

**DEVELOPMENT OF MARKETING AND RETAIL SIMULATORS FOR
BUSINESS GAMES**

**DESENVOLVIMENTO DE SIMULADORES DE MARKETING E VAREJO PARA JOGOS DE
EMPRESAS**

**DESARROLLO DE SIMULADORES DE MARKETING Y VENTA AL POR MENOR PARA JUEGOS DE
EMPRESAS**

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RESUMO

O presente estudo descreve o modelo conceitual de um simulador educacional de marketing na área do varejo. Por meio de um estudo aplicado, buscou-se aumentar o nível de credibilidade do modelo proposto. A princípio, realizou-se uma revisão bibliográfica de simuladores organizacionais e, em seguida, apresentaram-se as características de três simuladores educacionais de marketing e/ou varejo disponíveis no mercado. Após esta etapa, elaborou-se a modelagem conceitual do simulador e os materiais de apoio. Os resultados demonstraram a importância deste processo para alcançar certo nível de credibilidade e aproximação do modelo com a realidade. Como contribuição, o estudo proporcionou a elaboração de uma ferramenta educacional a ser utilizada por estudantes e pesquisadores em ambientes de ensino e aprendizagem e pesquisa aplicada, e no treinamento e desenvolvimento de profissionais de marketing e administração.

Palavras-chave: Simuladores Organizacionais; Marketing; Varejo.

ABSTRACT

This study examined the development of the model (prototype) of an educational simulator of marketing in the retail area. The study is exploratory and applied nature, and through a qualitative approach seeks to increase the level of credibility of the model proposed. At first, we carried out a literature review of Organizational Simulation, and then showed the characteristics of three educational simulators of marketing and / or retail available. After this step, we elaborated the conceptual modeling of the simulator and prepared of supporting materials. The results demonstrated the importance of this process to reach a certain level of credibility and approximation to the reality. As a contribution, the study provided the elaboration of an educational tool to be used by students and researchers in the teaching-learning and applied research environments, as well as the training and development of marketing and management professionals.

Keywords: Organizational Simulation; Marketing; Retail.

RESUMEN

Ese estudio describe el modelo conceptual de un simulador educacional de marketing en la área de venta al por menor. Por medio de un estudio aplicado, fue buscado aumentar el nivel de credibilidad del modelo propuesto. Fue principiado por una revisión bibliográfica de simuladores organizacionales y, entonces, fueron presentadas las características de tres simuladores educacionales de marketing y/o venta al por menor disponibles en el mercado. Después de esa etapa, fue elaborado el modelo conceptual del simulador y los materiales de apoyo. Los simuladores demostraron la importancia de este proceso para lograr cierto nivel de credibilidad y aproximación del modelo con la realidad. Como contribución, el estudio proporcionó la elaboración de una herramienta educacional para ser utilizada por estudiantes e investigadores en ambientes de enseñanza y aprendizaje, también en investigación aplicada y para formación y desarrollo de profesionales de marketing y administración.

Palavras-clave: Simuladores Organizacionales; Marketing; Venta al por menor.

1 INTRODUCTION

The growing use of business games in academic and business environments has intensified the development of organizational simulators. Simulators are didactic instruments constituted by an economical ruleset based on theories and concepts, and they aim to provide the management acting in a make decision process (SAUAIA, 2010). Through a simulator is possible represent real situations in simulated environments and study possible solutions for business and economic problems in a safe middle with no risk for real business (PRETTO; FILADRI; PRETTO, 2010; SAUAIA; OLIVEIRA, 2011).

This tool allows the application of business game, a process of simulated management in which the participants play an active role in the make decision process (ROSAS; SAUAIA, 2006). Students should obtain insights about how the real world works through the participation in a simulation (PRAY; GOLD, 1982). As a result, it is necessary that functions and algorithms within the simulation reflect or, at least, have coherence with economic, managerial and financial relationships from the real world.

This study had as aim describe the development process of conceptual model of Marketing and Retail Simulator (SIM MKT), a tool that can be used in the teaching and learning process by Marketing and Business students, as well as to train and develop professionals.

The conceptual model of this simulator was developed based on economic and financial relationships in marketing and retail fields. The data collection was performed through an evaluation of simulators available in the marketing and based on data from real business.

SIM MKT is a functional simulator, addressed to the teaching and learning of marketing. Participants in the simulation compose a Marketing department inside a fictional organization, instead of functional board (marketing, financial, production, planning, people management and chairmanship. It is possible consider an interactive simulation, because decisions are constructed and shared among the team members, that interfere directly on the results of other business.

