

Pereira Market Scan: Market Intelligence Framework

Leandro Pereira¹, José Santos², Carlos Jerónimo³, Rui Vinhas da Silva⁴, and Natália Teixeira⁵

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 client's 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; Market-Share

1. Introduction

The increasing competitiveness of internal markets and the potential impact capabilities of the market segmentation is crucial for prices effects engagement across-market comparisons (Packalen and Sen, 2013). For consumers, having business information on time and ongoing to support management decision-making, has increased the demand for process-based solutions/models and scientific methods (Knight and McGee, 2015). Thus, the marketing prediction models become crucial to overlap some issues or needs from potential customers. The market prediction models can be described as a system for collecting critical and anticipated information of the business variation in a continuous way. These models are more easily accessible and available to all marketers, at different size companies that can vary from large to small (Artun and Levin, 2015). Although, these model predictions have been used frequently they are particularly sensitive to the bargaining power of sellers relative to buyers (Priazhkina and Page, 2018). This concept, bargaining, according to the authors Priazhkina and Page 2018 measures the ability of traders to influence prices which is not captured by network affects. Market-share models should be competitive, descriptive as well as predictive, and profit-oriented (Cooper, 1993) thus, the application of prediction models to market share aims to provide a quantitative tool which will considerably improve the companies capabilities of capturing a considerable share of certain market and project future trends. Besides, these

¹ Leandro Pereira, ISCTE-IUL BRU-Business Research Unit. Av das Forças Armadas 1649-026 Lisboa, Portugal.

E-mail: leandro.pereira@iscte-iul.pt

² José Santos, ISCTE-IUL BRU-Business Research Unit. Av das Forças Armadas 1649-026 Lisboa, Portugal.

E-mail: jose.santos@winning.pt

³ Rui Vinhas da Silva, ISCTE-IUL BRU-Business Research Unit. Av das Forças Armadas 1649-026 Lisboa, Portugal.

E-mail: carlos.jeronimo@iscte-iul.pt

⁴ Carlos Jerónimo, ISCTE-IUL Av das Forças Armadas 1649-026 Lisboa, Portugal.

E-mail: Rui.Vinhas.Silva@iscte-iul.pt

⁵ Natália Teixeira, ISG - Business & Economics School, Av. Mal. Craveiro Lopes 2A, 1700-284 Lisboa, Portugal.

E-mail: natalia.teixeira@isg.pt



prediction models can provide an advantage and added value to the process of the decision-making in the current marketing strategy rather than, and according Dzyabura and Yoganasimhan (2018), be focused on causal inference.

The Artificial Intelligence and predictive tasks applied to Marketing will empower managers of different organizations to realize the evidence and benefits of such models on the market, thus enable them to make management decisions in order to create competitive advantages (De Bruyn et al., 2020). 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 (Dean, 1997) 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.

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.

This paper is organized by a systematic literature review, methodology, model development and subsequent of data sources followed by the results, discussion and final conclusions.

2. Literature Review

To overcome with the Pereira Market Scan, it has been evaluated the current market models which provide similar capabilities and aim to provide a support decision in the context of the market share.

To develop a good model for a complex real-world system requires significant collaboration among individuals who have knowledge about the system (domain experts) and analysts who can translate this knowledge into an analytical model (Abdelghany and Abdelghany, 2019). Following this assumption, the development of Pereira Market Scan has been based in the development of a model based, initially, in a comprehensive literature review regarding other marketing tools available on the market. The aim of this literature review it was to find a gap in the current literature which could allow to create and develop a more efficiency tool and do not overcome and offer the same solutions of the current existing tools. The tools which have been evaluated are based in marketing prediction. This concept is mentioned by few authors that revel the potential capabilities of predictive control of market shares. For instance, the author Qureshi et al., (2014) developed a predictive model for market-based demand for the maximum possible profit for a commercial office building participating in New York's Day-Ahead Demand Response (DADR) program. Other authors such as Guyon and Petiot (2011) used market share predictions to support product development, pricing and positioning.

From the bundle of available tools, the ones referenced next are the ones which have been more often used. To define this assumption with has been measured the number of references



and citations regarding the number of users from each marketing tools that will be referred in the next paragraph.

