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PRESENTATION

Revista de Negócios is located in Blumenau, state of Santa Catarina, Brazil, in the campus of Uni-versidade Regional de Blumenau—FURB, post-graduate programme in Business Administration. Revista de Negócios is published quarterly in January, April, July and October on the website furb.br/rn.

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MISSION

Revista de Negócios advances the knowledge and practice of management learning and education. It does it by publishing theoretical models and re-views, mainly quantitative research, critique, exchanges and retrospectives on any substantive topic that is conceived with studies on emerging countries. Revista de Negócios is an interdisciplinary journal that broadly defines its constituents to include different methodological perspectives and innovative approach on how to understand the role of organizations from emerging countries in a globalized market.

SCOPE AND FOCUS

Revista de Negócios aims to create an intellectual and academic platform, under the perspective of Strategic Management Organization, to promote studies on Emerging Countries. The Journal looks and reviews for contributions to the debate about researches on two specific topics: innovation and competitiveness and strategic organization in emerging countries. The topic of innovation and competitiveness covers all studies and researches related to how organizations can sustain their competitiveness, particularly focusing on innovations, entrepreneurship and performance. The second topic covers studies and researches on strategic management of organizations, more specifically on how companies can or should act at strategic level looking mainly but not only to external context, supply chain, competitive strategies in international market, and marketing approach. The editorial policy is based on promoting articles with critical perspectives seeking for the understanding of the differences and similarities among emerging countries and in comparison with experiences and theories on strategic management in developed countries. It intends to promote specific contributions of how theoretical and empirical studies on emerging economies may contribute to the advance of theories related to innovations and competitiveness and strategic management of organizations. It is welcome scholars particularly working on such topics to submit theoretical essays, empirical studies, and case studies. The Revista de Negócios is open to different methodological perspectives and innovative approaches on how to understand the role of organizations from emerging countries.

TARGET AUDIENCE

The target audience of Revista de Negócios is the Brazilian international academic community in related fields of knowledge on business management.

EDITORIAL STRUCTURE

The Editor

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Editorial Letter

In the current issue we are presenting four articles with several empirical and theoretical contributions to the topics of finance, marketing, and internationalization. The authors share the common understanding that the topics are challenging organizations from different industries, and with different market positioning. The articles have adopted multiple methodological procedures that reflect in large extent the complexity of the topics and themes discussed in the context of emerging economies.

The first article: Financial incentives in economic experiments: a theoretical and empirical debate, authored by Marco Goulart, Newton Carneiro Affonso da Costa Jr., Jéssica Pulino Campara, and Ana Luiza Paraboni, has the main objective to evaluate the impact of the use of financial incentives in experiments in the fields of economics and finance. The main results show that besides a need for clearer regulations regarding financial incentives, financial incentives can alter the behavior of individuals as in the case of the disposition effect. Thus, the originality and importance of this study is highlighted, given that it contributes to the literature not only at the theoretical level, but also by presenting an empirical essay corroborating the theoretical discussion. Such findings suggest a need to a further discussion using critical thinking about financial incentives in experiments in the fields of economics and finance.

The second article: Fans Make Art: Authoring and Creativity in the Production of Fanvideos, authored by André Luiz Maranhão de Souza-Leão, Bruno Melo Moura, Italo Rogerio Correia de Santana, Walber Kaíc da Silva Nunes, and Vitor de Moura Rosa Henrique, has the purpose to analyze the production of fanvideos in Brazil based on success-ful pop culture franchises. Five types of fanmade productions were identified: fandub, fanart, fan animation, fan music and fanfiction. Such production demonstrates that fanvideos reveal the fans' desire to make art, what occurs both as a way for the fans relate to the franchises they admire, as well as to express themselves based on them. As main implication, the study shows that by doing this, they wide the scope and the narrative possibilities of the franchises through intra- and inter-textualities in relation to the universe of pop culture and their own daily experiences.

The third article: Path Dependence and Innovation: A Dichotomy in Internationalization, authored by Suzana Maria Scherrer, Silvio Luís de Vasconcellos, has the aim to provide a theoretcial understanding about the role played by path dependence in the evolution of the international business of firms when they face circumstances in which innovation becomes a challenge. Based on in depth case study, the main findings point to several implications. It shows how the combined effects on decision making of path dependence at the levels of the organization and of the industry affects innovation and internationalization. At the level of the industry, it makes contributions related to the interconnections between decisions taken within an organization, which in turn affect the future decisions of other firms in the same industry.

The fourth article: Earnings Management versus Capital Structure: What Are the Chances of Companies Occurring Within the Discretionary Limit?, authored by Samuel Lyncon Leandro de Lima, Adhmir Renan Voltolini Gomes, Roberto Francisco de Souza, and Delci Grapégia Dal Vesco, has as main objective to assess how how managers chooses funding sources, by analyzing the chances of occurring companies within the discretionary limit in relation to their capital structure. The results show that profitability, investment opportunities, firm size, low capital structure are variables that affect the chances of companies occurring within the discretionary limit. Based on this findings we suggest that for some sectors, the discretionary limit may be different from the energy sector. Furthermore, the authors show that such process depends on the regulatory system of the country, as well as the relevance of the companies sector.

Before concluding this Editorial, as always, we want to express our gratitude to all reviewers that helped us to achieve this current issue. We thank you and hope we can continue to count on your contributions to our Journal in future issues.

To our readers, we hope you will enjoy reading the articles, and expect you to contribute with our Journal in future issues on business strategies and emerging economies.

Mohamed Amal
Editor

RN Revista de Negócios
Studies on emerging countries

Financial incentives in economic experiments: a theoretical and empirical debate

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KEYWORDS

Behavioral economics, Behavioral finance, Financial incentives, Disposition effect.

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ABSTRACT

The use of financial incentives in experimental economics gained recognition from Smith's seminal work (1962; 1976). However, although this practice is widely adopted internationally, it is still little used in Brazil. Noticing such gap, the objective of this article is to evaluate the impact of the use of financial incentives in experiments in the area of economics and finance. To this end, a simulation of computational investment using ExpEcon was performed with 106 undergraduate students from UFSC. The objective was for them to perform stock purchase and sale operations and with this data it was possible to estimate the variables of the research: disposition coefficient, proportions of realized gains and realized losses. For the analysis, t-tests and multiple regression were estimated in order to assess the impact of financial incentives on the results. To support the discussion, in addition to the theoretical framework, National Health Council (CNS) resolutions No. 466 and No. 510 were discussed. The main results show that there is a need for clearer regulations regarding financial incentives. The results also brought empirical confirmation that financial incentives can alter the behavior of individuals as in the case of the disposition effect. Thus, the originality and importance of this study is highlighted, given that it contributes to the literature not only at the theoretical level, but also by presenting an empirical essay corroborating the theoretical discussion. Such findings and debates do not cease the discussion but foster and encourage critical thinking about financial incentives in experiments in the area.

PALAVRAS-CHAVE

Economia comportamental, Finanças comportamental, Incentivos financeiros, Efeito disposição.

RESUMO

O uso de incentivos financeiros em economia experimental passou a ganhar notoriedade a partir dos trabalhos seminais de Smith (1962; 1976). Porém, apesar desta prática ser amplamente adotada internacionalmente, no Brasil ainda é pouco utilizada. Percebendo tal lacuna, o objetivo deste artigo é avaliar o impacto do uso de incentivos financeiros em experimentos na área de economia e finanças. Para isso, foi realizada uma simulação de investimento computacional utilizando o ExpEcon com 106 alunos de graduação da UFSC. O objetivo era que eles realizassem operações de compra e de venda de ações e com esses dados fossem calculadas as variáveis da pesquisa: Coeficiente de Disposição, Proporções de Ganhos Realizados e Perdas Realizadas. Para a análise foram estimados testes t e regressão múltipla, com o objetivo de avaliar o impacto dos incentivos financeiros nos resultados da pesquisa. Para dar embasamento a discussão, além do referencial teórico foram discutidas as resoluções Nº466 e Nº510 do Conselho Nacional de Saúde (CNS)Os principais resultados mostram que existe a necessidade de resoluções mais claras a respeito de incentivos financeiros e trouxeram a confirmação empírica de que incentivos financeiros podem alterar o comportamento dos indivíduos como no caso do efeito disposição. Destaca-se, então, a originalidade e a importância deste estudo, dado que contribui com a literatura não apenas no âmbito teórico, mas também ao apresentar um ensaio empírico corroborando a discussão teórica. Tais achados e debates não cessam a discussão, mas fomentam e incentivam um pensamento crítico a respeito de incentivos financeiros em experimento na área.

1 Introduction

During the 1960s, social psychologist Stanley Milgram conducted an experiment on obedience (Milgram, 1963).

Even today, this research, also known as Milgram's obedience experiment, is widely cited in the field of social psychology and other areas of scientific knowledge. What little is said today is that Milgram received strong opposition from his fellow researchers, who considered his experimental methods unconventional and even unethical.

Many years later, it became evident that Milgram's discoveries far outweighed the possible, unproven damage to the participants in the social experiment. In spite of the broad ethical discussion that took place at the time, even today a conflict still prevails about ethics in social experiments. One example of this is the use of economic experiments, more specifically with regard to offering financial incentives to participants.

The use of economic experiments and the discussion on the use of financial incentives gained ground mainly after the seminal works of Vernon Smith (1962; 1976), who in 2002, together with Daniel Kahneman, received the Nobel Memorial Prize in Economic Sciences. Since then, the use of financial incentives in economic experiments is a practice adopted in several research centers around the world (Bricker, 2014; Carpena et al. 2015; Harrison, 1989; Camerer & Hogarth, 1999; Holm et al., 2013; Cárdenas et al. 2014; Feltovich, 2011).

Despite the international importance that the experimental economy receives, in Brazil it is not possible to notice the same degree of success. According to the directory of research groups of CNPq, it is observed the existence of only two research groups that bring the theme "experimental economy" in its name. The Laboratory in Experimental Economics and Complex Systems was created in 2016 at the Universidade Estadual Paulista Júlio de Mesquita Filho (UNESP) and more recently the Laboratory of Applied Studies in Behavioral and Experimental Economics at Universidade Tiradentes (UNIT), created in 2019, that is, during the period of this research it had not yet been constituted. Even with the existence of other research groups and some laboratories in a few universities such as the Pontifical Catholic University of Rio de Janeiro (in general, not in public federal universities), the incipiency of the theme in the national territory is noteworthy.

In addition, in a survey conducted in 118 journals under CAPES' Qualis system in the areas of Administration, Accounting, Tourism and Economics, the main vehicle for dissemination of these works, we identified 147 papers that adopted the experiment as data collection until April 2017. Of these, only 8 provided some kind of incentive to their participants, and only two did so with financial resources (Póvoa, Maffezzolli, Pech & Silva, 2017; Antiqueira, Saes & Lazzarini, 2007; Iwai & Azevedo, 2016; De Lima, Porto & Botelho 2016; Costa et. al, 2014; Dos Santos, 2015; Passos, Cornacchione Jr; Gaioa; Brito, 2016; Dantas, Dantas, & Silva, 2012).

We can conjecture that one of the obstacles to the expansion of experimental research with financial incentives in Brazil is the interpretation that is made of the National Health Council (CNS) resolutions No. 466 of December 12, 2012, and No. 510 of April 7, 2016. These regulations address the guidelines and regulatory standards for research involving human beings. They are, therefore, the regulations adopted by the Ethics Committees that previously analyze and approve the conduct of any research, including those in the field of experimental economics.

Seeking to better understand this context, the main objective of this work is to evaluate the impact of the use of financial incentives in experiments in the area of economics and finance. Specific objectives include: i) developing a theoretical review on experimental economics and the use of financial incentives that can guide the empirical discussion; ii) conducting a review of Resolutions of the National Health Council (CNS) No. 466 of December 12, 2012, and No. 510 of April 7, 2016; and iii) presenting an empirical essay on the influence of financial incentives on the disposition effect.

Within this context, we will have the opportunity to explore the use of financial incentives in economic experiments both in the legal requirements, through the analysis of regulations, as well as theoretical and empirical. With this, we have first contributed to the discussion on the development of experimental researches, as well as the use of incentives in such researches, since at national level this is a topic little explored in comparison with more developed countries. The legal basis for this discussion provides a possible practical impact for future research. We hope that the debate here outlined will allow less doubt regarding the interpretation of the aforementioned resolutions and this will facilitate the adoption of this practice in Brazilian experiments.

Finally, it is important to consider this discussion not only at the theoretical level, but also by presenting an empirical essay that corroborates the discussion that financial incentives can have an important impact on the results of experimental research. With the present study we hope to minimize the existing gap in Brazil of the need for researches with national samples that evaluate the impact of financial incentives in experiments, since until the present moment that we finalized this article only one Brazilian study was dedicated to perform this comparison, and the variable evaluated was the risk aversion (Soares, Simões & Jorge Neto, 2018).

This paper begins with this introduction, starting with a presentation of a theoretical review on experimental economics and financial incentives. Subsequently, a discussion of the referred resolutions, debating the points related to the use of financial incentives. The third part presents an essay analyzing the influence of financial incentives on a widely debated anomaly in behavioral finance: the disposition effect. Finally, conclusions and recommendations are presented in order to discuss the use of this important scientific method.

2 Theoretical Framework

Since its dissemination in the 1960s, much has been debated at the international level about the use of financial incentives in experiments. It can be said that most of the work points to the need for the use of financial incentives, in order to engage the participant of the experiment. However, some studies show that the use of financial incentives is dispensable, or that it can be replaced by the use of other means of incentives, such as extra points in notes for the case of student participants. The objective of this session is to present the main research that deals with the use of financial incentives in economic experiments.

2.1 Financial Experiments and Incentives

Given the complexity in capturing the real behavior of individuals in the decision-making process, experimental research emerges as an alternative in this direction, since in this type of study the researcher ends up having greater control of the variables surveyed compared to the field, thus having the possibility of changing certain parameters (Feltovich, 2011). One of these parameters would be to allocate some financial reward to research participants.

However, there is no consensus in the social sciences regarding the validity of financial incentives, especially in relation to studies in psychology and economics. Thus, although the combination of these areas of knowledge has the potential to offer a deeper understanding of social issues, there seems to be a gap between the studies of the two areas, so that psychology researchers believe that the costs and benefits of different courses of action in the real world are often undefined, causing the rewards of the laboratory to decrease the realism of research (Ariely & Norton, 2007). Moreover, for researchers in this field of studies, subjects do not need rewards due to the fact that the intrinsic motivation is already high enough for them to undertake efforts (Camerer & Hogarth, 1999).

On the other hand, when investigating studies in the area of economics, it is possible to observe a greater consensus that the financial incentives offered to the participants of the experiments positively affect their performance, as well as increase the credibility of the data (Holm et al., 2013), so that if they were not paid, there would be no cognitive effort in order to avoid errors of judgment (Harrison, 1989; Camerer & Hogarth, 1999).

Hertwig and Ortmann (2001, p. 390) assume four main reasons why research in this area should use financial rewards. First, the authors claim that when monetary incentives are offered, the variability of performance decreases among participants. Then, one has the idea that this type of incentive is easier to evaluate and implement than the other types, as well as most individuals are enthusiastic about the possibility of earning more, not having satiety throughout the experiment. Finally, the authors argue that most of these studies test an economic theory, which predicts assumptions of maximizations, as well as defines behavior patterns that can be more reliable with reward.

On the other hand, there is also research in the economic field that questions some aspects of financial incentives. Cárdenas et al. (2014), raise the question that the monetary incentive offered, for being easily achievable, may not portray a real life situation, which is known as house-money effect. In this sense, the authors suggest a deepening in the studies regarding the time elapsed between the transfer of a reward and the experimental decision, because according to them, if the incentive is provided days before the study, individuals can have this value as part of their real incomes.

Bricker (2014) compares the quality of data and attempts to contact families who were invited to participate in the Survey of Consumer Finances (SCF), a survey conducted every three years in the United States. Some families were offered monetary incentives and others were not. In the first instance, the author found a faster acceptance of the benefited families to participate in the study compared to other families, as well as when comparing the value offered in 2007 ($20) and 2010 ($50). Bricker (2014) realized that the higher the value offered, the faster the adhesion is. However, in view of the results, it was possible to observe that the quality of the data and the effort required in the research were little affected by the reward offered. Given this, the author linked these results to the fact that most of the sample contains individuals with above-average income, so that the reward offered is not seen as something attractive, contrary to what happens with people with lower purchasing power.

In order to explore which aspects of financial education interventions facilitate economic decision-making, Carpena et al. (2015) investigated 1,500 individuals in India and offered rewards to each individual according to the number of correct questions they were asked, given that the questions were related to a video presented to participants. Thus, the authors sought to verify whether the monetary incentives could induce participants to retain and apply the knowledge taught during the experiment, but at the end of the research, they realized that the inclusion of payments related to the performance of each individual did not result in any significant improvement in the financial knowledge acquired by them, either in the short or long term.

Similarly, in reviewing 74 experimental studies, Camerer and Hogarth (1999) observed that financial incentives do not always improve each individual's performance. The authors concluded that high rewards have greater effects only on the tasks of judgment and decision-making, considered the easiest tasks, and that monetary incentives are harmful when the problems are more complex or, even, when a simple intuition provides an optimal response and thinking more deeply ends up worsening the situation of the subject.

2.2 Disposition Effect

The disposition effect was originally studied by Shefrin and Statman (1985), who explain it through four important elements: prospect theory, mental accounting, regret aversion and self-control. Odean (1998) later included reversion to the mean explanation.

The first component, prospect theory, is proposed by Kahneman and Tversky (1979), who state that individuals are risk-averse for gains, but risk-seeking for losses. In relation to mental accounting, the central point is that decision makers tend to segregate the different types of choices into separate accounts, ignoring any kind of interaction between them. Regret aversion, on the other hand, refers to the fact that investors tend to be reluctant to make losses, since at this time they are forced to admit their own mistakes. Self-control refers to an existing conflict between the rational and the emotional side of the individual. Finally, the reversion to the mean corresponds to the belief that assets that are significantly depreciated could increase in value and assets that are appreciated could be devalued, converging to the mean.

In recent years other studies have investigated the factors that influence the susceptibility of individuals to the disposition effect. Among the findings, there are issues such as socio-demographic characteristics (Feng & Seasholes, 2005; Dhar & Zhu, 2006), investment experience (Chen, et al., 2007; Calvet et al., 2009; Da Costa Jr. et al., 2013), psychological conditions related to the establishment of savings targets (Aspara & Hoffmann, 2015), emotions such as regret, which make investors maintain capital losses, and joy that make them realize capital gains (Summers & Duxbury, 2012), and psychophysiological characteristics - individuals with higher sweating, heart rate and body temperature tend to have greater disposition effect (Goulart at al., 2013).

From the determinants of the disposition effect, we now seek to understand how it is measured. From the moment the method used to calculate the disposition effect started to be seen as important for its outcome, several attempts were made to reach an efficient measurement. Thus, after the estimate suggested by Shefrin and Statman (1985), emerged the one proposed by Odean (1998), which can be considered one of the most used, and uses the frequency with which investors sell winning and losing shares in relation to the opportunity to sell both in a situation of profit and loss. Subsequently, other measures that represent an evolution in the studies of this behavioral bias emerged (Dhar & Zhu, 2006; Barberis & Xiong, 2012; Kaustia, 2010).

The studies on the disposition effect can also be divided according to the data collection method used, so that they can be based on actual market data (Odean, 1998), based on controlled experiments (Weber & Camerer, 1998), and controlled experiments using the computer system (Goulart et al., 2015).

3 Resolutions of the National Health Council (CNS) and its Interpretations

We began the debate by Resolution 466 (R466) of the CNS of 2012, which deals with the guidelines and regulatory standards for research involving human beings. For this reason, its use is the basis for the decisions of Ethics Committees throughout the country. Thus, a detailed reading of R466 allows the reader to observe that its wording takes into account several aspects of research in the area of health and biological sciences, without leaving clear guidelines regarding research in the context of the Human and Social Sciences. Realizing this gap, in 2016 a new resolution was published (R510), in which the CNS sought to recognize the ethical peculiarities of research in the Human and Social Sciences, however the theme on financial incentives is not directly addressed.