The early stages of simulation are in closed architecture, because the learning is concentrated in the decision make, through specific variables of marketing. In more advanced stages, by instructor decision, the simulation can be extended to opened

architecture, allowing the submitting of marketing plans by students initiative, or the introduction of critical incidents by the instructor initiative. The definition of early or advanced stages are not from the participants instruction level, but is about the time available for application and from the participants nearness level with the business game; it can be defined by the number of rounds and by the skills in management report analysis.

2 ORGANIZATIONAL SIMULATORS AND VALIDATION ASPECTS

Several authors (BERNARD, 2006; OLIVEIRA, 2009) report disadvantages and technical limitations in organizational simulators, among them the difficulty to portray all the variable from the real environment, complexity of models, inadequacy with reality, and cannot translate theoretical models. Simulators that do not match with reality or not translate theoretical models need to achieve credibility and reliability of model, which are achieved by validation of simulators process (FARIA; WELLINGTON, 2005).

Many studies have demonstrated the importance of business games, and the contribution for the formation of students and professionals (KEYS; WOLFE, 1990; ROSAS; SAUAIA, 2006; BORRAJO et al, 2010). However, according to Faria and Wellington (2005), the biggest concern has not been the significance of games, but their internal and external validation and what they really have taught. The validation of a simulation may be divided into: (1) external; (2) internal and (3) conceptual (DICKINSON, WHITELEY; FARIA, 1990; KEYS; WOLFE, 1990; WELLINGTON; FARIA, 2006; WOLFE; ROBERTS, 1983).

External validation comprehends the relationship between the performance in the business game and performance in the real business life. Internal validation covers cognitive and technical aspects. About cognitive aspects, it explains the relationship between academic performance and performance in the business games, and about technical aspect, it discusses the relations of simulator with theory.

About conceptual validation, Rosas (2009) define it as the justified selection of each decision; the alternatives are modeled based on extensive literature review, in real business cases and organizational characteristics that comprehend the context of simulated business, further the publication and discussion about the assumptions and justifications for decisions and their alternatives for the model. Keys and Wolfe (1990) suggest that deliberated search

for a selective and modelling method of decisions and its alternative of choice to compose a model has as aim the conceptual validation, which consists in justify the presence and working of each variable.

It is important highlight that the term internal and conceptual validation for simulator development is about the consistence of theoretical bases and their representation in decisions and results dynamics, not to the verification of statistical models.

The Frame 1 presents a synthesis of validation types and their approach.

Frame 1 – Synthesis of simulators validation types

Conceptual Validation/Content	Internal Validation	External Validation
Deliberate search of a selection and decision modelling method, and its alternatives of choice. Each variable is justified based on extensive literature review and real business cases.	<p>Approach 1: Cognitive chain – better students have better performance on business games.</p> <p>Approach 2: Technical chain – relations of simulator are according with theory and cannot be manipulated.</p>	<p>Approach 1: Professionals with good business performance have good performance on business games.</p> <p>Approach 2: Students with good individual performance on business game will have good performance in the professional carrier.</p>

Developed by the authors based on Wellington and Faria (2006), Keys and Wolfe (1990), Rosas (2009), Wolfe and Roberts (1996 *apud* Dickinson, Whiteley and Faria, 1990).

Few studies (WELLINGTON; FARIA, 2006; WESTPHAL; LOPES, 2007; ROSAS, 2009) have discussed the development of organizational simulators and the concepts of conceptual validation. For this reason, it is important present, in this study, the development process of a simulator, aiming to wake other researchers to the possibility of development of consistent tools which give support to the teaching and learning process in management.

