Research and Analysis of the Acceptance of a Junior Company in the Brazilian City of Cataguases using the ANOVA Tool

Roberta Simões Vargas[1], Douglas Barbosa[2], Patrícia Werneck Silva de Oliveira[3]
[1]*Student of Industrial Engineering, Faculdades Integradas de Cataguases - FIC/UNIS*
[2]*Specialist in Strategic Business Management, Faculdades Integradas de Cataguases - FIC/UNIS*
[3]*Expert in Sociology, Universidade Federal de Juiz de Fora - UFJF*
Cataguases/MG, Brazil

Abstract

This study aims to identify the level of acceptance of the FIC Junior Company and what services it offers are relevant to the industries and service providers of the Brazilian city of Cataguases and region. For this purpose, a questionnaire was developed to carry out the market research that, after being validated through Cronbach's alpha coefficient, was sent to companies. After data collection, they were correlated using ANOVA variance analysis. The results showed that for all industries, junior consulting is relevant and most of them are contrary to services. In the service companies, a high rate of contracting of junior consultants could occur, based on the level of knowledge of the consulting services in general. Among the services offered by FIC Júnior, the most relevant is Customer Satisfaction Survey and Analysis. The services considered relevant by these companies, but which do not have FIC Junior's portfolio, were: Finance, Quality and Marketing.

Keywords - *Junior company, ANOVA, Quiz.*

I. INTRODUCTION

According to [1] [2], the competitiveness between companies leads to the need for them to develop research for the elaboration of new products or services. On the other hand, the university being a research development space, with available laboratories and equipment, researchers of several areas of knowledge and experienced technical staff, needs the field to develop their experiences.

Like this, junior companies have emerged as an alternative for organizations that seek quality products and services at a reduced price, providing a living with the job market and a closer business vision for the participating students, and also providing recognition to universities. Therefore, the study is relevant, since it presents the perception of organizations about the consulting services provided by a Junior Company.

Therefore, the general objective of this study is to identify the level of acceptance of the FIC Junior Company and the services offered by it are relevant to the companies of the Brazilian city of Cataguases - MG, which operate in the industry and services and who are affiliated to the Commercial and Industrial Association of Cataguases and to the Chamber of Departmental Managers of Cataguases.

The specific objectives of the research are: to prepare a questionnaire for conducting market research, to conduct a pre-test with companies from different segments of the region and to validate the questionnaire using the Cronbach coefficient. After validation, the questionnaire was applied as a post-test only in the companies studied and ANOVA was used to show the correlation between the pillars "knowledge, relevance, contracting and frequency of consulting services" presented in the quiz.

II. LITERATURE REVISION

A. Junior Company (EJ)

According to the National Concept of Junior Enterprise, CNEJ [3], the junior companies are formed by university students enrolled in undergraduate courses of higher education, constituted in a civil association with the objective of executing projects and services, contributing to the progress of the country and training qualified professionals.

According to the author, the emergence of junior companies originated in France in 1997 through the students of *L'École Supérieure des Sciences Economiques et Commerciales* (ESSEC) and the idea was born with the purpose of adding the academic formation through the practice. In that way came the Junior Enterprise that provided a business reality before the conclusion of the courses.

A. The importance of the activity Junior Company

According to CNEJ [3], students gain entrepreneurial knowledge, gain market insight, conduct business with experienced professionals facing stimuli in the course of projects and learn to think differently.

The participation of the students in the activities proposed by the JE students during the undergraduate course is stimulating because it complements the teaching of the classrooms and helps the students to

be included in the job market, increasing their technical and professional knowledge [4] [5].

"In addition to developing a serious approach to customer issues, EJ still provides academics with the development of accountability, negotiation skills, and teamwork" [5] [6].

According to information from the Junior Association for Development Opportunity in Europe [7], the Junior Company is an expanding prodigy in the world and in Brazil with the appointment of Movimento Empresas Juniores (MEJ). Currently formed by 17 federations, representing 16 states and the Federal District, Brasil Júnior is the national body of the Junior Business Movement and has more than 11 thousand associated junior businessmen totaling 311 EJ's with 18 state federations, according to the MEJ, cited by [8].

III. METHODOLOGY

The present study ranks for objectives as a descriptive exploratory research. The descriptive research, according to [9], records and describes the observed facts, reporting the particularities of some population and determining relationships between variables. The survey of information explores the medium in order to raise data for the greater knowledge of a certain subject. Reference [10] states that the exploratory research is elaborated with the objective of allowing a broader view and is used when the subject adopted is little studied.