Specifically, in relation to R466, it is perceived a focus on the peculiarities of research in the health field. In this sense, several concerns are raised, such as research involving human reproduction and/or biological materials (item "II terms and definitions"), studies with pregnant and lactating women (item "III Of the ethical aspects of research involving human beings"), procedures with subjects with brain death or indigenous population ("IV of the free and informed consent process"), among many others. However, although R466 is coherent and complete regarding the aspects of research in the health area, some of its paragraphs raise doubts of interpretation when it comes to its application in research in the area of experimental economics. Item II, number 10 indicates that the research participant is:

> *"The person who, in an enlightened and voluntary manner, or under the clarification and authorization of his or her legal guardian(s), agrees to be researched. Participation must be free of charge, except for Phase I or bioequivalence clinical trials;". (R. Nº 466 of 12/12/2012)*

This elucidation leads many ethics committees to limit the use of monetary incentives.

On the other hand, it is common for research in experimental economics to offer a financial value for subjects to perform a given activity, and in many cases this value may increase or decrease depending on the performance of participants. An example is participation in an investment simulation where those who exceed the market index receive an extra value and those who fail to exceed lose a portion of the value they received (Da Costa Jr. et al., 2013).

In this sense, by requiring participation free of charge, the resolution raises a question of interpretation about the possibility of a participant receiving a monetary value and putting this value at risk during the experiment. If the value is previously offered, and the subject has a poor performance, then he would have to "pay" a value that is already in his possession. It would be possible to argue otherwise, claiming that the research participants do not hold the monetary resource before the end of the experiment.

Also, in item II, paragraph 18 defines what is "prior provision of material", and a similar wording is used in paragraph 21 to define "reimbursement":

> *"cash compensation, exclusively for transportation and food expenses of the participant and his/her companions, when necessary, prior to his/her participation in the research;". (R. Nº 466 of 12/12/2012, II, §18)*

This paragraph may generate a limitation for the researcher in experimental economics who intends to perform the payment of participants only after the research, as previously highlighted. The text also requires that payment be only for transport and food expenses, which excludes the use of monetary compensation so that the participant is effectively engaged in the procedure - the issue of engagement will be dealt with in more detail in the next item.

Item III, paragraph 2, line "i" states that research in any area of knowledge involving human beings shall:

> *"provide for procedures that ensure confidentiality and privacy, protection of the image and non-stigmatization of research participants, ensuring that information is not used to the detriment of individuals and/or communities, including in terms of self-esteem, prestige and/or economic and financial aspects;". (R. Nº 466 of 12/12/2012)*

This passage imposes a condition of confidentiality that may not be of interest to a particular experimental design in economics. In Goulart et al. (2015), for example, the experimental design predicted a potentially embarrassing situation. Because the research participants should reveal their financial performance, in a simulation of investments, publicly. The use of this type of experimental design is important since many financial decisions are not made individually, but in front of a group, just as there are real situations where the results are shared and the performance is made public (Endlich, 2000; Derman, 2004).

As a counterpoint to the passages that apparently oppose the procedures used in experimental economics, R466 also highlights the validity of research that brings benefits to the scientific debate.

> *"direct or indirect income, immediate or posterior, earned by the participant and/or his community as a result of his participation in the research". (R. Nº 466 of 12/12/2012, II, §4)*

On the other hand, R510, which follows an editorial style similar to R466 in many of its paragraphs, sought, in some way, to offer an opening to the ethical peculiarities of research in the Human and Social Sciences. The main highlight of R510 is the text on the "free participation" of the researched subjects. The text that defines the "research participant" was as follows in R510:

> *"individual or group, who is not a member of the research team, participates in it in an informed and voluntary manner, by granting consent and also, when appropriate, by assent, in the forms described in this resolution. (R. Nº 510 of 04/07/2016, art. 2, § XIII)*

It is noted the exclusion of the requirement of free participation that had been proposed by R466. However, in its final provisions (chapter VII) R510 suggests that "in situations not covered by this resolution - R510 - the ethical principles contained in R466 will prevail". Here we have a possible problem in interpreting whether or not the situation of non-voluntary participation was contemplated by R510. Our lay interpretation is that by proposing a new definition for "research participant" R510 contemplated the situation. We understand, however, that we have no legal basis for such a statement, and we wonder if the resolution should require this type of expertise from researchers and members of Ethics Committees.

We have observed so far that discussions similar to those faced by Milgram in the 1960s, regarding ethics in experimental research, are still present today. We understand that our research is simple if compared to Milgram's work, but we consider that the discussion is valid. We also emphasize that the objective is not to question the wording of the Resolutions, but to seek to interpret them, as well as to raise a greater debate within the academy in relation to the possibilities and obstacles to the use of financial incentives in experiments.

4 Methodology

This session presents the description of the method of the experimental essay. We describe the sample, the computational investment simulation used, the variables and design of the experiments and the statistical tests.

It has been exposed so far that there are different interpretations for CNS resolutions, and that there are few surveys that make use of financial incentives in Brazil. We present this essay with the purpose of exemplifying the use of incentives in experimental research, fostering the debate on the validity of incentives. For this, we analyze the influence of the use of financial incentives in the occurrence, or not, of the disposition effect in a simulation of computational investments.

4.1 Sample

Our sample is composed of approximately 30 individuals in each of the three types of experimental sessions performed (without incentive; continuous incentive; tournament incentive), a number that can be considered adequate, since most research in experimental economics uses similar samples (Smith, 1976; Smith et al., 1988). The total sample of the research, adding up all the sessions held, was 106 undergraduate students in business administration, economics and accounting at the Federal University of Santa Catarina. All students are from the early stages of the courses, so we expect to obtain a homogeneous level of knowledge among the participants.

4.2 Computational Simulation of Investments

In the process of developing this experiment, the participants receive verbal and textual (printed) instructions regarding the simulation of computational investments. The instructions include a projector demonstration of all system functionality, as well as a question-and-answer session and tests of buying and selling operations. Such procedures are commonly performed in economic experiments (Friedman & Sunder, 1994; Friedman & Cassar, 2004). The total time of application varies according to the player, reaching a maximum time of 60 minutes and minimum of 20 minutes, the average time is 30 minutes.

The design of the experiment adopted in this research is based on the model used by Weber and Camerer (1998), but with implementation through a computerized system (Weber and Camerer used questionnaires). The computational simulation (ExpEcon) allows the recording of an output .txt file, containing a report of all transactions of purchase and sale of assets over each period simulated by the participant. This report allows the calculation of the returns and risks incurred, as well as the effects object of this research. ExpEcon has only one main screen, as shown in Figure 1.

Figure 1. Main screen (ExpEcon)

Source: prepared by the authors based on the software (2018).

4.3 Description of the variables and design of the experiment

The investment simulation software generates a text file with data on participants' buying and selling operations, as well as the composition of the participant's portfolio per period. From the output file of each participant, all information is aggregated, and the variables of interest are estimated and tabulated in an Excel spreadsheet that serves as a basis for econometric analysis.

The Coefficient of Disposition (CD), which shows the disposition effect, is the dependent variable of the research. This coefficient is calculated according to the method developed by

Odean (1998), by which the proportions of realized gains (PGR) and realized losses (PLR) of the participants are calculated. The objective of the experiment is to analyze whether PGR and PLR are affected according to the manipulations performed, which are the financial incentive conditions. For this purpose, three experiments are developed with different incentive procedures.

In the first one, we have the condition of control, without financial incentive (“**without”**), in which the participants do not receive any kind of financial incentive but learn about their relative performance (position in relation to the other participants) at the end of the simulation. Participants have their results measured by cash plus the amount invested in assets (final balance). This performance is kept confidential, i.e. the results are disclosed individually in an envelope. The participant receives the information of its final balance and its position in the ranking in relation to the other participants of the survey.

In the second condition we developed the experiment with financial incentive (“**with”**), and all participants are remunerated according to their performance. We call this format continuous payment. At the beginning of the experiment, all participants receive 10,000 monetary units to be used in investment simulation, in which 1,000 monetary units of the simulation are equivalent to R$ 1 in cash awards. For example, if at the end of the simulation the Final Balance, which appears on the simulation screen, is 15,000 monetary units, the subject receives R$15.00. If, on the other hand, the balance is 5,000 monetary units, the subject receives R$5.00. For comparison purposes, the hourly value of the minimum wage in 2017 is R$ 5.85 (for a 40-hour workweek). This performance is kept confidential, i.e. the results and awards are disclosed individually in an envelope. It should be noted that in the condition without incentive the participants also start with the same amount of monetary units, but do not receive any financial incentive, regardless of performance.

Finally, the third proposed condition is called tournament (“**tournament”**), where only the top three performers in the investment simulation are rewarded. The remuneration of the first place is R$50, the second place R$25 and the third place R$10. Performance is kept confidential, and participants receive their own rewards and performance information privately.

Members of all groups participate in an investment simulation with 30 rounds of up to 3 minutes each. The price data of the assets that make up the simulation are based on real asset data (traded on B3) or randomly assigned.

In addition to the conditions proposed in the three experiments, control variables were also used to analyze whether other factors can explain changes in the dependent variable.

a. *Volatility*: Average of the standard deviations of the assets that make up the participant's portfolio in each simulation period. This average is weighted by the percentage share of each asset in the participant's portfolio, and the standard deviation of each asset is calculated based on the historical price oscillation, that is, as the periods pass, the data set used to calculate the standard deviation of the asset increases. It is a reference for a possible strategy of "risk avoidance", observed by the oscillation of the assets, by the participant.

b. *Cushion*: Average of the percentage of resources that the participant keeps in cash in each period. Such a name is derived from a possible "cushion" strategy that the participants could adopt to avoid the embarrassment of remaining among the last placed. Example: A participant who has 10,000 monetary units and uses 1,000 monetary units to buy assets, keeping them in portfolio, has a Cushion of 90%.

c. *Turnover*: Average percentage of funds (invested in assets plus cash) traded in relation to total funds (invested in assets plus cash) per period. Ex: A participant that has 10,000 monetary units (assets plus cash) and performs transactions equivalent to 5,000 monetary units has a turnover of 50%. It is an alternative measure to the number of transactions, because it presents a reference number on the traded value, being more robust in this sense. It is a reference for a possible strategy of greater or lesser negotiation of the participant.

d. *Assets in the portfolio*: Average assets in the portfolio, ranging from 0 and 6 (total number of assets in the simulation). It presents a reference for a possible diversification strategy of the subject.

e. *Transactions*: Total number of buy and sell transactions performed per participant.

4.4 Statistical tests

The disposition effect calculation procedures are based on the method used by Odean (1998). The analysis can be performed individually (per subject) or with aggregated data from all participants (Odean, 1998; Shefrin & Statman, 1985; Camerer, 1998). At the individual level, a proportion of realized gains and losses is calculated for each participant, and then averaged among the participants.

The analysis with aggregated data uses the sum of all gains and losses realized by all participants in one of the conditions. It is important to highlight that in the analysis at the individual level four averages of proportions are generated and the unit of analysis is "per participant" (a smaller sample). In the aggregate analysis four proportions are generated, and the unit of analysis is the set of operations of the participants (a larger sample).

Thus, for the analysis at the individual level, the *t-test* is performed to validate differences between means within the same group (CD = 0), according to equations 1 and 2:

$$t = \frac{PGR - PLR}{SE} \tag{1}$$

Where the standard error is given by:

$$\boldsymbol{SE} = \frac{\boldsymbol{S}}{\sqrt{\boldsymbol{n}}} \tag{2}$$

Where S is the standard deviation of the sample and n is the sample size.

In the aggregate level analysis, a t-test is performed to validate differences between proportions (ODEAN, 1998).

$$t = \frac{PGR - PLR}{SE(PGR - PLR)} \tag{3}$$

Where the standard error is given by:

$$SE = \sqrt{\frac{PGR\,(1 - PGR)}{N_{GR} + N_{GNR}} + \frac{PLR\,(1 - PLR)}{N_{LR} + N_{LNR}}} \tag{4}$$

To analyze the influence of the control variables on the disposition effect, multiple regressions are made (Wooldridge, 2010) in which the dependent variable is the Disposition Coefficient (DC). Equation 5 describes the proposed multiple regression model, performed in stepwise form, including the variables described in the previous section.

$$DC_i = \alpha + \beta_{1i}X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + u_i \tag{5}$$

Where X_{1i}=1 is the binary variable for participants without incentive (X_{1i}=0 for the other conditions); X_{2i} is the mean of the standard deviation of the assets that make up the participant's portfolio in each simulation period (volatility); X_{3i} is the mean of the percentage of resources that the participant keeps in cash in each period (cushion); X_{4i} is the average of the percentage of resources (cash plus assets) traded in relation to the total resources (cash plus assets) per period (turnover); X_{5i} is the average of assets in portfolio, varies between 0, and 6 which is the total number of assets of the simulation (average assets); X_{6i} is the total number of purchase and sale transactions made per participant (transactions).

5 Analysis

This session presents the results of the experiment, with analyses for the dependent variable: DC and its PLR and PGR composition bases. It should be noted that the purpose of the experiment is to test whether the financial incentive has an impact on the DC, compared to a condition in which the participants do not receive financial incentive. The general literature on the subject "financial incentive" is not conclusive (Camerer & Hogarth, 1999), depending on the task the incentive can improve the result or harm it. So far there is no knowledge of this type of analysis, specifically related to the disposition effect. Thus, we start the experiment without any expectation of its influence or direction.

In the condition of continuous incentive, where all subjects received the financial value according to their performance, we recorded as worst performance -17.71%. In this case the subject had a loss of approximately $1.70 of the $10.00 that initially received, ending the simulation with the value of $8.30. The best performance was 22.25% which generated a final received amount of $12.25. Table 1 presents the descriptive statistics at the individual level.

Table 1. Descriptive statistics for individual DCs.

	Total	Sem	Com	Torneio
Average PGRi	0,1747	0,2126	0,1658	0,1407
Average PLRi	0,1558	0,1134	0,1762	0,1866
Average DCi	0,0189	0,0992	-0,0104	-0,0459
Median DCi	0,0105	0,0384	0,0088	-0,0410
Max DCi	0,7756	0,7756	0,2429	0,3646
Min DCi	-0,6154	-0,2714	-0,4643	-0,6154
Standard Error DCi	0,2018	0,1967	0,1648	0,2056
t-test for the mean DCi=0	0,9421	3,1504***	-0,3157	-1,3587
(p-value – two-tail)	*(0,1730)*	*(0,0008)*	*(0,6238)*	*(0,9128)*
n	101	39	25	37

Note: * significant at 10%; ** significant at 5%; *** significant at 1%

The analysis shows that in the condition **without** incentive the DC was positive. In the conditions **with** continuous incentive and tournament the DC was not significant, that is, the subjects presented a rational behavior, confirming the evidences of Holm et al. (2013) that financial incentives improve participant performance.

Table 2 presents the descriptive statistics at the aggregate level. Once again it is possible to observe the occurrence of the disposition effect on the condition **without**. However, considering the aggregated data, it is also possible to observe a positive DC for the condition **with**. The most significant difference between the conditions occurred in the PGR, and at the aggregate level it was also possible to observe significantly higher DC in the condition **without** in comparison with the two incentive conditions.

Table 2. Descriptive Statistics for Aggregated DCs

	Total	Sem	Com	Torneio
Realized Gains (RG)	740	379	166	195
Realized Losses (RL)	545	224	131	190
Unrealized Gains (UG)	4306	1797	1016	1493
Unrealized losses (UL)	3496	1526	954	1016
PGR=RG/(RG+UG)	0.1467	0.1742	0.1404	0.1155
PLR=RL/(RL+UL)	0.1349	0.1280	0.1207	0.1575
DC=PGR-PLR	0.0118	0.0462	0.0197	-0.0420
Standard Error	0.0073	0.0114	0.0141	0.0131
Z stat	1.6083*	4.0514***	1.3932*	-3.2176
(p-value)	*(-.0538)*	*(.0000)*	*(.0817)*	*(.9993)*
Final sample	101	39	25	37

Aggregated level

(1) One tail test: Null hypothesis: DC ≤ 0; Alternative hypothesis: DC > 0

(2) Comparing PGRs between conditions without and with incentive: Without: 379/2176(=0.1742) vs. With 166/1182(=0.1404), Z=3.7922*** Comparing PGR between conditions without and tournament: Without: 379/2176(=0.1742) vs. Tournament: 195/1688(=0.1155), Z=6.8423*** Comparing PGR between conditions without and tournament: without: 379/2176(=0.1742) vs. Tournament 195/1688(=0.1155), Z=6.8423***

(3) Comparing PLR between conditions without and with incentives: Without: 224/1750(=0.1280) vs. With: 131/1085(=0.1207), Z=1.3933* Comparing PGR between conditions without and tournament: Without: 224/1750(=0.1280) vs. Tournament: 195/1688(=0.1155), Z=6.8423*** Comparing PLR between conditions without and tournament: Without: 379/2176(=0.1742) vs. Tournament 190/1206(=0.1575), Z=-3,2176

(4) Test to verify if DC (without) ≥ DC (with) using SE from the total sample: Z =(0.0462-0.0197)/0.0089 = 2.9758*** Test to verify if DC (without) ≥ DC (tournament) using SE from the total sample: Z =[0.0462-(-0.0420)]/0.0086=10.2891***

(5) * significant at 10%; ** significant at 5%; *** significant at 1% .

The results we found are significant and show that, at first sight, there is an influence of the incentive condition on the DC. However, this influence could be caused by a series of factors not related to the incentive. For this reason, tests are performed to verify whether these other factors could explain the variation observed in DC. Multiple regressions are performed in stepwise form, including the control variables already described.

Table 3. Regressions for control variables with and without incentive.

DC	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Interc.	-0.0104	0.0627	0.2099	0.2352	0.2659	0.4429
	(0.0370)	*(0.0712)*	*(0.1288)*	*(0.1283)*	*(0.1473)*	*(0.1811)*
1=without 0=with	0.1096*	0.0829	0.0454	0.0719	0.0734	0.0172
	(0.0474)	*(0.0522)*	*(0.0587)*	*(0.0604)*	*(0.0609)*	*(0.0692)*
Volat.		-0.0192	-0.0369*	-0.0288	-0.0307	-0.0385
		(0.0160)	*(0.0205)*	*(0.0210)*	*(0.0215)*	*(0.0217)*
Cushion			-0.1502	-0.1583	-0.1637	-0.2362**
			(0.1099)	*(0.1088)*	*(0.1102)*	*(0.1173)*
Trans.				-0.0016	-0.0015	-0.0010
				(0.0010)	*(0.0011)*	*(0.0011)*
Average share					-0.0087	-0.0281
					(0.0199)	*(0.0230)*
Turnover						-0.9004
						(0.5499)
R^2	**0.0646**	**0.0712**	**0.0842**	**0.1057**	**0.0932**	**0.1188**
n	64	64	64	64	64	64

(1) The table presents the coefficient, and in parentheses the robust standard error. In bold, the adjusted R².
(2) $DC_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + u_i$
Where $X_{1i} = 1$ is the binary variable for participants in "without" setting and $X_{1i} = 0$ for the "whit" setting; X_{2i} is the average standard deviation of the assets comprising the portfolio of each participant in the simulation period. This average is weighted by the percentage share of each asset in the portfolio of the participant, and the standard deviation of each asset is calculated based on price fluctuations, i.e., as rounds are played, the data set used to calculate the standard deviation of the asset increases (Volatility); X_{3i} is the average percentage of his total assets that the participant keeps in cash each period as a proportion of total equity (Cushion); X_{4i} is the total number of buy and sell per participant (Trans.); X_{5i} is the average number of stocks held in portfolio, varying between 0 and 6, which is the total number of options in the simulation(average share); X_{6i} is the average percentage of investment assets traded in relation to total assets (investments plus cash) per period (Turnover). For example: a participant who has a total of 10,000 monetary units (investments plus cash balance) who trades 5000 monetary units has a turnover of 50%.
(3) The total sample includes 69 participants. Five participants are excluded due to data capture error in the simulation software. A similar procedure was adopted in Dhar and Zhu (2006).
(4) White's (1980) regression correction was employed: heteroskedasticity-consistent standard errors.
(5) *Significant at 10%; **significant at 5%; ***significant at 1%.