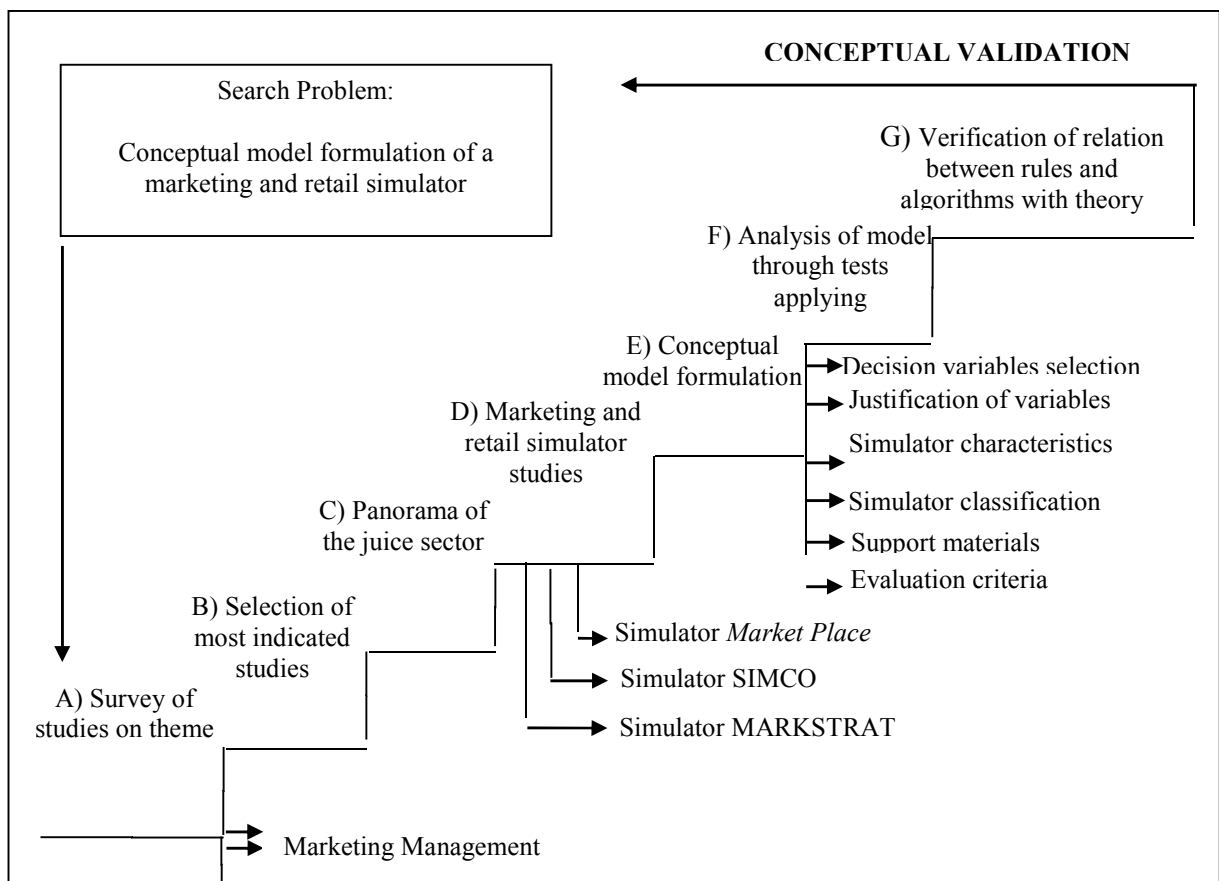
3 METHODOLOGY

The simulator was developed in a Public Institution of Higher Education in Rio de Janeiro state in 2011, by researchers who Works in business and marketing field with upper 10 years of experience in business games.

This study is characterized as applied nature, because its aim was generate knowledge to solve specific problems in management through the marketing simulator. It is a bibliographic study with literature review about organizational simulators and validations of simulators, with survey in retail field. Qualitative procedures were adopted to verify the relation between theory and practice in the marketing area and with retail reality.

The Figure 1 presents the stages that compose the development of this study, starting with the search problem and next the stages to be followed in order to find a solution.

Figure 1 – Research development stages



Developed by the authors, 2011.

Studies were surveyed about development and validation of organizational simulators (Stages A and B) as well as information about fruit juice, product marketed in the simulator, in Brazil and in large retailers business of South *Fluminense* region (Stage C). A study about variables of three marketing and retail simulators was performed (Stage D).

Based on the information surveyed, it was possible elaborate a conceptual model of the simulator proposed in this study (Stage E). Tests applying were performed with students of graduation, post-graduation and professionals of marketing and management (Stage F). Finally, the test applying results were compared with the theory (Stage G).

This study is specifically about internal validation, regarding to its theoretical aspect (theoretical chain), and in part of the conceptual validation, once it requires extensive literature review and a deep study about concrete business environments. On the conceptual validation, this study has approached only selection and justification of decision variables based on the literature. Although external validity and another internal validity approach – cognitive aspect – are also relevant in the validation process of simulators, it is not the focus in this study.

4 EDUCATIONAL SIMULATORS INVOLVING MARKETING AND RETAIL

Decision variables and rules of three simulators (SIMCO; MARKSTRAT; MARKETPLACE) were studied to support the construction of the model proposed. The main characteristics identified in the simulators evaluation and which have given support for this construction of the model are described on the Frame 2.