The Boston Consulting Matrix (Stern and Deimler, 2012) 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.

RFC-BOLSE, which avoids the IIA problem, yields convergent results for different rating scales, and outputs predictions that match regression reliability

RFC-BOLSE, which avoids the IIA problem, yields convergent results for different rating scales, and outputs predictions that match regression reliability (Guyon and Petiot 2011). It's a probabilistic model for the shares of preference predictions in rating-based conjoint analysis. Although, it has some limitations such as is confined to share of preference estimations and cannot be directly applied as a market share estimation tool.

The Internal-External (IE) Matrix is used to analyze the strategic position of one or more businesses (Christopher, 2013). 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 mean 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.

The GE/Mckinsey Matrix (Amatulli et al., 2011) 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).

The Space Matrix Strategic Management Method (Ghochani, 2012) 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 externals, which are: Internal (Financial Strength and Competitive Advantage) and External (Environmental Stability and Industry Strength).

In addition to these main models there are others of added value from the marketing branch, namely the Attraction Models (Kotler's Fundamental Theorem) proposed by Kotler (1984) with a parallel study from Akiva et al 1999, the Market Share Theorem (Cooper and Nakanishi, 1988) and Choice Modelling, which deserve to be mentioned.

The following models presented here 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 monitor variables that are the source of power to generate and increase a company's market share.

Pereira Market Scan has the capabilities of projecting the market share expected due to a set of business variables which are associated with a high degree of confidence. 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.

3. Methodology

The "Pereira Market Scan" presents a methodology 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. This methodology allows for a permanent determination and estimation of the market share through a set of metrics that represent two different stages as mentioned before, the client value and client life cycle. The aim of the tool is 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 (Pereira et al., 2017), changes and decisions on new investments. 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 monitored 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 model methodology will be based into two different stages which will contribute to increase the current state of the art. These two stages are the following ones:

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.

In terms of validation, two methodologies with a high degree of confidence were used: the Pearson correlation coefficient (Pearson, 1920) and the linear regression (through the coefficient of determination advanced by r^2), thus establishing the principle of scientific management. Pearson's correlation coefficient indicates the direction of correlation (Groemping, 2006), if any, between each variable and the market share, whether positive or negative, of metric scale (ratio or interval). The linear regression through r^2 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) (Groemping, 2006).

4. Model Development

The Pereira Market Scan can be applied to a slide/percentage of a certain industry or the total market sales of a company over a certain period. This metric is used to give a general idea of the proportional dimension of the company in the market in comparison with its competitors.

Thus, to test the efficient of the Pereira Market Scan it has been applied to 20 companies from the insurance sector. The sample will be detailed on the next section.

The model development has been focused on several strategic steps. In terms of framework, it has been based in 4 stages based in the following structure:

- 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 items 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 items 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.

4.1. Data Sources

The data used for testing the framework Pereira Market Scan was obtained from 20 Spanish companies from the insurance sector providing different type of insurances (health, car and life) applied to the 1st quarter of 2017. The selection from these companies was related with a more comprehensive approach and model validation among the several sectors of the insurance market besides the data available. 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. Regarding their division by sector, it is presented on table 1.

Insurance	Total number of companies
Health	10
Car	4
Life	6

Table 1. Total number of insurance companies

In order to evaluate the market-share, it has been presented a questionnaire to the 20 companies which have accepted to participate (it was sent 60 invitations to insurance companies and brokers). The questionnaire was delivered to the Top Managers. The questionnaires were divided into 3 sections (New clients, Up-Selling & Cross Selling and Retention) which are catalogued as variables. In terms of the questionnaire, it was the following one (table 2):

New Clients	Why are clients choosing your company?
	What is your level capacity of client's attraction during the last 6 months?
	Why are clients choosing your competitors?
UP-Selling & Cross Selling	Why would clients upgrade their current insurance products?
	What is the average insurance client value?
	Why would clients buy other products?
Retention	Why are clients leaving our company?
	Which are the retention average years?
	Why are clients leaving your competitors?



