Pereira Market Scan

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Abstract— **The increasing competitiveness of market search related with information needs led to several companies to invest in new forms of decision making and models applied to scientific methods to position them as market leaders and to extract added value. This study was conducted with the propose of developing a market tool to allow a deeper and more pragmatic analysis to clients value and clients life cycle in order to contribute to the competitiveness of companies with relevant outputs and increase the market share of his company in a more conscious, objective way. The findings of this study allowed to quickly identify and to mitigate the type of problems which affect the organization and thus provide benefits to all the stakeholders that are in interaction with organizations.**

Keywords—Marketing, Strategy, Management, Decision Making

I. INTRODUCTION

The increasing competitiveness of internal markets and the market share impact which is crucial for on prices effects and engagement across-market comparisons [1] are fundamental for organizations on having business information on time and ongoing to support management decision-making has increased the demand for process-based solutions/models and scientific methods [2]. However, nowadays there are no systematized, reliable and permanent techniques for the predictive control of market shares despite the literature review and techniques mentioned on the new chapter, that is, systems for collecting critical and anticipated information of the business variation in a continuous way. This would empower managers of the organization to have evidence on the market and thus enable them to make management decisions in order to create competitive advantages. This competitive advantage has been conducted through the testing of processes and/or techniques in different contexts and organizations where the existence of a cause-effect relation allowing the conclusion of a universal management existence with rigor and validity.

Taking into account the principle of scientific management [3] and the growing demand from national organizations to have timely and relevant business information for the control and management of their market shares (through the decision on strategies and other types of decisions), the "Pereira Market Scan" has been implemented to provide companies with greater knowledge of their business in real time and on a continuous basis, so that managers can make decisions that allow them to achieve several important objectives. This model has been divided into 2 different stages such as:

I - Increase Client Value, i.e., boost business value by increasing current customer billing (up and cross selling) and capturing new customers (in segment, geography, product or win-back);

II - Increase Client Life Cycle, i.e., the time current customers remain when they choose to continue buying instead of changing to a competitor, thus avoiding its exit and reducing the current customer abandonment rate. In this sense, the "Pereira Market Scan" model is analytical in providing information on variables that influence market share and dynamic by giving directions for the search for improvement actions or good practices. At the same time, the model allows the estimation of the market share according to possible changes on the critical variables.

II. TECHNICAL AND SCIENTIFIC OBJECTIVES

The technical and scientifically objectives of Pereira Market Scan consist in providing a considerable flexibility and reply capability to manager's needs. This model main needs and gains are enhance to provide a method of preventive control of market share variation, easy to apply, in order to avoid future losses, thus guaranteeing stability and financial security to the organization with positive consequences for the final consumer; Justify the positioning of the market share in a predictive way by estimating quantitatively which variables have a direct impact on the same market share and to provide the competitive market with tools based on the principle of scientific management that enables greater international competitiveness in different types of markets, such as internal or external. The market share indicator used for assessment Pereira Market Scan is the slice/percentage of an industry or the total market sales of a company over a given period of time. This metric is used to give a general idea of the proportional dimension of the company in the market in comparison with its competitors.

III. LITERATURE REVIEW AND STATE OF ART

To develop "Pereira Market Scan" it has been conducted an extensive literature review on the state of art in order to provide a more efficiency tool and not overcome and offer the same solutions to the current existing tools. From the available literature describing the available tools/models, some of them could be highlighted such as:

-Boston Consulting Matrix [4] it's a model based on product lifecycle, created by Bruce Henderson in the early 1970s, to determine what priorities should be given in a product portfolio of a business unit. The model implies that to ensure long-term value creation, a company must have a product portfolio that contains both high-growth products requiring cash inputs as well as low-growth products that generate a significant amount of cash. It has 2 dimensions: market share (the proxy for competitive advantage) VS market growth (serves as a proxy for industry attractiveness). This matrix maps the position of the business units in these two dimensions that generate profit. The higher the market share of the product or the faster the product market growth, the better it is for the company. This tool allows to verify the business portfolio of a company and can serve as a starting

point for a discussion of resource allocation in strategic business units.