Frame 2 – Main characteristics of simulators researched

Simulator studied	SIMCO	MARKET PLACE	MARKSTRAT
Covering of management problem	General	General	Functional
Team interaction	Interactive, presence of participants.	Interaction by computers based on distance learning.	Interactive, presence of participants.
Variables involved	Payment term; cash payment; propaganda; commission; hired/fired employees; wages; training; participation; overtime; interests in term sale; loan; application in	Place to install the factory; draw the products; localization; quantity of sale's offices; capacity; invest in P&D; create advertisement; new technologies, etc.	Brand portfolio; production; price; propaganda; sale's force; distribution; Market researches and studies; (P&D).

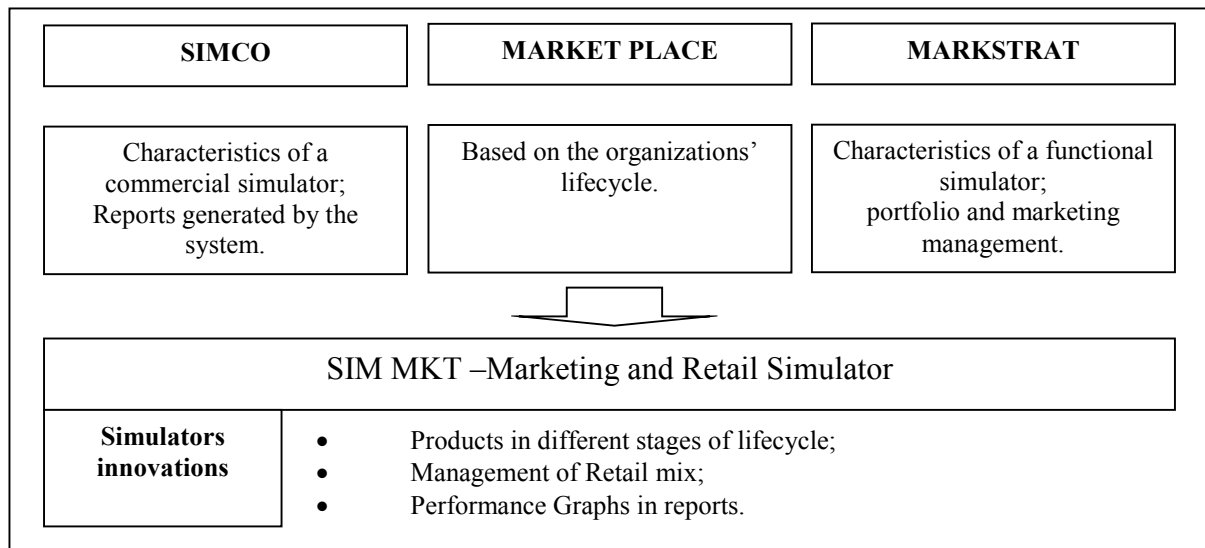
	profitable funds; Building of facilities.		
Computerization level	Computerized	Computerized	Computerized
Decision making	With help of software and of the make decision support system.	Exclusively using the online software.	Using software.
Difficulty level	Flexible (it is possible use only stochastic or determinable variables)	Flexible (Possible to be modified by the instructor). It presents nine application levels.	Flexible
Reporting generated	Demonstration of Results from exercise, Cash flow and Market report.	Reports with emphasis on strategic evolution in weak and strength points, in financial and marketing performance, and in financial projections.	Stock market newsletter, Key-indicators of performance, economic variables like PIB and inflation taxes; Detailed business reports.
General description of Simulator	Participants perform several sales policies, manage wage, hire and fire policies, develop budget and cash flow, control the loans, apply resources and manage payment delays, and eventually judicial recovers.	Participants follow stages of an organization lifecycle; prepare a business plan; analyze marketing researches and financial reports. The performance is measured through the <i>Balanced Scorecard</i> .	Representatives of a marketing department are recruited to develop new products, prepare the launching, make decisions about the marketing composed, order Market researches and studies, choose segments and place products.

Developed by the authors based on Marketplace; Campomar and Ikeda (2006); Simco (2009).

5 CONCEPTUAL MODEL OF MARKETING AND RETAIL SIMULATOR

Simulators Studied have contributed for preparation of the model presented, according to the Figure 2.

Figure 2 – Benchmarking of simulators studied



SIM MKT portrays the environment of a retail business that sells soy base juice, ready for consumption in determined region of country. Decision variables present in the SIM MKT correspond to the Retail Mix (6P's). Participants should manage the products portfolio, composed by until three types of juice. When deciding what juice the enterprise should offer to the market, representatives of marketing department should buy these products from the provider, considering the inventory level. Economic growth is informed by the simulator through Market total demand, and the inflation through the price of each type of juice of the retail provider, respectively.