Analyzing the conditions **without** and **with** continuous incentive (Table 3) it was not possible to observe explanatory power for the proposed models. Significance was found in model 1 for incentive conditions, and in model 6 for the cushion variable, which is the cash value that the subject maintains, as a kind of "earnings cushion".

Analyzing the conditions **without** and **tournament** (Table 4) we found more significant results. For all models the incentive manipulation was significant. The volatility variable was also relevant to explain the variations in the DC.

A possible explanation for this difference is the fact that the subjects of the tournament condition had as a basis of the oscillation of the simulation assets a random generation of movements of high and low, similar to that adopted in Weber and Camerer (1998). While in the other conditions, market data were essentially used. This change in the type of variation (random or real data) was not part of the initial proposal of this research and is undoubtedly a point to be taken into consideration in future research.

Even so, analyzing the data in Table 4, we can conclude that the manipulation of remuneration is one of the main explanatory variables for the changes in the DC.

One of the points addressed here was the issue of salience, which is a basic premise of experimental economics (Smith, 1982). According to this premise, participants have the right to claim a reward that will be increasing or decreasing according to the results. We observed that the absence of a financial reward/incentive tends to

Table 4. Regressions for control variables with and without incentive.

CD	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Interc.	-0.0459	0.0425	0.1345	0.1545	0.2990	0.1993
	(0.0331)	*0.0694*	*0.0984*	*0.1009*	*0.1205*	*0.1331*
1=without 0=tournament	0.1451***	0.1015**	0.0975**	0.1139**	0.1183**	0.1635***
	(0.0461)	*0.0548*	*0.0546*	*0.0575*	*0.0562*	*0.0618*
Volat.		-0.0186	-0.0280**	-0.0256**	-0.0332**	-0.0326**
		0.0129	*0.0147*	*0.0150*	*0.0151*	*0.0149*
Cushion			-0.1464	-0.1512	-0.1474	-0.1134
			0.1116	*0.1119*	*0.1093*	*0.1099*
Trans.				-0.0010	-0.0001	-0.0010
				0.0010	*0.0011*	*0.0012*
Average share					-0.0444**	-0.0275
					0.0213	*0.0233*
Turnover						0.5453*
						0.3268
R^2	**0.1060**	**0.1190**	**0.1276**	**0.1258**	**0.1652**	**0.1860**
n	76	76	76	76	76	76

(1) The table presents the coefficient, and in parentheses the robust standard error. In bold, the adjusted R^2.

(2) $DC_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + u_i$

Where $X_{1i} = 1$ is the binary variable for participants in "without" setting and $X_{1i} = 0$ for the "tournament" setting; X_{2i} is the average standard deviation of the assets comprising the portfolio of each participant in the simulation period. This average is weighted by the percentage share of each asset in the portfolio of the participant, and the standard deviation of each asset is calculated based on price fluctuations, i.e., as rounds are played, the data set used to calculate the standard deviation of the asset increases (Volatility); X_{3i} is the average percentage of his total assets that the participant keeps in cash each period as a proportion of total equity (Cushion); X_{4i} is the total number of buy and sell per participant (Trans.); X_{5i} is the average number of stocks held in portfolio, varying between 0 and 6, which is the total number of options in the simulation(average share); X_{6i} is the average percentage of investment assets traded in relation to total assets (investments plus cash) per period (Turnover). For example: a participant who has a total of 10,000 monetary units (investments plus cash balance) who trades 5000 monetary units has a turnover of 50%.

(3) The total sample includes 69 participants. Five participants are excluded due to data capture error in the simulation software. A similar procedure was adopted in Dhar and Zhu (2006).

(4) White's (1980) regression correction was employed: heteroskedasticity-consistent standard errors.

(5) *Significant at 10%; **significant at 5%; ***significant at 1%.

increase the DC, and that the use of a continuous incentive, as recommended, reduces the DC. We also observed that when the incentive is directed only to the best performances, the changes in the DC are even more significant when compared to the situation without incentives.

A broader discussion on the influence of incentives on the DC, or performance of the participants, could be held, but this is not the intention of this work. We conclude this session with sufficient evidence, with respect to the essay presented, to demonstrate the importance of debating the issue of whether or not to allow the use of financial incentives in the scientific community. We observed that there is a real impact on the results.

6 Conclusion

The main objective of this study was to evaluate the impact of the use of financial incentives in experiments in the area of economics and finance. We have shown that the interpretation of National Health Council (CNS) Resolutions 466 and 510 may present obstacles to the adoption of such a method. We argue that the wording of R466 demonstrates a legitimate concern with the ethical issue in health research, however for experimental research in the area of economics and finance its wording is not clear, which is also not clarified in R510.

By offering clear regulation, the CNS offers support and limits for the Ethics Committees to present their manifestations. We do not believe that it is the regulator's intention to offer an obstacle to conducting research in the field of experimental economics; we believe that there is a simple lack of greater debate with the scientific community.

Understanding that other areas of science require much greater attention and demand from the Ethics Committees, we consider that it is up to the interested parties (researchers) to demonstrate that their respective research deserves attention. On the other hand, we hope that the regulator can offer all his expertise and propose a regulation that takes into account the particularities of experimental economic science.

We present adequate literature to stimulate the debate, even though and corroborating with other researches, we demonstrate through an essay how the offer or not of financial incentive can alter the results of an economic experiment conducted in laboratory. From the results presented, we demonstrated that the use of financial incentives can influence the disposition effect, a bias of judgment widely debated in the field of behavioral economics.

With these results we were able to contribute to minimize the gap in the Brazilian context about financial incentives. As presented, only one study used a national sample to assess the impact of financial incentives on results of experimental studies (Soares, Simões & Jorge Neto, 2018) and there is a need to expand these results, because even if internationally we have studies that prove this influence, we live in a different context which can change the results.

In practice, this discussion contributes to alerting future studies to pay attention to financial incentives issues in their research, because they can effectively change their performance. At a theoretical level, our interest in this article was to foster the discussion, which in no way closes with the evidence presented here, nor even brings solutions. But on the other hand, it recovers and encourages critical thinking about financial incentives in experiments in the area of economics and finance, even because science is a continuous process, not consolidating itself as an absolute truth.

In light of this, the need for further studies on the subject is emphasized, considering other types of incentives, as well as samples with different characteristics. It is also suggested that future studies incorporate other variables, so that we can broaden the understanding on the impact of financial incentives and other behavioral biases. As a limitation of the study, the composition of the sample stands out, as we had three experimental groups, we needed a significant number of people and we had difficulty attracting a greater number of students to the experiment. In this context, we assumed that there may be sample selection bias, because possibly those students who showed interest in the subject participated in the study.

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Fans Make Art: Authoring and Creativity in the Production of Fanvideos

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ABSTRACT

The research aims to analyze how Brazilian produce fanvideos based on successful pop culture franchises. For such, assumes that fans are prosumers of pop culture in a context of participatory culture and that fanvideos are user-generated content propitiated by Web 2.0 technologies. A total of 257 fanvideos posted between April 2006 and February 2018 were analyzed through Interpretive Content Analysis. Five types of fanmade productions were identified: fandub, fanart, fan animation, fan music and fanfiction. Such production demonstrates that fanvideos reveal the fans' desire to make art, what occurs both as a way for the fans relate to the franchises they admire, as well as to express themselves based on them. By doing this, they wide the scope and the narrative possibilities of the franchises through intra- and inter-textualities in relation to the universe of pop culture and their own daily experiences. The research presents an original approach to user-generated content in association to fan production and the notion of prosumption. As limitation, the study is delimited to the Brazilian production of fanvideos. Future similar research could be carried out in other countries, as well as regarding other fan productions.

PALAVRAS-CHAVE

Vídeos de fãs, prosunção, conteúdo gerado pelo usuário, criatividade, autoria.

RESUMO

A pesquisa tem como objetivo analisar como o brasileiro produz vídeos de fãs com base em franquias de sucesso da cultura pop. Para isso, assume-se que os fãs são amadores da cultura pop em um contexto de cultura participativa e que os vídeos de fãs são conteúdos gerados pelo usuário, propiciados pelas tecnologias da Web 2.0. Um total de 257 vídeos de fãs postados entre abril de 2006 e fevereiro de 2018 foram analisados por meio da Análise Interpretativa de Conteúdo. Foram identificados cinco tipos de produções feitas por fãs: fandub, fanart, animação de fãs, música de fãs e ficção de fãs. Essa produção demonstra que os vídeos de fãs revelam o desejo dos fãs de fazer arte, o que ocorre tanto como um meio para os fãs se relacionarem com as franquias que eles admiram, como também para se expressar com base neles. Ao fazer isso, amplia-se o escopo e as possibilidades narrativas das franquias por meio de intra e inter-textualidades em relação ao universo da cultura pop e suas próprias experiências diárias. A pesquisa apresenta uma abordagem original do conteúdo gerado pelo usuário em associação à produção de fãs e à noção de prosunção. Como limitação, o estudo é delimitado à produção brasileira de vídeos de fãs. Futuras pesquisas semelhantes poderiam ser realizadas em outros países, bem como em relação a outras produções de fãs.

1 Introduction

Constant technological changes have impacted on how individuals relate to contemporary cultures (Lévy, 2007). One of the cultures that is most influenced by technological advances is popular culture, massively diffused by large media conglomerates in search of getting closer to its consumers (Kizgin et al, 2018, Peñaloza, 1994). The strength of popular culture relies essentially on fans of media products (Hills, 2013), since they are usually high engaged to the media products they admire, becoming organized and proactive in activities involving their relationships to them (Jenkins, 2006; Kozinets, 2001). In turn, to potentialize the productivity of the fans, the entertainment industry usually provides means for them participate in their own consumption experiences (Kozinets et al., 2004; Seregina and Weijo, 2006).

Once fans participate in the elaboration of their own consumption experiences, de Souza-Leão and Costa (2018) features them as prosumers. Prosumption is a concept accrued from an understanding of the impossibility to dissociate consumption and production (Ritzer, 2014; Tofler, 1980). Within the Web 2.0 technologies it has acquired a newly importance (Ritzer and Jurgenson, 2010). In this scenario, technological appropriation and media convergence begot participatory cultures, in which individuals with common interests become collectively productive (Guschwan, 2012; Jenkins, 2006). Grounded on new technologies of communication, such as social media, consumers commit to create, produce and disseminate content related to the/e popular culture (Boulaire et al, 2010; Ritzer et al, 2012).

Since the 1970s fanvideos has been one of the most emblematic sorts of fanmade content, contributing to the fan culture consolidation (Jenkins, 1992). Fanvideos production was made possible due to the evolution of home video technologies and became very popular nowadays, thanks to the ease of access and use of digital technologies, mainly the Web 2.0 ones (Freund, 2016; Stein and Busse, 2009), and to the video-sharing platforms, such as Youtube (Ziller, 2012).

User-Generated Content (UGC), such as fanvideos, emerges as a consequence to the technological changes on media consumption, associated with the participatory nature of Web 2.0 (Liu-Thompkins, 2012; Presi et al, 2014). Fanmade productions are hedonic practices (Kronrod and Danziger, 2013) created to expand or reinvent the original media content (Black, 2006; Kosnik et al., 2015), mainly those of popular culture franchises. Most popular creations include drawings and arts elaborated manually or digitally (Ordóñez, 2014), dubbing or subtitling of new texts on original content (Chaume, 2007), original or adapted songs regarding media products (Coppa, 2008; Freud, 2016).

This line of reasoning leads to the understanding that, when fans produce videos related to popular culture franchises, they seek to express their point of views about them, in a productive new and creative way. Among the emerging entertainment and social media markets, Brazilian is one of the fastest growth-rate (Yokoyama & Sekiguchi, 2014), and one of the biggest in terms of fan engagement with media products (de Souza-Leão and Moura, 2018; Desidério, 2017). In addition, one can find in Youtube a vast amount of fanvideos produced by Brazilian based on some of the main franchises of popular culture. Considering this, the research aims to analyze how Brazilian produce fanvideos based on successful popular culture franchises.

The growing social and economic relevance of popular culture justifies the interest of consumer research, mainly in relation to Consumer Culture Theory (CCT). Specifically, fanmade content gained prominence over time (McKay, 2011, Schäfer et al 2013), especially in the context of UGC and Web 2.0 technologies. By analyzing the fanmade production and the way it is done, our research provides a deeper understanding about this consumer practice. On the other hand, the assumption of fans as prosumers (de Souza-Leão and Costa, 2018) awakens the understanding of a logic of market productivity performed by them (Chen, 2011, Collins, 2010).

2 Theoretical Framework

2.1 Fans as prosumers of popular culture

A cultural turning point in the field of consumer research begun in the 1980s and came to prominence in the 2000s, culminating in the establishment of Consumer Culture Theory (CCT) (Arnould and Thompson, 2005), alleged as a new field of knowledge within the discipline (Gaião, Souza and Leão, 2012; Thompson, Arnould and Giesler, 2013). CCT assumes consumption as a cultural practice and relies primarily on an interpretive perspective of research, conducted mainly through qualitative approaches (Askegaard and Linnet, 2011; Earley, 2014).

Among the research topics identified in its thematic fields are the study of fans and consumer communities (Arnould and Thompson, 2005). Fans differ from ordinary consumers once they engage and collaborate with what they consume to materialize and legitimize their values (Hills, 2013). They often come together to share knowledges and assumptions of common interest, as well as they produce content based on the products they consume, in the context of the culture in which they are emerged (Hills, 2002; 2007; Sandvoss, 2005). Through social interactions, they consume in a collective way, configuring an organization of consumption known as fandom (Costa and Leão, 2018; Fiske, 2001; Fuschillo, 2018; Hills and Greco, 2015). Fandoms are social formations of fans who mutually shape and affect their values, ideology, productions, and even ways of socialization (Busse and Gray, 2011; Costa and Leão, 2017; 2018; Fuschillo, 2018, Goulding and Saren, 2007; Michael, 2015).

The specialized performances of fans contribute to the prestige gained by popular culture (Jenkins, 2006; Zajc, 2015). Popular culture refers to cultural products forged by different industries (e.g., entertainment, sports, news) and echoed by society. Therefore, it is influenced both by technological advances and media conglomerates and by social transformations. Due to its broad reach, it has been one of the main factors boosting globalization (Kizgin et al, 2018; Peñaloza, 1994).

Due to the productive nature of the fans' consumption, we follow de Souza-Leão and Costa (2018) in the assertion that they can be understood as prosumers (Ritzer and Jurgenson, 2010). Such term was coined by Alvin Toffler (Toffler, 1980), who pointed out that modern consumer plays an important role in the production process. The productive way of consuming has its origin in the pre-industrial society, gaining major relevance with the technological advances that occurred in the twentieth century and, most recently with the development of the Web 2.0 (Collins, 2010; Jurgenson, 2010).

In marketing, the concept of prosumer had a small discussion in Kotler (1986) but has experienced a broader adoption since Ritzer's works (2014, 2015a, 2015b). For the author, the dichotomy between production and consumption never really happened, since all production presupposes consumption, and all consumption is performed by means of a productivity. In this way, production and consumption could be understood as abstract opposite forms of prosumption, in a phenomenon that may occur from a point of production as consumption to one of consumption as production, or even in a balanced way.

Thus, rather than simply performing production-consumption functions, fans act as coproducers of their own consumption experiences (Ritzer, 2014; Stuart-Menteth et al, 2006). Such experiences take mostly in engaged collectively practices (Morreale, 2014, Sugihartati, 2017), in dialogic interactions (Hartmann, 2016; Ritzer, 2014), when the fans assume the responsibility of producing and sharing content amongst themselves (Collins, 2010; Ritzer et al, 2012).

This process takes place through a participatory culture, which concerns to collective shared knowledges, opinions, experiences and sensations, that have repercussions on the way in which the members of a culture socialize and interact (de Souza-Leão and Moura, 2018; Jenkins, 2008), transforming, in a symbiotic way, the relationship they have with the products they consume (Langlois, 2013; Jenkins, 2006). Among participatory cultures, fan communities are emblematic for their level of engagement and productivity, presenting possibilities for an economic and cultural development based on actions linked to global media conglomerates (Carpenter et al, 2012; Cleveland and Laroche, 2007).

The participatory culture stems from a process of media convergence, which concerns the resignification of media texts by individuals who manage to transit between different media technologies. They move from a socio-cultural isolation to an engagement in a community that welcomes their productions concerning objects or themes of common interest (Jenkins, 2008; Tombleson and Wolf, 2017). This occurs both by the establishment of a collective intelligence, which concerns the possibility of the network retaining a vast amount of information through the activities of the individuals who use it (Jenkins, 2006; Lévy, 2007), as by the appropriation of the technology available to users (Jenkins, 2008; Herrmann, 2012).

2.2 Fanvideos as User-Generated Content (UGC)

The increasing possibilities of online interactions and the democratization of the Internet has propelled the activities of prosumption (Almeida et al., 2012; Fonseca et al., 2008). It has been occurred due to the interactions through digital platforms (Jenkins et al, 2013), mainly through the intensified use of social media (Ritzer et al, 2012; Zajc, 2013). They are the Web 2.0 technologies that best foster cultural production (Micu et al., 2017; Tapscott and Williams, 2008), by introducing changes in social relations and enable the propagation of content developed by its users (Boulaire et al, 2010).

One of Web 2.0's most popular practices is the creation of content by users (Daugherty et al, 2008). User-Generated Content (UGC) have become more and more numerous and increasingly watched. UGC are produced with the intention of influencing audiences or just for fun and hobby (McKenzie et al., 2012; Tapscott and Williams, 2008). Many of its contents revolve around brands and products, as a way of its producers either expressing identity, or as a means of establishing social contact with other consumers (Daugherty et al, 2008; Muntinga et al, 2011).

The creation of original content that alludes to brands and products is one manner of consumers stablish bonds with them (Malthouse et al., 2016; Muntinga et al, 2011). UGCs that highlight brands and products are able to diffuse and legitimize them alongside consumers (Christodoulides et al, 2012; McKenzie et al., 2012). Hence, large conglomerates of the media and entertainment industry has begun to consider them relevant in creating social connection between brands and consumers (Delwiche and Henderson, 2013).

One of the most popular social networks, YouTube stands out for the possibility offered to its users to easily produce and share their own productions and so act as content-generators. No wonder, the platform had a rise of cultural and economic value after starting as a user-made video sharing site. Its popularity is not only based due to its innovative technological capacity, but mostly to the sense of community established between the users who generate content and those who use the site, what have turned it into a hybrid of social network and search tool (Portela and Marques, 2015; Van Djick, 2009; 2013).

YouTube has become a platform of influence on collective creativity, since it has propitiated its users to produce content (Burgess and Green, 2009). This fits the fan culture (Hills, 2013; Sandvoss, 2005), that has become notorious around the world due to the propagation of popular culture (Guschwan, 2012; Jenkins, 2006), what became easier with the advent of Web 2.0 (Freund, 2016), propitiating that the fan-generated content to be available online at any time (Jenkins, 2006; Kozinets, 2001).

According to Jenkins (1992), the production of fanvideos is one of the paradigmatic practices of this culture. Developed on the basis of media products, fanvideos fosters interactivity among fans, creating a community understanding, as well as determines a connection between fans and media products, reshaping the media texts to which they are related. The main reason why fans develop videos is the wish to reformulate the media texts. It is done to fit them into their visions, to adjust what they think are flaws in the narratives, and to delve into details that do not were so well developed in the original content (Freund, 2016; Stein and Busse, 2009). Thereby, fanvideos production attests to the involvement of fans with popular culture, while strengthening the culture of fans.