-Internal-External (IE) Matrix is used to analyze the strategic position of one or more businesses [5]. It is based upon the IFE Matrix and the EFE Matrix. Through the scores assigned in these two matrices it is possible to draw the final matrix. The axis of the XX's with the score attributed in the matrix IFE (Internal Factors) and the YY's axis with the score obtained in the matrix EFE (External Factors). The result of the total score of each of the factors, external and internal, should be inserted in a matrix. This matrix its divided into three major areas (Grow and Build, Hold and Maintain and Harvest or Divest) each one of these areas have a strategy depending on the location of the endpoint. The Grow and build means the company strategy should focus on market penetration as well as market and product development. The Hold and Maintain the company strategy should focus on market penetration and market development. Finally, the Harvest or Divest the company strategy should focus on reducing costs in these areas or opting for the elimination of this area/business.

-GE/Mckinsey Matrix [6] is an analysis model for portfolio and its business units. On the one hand, the ideal business portfolio helps to explore the most attractive industries and markets and, on the other hand, is it embedded in the company's main strengths. The goal regarding portfolio management is to define in which businesses to invest in, where to develop growth strategies and in which businesses to disinvest. This matrix is based on two axes, competitive strength and market attractiveness. The Competitive Strength analyzes the internal factors of the business units (e.g. strength of assets and competences, quality, patents, access to financial resources and investments, cost versus competition, market share, growth of market share, among others). The Market Attractiveness measures the factors external to the business (e.g. market size, market growth rate, market profitability, entry barriers, competition, demand, market segmentation, among others).

Limitations: It does not consider the links/interactions between the different business areas. It does not consider core competencies that lead to value creation. The measurement is made on a qualitative scale that is defined in the perspective of those who analyze and elaborate the matrix, opening space for subjectivity. In comparison with the "Pereira Market Scan" model, it does not allow the constant and predictive measurement of market shares in an analytical way.

-Space Matrix Strategic Management Method [7] is a management tool used in the formulation of business strategies considering the position of the company in the market against the competition. The acronym SPACE refers to Strategic Position and Action Evaluation. This matrix suggests, depending on the results obtained, the nature of the strategy to be used from among 4 options (Aggressive, Conservative, Defensive and Competitive). To obtain these results it is needed to analyze first 4 strategic dimensions, 2 internal and 2 external, which are: Internal (Financial Strength and Competitive Advantage) and External (Environmental Stability and Industry Strength).

In comparison with the "Pereira Market Scan" model, it does not allow the constant and predictive measurement of market shares in an analytical way.

In addition to these main models there are others of added value from the marketing branch, namely the Attraction Models (Kotler´s Fundamental Theorem) [8] with a parallel study from Bell et al [9], the Market Share Theorem [10] and Choice Modelling, which deserve to be mentioned.

IV. METHODOLOGY

The "Pereira Market Scan" tool sought to respond to the scientific/technological uncertainty of being able to implement a market share estimation, analysis and management model that, besides supporting the necessary strategic definition, allows for a permanent determination and estimation of the market share through a set of metrics that represent two diffente stages as mentioned before, the client value and client life cycle. The aim of the tool was to solve the problems related to the fact that models which exist are developed to be static, which means it does not anticipate the need for project priorities [11], changes and decisions on new investments.

The models presented, on the literature review, have several limitations comparing with Pereira Market Scan. Some of the main differences are based on the classification of factors centered on a subjective process (e.g. classification of market attractiveness, classification of competitive strength), and based on use of qualitative scales. In addition, they do not address the depth of critical, measurable, and monitorable variables that are the source of power to generate and increase a company's market share.

Pereira Market Scan has the capabilitie of projecting the market share expected due to a set of business variables which are associated with a high degreed of confidance. In order to carry out a permanent "Scan" model in order to respond to the current problem in organizations, the project activities and methodology were based on the literature review, benchmarking, analysis of existing models in the market, survey of limitations of the existing solutions, diagnosis of the current needs, future necessary requirements, model development, sample testing and validation of the model.

A. Model Development

The model presents a set of explicit variables in the vertices of a diamond that represent:

- New clients, which focuses on the rate of new customers in a certain period of time (usually monthly) with the possibility of analyzing the composition of the customer by geography, segment, product and also win-back customers. For this it is necessary to identify what a customer is (quantitatively framed about what is the minimum value to be considered one) and what causes or sources exist to be able to attract new customers. The calculation is obtained through the behavior of the variable over time, that is, the past is compared to the present;

- Up-selling, frequently assumed as a sale of more product quantity or product upgrade to the current customer or even as the increase of the profit margin by increasing the product price, expressed in the average customer value (average itens by basket). To understand its measurement it is essential to be aware of the products that are more requested by the customers and the reasons why a customer leaves without buying from the store. In this way, it is possible to understand and determine the leverage of sales in up-selling;

