existing in the company. Moreover, the management of many Romanian companies is overwhelmed by information irrelevant to business. Although many reports are produced in the company, they are incomplete and contain little value information (Obreja, Cucuteanu, 2014). In this context, the decisions taken by the Romanian managers are mainly based on emotion and not reason, increasing the likelihood that these decisions are wrong. The consequence is the increased risk of loss to the company and a downward trend. The lack of a culture in the activity of Competitive Intelligence or otherwise competitiveness through value-added information, often puts the managers in a position to make serious confusions between information and

intelligence. Although similar, these two terms are at different levels in the pyramid.

Another relevant study to explain the Romanian managers' reluctance in implementing innovative solutions, with outstanding results in competitive markets, is the psychology of the Romanian people. This study reveals that the psycho-cultural profile of Romanians is dominated by mistrust in people. This chronic distrust makes the Romanian managers not to be cooperative and tolerant to others for a common benefit. This lack of cooperation has serious consequences by blocking the intellectual and creative potential that leads to low performances. Also, the authors of the study state that promoting mediocrity, by amplifying any result on a low emotional background, along with a competitiveness that is not on a disciplined foundation, leads the level of cynicism and skepticism to increased values (David, 2015).

In addition to these aspects of the Romanian manager's psycho-behavioral profile, which is delaying the development of the cutting-edge market, there are a number of early adopters who, once validated, help implement these technologies in the marketplace. In this situation, there was the mobile phone market that was opened in 1997. None of the two operators imagined, however, at the moment of launch, how fast the mobile phone industry will grow. In fact, revenue at the end of the first year surprised both the operators and the investors behind them, as well as the pessimists who rushed to declare mobile telephony a business without much potential in one of the few countries that still did not offer GSM mobile telephone services. At the end of the first year since the two GSM companies entered the market, the number of users of each provider was approximately 100,000, by the end of 2015, the number of active mobile users was 23.1 million users growing 1% over the previous year.

2.4 Comparative study in U.E. on adapting companies to the current competitive environment in the digital economy. As a result of poor data related to neuromarketing companies, this domain being a niche, it is not possible to establish on the basis of existing data certain causal and correlation relationships to demonstrating the robustness of empirical data. The implementation of Competitive Intelligence function in businesses can be a good indicator of market and industry maturity and the gap between the former Eastern Europe and Western Europe being very visible.

Over 90% of FORTUNE 500 companies use Competitive Intelligence as a way to substantiate

company decisions. Western European countries are present with many companies in different industries and business areas in this top. In contrast, with one exception, companies in the former Eastern Europe are not part of this top: a Polish company managed to rank at 454 out of 500. Unfortunately, in this case too, data are insufficient to provide conclusive results. In this situation we can use other indicators on the basis of which we can deduce the ability of some countries to increase their competitiveness by implementing innovative solutions such as neuromarketing and cloud computing. This comparative study will analyze and rank the data from the following countries: Romania, Italy, Spain, Austria, France, Germany, Belgium and Poland. We created an index of technological competitiveness (TCI) based on three indicators:

(1) First indicator is Global Competitiveness Index (GCI). GCI is index published by the World Economic Forum in yearly (2017) report.

Table 1 The GCI 2016-2017 Scores. Source: WEF, The Global Competitiveness Report 2016-2017

Ind.	RO	IT	ES	AT
GCI	4.30	4.49	4.68	5.22
Rank	8	7	5	3

Ind.	FR	DE	BE	PL
GCI	5.20	5.57	5.25	4.56
Rank	4	1	2	6

(2) The second indicator is ‘Integration of Digital Technology’. This indicator covers two areas: (a) ‘business digitisation’ and (b) ‘eCommerce’. ‘Business digitisation’ has five indicators: electronic information sharing, cloud solution, social media, eInvoices and RFID.’ eCommerce has indicators the percentage of small and medium-sized enterprises (SMEs) selling online, eCommerce turnover as a percentage of total turnover of SMEs, and the percentage of SMEs selling online cross-border.

Table 2. DESI 2016, Integration of Digital Technology dimension, by country. Source: European Commission, Digital Scoreboard

Ind.	RO	IT	ES	AT
(a)	13.60	22.34	23.97	26.03
(b)	6.31	9.00	12.86	14.67
(a)+(b)	19.91	31.34	36.83	40.70
Rank	8	6	4	3

Ind.	FR	DE	BE	PL
(a)	18.96	25.31	28.32	14.06
(b)	15.16	18.65	21.97	8.93

(a)+(b)	34.12	43.96	50.29	22.99
Rank	5	2	1	7

(3) The third indicator is number of neuromarketing companies affiliated to the international profile association.

Table 3 Neuromarketing Companies – NMSBA Source: Neuromarketing Science & Business Association (Sousa, 2016)

Val.	RO	IT	ES	AT
No.	1	6	6	2
Rank	7	2	2	5

Val.	FR	DE	BE	PL
No.	2	11	3	1
Rank	5	1	4	7

According to the BBC Research study, the global market for neuromarketing technologies has reached to 21 million USD in 2015 with a predicted annual growth rate (CAGR) of 18% from 2016 to 2021 (NMSBA, 2017). Following the comparative analysis of the technological competitiveness index (TCI), we find that the most competitive country in terms of technology is Germany, followed by Belgium, Austria, Spain, France, Italy, Poland and Romania.

3. CONCLUSIONS

The conclusion of our study is that, in order to have an advanced and competitive European Union, it is absolutely necessary to develop innovative solutions for Competitive Intelligence that would include elements of neuromarketing and advanced Artificial Intelligence (*Cognitive Business*)? In an era where global competitiveness is achieved by the unions or federations of states with a continental coverage, has the European Union a vision and a philosophy of its own on how to conceptualize an own identity and create a school of competitive intelligence that can be used for it’s development?

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