

# Knowledge Acquisition Based on Geomarketing Information for Decision Making: A Case Study on a Food Company

Amanda Nunes, Célio Santana, Fernanda Bezerra, and Natan Sobral

**Abstract**—This paper presents a case study of a marketing agency that used geomarketing to perform a new campaign for a food company. Initially the food company started a ad-hoc initiative of advertisement renting five outdoors in the most crowded avenues of Recife. This research was conducted based on a action research, in a real environment, where the marketing agency evaluated the former marketing campaign and based on its results, proposed a new one reaching more people and places where the product is sold. The result was the increment of target people reached and also in the sales. The knowledge about where were the best places to put the advertisements was acquired using geomarketing only.

**Index Terms**—Geomarketing, knowledge acquisition, decision taking.

## I. INTRODUCTION

In recent years, the advent of information technology has transformed the way of how marketing is done and how companies manage information about their customers. The availability of large volume of data on customers, made possible by new information technology tools, has created opportunities as well as challenges for businesses to leverage the data and gain competitive advantage [1].

The World Wide Web has made the process of collecting data easier, adding to the volume of data available to businesses. Many organizations have realized that the knowledge, stored in these huge databases, is important to supporting organizational decisions. The knowledge about customers is critical for marketing decisions but, much of this useful knowledge is hidden and untapped [2].

The intense competition and the increasing available choices for customers have created new pressures on marketing decision-makers and emerged a need to manage customers in a long-term relationship. The customer relationship management (CRM) requires the organizations tailor their products and services and interact with their customers based on actual preferences [3].

Almost all industries need to advertise and promote their products and services. There are generally two approaches to advertisement and promotion: mass marketing and direct marketing. Mass marketing, which we are interested, uses medias such as television, radio, and newspapers, broadcasting messages to the public without discrimination. It used to be an effective way of promotion when the products were in great demand by the public [4].

However, in today's world where products are overwhelming and the market is highly competitive, mass marketing has become less effective. The response rate, the percent of people who actually buy the products after seeing the promotion, is often low. From the datasets that we have studied (see later), 1% is quite typical [5].

The current scenario of the outdoor media market in Brazil has been growing gradually. The increasingly the use of medias such as Outdoor, Front Light, Gable and etc. reach the eyes of thousands of potential consumers every day. According to the Inter-media Project (2014), this sector showed a growth of 21.82% from 2012 to 2013, from a turnover of Brazilian currency (Reais) R\$ 912,549,333.95 to R\$ 1,100,678, 69.06.

One approach to take more efficient actions related to mass marketing is the use of geomarketing to assist the process of decision-making on companies specialized in marketing and propaganda. The geomarketing is interpreted as the genesis of market intelligence considering the importance of spatial concept that is essential to the final result obtained. The interpretation of these results is still a purely intellectual work [6].

Cliquet [6] also suggests that contemporary companies adopt a mix of various techniques applied to marketing. Geomarketing, specifically, provides the keys to decode the meanings of a particular territory, and thus companies should gradually integrate this spatial analysis to their marketing. A better understanding of the connection between consumers and the space provides new possibility of approaches of marketing to companies promoting a competitive advantage.

Studies on market geography or geomarketing, has often been adopted by many types of organizations in order to maximize sales, market penetration and even solve logistics problems between suppliers, distribution centers and retail stores [7].

The city of Recife, where it was held this study, is one of the biggest consumer markets of Brazil being the target of speculation as large supermarket chains. According Grassi [8], organizations select points of interest considering technical conditions that work well to them.

The geographical science is used, considering the commercial point of view, with the purpose of growth of companies contributing to loss reduction and profit maximization. This phenomenon is part of the daily life of the local market and involves a whole ecosystem of companies, consumers and facilitators of this relationship [8].

Considering this fact, a large Brazilian company of the food industry, which distributes its products in all major

supermarket chains present in the city and that already performed actions related to mass marketing, decided to evaluate how its marketing strategy was and, in case of dissatisfaction with the current results, perform necessary adjustments.

Since a geomarketing study was performed to identify the main selling points of the product and relating them this to a particular consumer target and the highest circulation this public. From the mapping between consumer behavior, points of sale and where advertises were published we could indicate the best strategy for the campaign.