- Cross-selling, understood as complementary sales or impulse sales to the same customers or even sales within the sphere of influence in B2B or B2C. It is also reflected in the average customer value (average of different itens in the basket). To better perceive its measurement it is important to understand for the products more requested by the customers which complementary products are added to the purchase. In this way, it is possible to understand and determine the leverage of cross-selling sales;

-Retention, is based on the customer abandonment rate, that is, it focuses on clients who leave. To determine it, it is crucial to know the average annual purchase frequency per customer. In order to act on it, understanding the causes that lead clients to leave the organization determines the variation of the abandonment rate, and the variation is calculated in comparison with the previous measurement. At the same time, the action can focus on the current customer's life cycle (therefore it is crucial to determine which is the average duration of this cycle). Once again, understanding the reasons that allow to extend the relationship with the customer enables the organization to act on the current customer's life cycle.

B. Model Validation

The typical process of market share analysis is itself a process with a low degree of confidence, as the tools normally used are poorly measurable and monitorable given the limitations listed above. At the same time, its definition is not trivial given the ambiguity of the market concept. In the present case, this tendency was countered by exhaustively delimiting the variables addressed. Thus, the market share is given by a fraction of the actual gross sales (in monetary value) of the company in relation to the competitors, for a monthly period, in a given set of products and a given geographic area. The total market consists of the company and the competitors with specific characteristics depending on the industry.

During the reference period, a set of tests and analysis were performed on the results obtained at each stage of the tool development. In this sense, a sample of 20 companies from the retail industry were used and, for the present study, the data used was encrypted in order to protect the source that provided it. At the same time, it was ensured that all parties did not become aware of the study as well as who did the double-blind comparative analysis. During the same period, the KPIs associated with the four variables of the "Pereira Market Scan" model were measured, as well as the evolution of the market share. Each company was asked to record, in a previously distributed collection matrix, the management measures they were taking over the reference period to increase market share. In this way, it would be possible to understand the relationship of these measures with the variables of the model.

In the scope of the present study, and in order to validate the "Pereira Market Scan" model, it was analyzed the relationship between the variables that the model exposes and the market share, that is, the attraction of new customers, the retention of current customers, up-selling and cross-selling sales, and market share.

For the previous validation, two methodologies with a high degree of confidence were used: the Pearson correlation coefficient and the linear regression (through the coefficient of determination advanced by r2), thus establishing the aforementioned principle of scientific management. Pearson's correlation coefficient indicates the direction of correlation [13], if any, between each variable and the market share, whether positive or negative, of metric scale (ratio or interval). The linear regression through r2 allows to obtain the estimated value (conditional) of a variable in relation to data of another variable that one wants to test, that is, how much of the variation of a variable (in this case, market share) is matched by variation of the other variable (each one presented in the "Pereira Market Scan" model) [13].

It should be noted that each variable is measurable by specific indicators. The new clients variable is obtained through the attraction rate of new customers and presents a positive correlation (more detailed in the presentation of results) with the market share. The Retention variable is quantified by the abandonment rate. In this case the correlation is negative, i.e. if our customers abandon us our market share is negatively affected. The Up-selling and Cross-selling variables are measured by the up-selling and cross-selling sales rates, respectively, that are positively correlated with the market share.

Finally, it was intended to obtain an equation that would explain the relation of the four variables of the model with the market share with the intention of being able to establish a predictive model on the market share. For this verification, a multiple linear regression, shown below, was applied and represented by the equation

$$Y = M1.X1 + M2.X2 + M3.X3 + M4.X4 + C \text{ (1)}$$

The uniqueness of the model developed is not only justified by the knowledge/skills in the technical fields of Business Case and Project Management, but also in the experience and knowledge acquired over time.

V. RESULTS

The application of methodologies that incorporate scientificity, confidence and rigor to the validation of the tool leads to believe that all the foundation described here is solid.

It was in this logic that, after collecting the data from the sample of 20 companies, a set of tests was applied, as already mentioned. Pierson's correlation indicated that all model variables are strongly correlated with market share. The correlation with the New Clients' variable presents a $p = 0.9379$, for the Retention variable a $p = -0.8968$, for the Up-selling variable a $p = 0.8971$ and, finally, for the variable Cross-selling $p = 0.9123$.

Thus, the correlation between the variables New Clients, Up-selling and Cross-selling with the market share is positive indicating that they are heavily dependent. At the same time, the Retention variable correlates negatively with the market share, also showing a high dependence.