5.2 SIMULATION DYNAMICS

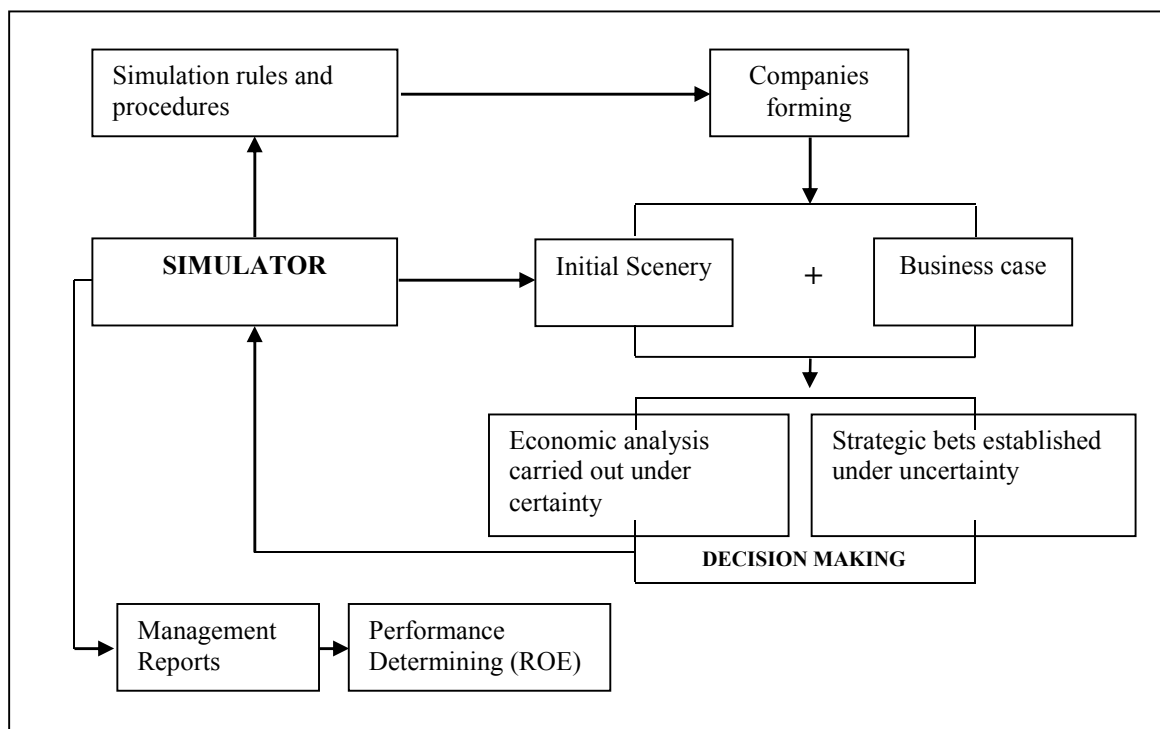
Participants ARE divided into teams with five students on average, who represent retail business competing with each other. Integrant of each team compose the Marketing Department of the business and, together, they make decisions that will direct the company. After the team formation, players receive the participant's handbook with the business case, simulation rules and initial scenery. When defining the company's name, participants are directed to the analysis of the initial scenery that, initially, is the same one for all the teams, and they are going to be changed according to the decisions in each round.

Companies are responsible by make decisions about the product *mix* that will be offered, the price of each product, investment in advertisement (propaganda, sponsor and campaign), investment in sale/place (distribution and sale force), investment in the store

presentation (departmentalization, store and layout) and investments in people (attending, speed and services).

During the rounds occur variations in the Market that affect the demand as a whole. Decisions of companies should consider the product lifecycle along the rounds. The simulation is composed by eight rounds and each one corresponds to one semester. The dynamics of simulation process may be seen in the Figure 3.

Figure 3 – Simulation dynamics



Developed by the authors based on Westphal and Lopes (2007), Sauer (2010) and SIMCO (2009).

5.3 MARKETING AND RETAIL SIMULATOR ARCHITECTURE

In this section, in a simplified way, the criteria for build formulas and equations which have drawn the conceptual model of marketing and retail simulator are presented.

Initially, three flavors were chosen and their respective volume of sale, further the unitary price for fifteen days. Next, a lifecycle was constituted for each type of juice. It was attributed the terms *type of juice* (x, y and z) in order to avoid any other association to the flavor by the participants.

In this way, each type of juice is in a different stage of lifecycle. The juice type x is popular and it is in the market for some time, and in the simulation beginning, it is in the growth stage. Usually its price is lower than others, and its demand is elevated. It has more elasticity price-demand (ex.: 1,18).