The objectives of this work is, through a case study, analyze the marketing strategy, based on management information for decision making in relation to the action of an outdoor media company in the food sector. This analysis will be through the use of geomarketing that will serve as a source of information for the analysis of raw data.

The specific objectives are:

Identify, through a geomarketing tool, the range of initial marketing strategies adopted by the company;

Present how data are obtained and segmented from this tool;

Assess where there is greater movement of people who fit the target audience;

Assess where commercial establishments frequented by these people are;

Propose new venues for marketing action based on data from geomarketing;

Analyze the decision making of the company for marketing actions based on the information passed.

In this light, besides this introductory Section, in Section II is presented the theoretical background, in Section III the methodology is presented, in Section IV the results of the case study is presented and in the last Section V the conclusions are presented.

## II. THEORETICAL BACKGROUND

### A. Decision Making Applied to Marketing

Kent [9], states that in order to make the best decisions, marketing managers, in both 1) commercial and 2) noncommercial organizations, must have the right information. Client-based marketing research is about providing this information, so in this sense marketing research is part of the marketing process. Managers need to be able to diagnose the situation that is facing them, taking account of organizational resources, strengths and weaknesses and the environment in which decisions have to be taken. They need to be able to decide by reviewing the organization's strategic objectives, examining the options for reaching those objectives and making a selection that is consistent with the company mission, that will maximize the chances of attaining the objectives and that is suitable, feasible and acceptable. Finally, managers need to be able to deliver their decisions and control the process of delivery. The process of managerial decision-making is illustrated in Fig.1 retrieved from Kent [9].

Marketing research can be used for a variety of purposes, but it is no substitute for decision-taking. Like any tool, well used it helps managers to do a better job. It helps to reduce

the risks in business decisions, but will not make the decision for them. Good marketing requires flair and creativity along with sound judgment and experience. Marketing research is no substitute for these either; but good information can help reduce the area in which hunch, gut feeling or simply good luck has to operate [10].

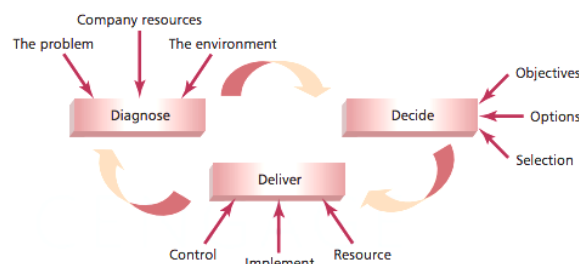


Fig. 1. Management decision process by Kent [9].

Customers' preferences are always changing, and the micro and macro environment are also constantly developing. Unless managers have at their disposal systematically collected, up-to-date and high-quality data on these changes, then all decisions are likely to be clouded in uncertainty and based on unknown assumptions about what is happening – in short, each decision will be a uncertain. Managers can use information derived from marketing research in several different ways [9]:

- To help tackle or resolve “one-off” problems or issues,
- To assist in making plans and setting objectives for the future,
- To monitor changes in the environment as they occur,
- To build up a database or marketing information system that can become a resource for a growing range of analyses or database marketing techniques,
- To use as a common “currency” with which organizations can negotiate with media owners, advertising agencies, distributors, suppliers or other
- Agents whose services they require.

A typical one-off problem may be how to react to a threat from a new product or new technology being introduced by competitors, or to a sudden or persistent decline in sales or in market share. If a competitor introduces a new product, marketing research may be called upon to examine consumer perceptions of the advantages and any limitations of the new product and how it compares with existing products available [9].

We have to differentiate the fact of the researcher or the client to feel that he or she now fully understands the situation facing the company from the other fact that is the certain about the decision or decisions that need to be taken. Marketing research is not geared exclusively to the taking of marketing decisions, other aspects about pricing or levels of production may have a marketing input, but there will almost certainly also be inputs from accountants or production managers or engineers. Decisions about communications with customers may well be the preserve of the marketing manager, but communications, for example with suppliers, intermediaries, competitors, and shareholders and so on, may well involve other kinds of manager [11].

If the company decided, for example, to conduct a survey of opinion among its shareholders, this would probably still be regarded as “marketing research”, but decisions to issue

additional shares or to merge with another company are unlikely to be for the marketing manager to make. Decisions may be of many different kinds. They may be operational, tactical or strategic; they may be routine, adaptive or innovative. Furthermore, companies will have very varied ways in which decisions are made, ranging from a formal, fully rational process to rather more informal procedures [11].