Table 2. Questionnaire internal Top Managers**5. Results**

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 way, it would be possible to understand the relationship of these measures with the variables of the model. Based on the results provide by the questionnaire it was applied the Pereira Market Scan. The results obtained from the questionnaire are presented in the next tables for each main group of questions (New clients, Up-selling & Cross-selling and Retention) which are designated variables.

Why are clients choosing your company?	
Categories	Results (%)
Brand	53
Price	33
Support	11
Other	3

Table 3. New Clients first question

What is your level capacity of client's attraction during the last 6 months?	
Month	Results (%)
1	3
2	2,50
3	1,71
4	7
5	4,33
6	3,23
7	3,29

Table 4. New Clients second question

Why are clients choosing your competitors?	
Categories	Results (%)
Price	64
Support	19
Personalization	10
Other	7

Table 5. New Clients third question

Why would clients upgrade their current insurance products?	
Categories	Results (%)
Pay-Per-Use	45
Addons	34
Personalized Advice	18
Other	3

Table 6. Up-selling & Cross-selling first question

What is the average insurance client value?	
Month	Results (€)
1	972
2	885
3	935
4	989
5	915
6	965
7	938

Table 7. Up-selling & Cross-selling second question

Why would clients buy other products?	
Categories	Results (%)
Bundles	61
Temporary Needs	21
Personalized Advice	10
Other	8

Table 8. Up-selling & Cross-selling third question

Why are clients leaving our company?	
Categories	Results (%)
Bureaucracy	77
No trust	16
Support	4
Other	3

Table 9. Retention first question

Which are the retention average years?	
Month	Results (Years average)
1	1,26
2	1,87
3	1,50
4	1,73
5	1,97
6	1,41
7	1,74

Table 10. Retention second question

Why are clients leaving your competitors?	
Categories	Results (%)
No products	43
No personalization	41
Bureaucracy	9
Other	7



Table 10. Retention third question

It should be noted that each question is measurable by specific indicators. The new client's 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 following equation:

$$Y = M_1.X_1 + M_2.X_2 + M_3.X_3 + M_4.X_4 + C. \quad (1)$$

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.

The results obtained with this model, namely the 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 $Y = M_1.X_1 + M_2.X_2 + M_3.X_3 + M_4.X_4 + C$, obtained through the use of a multiple linear regression, where Y affects the market share variation and the factors $M_1.X_1$ until $M_4.X_4$ 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:

$$\Delta QM = M_1 \times \Delta NC - M_2 \times \Delta R + M_3 \times \Delta US + M_4 \times \Delta CS + C \quad (2)$$

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:

$$\Delta QM = 0,5759\Delta NC - 0,4152\Delta R + 0,1952\Delta US + 0,3087\Delta CS - 0,0035 \quad (3)$$

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 these 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 nowadays (Amado et al., 2018). The variables of the "Pereira Market Scan" model is data-driven, proposing an intelligent analysis 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.

This study was 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.

6. Discussion

The application of methodologies that incorporate scientific, confidence and rigor to the validation of the tool leads to believe that all the foundation described here are 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 r^2 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, r^2 was equal to 0.8797 (87.97%). For the Retention variable, a $r^2 = 0.8043$ (80.43%) was obtained. The Up-selling and Cross-selling variables presented r^2 equal to 0.8049 (80.49%) and 0.8322 (83.22%), respectively.



7. Conclusions

The tool developed responds to the needs of any manager, who operates in the retail sector, to make and provide 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 be endowed with a solution that was derived from a mathematical model based on business metrics, thus allowing managers to make decisions based on statistical models and not in empirical knowledge. It also allows to visualize the behavior of these metrics over time.

The model developed 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.

The essence behind Pereira Market Scan consists in providing a considerable flexibility and reply capability to manager's needs in order to provide an added value for the decision making process. This model main needs and gains are enhanced to provide a method of preventive control of market share variation since a higher market share usually means greater sales, lesser effort to sell more and a strong barrier to entry for other competitors. This model is easy to apply in different cross markets and contribute significantly to avoid future losses, thus guaranteeing stability and financial security to several organizations with positive consequences for the final consumer. It also justifies 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. Although the market share indicators provide only a limited amount of information, it describes the outcome, while the driving forces remain uncovered (Benkovskis and Worz, 2018).