In parallel, a linear regression was made through r2 in order to understand how much of the market share variation is matched by the variation of each "Pereira Market Scan" model variable. The results are quite illuminating of their relationship. Between the New Clients variable and the market share, r2 was equal to 0.8797 (87.97%). For the Retention variable, a r2 = 0.8043 (80.43%) was obtained. The Up-selling and Cross-selling variables presented r2 equal to 0.8049 (80.49%) and 0.8322 (83.22%), respectively.

The results of this linear regression show that the variation of the market share of the companies in the sample is

explained with great confidence by the variation of the four variables of the "Pereira Market Scan" model. This finding allows us to proceed to the description of the result of the next step that involved the realization of a multiple linear regression.

The goal was to obtain a parametric equation that explained the predictive model by relating the oscillation of its variables with the variation of the market share, in a predictive way. Thus the objective was an equation $Y = M1.X1 + M2.X2 + M3.X3 + M4.X4 + C$, obtained through the use of a multiple linear regression, where Y affects the market share variation and the factors M1.X1 until M4.X4 refer to the variation of the four variables of the model plus the constant. The creation of this model allows to know the marginal effect of each variable of the tool.

For the present case the expression obtained was reflected in this way:

$\Delta QM = M1x\Delta NC - M2x\Delta R + M3x\Delta US + M4x\Delta CS + C$ (2)

in which:

ΔQM – Variation of the market share

ΔNC – Variation of new clients

ΔR – Variation of retention of actual clients

ΔUS – Variation of sales in Up-Selling

ΔCS – Variation of sales in Cross-Selling

It can be also emphasized that the degree of confidence obtained associated with the multiple linear regression in question is reflected in 96.31%, which provides good indicators on the reliability of the equation obtained. Thus, the equation used was the following:

$\Delta QM = 0,5759\Delta NC - 0,4152\Delta R + 0,1952\Delta US + 0,3087\Delta CS - 0,0035$

In this way, the presented results infer that the variables of the model are strongly correlated with the market share of the sample of companies analyzed and that explain it with a high degree of confidence. At the same time, an equation was obtained that expresses the predictive relationship between the variables and the market share, thus helping to estimate the market share, indicating the weight of each variable over the market share and indicating where to act in case it is intended to increase market share.

Regarding this results, it can be said that, for the tool to return the results reliably, it is necessary to ensure that organizations are able and have the capacity to carry out an assiduous and computerized collection based on the history (performed) so that the variables of the model can be permanently updated. Only in this way, it will be possible to meet the objectives of the model effectively.

At the same time, the current paradigm conspires to use the data collected in an intelligent way. The well-known Big Data that so many companies apply to self-diagnose is giving way to Smart Data through which companies understand themselves, understand the market, and adapt to their vicissitudes in order to survive is a crucial challenge nowadys [14]

The variables of the "Pereira Market Scan" model are data-driven, proposing an intelligent analysis in order to provide the company with strategic information that indicates

directions coherent with its challenges. There is then a need to place the sensors in the As-is so that the performance delta of the organization can be analyzed in a smart way in order to improve the value proposition to the customer.

The study focused on the retail sector comprising a sample composed of 20 companies. It is understood that the equation obtained is adequate for this sector and lacks validity over other sectors. Thus, as a future necessity, the replication of the study on other sectors in order to obtain accurate and adapted equations for each one, as well as the exploration of a holistic equation, remains open and is assumed as a challenge to be achieved in the near future.

VI. CONCLUSION

The tool developed responds to the needs of any manager, who operates in the retail sector, to make a management decision about his business and to increase the market share of his company in a more conscious, objective and quantifiable way.

The market will thus be endowed with a solution that was derived from a mathematical model based on business metrics, thus allowing managers to make decisions considering reliable data that depict reality as well as visualize the behavior of these metrics over time.

The model allows, therefore, to ensure that the causes of the real problems that affect the organizations are quickly identified so that solutions can be secured to mitigate the negative impacts and thus can provide benefits to all the stakeholders that are in interaction with organizations. The most obvious consequence is the leverage of market share.

Finally, it is important to underline the predictive characteristic of the "Pereira Market Scan" that innovates the current paradigm of obtaining or calculating the market share. It is believed that this model stands out from the other existing tools because it presents a dynamic and predictive characteristic, with a low cost of associated and without space for the subjectivity since it has been tested and it is understood on a quantitative manner

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