Strategic decision-making is often treated as an instantaneous choice between two or more known alternatives. However, this 'point of decision' approach is unable to capture the richness and complexity of the processes that unfolded to the point of decision including how problems were uncovered, the way in which research was conducted, what was done to ensure decision adoption and the steps taken to assess benefits [11].

Decision making from a point of decision perspective also assumes that managers have complete control over decisions. It is more likely that the decision maker has limited discretion in selecting among courses of action. Nevertheless, managers still have some degree of strategic choice even if the wider context is firmly set in place. Actually decision-making processes in organizations are as much about defining the question as they are about providing an answer [12].

### *B. Geomarketing*

Before disserting about Geomarketing itself we need to differentiate the concept of Geomarketing from Geographic Systems Information (GIS), even geomarketing adopting GIS techniques they are different things. A GIS can be defined in two ways (i) Den ègre and Salg é [13] stated that a GIS is a "computer system of materials, software and processes conceived to allow the collection, management, manipulation, analysis, modeling and display of spatial data in order to resolve complex management and development problems.". Didier [14] proposed the following definition: "Collection of data located in space, structured in a way that is able to conveniently extract syntheses useful in decision making".

According Yrigoyen [15], the correlation between geomarketing and GIS is that, Geomarketing is "[...] a set of techniques that allows us to analyze the economic and social reality of a geographical standpoint, by maps and space statistical tools.". Cardoso [16] concludes that GIS is a technique that manipulates the data and geomarketing to answer questions such as: who buys? where you buy? buy and why?

Geomarketing is possible due the introduction of information and communication technology associated to various marketing techniques in order to assist in the data management. One example of this blending is the geoprocessing according Grassi [8] can be understood as "a set of techniques for collecting, processing, handling and presentation of spatial data."

The term Geomarketing, also known as Geographic Marketing, born of the confluence between the Marketing and Geography latter being a science that includes human components having higher incidence in phenomena such as population, culture, society, communication networks, etc. ... The geomarketing is a subject still little known by analysts,

but the potential is enormous considering that enables decision makers to visualize marketing strategies as well as great locations with greater business opportunities [16].

The geomarketing has its origin in the literature theories of urban location. As a field of study, the term goes back to the United States even in the 1930s, with the first essays of William Applebaum, when he developed and applied to the quantitative selection of commercial locations [8].

The Central Place Theory, proposed by Walter Christaller, also in the 1930s, was another great foundation for what we now call geomarketing. According to Mulligan [17], this theory was proposed to organize the complexity of constraints in relation to commercial space decisions. Mulligan still references this theory as comprehensive in relation to the size, spacing and functions of the service centers, and further states that she was by far the most important urban location theory in the period.

The geomarketing becomes conceptualized as a specific term "geography as marketing", this concept is accepted in both areas. Currently, some authors clearly classify geomarketing as the interaction of geography and marketing. Yrigoyen [15] states that: "In reality, the geomarketing form part of the space economy, which is based on the general principle that geographic distance exerts a real influence on economic activity."

The evolving concept of Geomarketing led to a change in their perception by the business community because of the following advantages [16]:

- Help companies determine what products or promotions that best fit the lifestyles and consumption patterns in a geographical perspective;
- Delimits areas of consumer performing a spatial analysis of competitors;
- Creates multidimensional scenarios of great areas of trade, sales forecasts, in space or design and design trade of territories using GIS technology It may be noted in the chapter corresponding to the case study, an example of a company using the GIS technology you may experience the business potential of a point of sale and to analyze and detect locations for new outlets.

Cliquet [6] points out that with Geomarketing several issues have arisen such as: Where lie my customers? What are its characteristics? (Market segmentation and classification of residential areas). Where are my competitors located? What is the potential change in a particular area with my product? What market share can I expect? Where should I locate my brand? Should I expand an existing brand? How should I promote my product? Where and how do I advertise?