The juice type z was launched in the Market and it is in the initial stage. This type of juice presents a medium cost-benefit, because both its price and its demand are among the others. The juice type z has an elasticity price-demand around 0,92; it means that consumers of this type of juice are lower sensible to prices than other consumers of other juices.

5.4 ARBITRATION PROCEDURE OF MARKET DEMAND

Market demand was estimated based on the real demand for juice in the country in 2008. According data from SINCONGEL, the national demand for juice ready for consumption was around 508 million. To identify the marketing demand, it was considered that retailers attend only the southwest region. In this way, the percentage regarding the inhabitants of southwest was taken from the national demand, and variations were performed along the semesters, according to the lifecycle of each product. It is possible observe the calculus of demand for determined type of juice on the Frame 3.

Frame 3 - Example of calculus for demand for juice Type X

Lower real demand for juice Type x	896	Higher real demand for juice Type x	7220
Percentage (%) of demand Type x regarding to all the lower demands (x, y and z)	17.58%	Percentage (%)of demand Type x regarding to all the higher demands (x, y and z)	2.15%
9.580.538	Total demand 208.000.000	11.525.439	

Total demand X
% of demand Type x regarding to the lower demands (x, y and z)

National demand X
% inhabitants in the southwest region

National demand X
% of demand Type x regarding to the higher demands (x, y and z)

Developed by the authors, 2011.

The values of demand calculated in the Frame 3, for the juice Type x, may be observed on the Table 1.

Table 1 - Demand for juice Type x

Demand (liters)	
Trimester	Juice Type X
0	6.085.743
1	8.459.182
2	9.858.903
3	11.745.484
4	12.110.628
5	12.658.345
6	13.145.204
7	12.110.628
8	10.954.337

Developed by the authors, 2011.

Each decision variable has a degree of importance according to the stage of lifecycle in which the product is inside. The weights assigned to each decision variable are based on studies by Kotler and Keller (2006).

Variations along the trimester consider the price-demand elasticity for each type of juice. The weights assigned to the price vary according to the elasticity calculated for each product. A graph was elaborated for each type of juice with weights variations, considering the individual lifecycle.

Weights were attributed to the variations for presenting decisions, personal and points from 0 to 100 in each trimester, based on the degree of importance attributed by the authors presented in the theoretical framework. These variables present the same weight, independently on the type of juice, what differ from the variables *price* and *investment in marketing*. A weight from 0 to 100 was attributed to the variable *disclosing* (investment in marketing); this variation is different for each type of juice.

The ranking of companies is calculated through a mathematic equation, which includes decision variables and their respective degrees of importance attributed in the conceptual model. It constitutes a function-ranking for each type of juice, in each round, for each company. The equation 1 presents an example of Function-ranking for the juice Type x of the company 1 in the round 1.

Function-ranking of product Type x in the round 1 for the company 1

$$R_{ix} = \left((a_{ix} \times \alpha_{ix}) \left(1 - Q \times N A_i \right) \frac{\sum b_i \beta_i; c_i \gamma_i; d_i \varphi_i}{\varphi} \right) / p_{ix} \theta_{ix} \quad (1)$$

- a – monetary value of investment in the disclosing for the product type x of the company 1 in order to stimulate clients to buy the products type x in the round i;
- b – monetary value of investment in store presentation of company 1, in the round i, to stimulate buying decision by clients;
- c – monetary value for investment in people for stores of company 1, round i, for please and retain clients;
- d – monetary value of investment in distribution places of company 1, round i, in order to attend higher number of clients as possible;
- p – monetary value for price of product type x, round i, company 1, aligned to the strategy of company 1 and observing competitors;
- α – degree of importance attributed to the investment in disclosing, round i, for the product type x;
- β – degree of importance attributed to the investment in the presentation store, round i;
- φ – degree of importance attributed to the investment in people, round i;
- γ – degree of importance attributed to the investment in place, round i;
- θ – degree of importance attributed to the price for the product type x, round i;
- Q – weight of QUIZ (Competitive Intelligence) that increment investments in disclosing by the company 1, no costs, round i;
- N A – number of rights in the Competitive Intelligence, round i.

After the construction of Function-ranking, a function was elaborated to determine the participation in the Market for each type of juice, of each company, in each round. The equation 2 shows an example of this kind of equation for the juice type x, of company 1, round i.