The production of fanvideos is clearly related to advances in communication and information technologies. The practice originated in the 1970s, thanks to the popularization and improvement of videocassettes and handycams (Stein and Busse, 2009). With the ease access to digital technologies and the emergence of Web 2.0-based technologies, fanvideos production has become a common and popular practice in this century (Freund, 2016).

3 Methodology

Brazilian fanvideos disclosed on YouTube were the base of the research. The videos correspond to visual documents and, since they are available online, refers to secondary data (Flick, 2014; Loizos, 2013). Specifically, the fanvideos are multifocal data, since they comprehend different senses (Flick, 2014; Loizos, 2013), propitiating researchers to access the recorded social practices (Flick, 2014).

We adopted Interpretive Content Analysis (ICA) analytical method. It is an adequate technique for scrutinizing layers of meanings presented in a content (Baxter, 1991), in a manner lined with interpretive research (Wester and Jankowski, 2002). Because it is an interpretivist epistemology approach, ICA transcends the semantic and lexical levels of traditional content analysis (Drisko and Maschi, 2015), addressing the whole context in which a given content is signified (Ahuvia, 2001).

It is preferable ICA to be carried out by more than one researcher, so that a collaborative work calls for reflexivity and self-reflection (Ahuvia, 2001). This procedure averts personal biases in data interpretation (Drisko and Maschi, 2015), preventing categorization inadequacies of the research corpus (Montgomery; Duck, 1993).

ICA get started with researchers determining a data source and establishing criteria to qualify them, according to the representativeness of the data for the investigation. The analysis is conducted through data codification, based on hierarchy and interrelationship designs. It provides a way of generating and defining codes and relations between them, representing the problem under investigation (Drisko and Maschi, 2015).

In line with the method, we undertaken a previous evaluation of fanvideos on Youtube. Videos based on three popular culture franchises provided substantial material: Game of Thrones, Harry Potter and Star Wars. Game of Thrones is an acclaimed and successful TV show, considered the most emblematic phenomena of pop culture in the 2010s (Milkoreit, 2019; Sarikakis et al., 2017). Harry Potter franchise is one of the bestselling book series in history and a blockbuster movie series, that became remarkable for the millennial generation (Benett, 2014; de Souza-Leão and Cos-ta, 2018). Star Wars has been one of the most impacting pop culture phenomena for over forty years and extended the brand from the successful movies to a large product portfolio that includes comic books, animated series, and toys (Bicca et al., 2014; Taylor, 2014).

For selecting the data, we defined three criteria according to the research problem. The fanvideos would have to be fanmade productions, done by Brazilian, with no monetary purpose. To meet these criteria, we only selected videos totally or partially produced by users of the platform, in Brazilian Portuguese language, not including those published on professional or monetized channels.

A keywording search inchoated the data collection. We started with terms that characterize the overall purpose of the research (fanvideos, fan productions, fans, fandom). From the identification of the most typical types of fan productions, we included terms that would identify them (e.g., fanart, fanfiction). Finally, after defining the three franchises that inspired the productions of the videos, we combine their names (i.e., Game of Thrones, Harry Potter, Star Wars) with the previous terms. Besides, while a video is playing, other videos related to it are recommended by the platform, based on an algorithm that Youtube works with (Tourinho et al., 2012). Considering this as an efficient way to reach related videos, we also used this tool to gather videos, verifying the described criteria. This process led to a research corpus composed by 257 videos, lasting between two and twelve minutes, and posted between April 2006 and February 2018. This correspond to all available videos regarding the research problem definition and the adopted criteria, ensuring the research corpus representativeness (Aarts and Bauer, 2013).

Data analysis was performed in four stages:

1) Firstly, videos were categorized by aspects of narrative and technical basis, as well as how franchises were used. Categories were defined based on (technical, narrative and content) aspects related to video production (Owens, 2017);
2) Then, categories were coded considering the way in which they were empirically represented. Codes definition were based on audiovisual types of production and narratives (Mittel, 2004), as well as in types of fan practices (Duffett, 2013);
3) After that, videos were classified based on its fanmade type (grounded definitions are presented in the result descriptions);
4) At last, code relations were identified, allowing the establishment of patterns in each fanmade type.

Analytical procedure followed principles of triangulation among researchers (Denzin, 2017). Three researchers collected the data. The final research corpus was validated by other two. One of these researchers defined the analytical categories (stage one of the analysis) The data collecting trio analyzed the fanvideos in an inter-coding reliability process (Miles et al, 2014). The other pair supported and reviewed the process, making its final validation (analysis stage two). Then, the same researcher that determined the analytical categories, also identified the fanmade types (stage three of the analysis). Finally, the same duo analyzed the code relations and determined the patters in each fanmade type (analysis stage four).

Lastly, data were undergone to quality criteria of qualitative research. The described research corpus construction process and data analysis procedures of reflexivity and triangulation serves this purpose, as so the detailed result description that follows (Paiva et al, 2011).

4 Analysis

4.1 Categories and codes

Seven categories (stage one of the analysis) were identified (in bold, below). Two of them refer to technical characteristics of production; other two assign narrative characteristics do the videos; finally, three categories rely on how the franchises are adopted. A certain quantity of codes (underlined next) are unfolded from each category (analysis stage two).

Regarding the technical categories, a first one defines the **production format**. Formats (codes) found are <u>animation</u>, that refers to videos made by the use of animated elements, such as objects, images and scenarios; <u>live-action</u>, referring to videos in which real-life elements, such as persons and places, are used in the production; and <u>collage</u>, in videos combining different materials, such as images, animations and performances.

Production form is the other technical category and concerns how the material used on the videos are originated. All animation and live-action videos are <u>original</u>, that means productions created and produced integrally by the fans. Sometimes, to videos with original creation, franchise official materials are added (<u>composition</u>). In contrast, franchise official materials go through <u>editing</u> or <u>mixing</u>, when associated with third party materials, through cutouts and additions thereto. These three production forms correspond to collages.

In relation to the narrative categories, fans make use of a wide variety of **techniques of narrative**, which are closely linked to the production forms. Among the videos primarily made based on franchise official materials, every editing video refers to editions of scene sequences defined by the fans (<u>compilation</u>). Mixing, in turn, can be made by the superposition of materials (e.g., music, images, other videos) previously produced by third parties (<u>addition on scenes of the franchise</u>); through the insertion of texts by means of <u>subtitling</u>, maintaining or changing the original content; or even by <u>dubbing</u> original texts.

Among the original videos, some deals with <u>presentations</u> based on or inspired by the sagas, occurring by <u>cosplay</u>, which are trustworthy clothing regarding the fictional universes of the franchises; using allusive <u>fantasies</u> to this one; or in a <u>simple</u> way, through ordinary clothes. Another way to represent the sagas is by means of <u>puppetry</u>, using toys, animals or objects. Also, the animation technique of <u>stop-motion</u>, developed based on frame-by-frame sequenced photos is adopted.

Another animation technique used is the <u>computer graphics</u>, developed based on animated images through software. The videos made by this means can be both original and through composition. The same occurs with videos presenting manual <u>drawings</u> and <u>videoclips</u>, that serve as the basis for musical productions. Finally, franchise official materials are used as <u>accessories to real life situations</u> and creations allusive to <u>comics</u>, in cases of compositions only.

Genre (the second narrative category) concerns the narrative style used to develop the video. In <u>parody</u>, videos make imitations or jocose humorous references of or based on the sagas. <u>Storytelling</u> are videos presenting situations or stories about or built on the sagas. The sagas are also used as background for real-life situations (<u>thematization</u>). Finally, fans also produce videos to teach how to do something about the sagas (<u>tutorial</u>). In regarding of the techniques of narrative, every tutorial is made by means of drawings. For parodies, fans betake videoclips and all kinds of presentations, that are used also for thematization, along with computer graphics, subtitling and accessories to real life, this latter the only not used for storytelling.

As for the way in which the sagas are used, a first category refers to the **references to the franchises** that guide the construction of the narrative. It might occur via <u>internal references</u>, in videos that reverberate the saga itself, and through <u>mixed references</u>, in videos that combine the repercussion of the saga with matters external to it.

In relation to the **thematic** on which content are developed (second category referring the references to the franchises), stories coherent with the franchises fictional universes are created both in (imagined saga) or out of (invented saga) the contiguity with some stablished narrative. Franchises fictional universes are also introduced by itself (intra-universe), jointly with other ones (inter-universe) or with real life (para-universe). The last two codes relate to mixed references to the franchises, while the former three to internal references.

Finally, closely related to the latest categories, the **approach of the franchises** refers to the manner fans incorporate official narratives into their productions. Among the videos made via internal references, imagined and invented sagas refer to new stories of the universe, made following the logic, rules and temporality of the sagas. Intra-universe, in turn, refers to the narratives of the universe that are showed in an alternative way, either different from their original version (reinterpretation) or not (retelling). Reinterpretation of the universe also happens in inter-universe videos, along with use of elements of the sagas, that is iconic features. Para-universe videos, on the other hand, can occur when the sagas are used regarding other subjects (appropriation) or as base of inspiration.

4.2 Fanmade Productions

Characteristics of the videos confronted with literature references made possible classifying them according their fanmade type (stage three of the analysis). Thenceforward, the analysis searched for patterns based on the relationships between the codes (fourth stage of analysis). Results are presented by fanmade type, through the patterns defined by the combination of codes (in bold) and resorting to the research empirical context.

4.2.1 Fandub

Fandub are productions in which fans dub scenes of the franchises by keeping the original content of the scenes, in order to change only the tone or add some mannerism to them (McKay, 2011). Fandub is an innovation that both bring the fans together and provides a sense of identity (Chaume, 2007).

On the analyzed videos, fans make use of the **dubbing** to **retell stories of the universes** (**storytelling**) in an inherent way (**internal** approach) to them (**intra-universe of the sagas**). In most of the videos it is done through **mixing** and **collage**, in which fans dub scenes of Harry Potter and Star Wars movies based on the original screenplay of Brazilian dubbing.

A second pattern works like a fandub in reverse. It refers to **original live-action** productions, in which Star Wars fans **fantasy**-dress themselves as characters of the saga to **represent** scenes from the films with the original audio of the official dubbing in Brazilian Portuguese.

Both Harry Potter and Star Wars fans adopt this practice to retell stories of these sagas, giving a new face to the scenes of the films. Fans of Star Wars also use dubbing to experience the universe in real-life situations. The non-identification of fandubs related to Game of Thrones may be associated with the way the franchises are enjoyed over time. The TV series is the latest franchise and has an audience that typically watches it subtitled, whether by cable TV or through Internet. The films, on the other hand, come from a long tradition of dubbed replays on TV.

4.2.2 Fanart

Fanart is a type of graphic art created by fans of certain popular culture franchises, based on them, having the video as one of its means of production (McKay, 2011). Once this artistic production is not limited by the official franchises' narrative, it can extend its universe according the fans' imaginary (Ordóñez, 2014). Fanart can be characterized both as a fans' reinterpretation of a particular franchise theme and a self-reflection of the fan. Fanart, therefore, transcends the image of both the franchise and the creator-fan (Manifold, 2009).

A first pattern of fanarts is characterized by the use of the **drawing** technique, all based on Harry Potter. Some videos make **original animations** and others merge them (**collage**) with scenes from the franchise films (**composition**). They are produced for **retelling stories** (**storytelling**) of the universe (**internal reference** of the **intra-universe of the saga**) – typically striking passages of the saga.

In another pattern in which the fanarts are **drawings**, **original live-action** videos **based on** Star Wars teach (**tutorial**) to draw characters from the saga. In these terms, the franchise is a means (**mixed references**) for a real-life application of the technique (**para-universe of the saga**).

Finally, in another group of videos about Star Wars, the saga is **appropriated** through **mixed references** to **thematize** real-life situations (**para-**

universe of the saga), such as birthday invitations and cultural contests. Fanarts are made from diverse sources (**collage**), both by original materials **composed** with those of the saga (**accessories to real-life situations**), and by **subtitling** scenes of the franchise films (**mixing**).

Regarding how the franchises are approached in fanarts, it is possible to conjecture a generational distinction, since typically younger Harry Potter fans are concerned with treating the universe itself through their art, while those of Star Wars, of a previous generation, use it for real-life applications, although related to typically childish issues and situations. On the other hand, the absence of fanarts inspired in Game of Thrones could be explained due the adult content of the series does not match with the childish-like productions in the corpus.

4.2.3 Fan animation

Fan animation is a bustling sequence of image produced by fans based on a fictional saga (McKay, 2011). Given the sociocultural and technological conjectures in which popular culture fans are embedded, they produce computer-generated animation to create animations that both tell sagas' stories, or stories themselves create by having the sagas as a base or reference. For such, they use different techniques of production, ranging from the use of computer graphics to stop-motion footage, using toy or modeling clay. Such care and dedication reflect their attachment to the franchises (Shen, 2007).

For its characteristic, all fan animation is an **original** production. In two similar patterns of production, **computer graphics** is the basis for addressing the saga in relation to real life (**para-universe of the saga**), **merging references** of the two spheres. In one of them, fans **appropriate** Star Wars references to **thematize** personal life situations (e.g., marriage proposal). In the other, fans of Game of Thrones and Star Wars create **saga-based** situations (**storytelling**) referring to the real world. Examples of this are productions representing Star Wars fans in real-life situations, and the remaking of Game of Thrones' opening scene, with the series' locations exchanged for Brazilian cities.

A latest fan animation pattern evidences the creation of **original storytelling** (**internal** reference) adherent to the fictional universe of the Harry Potter and Star Wars franchises. The sagas are either **imagined** (e.g., creation of a new end to the Harry Potter story) or **invented** (e.g., a rave involving Darth Vader, the main villain of Star Wars, and his soldiers, the stormtroopers). Although in this group also the **computer graphics** is adopted, the most used technique is the **stop-motion**, which is done through photographs, toys and modeling clay.

Attention can be drawn to the fact that, although the three franchises serve as a reference for this fanmade production, a significant majority is based on Star Wars. This possibly occurs because this is the only out of the three fictional universes that has animated series as official production with particular content of the saga. Even though Harry Potter and the Game of Thrones franchises present some content in animations (i.e., home video extras), they are complementary materials to the films and the television series, respectively.

4.2.4 Fan music

Fan music refer to songs (lyrics and melody) created by fans based on or having as reference popular culture franchises (McKay, 2011). It is a type of vidding, which is a popular practice in the universe of fandoms, based on the appropriation of the official narratives by the fans. They take their favorite passages of media product narratives for reconfiguring them in order to generate a music production (Coppa, 2008; Freund, 2016), bringing peculiar and particular interpretations (Freund, 2016).

Due to its own characteristic, all productions of fan music were made in the form of **videoclips**. However, in the research corpus we identify both the production of fan music in the proper sense of its definition, and what we call fan music version, when new lyrics, consistent with the universes of the franchises, are made for existing songs.

A set of patterns refers to **storytelling** videos, produced through **collage compositions** and as **original live-actions**. One of these patterns concerns the role of the franchise in the daily life of the fans (**para-universe of the sagas**) through versions of songs based on the Harry Potter saga, **mixed** with references from real life. Examples of that are fans who have made new lyrics, based on their affective relationship with the saga, for a given Brazilian song that tells of the difficulty of losing someone, to mark the release of the last film of the franchise. The other patterns of this group approach the **intra-universe of the sagas** (**internal** reference) in musical productions that **reinterpret their**

universes or **retell their stories**. In the first case, fans of Star Wars and Harry Potter create original songs that reinterpret the relationships of the protagonists of the sagas (i.e., parental relationship of Darth Vader and Luke Skywalker, the antagonism between Harry Potter and Lord Voldemort). In turn, two situations are used for retelling stories. Fans of the three franchises compose raps to enhance or depreciate characters and their relationships within the sagas. On the other hand, fans of Star Wars and Harry Potter use a famous Brazilian song that tells the saga of an anti-hero (i.e., Faroeste Caboclo) as bases for lyrics that summarize the biography of the boy-wizard or of Anakin Skywalker, the chosen one that became the villain of the stellar saga.

On another front, videoclips are made as **parody**. Again, the use of **compositions** by means of **collages** (now exclusively) is adopted. Videos **based on the sagas** approaching them as **para-universe**, through **mixed** references, convey both original songs and music versions. In a fun and even unusual way, such original songs declare the pleasure and pride of being a fan of Star Wars. The others are instrumental versions of notorious songs from Star Wars and Game of Thrones (i.e., imperial march of the first and the opening music of the second) remade in typical Brazilian rhythms (i.e., funk, samba). Parodic videos are also used for **reinterpreting the franchises**. This is done both in relation to the **intra-universes of sagas** (**internal** references) and through interlocutions with (**mixed**) references of other universes (**inter-universe of sagas**). In the first case, fans of Harry Potter and Star Wars make versions of famous Brazilian songs with humorous new lyrics that feature rereadings of characters and important saga situations. In the second, fans of all franchises create rap duels between characters from the sagas and other fictional popular culture universes (e.g., Darth Vader vs. Lord Voldemort, Darth Vader vs. Sauron, villain of Lord of the Rings).

It shall be noted that the retelling of the fictional universes and their reinterpretation – sometimes in dialogue with other sagas –, occurs primarily through original raps. This aspect seems blunt of a youth production, since such style has become one of the most popular since the last decade. On the other hand, musical production in dialogue with real life occurs primarily through music versions. Original songs of this kind are made by Star Wars' fans.

4.2.5 Fanfiction

Fanfictions are fan-created narratives based on and inspired by the sagas they admire, creating new stories and new possibilities for the original plot and characters (Black, 2006, Kosck et al., McKay, 2011). Fanfiction has become the most popular way of demonstrating fans' attachment to the franchises' narratives and their strong loyalty to them (Thomas, 2011).

In a first group of patterns, fans **mix references** of the saga with elements of real life (**para-universe of the saga**). These productions follow three axes: the **saga-based** production of both **parodies** and **storytelling**, as well as the **saga appropriation** for **thematization** of social real-life situations of the fans.

In the first of these patterns, fans of Harry Potter and Star Wars make **all types of representations** in **original live-action** videos, through humorous situations that emulate the fictional universes, such as Star Wars warriors (i.e., Jedi) engaging in duels for daily banalities.

Harry Potter and Star Wars' fans also use a variety of narrative techniques and production formats (second pattern): **addition on scenes of the franchise**, **computer graphics**, and **comics** in **collage-like** videos made by **composition** or **mixing**; and **puppetry** and **representations of all kinds** in **original live-action** videos. As an example, Star Wars fans create situations showing their anxiety with a new film release.

Third pattern evidences Star Wars fans **appropriating the saga** as ground for social situations. It occurs through **computer graphics** in **composition** videos through **collage**, or in **all types of representation** in **original live-action**. It is the case of videos in which fans dress as characters of the saga in situations that promote events organized by them.

In a second set of patterns, fans are dedicated to exploring **storytelling** possibilities of the franchises (**intra-universe of the saga**), through their own (**internal**) references. Two patterns follow the same line of combination of narrative techniques and technical categories: they are **collages** of **compilations** by means of **editing** and **mixing** of **subtitling** or **addition on scenes of the franchise**. The difference between such patterns is in the way the franchise is approached. One of them concerns the **reinterpretation of the sagas**, in which fans of all the franchises investigated give new meaning to sagas situations, replicating stories from their own perspective. The second of these patterns, in turn, deals with **retelling stories from the sagas**. It has this in common with the third standard of this group, which makes it through **original live-actions**, in which the fans make **puppetry** or **representations** (**simple** or **fantasy**-dressed). In both patterns, fans of Harry Potter and Star Wars use such resources to tell passages of the sagas in their own way or to stage them.

A third set of patterns is also characterized by the production of videos with **original live-action storytelling** in a **mixed approach** of the franchises (**intra-universe of the sagas**). In one of these patterns, Star Wars fans **use elements** of the saga in situations where it does not occupy a central role. For example, in a narrative based on a work by the Brazilian writer Machado de Assis, a duel takes place through lightsabers, the weapon of a Jedi in the Star Wars universe.