Cliquet [6] states that the objectives of Geomarketing boil down to four basic points: 1) manage a variety of information, 2) areas of marketing management, 3) adapt to customers and 4) predict developments. The author further states that, in terms of applicability, the Geomarketing aims: 1) adapt the commercial offer of a trade space optimizing performance; 2) work in micro-markets; 3) restructure the network; 4) determining a new location; 5) establish goals regarding potential; 6) point out the best customers using specific campaigns; 7) optimize investments in direct marketing; 8) assisted sales and analyze the competitiveness.

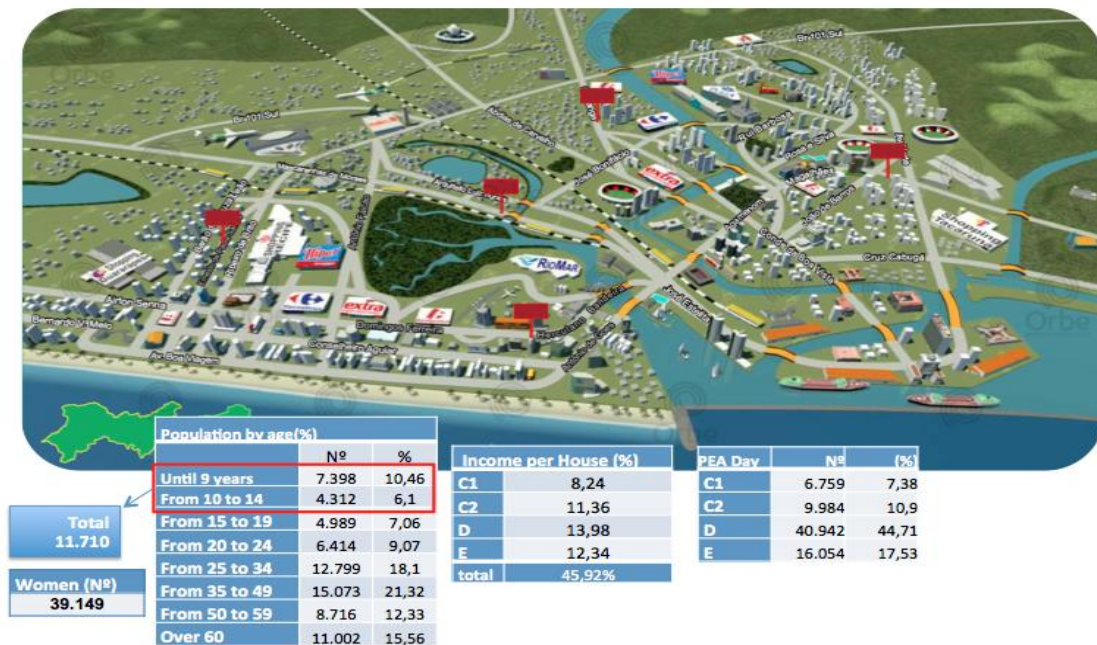


Fig. 2. Spatial visualization of outdoors in old campaign.

### III. METHODOLOGY

This study is based on the means as an action research, since researchers were involved in both the critical analysis of the problem and the implementation of solutions. This is a type of social research empirically based, that is experienced, which is designed and carried out in close association with an action or solving a collective problem, in which researchers and participants representative of the situation are involved so cooperative or participatory [18].

As for the purpose, this research is characterized as an applied research, which involves the action of man using the knowledge to create products and services. Aimed at improving the quality of life and the development of structures or services useful to humanity.

The research method used was the case study, where issues experienced in a marketing company stimulated researchers to perform analysis, develop recommendations and solutions to organizational issues related to information management. Data collection was made from an intensive direct observation, classified as participant observation, which consists of the immersion of researchers within the environment for data collection [18].

A huge company of food sector seeks our help to evaluate a marketing campaign of a new product launched 3 months before by the company itself. They were not convinced that the products were showed to the target people in a sufficient amount. The analysis of the initial campaign should consider only Recife City and target people are medium and poor women from 25yo until 49yo. Thus our methodology was:

- Identify where were the outdoors of the original campaign;
- Identify the amount of people, and its characteristics, around the outdoors area;
- Identify public spaces such as school, supermarkets and others near of the outdoors;
- Create a profile of the original campaign;
- Identify new outdoors (different places) to start a new campaign;

- Identify the amount of people, and its characteristics, around the new outdoors area;
- Identify public spaces such as school, supermarkets and others near of the new outdoors;
- Create a profile of a new campaign;

To achieve this goal our company had to develop a geomarketing tool based on Geographic Information Systems (GIS) provided by private and public companies that collects marketing information o Brazil such as IPC Marketing, Brazilian Institute of Geographic & Statistics (IBGE), Brazilian Central Bank (BACEN) and etc.. These GIS tools support the Geomarketing activity since they study of different levels of territorial depth. It has information about the Brazilian territory and allows the user a comprehensive analysis of the entire Brazil, as an analysis on minimum scale, where the census sector is adopted as the smallest territorial unit studied.