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 or empirics knowledge from stakeholders since it has been tested and it is understood based on a quantitative manner.

References

- Abdelghany, A. and Abdelghany, K. (2019). Market Share Models. In *Airline Network Planning and Scheduling* (eds A. Abdelghany and K. Abdelghany).
- Akiva B, Bierlaire M (1999) Discrete Choice Methods and their Applications to Short Term Travel Decisions. In: *Handbook of Transportation Science*. Kluwer. Springer. pp 5-33.
- Amado, A, Cortez, P, Rita, P, Moro, S. (2018) Research trends on Big Data in Marketing: A text mining and topic modelling based literature analysis. *European Research on Management and Business Economics*. Vol:24 (1) pp: 1-7
- Amatulli C, Caputo T, Guido G (2011) Strategic Analysis through the General Electric/McKinsey Matrix: An Application to the Italian Fashion Industry. *International Journal of Business and Management*. Vol 6. pp 61-75
- Artun, Ö. and Levin, D. (2015). The Future of Predictive Marketing. In *Predictive Marketing* (eds Ö. Artun and D. Levin).

- Benkovskis, K., & Wörz, J. (2018). What drives the market share changes? Price versus non-price factors. *Structural Change and Economic Dynamics*, 45, 9-29.
- De Bruyn, A., Viswanathan, V., Beh, Y. S., Brock, J. K. U., & von Wangenheim, F. (2020). Artificial intelligence and marketing: Pitfalls and opportunities. *Journal of Interactive Marketing*, 51, 91-105.
- Carol Carlson Dean, (1997) "The Principles of Scientific Management by Fred Taylor: Exposures in print beyond the private printing", *Journal of Management History*, Vol 3 Issue: 1, pp 4-17.
- Christopher M, Glissmeyer M, Capps C. (2013) Mapping An Internal-External (I-E) Matrix Using Traditional And Extended Matrix Concepts, *The journal of Applied Business Research*, Vol 29.
- Cooper L, Nakanishi M (1988) *Market-Share Analysis: Evaluating Competitive Marketing Effectiveness*, Kluwer Academic Publishers, Boston.
- Cooper, L. G. (1993). Market-share models. *Handbooks in operations research and management science*, 5, 259-314.
- Dzyabura, D., & Yoganasimhan, H. (2018). Machine learning and marketing. In *Handbook of Marketing Analytics*. Edward Elgar Publishing.
- Ghochani S, Mohamadreza F, Alavije K (2012) *Application of Space Matrix*. In: *Developing Country Studies*. Vol 2.
- Groemping U (2006) Relative Importance for Linear Regression in R: The Package relaimpo. *Journal of Statistical Software*, vol 17, pp 1-27.
- Guyon, H., & Petiot, J. F. (2011). Market share predictions: a new model with rating-based conjoint analysis. *International Journal of Market Research*. 53(6), 831-857.
- Knight, B. and McGee, J. (2015). Market Structure: The Analysis of Markets and Competition. In *Wiley Encyclopedia of Management* (eds C. L. Cooper, J. McGee and T. Sammut-Bonnici).
- Kotler P (1984) *Marketing Management: Analysis, Planning and Control*. In: Prentice-Hall. pp 1-18.
- Packalen, M. Sen, A. (2013). Static and dynamic merger effects: A market share based empirical analysis. *International Review of Law and Economics*. Vol:36 pp: 12-24.
- Pearson K (1920) Notes on the history of correlation. *Biometrika*. 13, 25–45.
- Pereira L, Teixeira C, Salgado A (2017) *Pereira Diamond: Projects Economic and Social Impacts*. In: *International Conference on Engineering, Technology and Innovation (ICE/ITMC)*, Funchal, pp. 6-14.
- Priazhkina, S., & Page, F. H. (2018). Sharing market access in buyer–seller networks. *Journal of Economic Theory*, 175, 415-446.
- Qureshi, F. A., Gorecki, T. T., & Jones, C. N. (2014). Model predictive control for market-based demand response participation. *IFAC Proceedings Volumes*, 47(3), 11153-11158.
- Stern C, Deimler M (2012) *The Boston Consulting Gorup on Strategy: Classic Concepts and New Perspectives*, 2nd Edition, pp 432.