Fans of Game of Thrones, on the other hand, perform **representations** (**simple** or by **cosplay**) to **reinterpret the saga**. In a series of videos, one of the main characters of the series (i.e., Jon Snow) wakes up in the real world and engages in a variety of modern situations, such as learning to use smartphone apps.

Finally, still as part of this set of patterns, fans of Harry Potter and Star Wars make use of **representation with fantasy** and **puppetry** to create **new stories of the universes**, whether they are **imagined** or **invented**. Such patterns can be illustrated, respectively, with battles waged through official Star Wars toys and duels between Jedi characters created by the fans themselves.

Fanfiction production is the most extensive and diversified. One way of understanding it may be by reflecting on how the sagas are articulated. There is a work of retelling and reinterpreting the universes, almost always restricted to them, but sometimes in intertextuality with other ones. This production is made by fans of the three franchises, but more broadly and diversified by potterheads (i.e., fans of Harry Potter).

On the other hand, there is also a production that proposes a dialogue between the sagas and the real life. No video related to Game of Thrones is found, while those inspired on Star Wars are more broadly and diversely.

Finally, there are the original productions, in which fans create new stories inspired by the fictional universes. This is a work made by fans of Harry Potter and Star Wars, the former only reimagining the saga while the latter also inventing completely unprecedented situations.

5 Discussion

Contents based on other texts can be understood as paratexts of those and end up composing and amplifying their meanings (Gray, 2010; Genette, 1997). One of the functions of paratexts is to reverberate the original content it refers to, in order to complement and reformulate its consumption experience through transmedia audience (Jenkins et al., 2009; Sørenssen, 2016), which enables a synergy between the production and reception of contents (Gray, 2010).

Thus, fanvideo production can be understood as a paratextual extension of media products. This indicates a specific function of the productive role of fans, which we describe as **authoring**. Following a conception proposed by Foucault (2009), Mittel (2004) and Hills (2010) argue that the authorship of audiovisual texts refers to a function of a certain discourse, strongly oriented by its genre.

Thus, it is possible to propose that the fanvideos are paratexts that, assuming an author-function, widen the scope and the narrative possibilities of the franchises on which they are based. Without commercial ties, they do this through inter-textualities both in relation to the universe of popular culture and their own daily experiences.

Jenkins (2006) points out that one of the fans' characteristics is to seek textual tools to create new content related to the cultural products they consume. By mixing perceptions with the original content, they generate unprecedented content, adding meanings capable of reflecting their performance and subjectivity.

In the globalized contemporary society, it is natural for fans to produce creative content related to what they consume and to share them in social media (Chen, 2018). It is part of the fan culture to interact, re-signify, imagine and materialize new contents about what they are in order to express their **creativity** (Chen & Chandler, 2010; Seregina & Weijo, 2016).

6 Conclusion

Results allow us to conclude that the production of Brazilian fanvideos occurs both as a way for the fans relate to the franchises they admire, as well as to express themselves based on them. Since our interpretation is that it is done as authoring through creativity, we conclude that it reveals the fans wish to make art, using the franchises as a base for that purpose.

Fanvideos content reveals a strong desire of the fans to participate in the development of the franchises. Most of the videos relate to how the fans travel between retelling, re-interpreting and creating new stories of the sagas. Herewith, fans play a productive role in content generation as co-authors. On the other hand, much of this production dialogues with other narratives and even with "real life", also treated as a narrative instance.

Fanvideos are used to create different types of artistic productions (i.e., drawings, music, performativity, etc.). Thus, not only does this production re-signify the franchises, but their content is also taken as the medium for such production, which indicates that the productive consumption of content generation is a creative practice.

It is possible to conjecture that some of the characteristics of the franchises on which fanvideos are based may influence both these productions and how they re-signify their narratives.

Our findings indicate a gradation in the diversity of fanvideos form, as well as in the manner they add content and meaning to the franchises, ranging from Star Wars (major) to Game of Thrones (minor). Among the investigated franchises, Star Wars is the oldest and the one with the largest product portfolio, as well as that which has a more diverse base of fans. The opposite can be said of Game of Thrones: the latest franchise to be released, made up of a TV series based on books and with fans in a more specific age group.

On the other hand, videos based on Star Wars are those that establish more intertextuality both with other franchises and the daily life of the fans, while those based on Harry Potter are more dedicated to the very text of the saga. Harry Potter's books established a cult canon (Costa and Leão, 2017). It cannot be said, in turn, that Star Wars has a cohesive canon. At the same time, Star Wars is a media product of great repercussion not only in popular culture, but also in the social imaginary for more than four decades.

A possible tentative theoretical generalization from this evaluation is that cultural impact, time of existence, variety of products, and fan-base diversity of an entertainment franchise can influence how fans appropriate their elements in their productions.

7 Implications and Further Research

In concluding that through fanvideo production the fans seek to make art, the research presents an original approach to a specific kind of user-generated content, contributing to a potential research agenda in the field of CCT. In addition, it reveals a facet of media product consumers that could be stimulated by entertainment industry brands, in order to increasing fan engagement with their products.

For a more accurate assessment of the fans' creative production types and the way they contribute to the meaning of the entertainment industry products, as well as the role played by these products in this process, we glimpse two possibilities. On the one hand, similar studies to the present one can be carried out in other countries, in order to observe how the fan productive culture is influenced by particular cultural contexts. Apparently, this aspect was not a critical factor in the present research, but new results could bring up some important details. On the other hand, the investigation of other fan productions (e.g., cosplay, fanfiction) could broaden the scope of understanding of the insights presented.

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Path Dependence and Innovation: A Dichotomy in Internationalization

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ABSTRACT

This study attempts to understand the role played by path dependence in the evolution of the international business of firms faced with circumstances in which innovation becomes a challenge. Decisions, both related to innovation and to internationalization, are interdependent and are related to prior events, generating repetitive effects and triggering self-reinforcing processes that affect future decisions. We employed descriptive, qualitative research methods, in the form of a single case study, conducting interviews at a large footwear firm and with independent industry experts, then analyzed these data using content analysis. The results enabled us to map the events internal and external to the organization that led to the decisions taken and which, at certain points, were reactions to innovation and to acceleration or deceleration of the internationalization process, providing evidence of path dependence. This study has implications for management practice, since it deals with the combined effects on decision making of path dependence at the levels of the organization and of the industry. At the level of the industry, it makes contributions related to the interconnections between decisions taken within an organization, which in turn affect the future decisions of other firms in the same industry. Factors limiting our results include the facts that just one firm was studied and that the historical data are also dependent on the limitations of human rationality and may not, therefore, include certain elements of perception linked to the period of time during which the facts narrated took place.

PALAVRAS-CHAVE

Inovação.
Dependência de Trajetória.
Internacionalização.

RESUMO

Este estudo visa compreender como a dependência de trajetória se estabelece na evolução dos negócios internacionais das empresas diante de circunstâncias em que a inovação se torna um desafio. Decisões, tanto em relação à inovação quanto à internacionalização, são interdependentes e relacionadas a eventos anteriores que geram efeitos repetitivos, desencadeando processos de autorreforço em decisões futuras. Realizamos uma pesquisa descritiva, qualitativa através de estudo de caso único, valendo-se de entrevistas dentro de uma grande empresa calçadista e com experts da indústria, analisados pela técnica de análise de conteúdo. Os resultados permitiram mapear os eventos internos e externos à organização que levaram a tomadas de decisão que, em determinados momentos, representaram reações à inovação e a aceleração ou desaceleração do processo de internacionalização, evidenciando dependência de trajetória. Este estudo tem implicações de ordem gerencial, uma vez que trata dos efeitos combinados de dependência de trajetória em nível organizacional e de indústria sobre a tomada de decisão. No nível da indústria, traz contribuições acerca da interconexão entre as decisões tomadas dentro de uma organização, que afetam decisões futuras das demais empresas da indústria. Como limitante aos resultados, alertamos que apenas uma empresa foi investigada e que os dados históricos são também dependentes da limitação da racionalidade humana, portanto podem não trazer elementos de percepção relativos ao espaço de tempo em que os fatos são narrados.

1 Introduction

This paper presents an analysis of how decision-making influences the evolution of international business in circumstances in which innovation becomes a challenge. Faced with the dynamic scenario of international business, involving constant innovation, the organizational world seeks options to maintain itself in the game of economic growth. This perspective has resulted in studies with a behavioral understanding (Johanson & Vahlne, 1977) becoming increasingly relevant over recent decades. This approach sees internationalization as one of the options with the greatest scope for sustainable corporate growth because it involves complex conditions, such as up-to-date knowledge and permanent strategies for innovation (Anderson, Potočnik, & Zhou, 2014).

Internationalization involves a complex decision-making process founded on both behavioral and rational factors that impact on the international paths taken by organizations (Johanson & Vahlne, 1977; Schweizer, Vahlne, & Johanson, 2010). However, the decision-making process is bound to past decisions, which leads to development of path dependence (de Vasconcellos, Calixto, Garrido, & De Souza, 2012; Mahoney, 2000). Thus, current and future decisions are influenced by the sequences of decisions that precede them, including the position taken by organizations with regard to innovation.

Although there is consensus in the international business literature with regard to the relevance of innovation (Gudlavalleti, Gupta, & Narayanan, 2013; Kafouros, Buckley, Sharp, & Wang, 2008; Knight & Cavusgil, 2004) and of path dependence to the decision-making process (Barney, 1999; Koch, Eisend, & Petermann, 2009; Mahoney, 2000, and others), there are few studies dealing with the effects of path dependence on innovation during the internationalization process. Some studies have made this connection previously, but in different scenarios, analyzing the role of path dependence in global value chains (de Vasconcellos, Garrido, Vieira, & Schneider, 2015), in innovation systems (Narula, 2002), in institutional environments in transition (Ebbinghaus, 2005; Zukowski, 2004) and in legitimation of international-business-oriented decision-making (Hutzschenreuter, Pedersen, & Volberda, 2007). This paper focuses on the decision-making process as it unfolds over time, analyzing events that affected an entire industry and comparing them with decisions taken within a large organization that manufactures footwear for both domestic and export markets.

The Brazilian footwear industry provides a suitable setting for complex studies because it is a mature market, that internationalized at the end of 1960s, and one that is repeatedly challenged by innovations with a global reach (Costa, 2010). In response to this scenario, it is important to understand the following research question: how does decision-making influence the evolution of international business, in the face of circumstances in which innovation has become a challenge? It was therefore proposed that a case study should be conducted of a large firm in the Rio Grande do Sul footwear industry, Ômega (fictitious name). It is believed that studying Ômega provides an opportunity to take a more in-depth look at management decision-making, in view of the different path taken by this firm, distinct from the majority of similar large companies, from the end of the 1960s to date.

2 Theoretical Framework

The theoretical foundation used to ground this paper is drawn from studies on internationalization, innovation, and path dependence. It is based on the premise that there is a relationship between the process of internationalization and innovation, which is influenced by path dependence, acting as a beacon for the decisions that lead organizations to seek markets overseas.

2.1 Internationalization

Over recent decades, internationalization has occupied a prominent position in the strategies for sustainable growth of organizations on the world stage. Internationalization is a gradual process of acquiring knowledge about other markets, that enables an organization to increase its involvement with business activities at a distance from its home market (Johanson & Vahlne, 1977). Internationalization is embedded within a process of adaptation of commercial transactions for the international markets that involves knowledge, economic factors, and innovations (Anderson, Erin; Gatignon, 1986; Zott et al., 2011).

Two central perspectives dominate studies of internationalization. From the economic perspective, international business comprises trade and investment activities seeking profitability through rational decisions and strategic positioning (Dunning & Lundan, 2008; Dunning, 1980) to deal with dynamic environments (Girod & Whittington, 2017). In parallel, from the behavioral perspective, organizations seek advantages to equip themselves for situations in different countries, through interactions with different knowledge bases, through use of technologies, through changes in production processes, and through marketing strategies (Zahra, Ireland, & Hitt, 2000), and continue learning as they gradually advance into other markets (Johanson & Vahlne, 1990; Johanson & Wiedersheim-Paul, 1975).

In counterpoint to the economic perspective, decision-making on internationalization faces different barriers. In addition to natural barriers, such as those created by geography, in international business other determinant barriers also exist, such as, for example psychological barriers (Johanson & Wiedersheim-Paul, 1975; Rebelato Mozzato & Grzybovski, 2018), cultural barriers (Reus & Lamont, 2009), and institutional barriers (Salomon & Wu, 2012). With regard to behavioral aspects, the influence of interpersonal relations, differences between values, education, and management practices all interfere in the internationalization process (Johanson & Wiedersheim-Paul, 1975). Therefore, firms gradually go through an evolutionary process of acquisition of knowledge and learning, which impacts on the decisions taken once this knowledge and learning has been assimilated by the company (Johanson & Vahlne, 2009).

While behavioral issues are relevant, others, of an economic nature, also remain determinant (Sun, Wang, & Luo, 2018). Profitability it is at the heart of an organization's existence (Barney, 1991). To achieve profit, firms develop competencies that bring them competitive advantages. Fierce competition and the needs of efficient production processes and technological updates, compounded by business practices, have led organizations to focus their strategies on development of innovative capabilities (de Vasconcellos, Garrido, & Parente, 2019; Yu & Si, 2012).

2.2 Organizational innovation

Innovation is superimposed on the economic perspective in the organizational environment and the changes involved are generally the result of external technological events (Rosenberg, 1982). From an economic perspective, innovation is a set of evolving functions that take place in the economic space and that modify the organizational environment with new methods of production, creating new products and markets (Schumpeter, 1934).

On the organizational level, several approaches centered on innovation came to the forefront with publication of the Oslo Manual (OECD, 2005). This is a globally-recognized reference for several surveys that examine the nature and impacts of innovation. According to the Oslo Manual, at the organizational level, "innovation is the implementation of a new product, good, or service, or of a new process, or a new marketing method, or a new organizational method in business practices" (OECD, 2005, p.46). According to the Oslo Manual (2005), innovation can be classified into four types: innovation in product, innovation in process, organizational innovation, and marketing innovation. Product innovation refers to introduction of new or improved goods or services that achieve superior results to those previously in existence. Process innovation is essential to the firm that wishes to be ahead of and differentiate itself from its competitors through superior processes that deliver flexibility, quality, and greater productivity (Souza & Bruno-Faria, 2013), since implementation of new production methods, equipment, software, and adequate automation bring competitive advantages for the firm. The Oslo Manual (2005) describes organizational innovation as implementation of new organizational methods applied to the firm's business practices and organization of the workplace, or even to relations with the external environment (OECD, 2005). Finally, the capacity to innovate in marketing is related to the firm's capacity to interpret the needs and desires of its customers, allowing it to stay ahead of the competition (Roberts & Grover, 2012).

Innovation is at the heart of economic change. The decision to innovate is generally taken in an environment of unpredictability and uncertainty, which can delay change and block innovation projects (Rosenberg, 1982). The level of management knowledge and commitment influence the decision-making process in relation to the most appropriate innovations for improving firm performance (Tigre, 2006). Thus, organizational innovation occurs within the firm in response to innovations in the external environment (Dosi, 1988).

2.3 Path dependence

Many studies have thrown light on the effects of organizations' prior histories, in particular, the sequence of events linked to a specific subject, in order to understand and explain present actions which will, in turn, impact on the future (David, 1985; Liebowitz & Margolis, 2010; Zukowski, 2004). Seen as bonds that constrain an organizations' decisions, this phenomenon has become known as path dependence (Arthur, 1989; David, 1985; Mahoney, 2000; Rosenberg, 1982). Path dependence is the occurrence of contingent and causal historic events that drive institutional patterns or chains of events with deterministic characteristics (Mahoney, 2000), given that each choice that a manager makes involves rejection of other options that were available at the time at which the decision taken was defined, given the limits of understanding of its effects (Simon, 1957).

Path dependence is present in organizations every day and influences their decision making, when the manager has the chance to question and curtail prior paths that could impact on the present moment and on the future evolution and direction (Arthur, 1989). Path dependence involves knowledge and understanding of the past and the path that derives from it, even if the pertinent changes cannot be exclusively explained by the historical events that have gone before (Mahoney, 2000). Management choices, based on past experiences, lead to formation of organizational structures that are self-reinforcing over time and influence the paths that organizations take, with the potential to limit or expand the range of future options (Mahoney, 2000) even for organizations that are part of the same global value chain (de Vasconcellos et al., 2015).

The sequences of events that are involved in path dependence can be classified as self-reinforcing sequences or reactive sequences (Mahoney, 2000). While self-reinforcing sequences are characterized by increasing returns, in which the benefits are increasing and cause an institutional pattern that eliminates other alternatives, that are sometimes better, reactive sequences are chains of causally connected events in a temporal sequence, in which each step is dependent on a preceding step, but without reproducing an institutional pattern. There is therefore the possibility of changes during the process, and also the possibility that contingencies can provoke points of rupture, which create new deterministic patterns, which, in turn, lead to a series of reactions that follow on in a logical manner after this point of rupture (Mahoney, 2000; Morck & Yeung, 2007). Path dependence is therefore related to an understanding of how patterns become routines or are altered by contingent combinations, influencing the decision-making processes of organizations over time (Mahoney, 2000).

This whole cycle of path dependence created by decision-making defines organizational changes and strategies. At the point at which a manager takes a decision to break with the past, a new path dependence is defined that will come to influence the decisions taken from this point onwards (de Vasconcellos et al., 2012). Understanding of how the external environment affects the organization does not exclude an understanding of how decisions taken in the past and, thus, past experiences can put constraints on future decisions. The result is the emergence of a cycle of interrelated restraints on organizations, which interfere with their managements' decision-making processes and the evolution of their international business (Johanson & Vahlne, 1977; MacKinnon, 2012). It is concluded that path dependence both provides the foundation for and influences the decision-making process, triggered by key events, whether internal or external, that will direct future decisions. Path dependence therefore binds present decisions to past decisions and has the potential to determine decisions to implement or not to implement innovation or to trigger or block innovation in the future. In this context, the evolution of a firm's international business is directly linked to its historical baggage, which is itself the result of decisions taken over time (de Vasconcellos et al., 2012) and will define the range of alternatives available for evaluation and selection in the future (Garud, Kumaraswamy, & Karnøe, 2010).

3 Methodological procedures

This study has a descriptive design, since it reexamines the theoretical framework in the light of data collected empirically in the field (Baxter & Jack, 2008), drawing together a consolidated selection of the literature on international business, innovation, and path dependence and applying it to a case study. This body of literature was used to underpin the investigation (Roesch, 2009), and provided the foundation for construction of a semi-structured interview script with open questions, part of a research protocol for data collection during interviews in the organization and its surroundings (Collis & Hussey, 2005). Two scripts were constructed, working from the theoretical references, one to be administered during the interviews with members of the firm and the other for administration to industry experts (de Vasconcellos et al., 2015), to enable triangulation of data and identification of the determinant events in decisions that involved reactions to innovation and internationalization.

The research technique employed was the case study, because it enables both wide-ranging and in-depth investigation with questions that offer the chance to analyze historical data on the firm that is the object of study, events that did or did not result in decisions taken by the firm's management, influencing the evolution of its international business (Yin, 1994). The approach chosen is qualitative research, to seek understanding of a problem that involves in-depth information obtained from a small group and in which subjective data are analyzed without using statistical techniques (Cooper & Schindler, 2016), enabling understanding of the different significances that people attribute to their experiences and the motivations for their actions. The study involved three semi-structured interviews with professionals with a long history of connection with the footwear industry and three interviews conducted at the firm, Ômega.