A variety of information arranged by platform comprises several areas; among them find the area of Foreign Media market. The essential use of the platform for the outdoor advertising segment returned to the strategic planning of media campaigns and the mapping of the target audience, using spatial data and socioeconomic analyzes of geographic area for this information in order to mount an analysis to assist in strategic decision-making process.

This case study analyzed is a food company whose target audience indicated in the survey were housewives, 25 to 49 years, the classes C, D and E. The study was conducted using socioeconomic information to punctuate where lies target for this data as Average Household Income and Age-distribution profile analysis of the regions were used.

To indicate the places with the greatest potential consumer of the product was analyzed data IPC Marketing "Power within the Household" Sub Category "Food" where, through this information, we can indicate which region has the greatest potential for consumption and which the social class consumes in a given geographical area. To assist in the outdoor media strategy was used in this study data PEA Day (Economically Active Population) to evaluate traffic flow of

that target audience. Finally we evaluated the generators places surrounding the area with the best qualified to work overseas media campaign.

IV. RESULTS



Fig. 3. Color map one specific area.

Fig. 2 presents the spatial visualization of where was the outdoors of the original campaign. The reds planks presents where the former outdoors were.

In each outdoor area we can visualize the data based on a color map (Fig. 3) where red areas have more potential for selling.

The media strategy initially adopted by the company was drawn at random where there was no interest to seek

information on the concentration of the target audience or even on poles generators that were being achieved.

Points arranged in the campaign were chosen by evaluating only the traffic flow of the main avenues of Recife, anchoring in choosing the perspective of quantity, excluding the quality.

Assessing these points the tool gets the final results of the campaign with the following data:

Number of women affected: 39.149.

Number of children reached: 11.710.

The public places closest to the outdoors were: 1) banks (43), 2) private schools (35), 3) supermarkets and public schools (25). Its clear that people that are going to banks are less susceptible to food advertisement than children (schools) and housewives (supermarkets) so the market strategy should change.

The new market campaign, showed in Fig. 4, moved the advertisement in three of the outdoors (Purple points) and now the estimated visibility reaches:

Number of women affected: 55.961.

Number of children reached: 24/095.

The cost of the new outdoors is 5% cheaper than the old ones and reaches more than the double or target population. The public places near of the advertisement already changes being now: 1) Private Schools (38), 2) Public Schools (33) and 3) Supermarkets (26).

The total return of the investment of the campaign is still calculating, but today, the number is about 5:1, due the increasing in sales that was perceived.



Fig. 4. Spatial visualization of outdoors in new campaign.

V. CONCLUSION

This study showed how Geomarketing could be used to discover and acquire knowledge related to marketing actions. Actually this way to discover and acquire this knowledge follows the traditional way of data mining, but now we just used geographic approaches to solve one real problem.

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**Amanda Nunes** was born on 27<sup>th</sup> November, 1992 in Recife, Brazil. She is an undergraduate student of information management in Federal University of Pernambuco, Brazil. She is also a research assistant in the same university and her research specialization is related to software measurement.



**Cádio Santana** was born on 14<sup>th</sup> July, 1982 in Recife. He is currently a professor at Federal University of Pernambuco, Brazil. He has a PhD in computer science from Federal University of Pernambuco, Brazil. His research interests are related to software engineering, agile software development, quality and measurement of software projects.



**Fernanda Nascimento** was born on 2<sup>nd</sup> November, 1993 in Recife. She is now an undergraduate student of information management in Federal University of Pernambuco, Brazil. She works in a marketing company and her research area is related to geomarketing.



**Natan Sobral** was born on 5<sup>th</sup> February, 1990 in Recife. He is an undergraduate student of information management in Federal University of Pernambuco, Brazil. He works in a marketing company and his research area is related to geographical information systems.