Equation Market-Share

$$PM = f(R_{ix1}; R_{ix\omega}; R_{ix\sigma}; R_{ixZ}; R_{ix\delta}; R_{ix}) \quad (2)$$

R_{ix1} – quantity in liters of juice type x , round i , company 1; in other words, ranking of juice type x , company 1, round i .

$R_{ix\omega}$ – quantity in liters of juice type x , competitor ω , round i ; in other words, ranking of juice type x , competitor ω , round i .

...

$R_{ix\sigma}$ – quantity in liters of juice type x , competitor σ , round i ; in other words, ranking of juice type x , competitor σ , round i .

When defining the Market participation for each type of juice, a function was elaborated to determine the quantity sold for each juice, each company, in each round. This function deserves a special attention, because the company will not necessarily sell the quantity resulted in the ranking, but it is limited to the products available in storage.

In this way, further to manage the products portfolio, the retail company should verify the product availability in storage to avoid dissatisfaction by clients.

5.5 PERFORMANCE EVALUATION OF PARTICIPANTS

There are several discussions about criteria used to evaluate a management simulation. Some authors (BERNARD; SOUZA, 2007; WESTPHAL; LOPES, 2007; STAHL; LOPES, 2004) have questioned the exclusive use of traditional criteria based on company's performance. In this way, how evaluate the company's performance except through reports generated by simulations?

In the case of application of games in disciplines, Bernard (2006) asserts that participants should be evaluated by performance in the simulation, because the company simulated is the central matter of discipline. However, the use of only this criterion may lead to several distortions. When considering that participants learn with errors during the simulation, a negative result in the simulation not necessarily means low learning.

In this case, according to Bernard and Souza (2007), it is recommended the use of a set of evaluation criteria composed by performance indicators (profitability, participation in the market), participation criteria (involvement in the classroom) and traditional criteria

(written works, tests, etc.). In this way, a possible reprobation in the discipline will not be by bad performance in the simulation, but by the set of evaluation criteria established.

Stahl and Lopes (2004) suggest an alternative system of qualitative evaluation of participants, and it should be consistent with learning objectives of simulation. In this way, an alternative mean of performance evaluation of companies was adopted when try to extract quantitative and qualitative information from the results. These means of evaluation used in the Marketing and retail simulator are presented in the frame 4.

Frame 4 – Means of learning evaluation of participants

Results reports	Competitive Intelligence	Analysis of results and decision justifications
In order to obtain a more accurate quantitative of performance evaluation of participants, an evaluation by mean of management and accounting reports generated by simulation was adopted.	Along two rounds, companies answer theoretical questions about marketing, client behavior, price, segmentation, etc., in the form of decision. The answers give an increment in 25% in marketing investments (no costs).	Each three months the companies receive the forms of decision with a field to justify its decisions and analyze the anterior period.
Learning objectives		
It is intended to measure the performance of companies based on the return of net worth (ROE) accumulated along the simulations.	Searching identify whether decisions are according with knowledge previously acquired.	It is intended to measure the quantity of information were abstracted from the management and accounting reports, and verify whether decisions are based on theories, sceneries, etc.

Developed by the authors, 2011.

6 ANALYSIS OF SIMULATOR PILOT APPLICATION

A simulator pilot application was carried out in order to evaluate the consistence of components (economic rules, forms of decision, participant’s handbook, management reports) and identify the main doubts, comments and suggestions along the simulation, according with the stage F previously mentioned in the Figure 1.

The pilot application, with average duration of four hours, has happened with students from the 3rd, 5th and 7th periods of the graduation in Management, students from the post-graduation in Management with emphasis on strategy and professors of Marketing from the Management Department of two Institutions of Higher Education in Rio de Janeiro.

The participants have assumed individually the companies for three trimesters, equivalent to three rounds of simulation. After the test-rounds, a questionnaire was applied with six questions to evaluate the simulator. Criticism and difficulties presented by participants in the test-rounds resulted in adjustment in the model (participant’s handbook, economic rules of simulator, reports, etc.). Positive points have contributed in the attempt of conceptual validation and the suggestions of improvement were registered in order to continue the development of model. Main impressions of participants about the business case resulted in improvement after the pilot application.

In the evaluation of simulator an analysis of simulator rules was required to participants, considering the degree of complexity and the quantity of variables involved. The answers collected are presented in the Frame 5.

Frame 5 – Evaluation of simulator

Question	Simple	Complex	Changes
Simulator rules	<ul style="list-style-type: none"> • Simple rules, ideas for a game in initial stage of development; • The decision process is simple and easy; • The reports are simplified; • The game is easy to apply. 	<ul style="list-style-type: none"> • Difficulty because it does not recognize some variables; • Complex for who never have participated in a simulation; • It does not explore well the explanation of variables; • Quantity of products involved. 	<ul style="list-style-type: none"> • It was defined, in the learning objectives, that the simulation must be applied to people with basic knowledge about marketing; • It was advised the application of a test-round before the game.