The choice of interviewees took into consideration the requirements of the semi-structured interview scripts, including the interviewees' history at the firm and the roles they had occupied over their time at the company. A total of six interviews were conducted, in July 2017. The criterion for choosing the external interviewees was their professional participation in events that were determinant in changes in the footwear industry. External interviewee 1 (EXT-1) has participated intensively in the footwear industry since the 1960s, working as an export agent, as professor of international business at the Universidade do Vale do Rio dos Sinos (UNISINOS), and as a consultant for the Brazilian Footwear Industry Association (ABICALÇADOS). External interviewee 2 (EXT-2) has been in business in the international logistics industry since the 1980s and was president of the Novo Hamburgo Commercial Association (ACINH) for 5 years. Finally, external interviewee 3 (EXT-3) has been in business in the footwear industry since 1969, focused on styling and sales of women's footwear, handbags, and accessories. The interviewees from Ômega were chosen on the basis of their involvement in the firm's strategic decisions and their histories at the firm, enabling them to provide details about the events that had taken place over the period of interest to the study. Internal interviewee 1 (INT-1) is the chairman of the board of directors, founder, controlling shareholder, and manager and whose participation in the firm's strategies has been decisive throughout its history. Internal interviewee 2 (INT-2) is the CEO, and internal interviewee 3 (INT-3) has worked for the firm since it was founded, holding positions in many different operational departments, from the mechanical engineering department, through production and sales, culminating in his current role as director of property and assets.

The corpus accumulated during the interviews with the external interviewees totaled 3 hours and 28 minutes, while the interviews with representatives from Ômega lasted 3 hours and 5 minutes, making a total of 6 hours and 33 minutes. This material was transcribed, resulting in 105 pages of text. Data were then compiled using categories preestablished for the interviews (Bardin, 1977). The analytical categories defined for this study were: a) internationalization, b) organizational innovation, and c) path dependence in decision-making. The information accumulated was analyzed in the light of the theoretical foundation and confirmed against secondary data, which were acquired by searching for material on the history of the footwear industry in scientific periodicals and books. Specific data on Ômega were collected on the same day as the interviews. For data analysis, responses were first categorized according to the theoretical foundation, to then attempt to answer the research question, as recommended by Yin (1994). Organizational techniques proposed by Bardin (1977) were employed to speed up and order interpretation of data, creating a systematic sense of "what" should be analyzed and "how". Finally, an analysis was conducted based on the theoretical assumptions, so that reliable inferential reflections could be made and conclusive interpretations could be drawn that would be able to explain how the process of internationalization was affected both by the need to constantly innovate and by the elements of path dependence in the organization..

4 Historical analysis of the Brazilian footwear industry

The footwear industry was chosen as the setting for this case study because of the convenience of conducting research in this industry, as an export sector, since there is a rich body of historical and academic data available. Additionally, the footwear industry is a mature industry, one that is constantly facing challenges related to innovation because of its involvement in launching fashions and developing new products, and it was also the first industrial manufacturing sector from Brazil to gain international recognition (Costa & Passos, 2004).

Up until the start of the 1960s, footwear production was concentrated in developed countries, but the search for lower production costs put Brazil on the global footwear production and export trail (Costa, 2010). The footwear industry expanded and foreign sales increased gradually, but steadily, in a scenario in which credibility was primarily provided by foreign customers, via agents and export companies that took responsibility for practically all foreign sales, taking care of the entire intermediary process, including product development, quality control, and expansion of production capacity (Rabellotti & Schmitz, 1999).

In the 1970s, the footwear industrial complex began to develop as part of the efforts to serve growing international demand and in response to programs to encourage growth in exports, such as tax incentives and the policy of mini-devaluations of Brazilian currency against the dollar, improving the competitiveness of Brazilian products (Costa, 2010; Costa & Passos, 2004). Under these conditions, production of footwear increased and the industry's infrastructure, including the entire supply chain, was consolidated. However, the start of the 1980s was a time of challenges created by a scenario of economic difficulties in general related to the Brazilian recession and the troubled international economic situation. Compounding this, China was already showing signs of making large-scale investment in expanding its footwear manufacturing base and there was an atmosphere of concern with making prices more competitive (Costa, 2010; de Vasconcellos et al., 2015).

In 1985, Brazil was responsible for 7.6% of global footwear export volume, whereas China was responsible for just 1.4% and Italy for 31.3%. This situation shifted rapidly and in 1993, Italy's share was down to 18.5%; Brazil's share had shrunk slightly, to 5.7%, and China, in the ascendency, had reached 15.4%, with clear signs of short-term supremacy (Costa & Passos, 2004).

The start of the 1990s proved to be a period of economic instability and recession. Industrial production was drastically reduced and the Brazilian leather goods and footwear complex was weakened, feeling the negative results of its lost competitiveness, whereas China took the lead as the largest manufacturer of footwear in the world, with low prices, absorbing part of Brazil's production (Schmitz, 2006). As tax incentives for exported products were phased out, in 1991, and the first major foreign exchange crisis provoked by the Plano Real began to bite, in 1994, Brazilian footwear export revenue fell by 30% from 1993 to 1999, from US$ 1,846 million to US$1,277 million (ABICALÇADOS, 2019).

Asian competitors, with abundant labor and government support, advanced into the international market rapidly. In this context, in the 1990s, Brazilian firms needed to recover competitiveness and, motivated to maintain their profitability, they began to relocate part of their production to the Northeast of Brazil, where labor costs were lower and government subsidies were available (Costa, 2010).

At the end of the 1990s, there was a wave of investment in proprietary brands, as an alternative strategy for sales on both domestic and export markets (Costa & Passos, 2004). The availability of export orders in earlier periods, combined with the challenges of taking advantage of opportunities for growth, prevented the majority of firms from improving their internal capabilities for product development, design, proprietary branding, and sales of their own production, so they remained dependent on the export companies (Calixto, 2013). The firms reacted and focused on technological modernization to increase productivity and improve the quality of their product. They were also obliged to seek alternative markets and, for geographic and cultural reasons, prioritized Latin America, primarily Argentina, which became a regular customer over the following years (Costa, 2010).

The first decade of the 2000s was a scenario in transformation, with developments in the quality of the product and increased added value (de Vasconcellos et al., 2015). During this period, there was no significant variation in the numbers of pairs exported, but the value of exports increased by 17%, illustrating an improvement in the quality of the product, confirmed by the increase in mean price from US$ 9.52 in 2000 to US$ 11.35 in 2008, and then US$ 11.57 in 2011. However, from 2011 to 2016, the mean price fell by 31.2%. It was suggested that this was because of an increase in exports of lower added value products, such as synthetic injection molded items (EXT-2).

In 2017, the Brazilian footwear industry was recognized for its production of higher quality products with greater added value and continues to be one of the largest clusters worldwide, as third-largest manufacturer, producing approximately 900 million pairs per year, with exports at the US$ 1 billion level to 163 countries (ASSINTECAL, 2019).

Table 1. Brazilian footwear exports

Year	Footwear exports (US$ millions)	Footwear exports (Millions of pairs)
1970-1975	470.00	115.0
1976-1980	1,366.00	187.0
1981-1985	3,677.00	501.0
1986-1990	5,601.00	745.0
1991-1995	7,383.00	801.0
1996-2000	7,245.00	716.0
2001-2005	8,325.90	926.6
2006-2010	8,503.20	792.9
2011-2015	5,512.00	602.8
2016-	998.00	125.6

Source: MDIC/Abicalçados.

The industry's evolution can be observed in terms of the organizational business structure, diversified and high-quality production, industry associations, and technology centers, and the increased participation in both domestic and international trade fairs. According to ABICALÇADOS (2019), this is a successful path, with a production base comprising around 7.7 thousand firms, of great importance to the Brazilian economy, directly employing more than 300 thousand workers, in ten of the country's states.

Table 1 shows a summary, in dollars and numbers of pairs shipped, of the path taken by Brazilian footwear exports over the last 46 years. These data demonstrate the periods of expansion and retraction of Brazilian footwear exports.

5 The case of Ômega

Ômega Footwear was founded in the 1970s, in Brazil's southernmost state, Rio Grande do Sul, producing 500 pairs of ladies' footwears per month. Nowadays, the firm is one of the largest manufacturers of ladies' footwear in Brazil with eight factories and 14 thousand direct employees. According to documentary research on Ômega Footwear, in 2017 its production was approximately 70,000 pairs per day, around 10% of which is earmarked for export, to 50 different countries.

It is considered that this firm is an appropriate object of study to fulfill the research objectives because it has had experience of several different strategies over the course of its internationalization and because it has been faced with a complex environment, with many changes and crises over the course of its almost 40 years in the international market. Although it is embedded in one of the largest footwear clusters in the world, where a large number of firms have taken the path of prioritizing the international market over the last twenty years (Costa, 2010; Rabellotti & Schmitz, 1999), Ômega stands out because of its unique innovations, founded on creation of its own proprietary brands, expansion in the internal market, and targeting foreign direct sales.

The firm began exporting in 1978, indirectly, to the United States via an export agent, using the production system that predominated in the Vale do Sinos at the time – private label production. However, later the same year the firm chose a different route and entered into a partnership to sell products on the English market, considered more demanding in terms of quality and technical control of production, attempting to introduce a product line developed in-house at Ômega (INT-1).

In order to supply the English market, the firm modernized and implemented innovative processes in all areas, particularly for production, which expanded gradually. These actions were part of a plan for expansion that was based on a high-quality product with competitive pricing, under supervision and guidance from the European customers (INT-2).

Over the next five years, sales to the domestic market were reduced and exportation took over the entire production in 1983 and 1984, as a result of constant effort and investments. During this period, production was growing by around 15% a year and the factory was already producing higher added value ladies' shoes. However, with the intention of reducing its dependence on foreign customers, the plan was to retain part of its production dedicated to the domestic market (INT-1). The firm therefore took on the challenge of launching its proprietary brand and opening markets throughout Brazil, without restricting its export growth (INT-1).

In relation to the progress of international sales, the firm achieved solid growth of 10 to 20% over the first 10 years of the operation (INT-2). The fall in exports seen from 1987 to 1994 was the result of its transition from private label sales to its proprietary brand, which was considered an investment that was necessary to launch the Ômega product abroad. From that point onwards, the firm achieved impressive growth in production for export, reaching 3.2 million pairs, in 2016.

As a result of the experience it had accumulated in the English market, Ômega was supplying a product with unique selling points, that combined competitiveness with quality. As a result, sales on the domestic market remained buoyant and overtook exports in 1989 (INT-2). In the opinion of interviewee INT-1, there was a need to find ways of doing business with greater security and autonomy, which implied cutting out the intermediaries.

The company's growth was consolidated after it launched its first proprietary brand, Delta, in 1986. This was followed by relocation of a proportion of its production to the Northeast of Brazil, from 1995 onwards, targeting greater productivity and competitive prices. These initiatives were necessary to guarantee sustainable growth and sales autonomy (INT-1).

The 1990s were a decade of transition in international sales, with substitution of customers' brands by the proprietary brand. Little by little, the firm eliminated intermediaries from its international sales. In parallel, it launched two more brands. The constant increase in sales encouraged the firm to expand its production facilities in the Northeast and, as of 2017, Ômega comprises six factories in the Northeast and two in Rio Grande do Sul. In terms of numbers of pairs, from 2001 to 2016, production in the Northeast increased from 2.3 million pairs per year to 18.4 million, accounting for 95% of the firm's production by 2017 (INT 1-2-3, confirmed by documentary analysis of the firm).

Within this scenario, the challenges of innovation were an element of the path taken by Ômega. As proposed by Tigre (2006), it was necessary to create strategies that resulted in an environment that was conducive to constant renewal, not only of products or advanced technologies, but also of processes, marketing, sales, and organizational management. According to interviewee INT-1, three innovations were decisive in the firm's history: meeting foreign customers' standards, creation of proprietary brands, and migration of production to the Northeast. Other changes were triggered by these three primary changes. Ômega has taken a different route to the typical path in the Brazilian footwear industry, which, in general, internationalized under the guidance of foreign importers, prioritizing private-label production.

6 Analysis of the case of Ômega and the footwear industry

The drive for expansion and continued competitiveness prompted Ômega to decide to sell to the international market, as described by interviewee INT-1. This is consistent with research by Fligstein (1996), who states that internationalization of companies is the result of rational/economic and behavioral factors and is pursued in order to keep them competitive and strategically positioned in the global scenario. According to interviewee INT-1, this firm chose the easier and lower risk option when starting internationalization, via an export agent, because it was not set up for direct sales. According to Johanson and Vahlne (1977), seeking alternatives in the international market to deal with situations of risk and uncertainty is inherent to the internationalization process. The descriptions from EXT 1 and 3 of the start of Brazilian footwear exports coincide with the initial path taken by Ômega, since both experts emphasized the importance of export agents to formation of the footwear manufacturing cluster, particularly in Rio Grande do Sul.

The Ômega case is consistent with earlier research into the reasons for internationalization, which have described a constant relationship between the rational-economic and the behavioral angles (Fligstein, 1996). While the firm was targeting economic growth with a rational foundation, there is an evident behavioral component, since the decision-making process only started once the owners felt confident in the governmental support and followed the steps taken by other firms in the footwear manufacturing cluster. Johanson and Vahlne (1977) point to the importance of the behavioral approach to the decision-making process, since it is influenced by subjective factors inherent to the path of the firm and its management. This is evident in the position of interviewee INT-1, who mentions his experience as a shoemaker, working in his father's small factory since adolescence.

According to de Vasconcellos et al. (2012) and Sun et al. (2018), both approaches, rational and behavioral, are of equal relevance and complement each other in the attempt to reconcile different perceptions of how managers define their strategies for foreign markets. In this context, it appears evident that the rational factors, such as extreme care with the firm's financial security, and the behavioral factors, such as family and historical baggage, as described by interviewee INT-1, complemented each other in the search for actions that lead to the decision to internationalize the firm.

The lack of control of sales that is an element of indirect exportation, as explained by Özcan, Coronado Mondragon, and Harindranath (2018), was clearly felt by the management of Ômega. According to interviewee INT-1, despite its convenience and greater rapidity, this system did not fit in with the firm's work principles, since it took away their control over the operation and left the firm exclusively concerned with production. The lack of independence and the risk of accommodation prompted the firm to start its own exports to the European market the year after, although still in an indirect form, but in a manner that demanded a more complete involvement and which opened the doors to a gradual accumulation of increased knowledge.

In the opinions of the interviewees from Ômega, the company needed to take advantage of the learning it acquired through exporting to England, which was a particularly demanding market, to effect changes. The firm therefore decided to follow the proprietary brand path to expansion, both in its local market and to achieve direct export sales. It can also be observed that these decisions predominantly represent a change in path influenced by behavioral factors, given the way that they were taken gradually, in response to the innovations originating in the external environment. Ômega's first major innovation was of an organizational nature, taking the decision to internationalize. During the three interviews with members of the firm, an understanding was arrived at that this decision was decisive for the other innovations that occurred as the firm evolved, which is consistent with the concepts dealt with in the Oslo Manual (OECD, 2005).

It is of relevance to this study to understand the perceptions of the interviewees from Ômega of dealing with the challenges of innovation. It can be observed that innovation is an integral part of the firm's primary objective of constant growth, through a product that is always up to date and competitive. This goal means that internal and external innovations are adopted naturally as part of the firm's growth process. It can be discerned that the firm responds in an organizational manner to external innovations, triggering the appropriate innovations in process, product, and marketing.

The firm's second major innovation was creation of its proprietary brand, in 1985, focused on the product and the customer, and this action triggered creation of the firm's research and development (R&D) department. This change injected dynamism into diffusion of knowledge, cooperation, and commitment, driven by the rapid increase in sales (INT-2). According to Dosi (1988), the customers' perception of a product's added value triggers reactions in the firm, reactions that accelerate change. In contrast, in the interviews with the external experts, there was no mention of development of brands or focus on product during this stage of the Brazilian footwear industry's history.

In 1995, the need for greater productivity, combined with pressure on prices exerted by competition from China, led the firm to start the process of relocation of production to the Northeast (INT-1 and 2). The same movement could be observed in the other firms in the footwear industry in Rio Grande do Sul (EXT-1 and 2). However, while the majority of firms were targeting a reduction in costs to enable a later attempt at increasing production, Ômega was already targeting cost reductions and increased production simultaneously. The perspective of an interactive process of organizational innovation, as an argument for competitive advantage and superior results to the competition, is emphasized in the studies in the Oslo Manual (OECD, 2005).

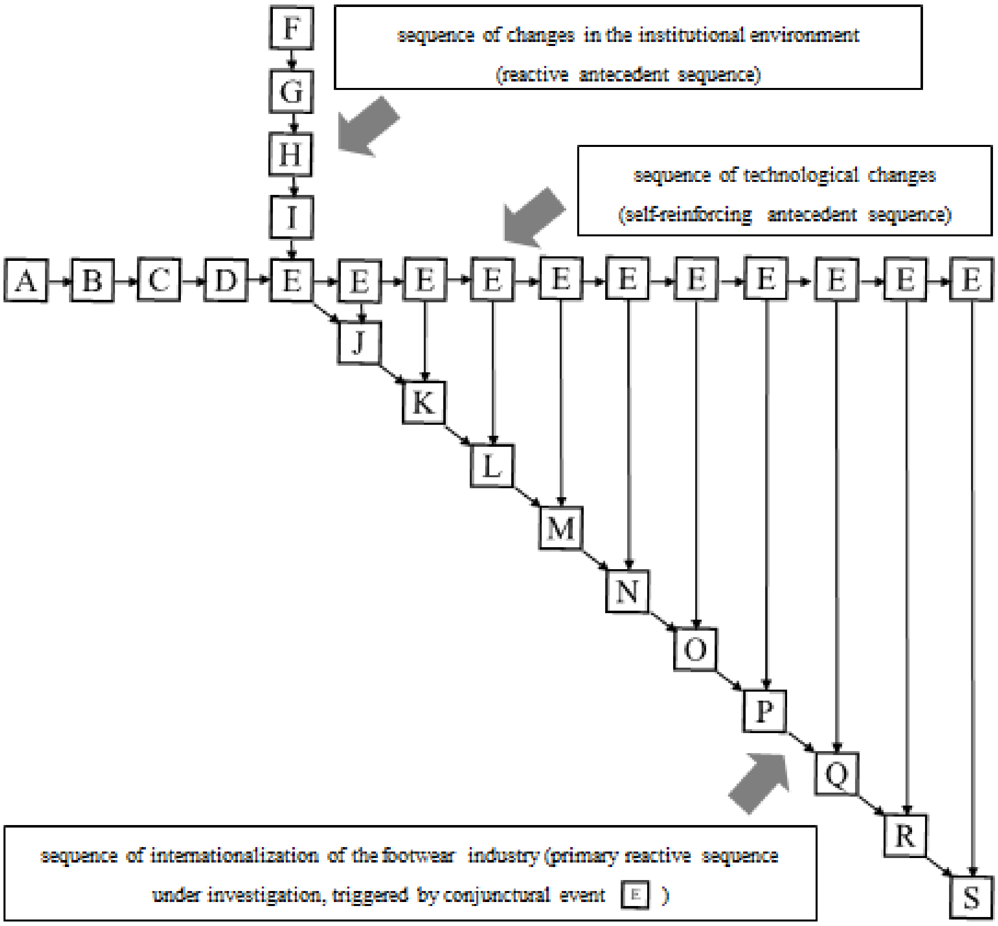
Ômega's development is aligned with its focus on innovation. In the 2000s, the firm consolidated its sales and was able to implement a program of industrial automation in conjunction with a technological update of the firm (INT-3). According to interviewees INT-1 and 2, both of whom are directors of the company, the firm's decisions are taken on the basis of its accumulated knowledge and the beliefs and values that are part of the firm. They believe that these decisions are the result of a wide range of factors, such as the managers' personal experience, what they have learned about the institutional environment, the confidence they have acquired in their own actions, the commitment of their team of employees, and, most importantly, their capacity to ensure that the necessary actions are implemented.

Analyzing the path taken by Ômega, it is clear that decisions are not taken simply on the basis of current facts, but that there is a historical element, which often diverges from what would appear to be the most rational decision, as proposed by Mahoney (2000) and de Vasconcellos et al. (2012). It can be observed that the path passes through a series of complementary concomitant decisions, which triggered a series of innovations at Ômega, and this is in line with the view presented by Mahoney (2000) with relation to the evolutionary nature of the decision-making process, in which previous decisions influence present decisions and trigger future decisions, which is compatible with path dependence.

Based on the reports from interviewee INT-1, it is understood that the firm positioned itself opportunely in response to each innovation that emerged along its path, changing itself and creating the conditions for the new decisions to lead to fulfillment of its growth targets. When the firm realized that its growth was the result of its own efforts, but was subject to control by the export agents, it perceived a limitation in terms of product development and sales. It reacted, launching the Delta brand in 1986, which brought with it the decision to invest in the domestic market that, in turn, obliged it to initiate a process of product development. It is assumed that organizational, marketing, and process innovation all took place, which is in line with the views of Mahoney (2000), with regard to the study of management choices, based on past experiences that lead to the formation of organizational structures.

These decisions enter into a sequence of self-reinforcement of prior decisions. As time passes, this can bring benefits and also problems, which become ever greater as continuous adoption amplifies or limits the scope of future options. It is clear that there was a point of rupture along the path of Ômega which, since its foundation, had always been dependent on third parties for development of its models and also to sell them. At this point, the firm chose a different route to the rest of the footwear industry which, in general, was still increasing its international sales via international export agencies, although competition from Chinese production was already making price negotiations difficult (EXT-2 and 3). It can be concluded that Ômega was heading in a direction that would increase its range of future options for continuing sales, this time with a proprietary brand (Figure 1).

According to interviewee INT-2, after it launched the Delta brand, the firm began to work on a sequence of innovations. The rapid increase in sales under the Delta brand encouraged the firm to focus on the distinctive qualities of its product and so, in 1990, it set up its own R&D department, which, in turn, triggered further innovations and the brand became consolidated (Figure 1). It should be noted that, initially, there was product innovation, involving production processes, to increase and diversify the collection.



<u>Key elements:</u>

A – Shoes as a colonial inheritance
B – Development of the footwear manufacturing cluster
C – Government incentives for footwear exports
D – Participation in European trade fairs
E – Brazil integrates into the Global Footwear Value Chain

F – Handmade production
G – Scalable production
H – Technical schools are founded
I – Learning technical vocabulary at fairs
J – Emergence of export agencies
K – Production focused on private labels
L – Concentration of production for export to United States
M – Technical innovations to maintain prices competitive
N – China starts production
O – Migration of factories to Northeast Brazil
P – Succession of exchange rate crises (1994, 1998, 2002)
Q – Attempts to launch higher added value products
R – Efforts to develop domestic proprietary brands
S – Efforts to develop global proprietary brands

Source: Adapted from Mahoney (2000)

Figure 1. Explanation of the Reactive Sequence of Internationalization of the Brazilian Footwear Industry

According to Mahoney (2000), reactive sequences are chains of events in a temporal sequence that are causally connected. This is what took place at this firm, since the decision to launch the proprietary brand was a determinant event and, from this event onwards, each subsequent event was a reaction, demonstrating dependence on prior steps, as illustrated in Figure 1.

To engage in a deeper reflection on the changes in the economic environment that interfered in the decision-making at Ômega, in this study we draw on an investigation by Goldstone (1998), used by Mahoney (2000), who explained how a sequence of events is triggered by decisions taken in response to given contingent event, while discussing the causes of the English Industrial Revolution, founded on the coal industry. Drawing on that study, Figure 1 explains the reactive logical sequence in the internationalization path of the footwear industry, triggered by a causative event originating in a contingent breakpoint, which are common in dynamic environments that oblige organizations to constantly reconfigure their resources (Girod & Whittington, 2017).

According to Mahoney (2000), there are three main types of sequences: independent sequences of events, when two sequences do not affect each other; sequences that intersect at certain points, but without major consequences for the paths of the events involved; and sequences that intersect and affect each other's paths. In the case of the path followed by the footwear industry and the single case Ômega, there was a change of path, which fits the definition of a self-reinforcing sequence, and resulted in Ômega deciding to supply the international market.

Figure 1 illustrates the changes in the economic environment (i.e., external) that interfered in Ômega's decision making. There is a reactive antecedent sequence, comprising changes in the institutional environment, a self-reinforcing sequence, comprising the sequence of technological changes in the footwear industry, and the primary reactive sequence under investigation, triggered by conjunctural event E, integration of Brazil into the global footwear value chain, which occurs at the intersection of the first two sequences. The manner in which the firm acted proactively, anticipating other possible dependencies (such as dependence on selling via export companies), merits closer attention, since it reflects the decision-making process within the firm, which is the focus of this paper, when faced with innovations and situations triggered by the external environment. This sequence is made up of the events that led the firm to grow in a different manner, and in line with its objectives (INT-1).

Of particular note in Figure 1 is that the decision-making sequence was set off by contingent event **E**, integration of Brazil into the global footwear industry value chain, which, in turn, resulted from a conjunction between the sequence of changes in the institutional environment and development of the footwear manufacturing cluster (**B**), which triggered events **C** and **D**, leading to contingent point **E**. In turn, the sequence of technological changes that comprise events **F**, **G**, **H**, **I** demonstrate properties of self-reinforcement because they are the results of antecedent events that are causally linked. Intersection of the first two (event **D** with event **I**) produces the major conjunctural event **E**, internationalization of the Brazilian footwear industry. It can be observed that here a historical contingent event triggered a subsequent sequence that followed a relatively deterministic pattern, as proposed by Mahoney (2000).

Figure 2 was drawn up to illustrate how the firm reacted to the external phenomena. The evidence of path dependence in the evolution of Ômega's international business can be observed in the timeline, where the gradual cycle of innovations that impacted on the path taken by Ômega that diverged from that followed by the Brazilian footwear industry can be observed. The upward displacements represent the extent to which the firm was able to decouple from the previous model, dependent on the American importers, primarily by anticipating and taking decisions that gave it greater control over its own business.

It can be observed that before Event 1, Ômega did not have an organizational structure and had limited control over its own business. After the determinant Event 1, there is a breakpoint and the firm organizes itself to supply the international market, a determinant organizational innovation at the start of the internationalization process. After this event, the firm gradually increased the added value of its product, constituting an improvement path, and worked to reduce its dependence on those buying from it. In contrast, the footwear industry as a whole remained dependent on third-parties for its sales.

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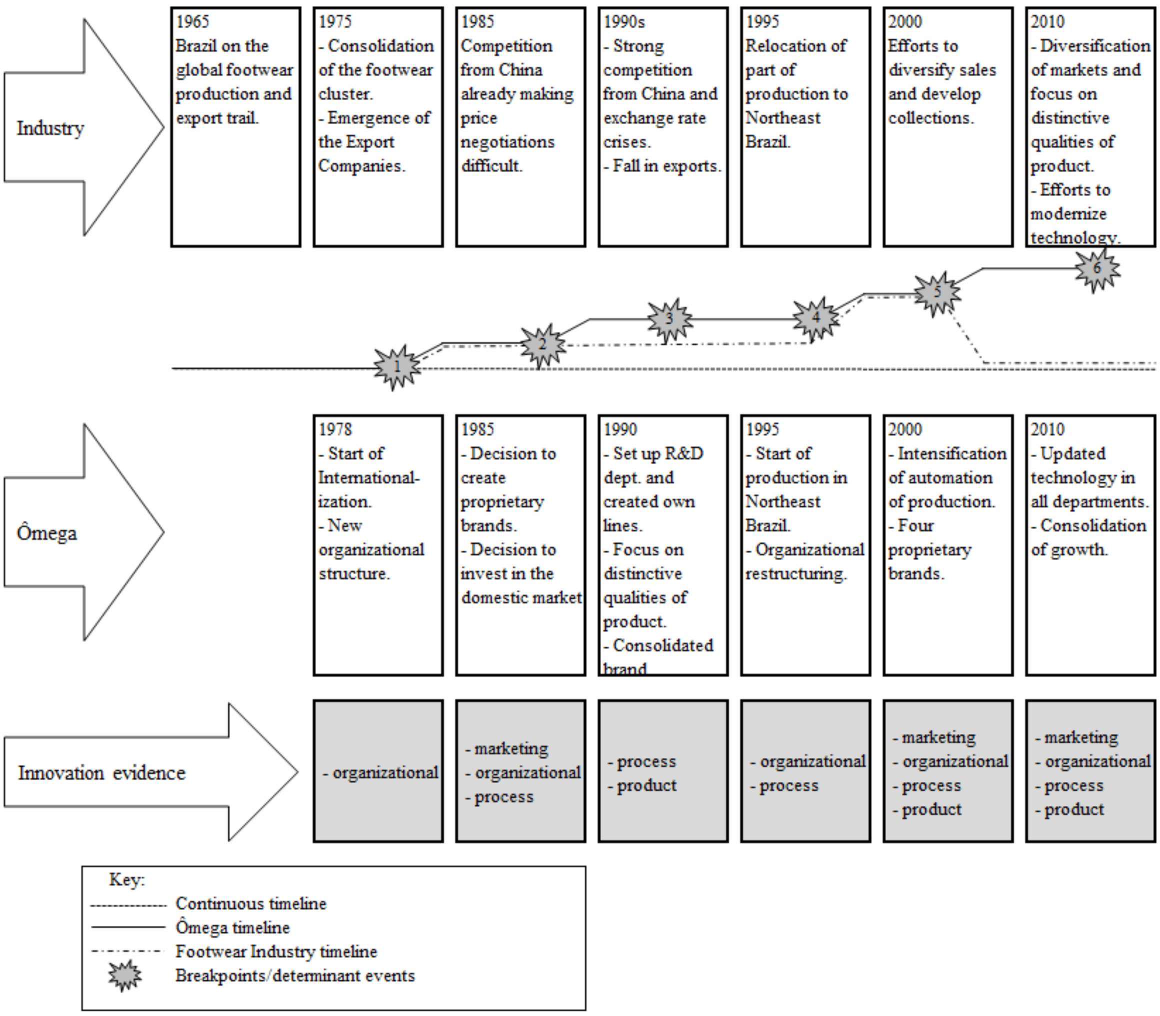

Source: Produced by the authors from study data.

Figure 2. Evidence of Path dependence at Ômega

At Events 2 and 3, Ômega went through additional processes of organizational, marketing, and product innovation, taking the decision to create its own proprietary brands and develop its own collections, consolidating its growth trajectory. In general, the other firms in the area were still tied to the importers and the problems increased gradually, as described by the external interviewees. At Event 4, there was another determinant event affecting both Ômega and the footwear industry in general, with relocation of a proportion of production to the Northeast. This created the possibility of increasing sales, which only occurred at Ômega, because it had greater control over its own business and had the capacity to win orders. Soon after, the other firms realized the limitations preventing them from multiplying business, and it was only at this point that they began to make attempts to develop products and diversify sales, including to the domestic market. While Ômega was consolidating its growth, at Event 5, the footwear industry in general was unable to overcome the constraints of the earlier decisions taken in the cluster (de Vasconcellos et al., 2015) and remained dependent on firms that designed their collections, even for sale on the domestic market.

At Event 6, it will be noted that there is a larger distance between Ômega and the footwear industry, because the firm was in the position to take advantage of opportunities in the market it had already mastered, including on the international market, whereas the majority of firms in the industry were limited by deficiencies that had been created over the course of time, inherited from their dependence on sales and development of product built up in previous periods. According to Johanson and Vahlne (1977), events in the macro-environment and the decision paths followed by firms can create constraints on future decisions that limit the evolution of business. In the analysis illustrated in Figure 2, it is notable how, at Ômega, path dependence influenced the decision-making process when faced with important facts, whether generating innovations or generated by innovations. The hypotheses ventured by Mahoney (2000) about the impact of initial occurrences on subsequent development, forming a successive, connected chain of events, are confirmed. As stated by de Vasconcellos et al. (2015) and de Vasconcellos et al. (2012), this entire cycle of path dependence created by decision-making defines the strategies and organizational changes that, in turn, will determine the evolution of international businesses, which is also true of the decisions on which entry strategies will be adopted (Sun et al., 2018).

7 Final comments

The primary objective of this study was to understand how path dependence is established in the evolution of the international business of firms faced with circumstances in which innovation presents a challenge. The choice to study the case of a firm that took part in formation and consolidation of a footwear manufacturing cluster provided the opportunity to draw parallels between its internationalization path and that of the other firms in its milieu, in an environment of fierce competitiveness and a constant need to innovate.

Faced with certain circumstances, it was observed that a decision was taken on the basis of past events and that it also led to future path dependence. This was evident in the decision to export, in the decision to continue supplying the domestic market, the decision to create proprietary brands, the decisions to transfer production to the Northeast of Brazil, and the decision to manage the firm’s own sales. The way that the firm dealt with the challenges of innovation was also characterized by decision making influenced by path dependence, which was observed when the events narrated in the interviews at the firm were mapped, in particular in the emphasis that the interviewees placed on the factor of modernizing the firm’s products.

Reflecting on the sequence of innovations at Ômega, it is assumed that the firm learned to produce higher quality footwear when exporting and then transferred this know-how to production of its proprietary brand for the domestic market. Over time, it accumulated learning that enabled it to take advantage of each innovation that appeared in its path and to create the conditions for continuity and evolution of its positioning. The subsequent decisions therefore led to further actions, which drove more innovation, creating a positive cycle around the principles that had been established, culminating in the ability to export under its own proprietary brand. In this scenario, each management decision was influenced by the previous steps and influenced the strategies chosen to advance further.

This paper contributes to the literature on international business and innovation, primarily by calling attention to path dependence as a factor that inhibits implementation of internationalization strategies. The history of the firm matters, as does the history of its context, whether because of the prism of the cluster in which a firm is embedded, or whether because of the industry in which it does business.

This paper also has implications for management practice, since it discusses the combined effects of path dependence on decision-making on the levels of the organization and the industry. On the industry level it provides insights into the interconnections between decisions taken within an organization, which can affect the future decisions of the other firms in the industry. On the level of public policies, it enables understanding of cognitive processes that relate past and future decisions, influencing migration of industries from one region to another.

This study is subject to certain limitations.

Considering situations specific to Ômega, there is a limitation affecting the analysis of performance. For internal strategic reasons, the firm studied chose not to share its revenue figures, which limits the analysis. As a study that relates path dependence and innovation in the footwear industry, it is also limited by having analyzed only one firm. The historical data are subject to the limitations of human rationality and may therefore lack elements of perception relate to the period of time elapsed since the events described occurred.

It is believed that this paper can contribute academically to further research into the subject of decision-making by attempting to understand the process of co-evolution that occurs between a firm's international business and its need to innovate in order to remain competitive internationally. It is also believed that understanding the decision-making process is one of the essential items on the agenda of academic courses in management. The decision-making process involves all of the factors analyzed to make choices. However, not all of those factors are known because of the limits of rationality itself (Simon, 1957), leading to situations in which those decisions that appear to be the most obvious are not taken (Mahoney, 2000).

In view of the conclusions presented and also the limitations acknowledged, gaps emerge to be filled in future studies. First, this study could be replicated in other institutional environments to analyze decisions, comparing industries, countries, periods. Second, a quantitative study could be conducted at a footwear firm of a similar level, in order to enable measurement of the rational factor in decision-making and to enable a comparative study. This context could provide different answers to similar questions, enabling identification of how decisions were affected by or affect the innovation process in firms. Finally, conducting a wider-ranging, multi-case study, taking in the diversity of decisions taken in similar situations, could enable a more complex analysis of the results obtained. This could also better demonstrate the degree of impact of path dependence on the decision-making process in different firms.

In general, this study identified how decisions were taken in the firm studied and how they were affected by or affected the innovation process, which was or was not affected by the influence of path dependence. However, as was perceived in the study itself, rationality is also limited when analyzing data. It is impossible to completely understand how decisions follow on from one another, but, despite this limitation, it is believed that the objectives were, to a great extent, achieved.

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Studies on emerging countries

Earnings Management versus Capital Structure: What Are the Chances of Companies Occurring Within the Discretionary Limit?

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ABSTRACT

The discussions about companies' debts have been pertinent to researches for decades, but it is still a puzzle issue. The mainly aspect this issue is how managers chooses funding sources. In this sense, the purpose of this study is analyzing the chances of occurring companies within the discretionary limit in relation to their capital structure. This research was conducts by logistic regressions with a sample of 706 energy sector firms from 37 countries around the world, with financial data from the period 2015 to 2017, making the total of 2.118 observations. So, results shows that profitability, investment opportunities, firm size, low capital structure are variables that affect to the chances of companies occurring within the discretionary limit. These results evidenced that the discretionary limit can be greater than 1% of the return on asset (ROA). Based on this findings we suggest that for some sectors, the discretionary limit may be different from the energy sector. Besides this, it depends by the attention of the regulatory agents of each country, as well as the relevance of the companies sector to the others.

PALAVRAS-CHAVE

Gerenciamento de resultados, estrutura de capital, teoria *trade-off*, teoria *pecking order*, setor de energia

RESUMO

As discussões sobre o endividamento das empresas têm sido pertinentes às pesquisas há décadas, mas ainda é um quebra-cabeça. O principal aspecto dessa questão é como os gerentes escolhem as fontes de financiamento. Nesse sentido, o objetivo deste estudo é analisar as chances de ocorrência de empresas dentro do limite discricionário em relação à sua estrutura de capital. Esta pesquisa foi conduzida por regressões logísticas com uma amostra de 706 empresas do setor de energia de 37 países em todo o mundo, com dados financeiros do período de 2015 a 2017, totalizando 2.118 observações. Assim, os resultados mostram que lucratividade, oportunidades de investimento, tamanho da empresa e baixa estrutura de capital são variáveis que afetam as chances de as empresas ocorrerem dentro do limite discricionário. Esses resultados evidenciaram que o limite discricionário pode ser superior a 1% do retorno do ativo (ROA). Com base nessa constatação, sugerimos que em alguns setores, o limite discricionário pode ser diferente do setor de energia. Além disso, depende da atenção dos agentes reguladores de cada país, bem como da relevância do setor de atuação para os demais.

1 Introduction

The literature on earnings management comes showing several reasons that influence managers to manipulate financial reporting (Watts, & Zimmerman, 1990, Healy, & Wahlen, 1999). Within these aspects, there is research evidences the role of government participation in corporate control (Jalil, & Rahman, 2010), as well as whether capital structures are able to evidence whether firms tend to manipulate results (Francis, LaFond, Olsson, & Schipper, 2004, Cheng, & Warfield, 2005).

In this sense, the researchers' concern about studying the capital structure of firms emerged, in order to understand the choice of managers on the concentration of debt and equity to finance a firm. Therefore, some theoretical currents that discuss the capital structure were proposed in the literature (Nassar, 2016; Karacaer, Temiz, & Gulec, 2016).

Although it's a topic that has been discussed for decades, understanding the choice of managers on the configuration of capital structure of firms is still a puzzle for researchers (Myers 1984; Nassar, 2016; Karacaer et al., 2016; Pontoh, 2017). In this context, Myers (1984) proposed to discuss the theme under two theoretical currents, consecrated in the literature as trade-off and pecking order. Based on the proposal of Myers (1984), several empirical studies were developed around the world, with the purpose of analyzing the capital structure of companies.

However, the development of the energy sector is important for the development of other companies as well as for the countries, and for this reason, they receive a lot of government attention, through state control or even through sector-specific laws.

Therefore, due to this government focus on the energy sector, companies can efficiently manage their assets. In this sense, the capital structure can prove to be determinant for companies to be efficient in relation to the returns of invested capital, as well as, to avoid returns or losses within discretionary limits.

Although, Leuz, Nanda and Wisocky (2003) suggest that the discretionary limit is between 1% of the return on asset (ROA), the authors emphasize that the discretionary limit may differ according to the countries. Given this, the energy sector can cause managers to adopt capital structures in order to avoid being within these limits. And have a discretionary limit differ of other sectors.

Given this discussed relevance of the energy sector, this paper seeks to contribute primarily to the literature on earnings management and capital structure by analyzing the discretionary limits on return on assets (ROA). In addition, working with different countries around the world provides an opportunity to observe the behavior of discretionary managers and compare them.