Developed by the authors, 2011.

One of the questions has searched to identify the principles, models and techniques noticed in the simulator by the participants. The concept identified was 6P’s, method of

apportionment and pricing, further others mentioned in more embracing way, like finances, principles of marketing, management techniques, marketing, accounting, production, people management, Porter's generic strategies, retail management and basic concepts about products. With this result, it was observed that concepts and theories in the marketing field were mentioned several times, signaling the focus of simulator in what have been proposed - marketing and retail.

Among the main difficulties mentioned by respondents it is possible cite the lack of previous knowledge of variables involved: presentation, people and place, and the difficult to comprehend in a faster way the market report. Among the main positive points, it is possible mention ease of application, flexibility of use and specificity (marketing), variety of products, well elaborated form of decision, disposition of market and accounting reports, synergy of knowledge in management and marketing, good processing system of decisions and easy to fill. The main improvement suggestions were: transform it in an interactive system based on the web, presenting individual graphs, improvements in the design and level of difficulty of questions about marketing presented in the QUIZ.

7 FINAL CONSIDERATIONS

7.1 CONTRIBUTIONS OF SIMULATOR FOR EDUCATION

It is important highlight the contribution of simulators as tools which will help the teaching and learning process by means of business games. In this way, it is necessary the development of these tools and the publication of their modelling to motivate new developers. Before this, this study brought four main contributions: (a) presenting a description of development of simulators; (b) elaborating a product which will help the disciplines of marketing, and the training and development of professionals; (c) constructing a retail simulator, distinct characteristic of traditional simulators available in the market.

Detaching the contributions of the study for the academy is also important: elaborating a supplement tool for educators and detailing the process of development of simulators to help students and researchers in new studies. It is also detached the contributions for the market of organizational simulators: a tool to help the training and

development of professionals in the Marketing and Management field, and a new product with distinct characteristics from others that is the simulation of a retail company.

7.2 CONCLUSIONS AND PROPOSITIONS FOR NEW STUDIES

The analysis of elaboration of model (prototype) of the marketing and retail simulator achieved significant results for the simulator and its support materials (participant's handbook, form of decision, and accounting and management reports).

The main results achieved with the elaboration of conceptual model were: adequacy of number of variables for retail, allowing manage a products portfolio; inclusion of variables: presentation, people and place; indication of a higher cycle of rounds, considering the lifecycle of products; create a friendly interface for simulator; standardization of management spread sheet; development of graphs of performance; presentation of accounting reports by means of detailing the financial statements (DRE and BP) appropriate for the field and of management reports (market, statement of operations); elaboration of the participant's handbook and support materials for instructor, creation of a business case and forms of decision.

The main results achieved with the internal validation test were certain approximation with the reality through the use of information from real companies and the sector of juice fruit to estimate the demand, and of theoretical concepts about marketing, retail and lifecycle of products to distribute the levels of importance of decision variables, further the selection and justification of decision variables based on theoretical models.

The test-application also contributed with important results for the conceptual model of the simulator, allowing identify doubts which result in improvement of support materials and, mainly in the exposition of the rules of game. The positive points identified, all listed by participants, contributed to the attempt of internal validation, in the same way that negative points were worked for improvement in the model.

Along the study, some limitations were found, and they have not allowed a deeper performance, among them the difficulty to access information of real retail companies, which could be used to portray more precisely the business scenery; the lack of studies that discuss the validation of simulators; the exclusive use of a *survey* research, maybe an

explanatory research would reach bigger results; only one test-applying to evaluate the sensibility of simulator, what become impossible achieve higher advances in the model; the journals used to perform the survey could belong to other areas, like Marketing and Information Systems.

Further the limitations of the study, some limitations of the simulator are also detached: the expiration date of juices were not considered in the simulation and it is among the more important attributes for consumers; the simplification of financial statements, what make impossible a bigger analysis of participants; the game is not interactive based on web resources.

As propositions for new studies, a deliberate search based on conceptual validation is suggested to deep the level of justification of decision variables; the search by internal validation of simulator through development of algorithms and mathematical models according to the reality; the insertion of the simulator in the web, like suggested by participants in the test-applying, and the increase in the numbers of test-applying. Based on the questioning of several authors presented in the justification of this work, at is also suggested the validation test with statistical methods, but it is not a requirement in the internal validation process of simulators.

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