Even with the relevant considerations of the researchers on the subject, there is still limitations literature on the sample (Nassar, 2016, Pontoh, 2017). Based on this gap, this study purpose of analyzing whether the characteristics of the capital structure of companies in the energy sector can determine the occur companies into discretionary limit. Thus, was suggest the following research question: what are the chances that companies in the energy sector will occur within the discretionary limit in relation to their capital structure?

In order to answer this question, the purpose of this article is to analyze the chances of occurring companies in the energy sector, listed on the stock exchange of 37 countries, within the discretionary limit in relation to their capital structure. Besides this introduction, this article is structured in four other lines. Section 2 discusses the literature review, Section 3 details the research methodology, data and variables, and Section 4 discusses data analysis and results. Finally, Section 5 presents conclusions and limitations.

2 Literature Review

2.1 Trade off theory and pecking order theory

Knowing about choices when it refers to the capital structure of firms, according to Myers (1984) is an issue that we don't know the answer to. Although it's a decades-long discussion, since the paper by Myers (1984) the capital structure of firms is considered an enigma for researchers (Myers 1984; Nassar, 2016; Karacaer et al., 2016; Pontoh, 2017). The focus of this question is on the configuration of the capital structure, as it particularly involves the managers' choices about the financing sources of companies. These sources of corporate financing, according to Nassar (2016) can be internal (equity) or external (debt).

In order to explore this gap on the subject, Myers (1984) investigated two theoretical currents on the capital structure of firms, known as trade-off and pecking order. Thus, the trade-off theory is based on the assumption that companies should seek an optimal capital structure, aiming at maximizing benefits and reducing borrowing costs (Myers, 1984). On the other hand, in pecking order theory according to Myers and Majluf (1984), there is a hierarchy in the choice of firms' financing sources, so the preference is for actions that incur less cost, mainly with the use of internal resources, employing the retained earnings.

While the idea in the trade-off theory according to Nassar (2016) and Uzliawati, Yuliana, Januarsi and Santoso (2018) is the balance between benefits and the cost of debt, on the other hand, in pecking order theory, Nassar (2016) explains that the managers' preference is for the source of internal financing, with the purpose of reducing the costs associated with information asymmetry. Thus, a systematic question is presented in this context, which is associated with the relationship between managers and stakeholders regarding the economic and financial performance of companies.

In addition to these theoretical aspects, there are other discussions on the subject (Nassar, 2016; Karacaer et al., 2016), which in summary is directed at the behavior of managers by decision making on capital structure, so that result should be the maximization of firm value (Karacaer et al., 2016; Uzliawati et al., 2018).

2.2 Earnings Management

The earnings management can be classified as a derivation coming from the accounting choices. Although accounting choices have generally accepted accounting principles (GAAP) as the north, managers can decide which procedures are best suited to their environment (Watts & Zimmerman, 1990, Fields, Lys, & Vincent, 2001). In between existing definitions, Healy and Wahlen (1999) described the earnings management occurs through managers' choices, in order to change the financial report, and then influence contractual relations.

In this sense, the earnings management literature also has an ethical focus (Almahrog, Aribi, & Arun, 2018), because even though earnings management doesn’t necessarily result in infringement of laws (Dechow, & Skinner, 2000), is expected is that opportunistic behavior or moral obligation influence companies to perform ethical activities (Alsaadi, Ebrahim, & Jaafar, 2017).

However, it is widespread among researchers that earnings management is abundant, but the aggravating factor is that reliable measurement not yet comes close to being documented. In this sense, one can question the results of researches that present, for example, that most accruals variations are attributed to discretionary increases, or that manipulations occur routinely and in large quantities, among other cases (Ball, 2013).

Thus, earnings management is a metric that is difficult to measure because the manifestation occurs in different ways, i.e., it can be measured by the smoothing of the reported operating profits, as well as, by the discretion in the reported gains (Leuz et al., 2003). Therefore, it’s noted that the research on earnings management isn't a new topic, but still raises important questions in the literature on financial accounting. And, several studies address the earnings management through accruals or cash flow (Lisboa, 2017).

2.3. Hypothesis development

2.3.1. Profitability

Profitability is an important factor when it comes to the capital structure of firms. In this sense, Karacaer et al. (2016) propose that more profitable companies tend to concentrate less debt. The option of managers by internal financing, gives asymmetry information with external investors (Karacaer et al., 2016). Although it is not unanimous in previous studies, several investigations find the positive relation between the profitability and the capital structure of firms (Nassar, 2016). This divergence in the findings is justified by the view that investors are not only focused on profits but, for example, on the level of risk (Uzliawati et al., 2018).

H_1: The profitability of the firms positively influences the chances of occur companies at the discretionary limit.

2.3.2 Investment Opportunities

Considering the assertion by Uzliawati et al. (2018) that investors don't have the unique focus on profitability, we added for estimation the investment opportunities. This claim to consider the companies' market value over total assets was due to the alternative of internal investment source through the issuance of stocks (Karacaer et al., 2016; Nassar, 2016).
H_2: Investment Opportunities positively influences the chances of occur companies at the discretionary limit.

2.3.3 Firm size

Previous studies point to a positive relationship between firm size and capital structure (Karacaer et al., 2016; Pontoh, 2017). According to Karacaer et al. (2016) it is expected that larger firm, has higher debt capacity. Another relevant point for larger companies is the bargaining power over lenders, mainly to issue and lengthen the debt (Pontoh, 2017).
H_3: Firm size positively influences the chances of occur companies at the discretionary limit.

2.3.4 Capital structure

The capital structure is a relevant point in the quality of financial reporting (Givoly, Hayn, & Katz, 2010), however, as the theories suggest; trade off and pecking order, there isn't consensus on the capital structure (Myers 1984, Nassar, 2016, Pontoh, 2017). Thus, avoiding small losses by modifying the firm's capital structure may be opportunistic behavior to avoid contractual breaches. This comportment can occurs because the capital structure represents litigation risks and probably reflects the quality of financial reporting (Givoly et al., 2010). In this sense, the managers with high capital structure have incentives to earnings results (Cheng, & Warfield, 2005). Thus, the hypothesis proposes that the reverse is also true, that is, low capital structure reduces the chances of manager earnings results.
H_4: The low capital structure negatively influences the chances of occur companies at the discretionary limit.

2.3.5 Revenue

The earnings management can also occur through revenue recognition, managers can use revenues strategically to improve operational performance and this can occur because the managers want to achieve or even exceed targets (Noh, Moon, & Parte, 2017). And as an aggravating factor, some sectors may be more likely to earnings results than others (Rasmussen, 2012).
H_5: Revenue positively influences the chances of companies occurring at the discretionary limit

2.3.6 Liabilities

Debt ratio is an important source of financing for companies according to Nasser (2016) because there are several options for taking external resources. This policy can minimize the costs associated with information asymmetry (Nasser, 2016). In addition, the debit is an evidence issue in the middle of researchers about the capital structure of firms since the accounting equation proposed by Luca Pacioli (Pontoh, 2017).
H_6: Debt ratio positively influences the chances of companies occurring at the discretionary limit

3 Research Methodology

3.1 Sample

The sample of this study is composed of 706 energy sector firms from 37 countries around the world, with financial data from the period 2015 to 2017, making the total of 2.118 observations.

Table 1. Countries and business in sample

Countries	Business	Total
United States of America	228	684
Canada	209	627
United Kingdom	61	183
Russia	40	120
Norway	30	90
Germany	18	54
France	14	42
Poland	13	39
Sweden	9	27
Brazil and Italy	8	48
Ukraine	6	18
Bosnia and Herzegovina and Ireland	5	30
Belgium, Bulgaria, Chile, Greece and Spain	4	60
Argentina, Colombia, Hungary and Serbia	3	36
Austria, Croatia, Cyprus, Denmark, Portugal and Montenegro	2	36

Finland, Iceland, Lithuania, Macedonia, Malta, Peru, Slovak and Slovenia	1	24
Total	**706**	**2118**

Source: Thompson Reuters (2018)

Financial data was collected from the Thompson Reuters database. After data collection, companies listed on stock exchanges outside the country of origin and missing observations were excluded from the sample. The choice by the energy sector is because of the amount of 2.5 trillion US dollars of revenues obtained in the year 2017 by the sample companies. In addition, because it is the sector with the largest number of companies available in the classification of the database.

3.2 Variable definitions

As a dependent variable we use the earnings management (presented by EM4) and measure it with dummy (coding with 1 and 0). That is, if the company obtained return on assets between ± 1%, managers probably tend to manage the results (Leuz et al., 2003). However, the discretionary limit may be different from 1% according to the country.

Table 2. Variables statements

Variables	Statements	Authors
Discretionary Limit	Dummy = 1 when Roa $\pm$ 1% else 0	Leuz et al. (2003)
Discretionary Limit	Dummy = 1 when Roa $\pm$ 3% else 0	Leuz et al. (2003)
Discretionary Limit	Dummy = 1 when Roa $\pm$ 5% else 0	Leuz et al. (2003)
Profitability	$\frac{\text{Net income after taxes}}{\text{Total Assets}}$	Karacaer et al. (2016), Nassar (2016), and Uzliawati et al. (2018)
Investment Opportunity	$\frac{\text{Market value}}{\text{Total Assets}}$	Karacaer et al. (2016), Nassar (2016), and Uzliawati et al. (2018)
Firm Size	Log(Total Assets)	Karacaer et al. (2016), and Pontoh (2017)
Low capital structure	Dummy = when $\frac{\text{Total Equity}}{\text{Total Liabilities}} < 10\%$ else = 0	Francis et al. (2004), and Cheng, & Warfield (2005)
Revenue	Revenue	Rasmussen (2012), and Noh et al. (2017)
Liabilities	Total Liabilities	Nasser (2016), and Pontoh, (2017)

Source: Authors (2018).

In this sense, the value of 1%, 3% and 5% of return on assets (ROA) stipulated as a discretionary limit. For this, 3 logistic regressions were calculated. Thus, companies with a result within discretionary limit obtained weight 1 and 0 otherwise.

3.3 Regression models

Was estimated a in this paper a logistic regression model with panel data. The choice to estimate this model is because of the opportunity to combine cross-section data with temporal series data, a gap pointed out in previous studies (Nassar, 2016; Pontoh, 2017).

The regression models analyzed in this study is as follows:

$$log\left(\frac{1}{1-EM4_{it}}\right) \qquad (1)$$

$$Em4_{it} = -\delta+\varphi_1 Profitability_{it}+\varphi_2 Investment_{it}+\varphi_3 Size_{it}+ e^{\varphi_4 lCStructure_{it}+\varphi_5 Revenue_{it}+\varphi_6 Liabilities_{it}+\varepsilon_{it}} \qquad (1.1)$$

The likelihood test of rho was performed to select the population average or random-effects model (Twisk, 2013). The fixed-effect model wasn't used because many companies don't present variations in the dependent variable and this implies an additional difficulty measure the fixed effects models in logistic regression.

4 Results and Discussion

4.1 Descriptive statistics

Table 3 presents the descriptive statistics for independent variables defined as profitability, investment, opportunities, firm size, revenue, and debt ratio.

Table 2. Descriptive statistics

Variables	Men	Std. Dev.	Min.	Max.
Profitability	-0.39584	13.15468	-510.3716	226.3104
Investment Opportunities	3.17116	37.2203	0.0001109	1444.611
Firm Size	8.49778	1.311808	3.219921	11.54344
Revenue	4.34e+09	2.04e+10	-1.51e08	3.94e+11
Total Liabilities	4.04e+09	1.59e+10	-8.37e+07	1.82e+11

Source: Research data (2018).

Table 3 shows the mean value of profitability for firms is negative (US -0.39), which indicates these firms of energy sector had by mean negative performance. Moreover, when compared the capital structure mean (internal and external resources), results indicate these firms had mean total liabilities higher than investments opportunities. These findings show the managers' preference for external resources, because they work with a high debt.

Table 4 presents the estimated regressions odds ratios results.

Table 4. Odds ratio for discretionary limit with ROA between ±1%, ±3% and ±5

Variables	Odds Ratio EM4±1%	Odds Ratio EM4±3%	Odds Ratio EM4±5%	VIF
Profitability	11.525 *	33.352*	18.754*	1.16
Investment Opportunities	0.419*	0.435*	0.500*	1.17
Firm Size	1.030	1.342*	1.461*	1.40
Low Capital Structure	0.188*	0.353*	0.305*	1.11
Revenue	1.000**	1.000*	1.000*	3.87
Total Liabilities	1.000*	1.000*	1.000*	4.17
Time effect	:	1.104	1.036	1.01
Constant	0.114**	0.027*	0.035*	:
Lnsig2u•	-0.923	0.310	-0.355	:
Sigma_u•	0.630	1.168	0.982	:
Rho•	0.108	0.293	0.226	:
Likelihood test of rho•	1.47	46.86*	37.24*	:
Logistic Regression Model	Population Average	Random Effects	Random Effects	:

Source: Research data (2018).
Note: * p-value<0.01, **p-value<0.05, • data concerning the random intercept model test

The choice of the regression model effect was performed according to Likelihood test of rho. As there aren't statistical differences significant in the EM4 ± 1% model, was chose to present the coefficients of the model performed with the population average, thus, the time effect isn't taken into account. For the discretionary limits of the metrics EM4 ± 3% and EM4 ± 5%, was necessary present an intercept with random effects, since they presented statistically significant differences. Moreover, even though the time-effects aren't statistically significant in both models the slope is important, as it raises the maximum likelihood compared to models that disregard this. The inflation factor of the variance showed that there isn't multicollinearity the values obtained is between 1 and 10.

4.2 Profitability

Profitability was statistically significant at p value > 1%. For the discretionary limit model equal to 1% of the return on asset (ROA), the odds ratio demonstrates that increase of one unit in profitability increases 11.5 times the chances of companies occurring within that limit. And as evidenced by the odds ratio of models with discretionary limits of 3% and 5%, the odds are moving in the same direction, that is, they increase by 33.3 times and 18.7 times respectively. Based on these results the hypothesis of H_1 for this research is not rejected.

The theoretical implication of this result suggests that the higher the expectation of profitability the more likely the managers to manipulate their financial reports in order to leave the company within the discretionary limit.

These findings about the positive influence of the profitability, are different that verified by Karacaer et al. (2016), and Nasser (2016). Findings particularly about profitability influences' on leverage it by Karacaer et al. (2016) present negative effect. Negative effect also was verified by Nasser (2016) about profitability influences' on debit ratio.

4.3 Investment opportunity

The investment opportunities obtained p value > 1% in the three models analyzed. The results show that the greater the investment opportunity, the lower the chances of companies falling within the discretionary limits. The odds ratios show that (1-0.42) 58% lower for the limit equal at 1%, (1-0.43) 57% lower for the limit equal at 3% and (1-0.5) 50% lower for the limit equal at 5%. It means that the hypothesis of H_2 for this study is not rejected.

These results suggest that firms with good investment opportunities are more likely not to fall within such discretionary limits. However, it is emphasized that they will not necessarily earn profits, as these companies can remain with losses lower than the established lower limit increasing the volatility and risk involved.

Besides that, these evidences about the positive effect on investment opportunities are different that verified by Pontoh (2017). Similar to the one proposed in this inference (focus on internal resources) Pontoh (2017) estimated as a choice for source of funding the influence' of stock prices on debt ratio, and on firms with lower debt the influence was positive, but on firms with higher debt the influence was negative.

4.4 Firm Size

The size of the company wasn't determinant the chances of companies occurring within the discretionary limit equal to 1%. However, for the limits of 3% and 5% presented p value less than 1%. The results show that the higher the company's chances of being within the discretionary limit of 3%, chances equal to 1,342 times. And for the discretionary limit of 5% is even greater, of 1461 times.

It means that for the limits of 3% and 5% the hypothesis of H_3 for this study is not rejected, but in this case for the limit of 1% the hypothesis of H_3 is rejected. These results suggest that firm size can only determine an upper limit than that pointed out by Leuz et al. (2003).

The same firm size positive effect was verified by Karacaer et al. (2016), and Pontoh (2017). Karacaer et al. (2016) found positive firm size influence' on leverageit. Pontoh (2017) also found positive firm size influence' on debt ratio, but only in firms with higher debt. On firms with lower debt Pontoh (2017) verified that size influence' on debt ratio was negative.

4.5 Capital structure

The low capital structure showed p value less than 1% in all analyzed models. Moreover, the results show that if companies have a capital structure of less than 10% relative to third-party capital, the chances of being within the discretionary limit of 1% are (1-0,188) 81% lower than companies with more concentrated structures. Likewise for the discretionary limits of 3% and 5%, however, the odds are (1-0.35) 65% and (1-0.31) 69% respectively. Based on these findings the hypothesis of H_4 for this study is not rejected.

These results demonstrate that the dispersed capital structure determines that firms are more aggressive about their returns. However, this fact can be good when the company tends to have positive and bad returns when negative as volatility can increase more than 5%.

We results are in harmony with the results of Givoly et al. (2010) because the low capital structure reflects in the quality of the financial report in order to avoid the discretionary limit. And, if the high concentration of capital encourages earnings management, as pointed out by Cheng, and Warfield (2005), on the other hand, our results demonstrate that the low capital structure reduces the chances of managers having incentives to manipulate the financial reports in order to avoid small losses, considering as small the maximum limit of 5% of the return on asset (ROA).

4.6 Revenue

Revenue was also shown to be less than 1% in all three models analyzed. However, the odds ratio showed that the increase in revenue doesn’t alter the chances of companies occurring within discretionary limits. These results point that the hypothesis of H_5 for this study is rejected.

Thus, this finding point out those companies in this sector doesn't use the mechanisms inherent in recognizing revenues to avoid small losses. What makes sense, because in this sector discretion is more limited compared to the other sectors, in this way, the findings of Rasmussen (2012) strengthen these results by highlighting these possible differences.

4.7 Liabilities

It should also be noted that total corporate liabilities, as well as revenues, were below 1%. In the same sense, the variation in liabilities doesn’t increase the chances of companies being at the discretionary limit. Based on these results the hypothesis of H_6 for this study is rejected.

Thus, total liabilities of companies don't influence managers' chances of avoiding small losses; this result suggests that the cost policy, even if associated with information asymmetry, according to Nasser (2016), isn't relevant for companies in the sector energy remain within the discretionary limits studied.

5 Conclusion

In this study were estimated logistic regressions with sample of 706 energy sector firms from 37 countries around the world, with financial data from the period 2015 to 2017, making the total of 2.118 observations. The objective was analyzing the chances of occurring companies in question within the discretionary limit in relation to their capital structure. The analysis results shows profitability, investment opportunities, firm size, capital structure are variables that affect to the chances of companies occurring within the discretionary limit. On other side, the revenue and liabilities don’t affect the chances.

In this way, the presented variables influenced in different ways the managers' chances of manipulating their financial reports in order to avoid small losses. The company's profitability and firm size have been shown to have increased odds and investment opportunities and low capital structure have lowered the odds. Furthermore, even with a strict level of significance, revenues and responsibilities don’t affect the companies' chances of being within the discretionary limits studied.

In addition, the implication of these findings indicates that capital structure and corporate performance may be affected by earnings management. Thus, the findings corroborate the literature discussed about managers' focus on the economic and financial performance of companies. Although the conclusions of this study are not generalizable, but limited to the sample, we hope it can be the reference for future studies on capital structure and earnings management.

The contribution of this study was to show that the discretionary limit can be greater than 1% of the return on the asset (ROA). With this, we suggest that for some sectors the discretionary limit may be different from the energy sector. Thus, the importance of analyzing the discretionary limit within the energy sector is fulfilled by the attention of the regulatory agents of each country, as well as the relevance of this sector to the others.

The discretionary limits larger than initially established by Leuz et al. (2003) have been shown to be consistent with the capital structure. Given the results, we suggest for future studies to seek evidence in other sectors, as well as if other discretionary limits are plausible to be determined by the capital structure and other characteristics of the companies.

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