Regarding the procedures, this research is characterized as bibliographical and was carried out from February to October/2018, having as main sources of research: digital books, magazines, articles and electronic annals of federal universities.

The approach is quantitative, and the documentation technique was direct and extensive. According to [11] quantitative research uses mathematical language to reproduce the motifs of an event and the correlation between variables.

A. Data collect

To obtain meaningful information about the market where the research is applied, it is essential to carry out a market research, according to [12]. Therefore, for this study, a primary data collection was used, and the research instrument used was a questionnaire.

The collection was carried out between June and September/2018, in the Brazilian city of Cataguases-MG. The population of this study is made up of 61 companies, 52 of which are from the services sector and 9 from the industry sector in the region, which are currently affiliated with two representative entities, the Cataguases Commercial and Industrial Association and the Cataguases Chamber of Warehouse Managers.

1) ***Quiz:*** According to [13], the preparation of a quiz requires the observance of precise rules, in order to increase its effectiveness and validity. In your organization, you should consider the types, order, groups of questions and their formulation.

The objective of the quiz is to identify and analyze the level of acceptance of a Junior Company in the city of Cataguases, and to present the most relevant and favorable service segments for companies in the region.

The quiz formulation consists of nine closed and one open questions, the first three classified as socioeconomic and the remainder aimed at identifying the profile of companies and services that could be offered by FIC Júnior Consultoria (FIC Junior Company in Cataguases).

After the questionnaire was drawn up, a pre-test was carried out between 06/25/18 and 07/07/18, and between 07/12/18 and 07/24/18 in some companies from different segments of the the purpose of obtaining data for the validation of the questionnaire. The pre-test was sent via the Google Forms platform, a widely used online form creation tool for market research and information gathering, and the application resulted in 61 responses.

According to [10], the pre-test points out possible faults and should be applied between ten and twenty elements that are part of the total population surveyed. Therefore, this testing phase helps increase search quality and avoids rework.

From the validation of the questionnaire detailed in item B1, in Methodology, the post-test was carried out through telephone and Google Forms contacts with the Cataguases and region companies analyzed in this study, from September 17 to 24, 2018.

B. Statistical procedures

1) ***Validation of the quiz***: "A properly constructed questionnaire should take into account two very important aspects: its validity and reliability" [14]. Two methods were used to verify the validity of the questionnaire: the binary tree for conversion of the answers and the Cronbach's alpha coefficient for the correlation of the same. According to [15] [16], the alpha coefficient is certainly one of the most important and widespread statistical tools in research involving the construction of tests and their application.

Presented by Lee J. Cronbach in 1951, Cronbach's α coefficient (as it is scientifically known) is one of the reliability estimates of a questionnaire that has been applied in a survey. Since all items in a questionnaire use the same measurement scale, the coefficient α, with $\alpha \in [0,1]$, is calculated from the variance of the individual items and the covariance between the items [17].

References [14] [18] states that the minimum acceptable value for alpha is 0.70; below this value the internal consistency of the scale used is considered low. In contrast, the expected maximum value is 0.90; above this value, it can be considered that there is redundancy or duplication, that is, several items are measuring exactly the same element of a

construct; therefore, redundant items must be eliminated.

*2) **Analysis of variance – ANOVA:*** "The analysis of variance analyzes the variations within the sample (random variations) and the variations between samples (variations explained)" [19]. "It is a procedure used to compare three or more treatments. There are many variations of ANOVA due to the different types of experiments that can be performed" [20].

According to the author, a treatment is an imposed condition or object that one wishes to measure or evaluate in an experiment, and usually in one experiment more than one treatment is used. In this study, the analysis of variance with one factor will be approached, and the treatments (pillars) analyzed are: knowledge, relevance, contracting and frequency of hiring consulting services.

For this, two hypotheses were created (H0 and H1) to compare the combinations between the abutments. According to [19] the null hypothesis (H0) is the one that will be tested, on which evidence must be obtained to reject it. It is the value currently accepted until there is evidence that this value is the most correct. The alternative hypothesis (H1) is the one that will be in place of H0 and evidence must be obtained to accept it. It will only be accepted if there is evidence that the value of the null hypothesis will no longer be accepted.

The calculation to test the hypotheses was performed in Minitab with emphasis on the F (Fisher-Snedecor) statistic, which according to [19] is used to test the joint effect of the explanatory variables on the dependent.

Reference [21] states that the analysis of variance has as one of the main objectives to obtain statistics F. Reference [22] states that the F statistic is used to test the hypothesis that all coefficients of the model are null. To do so, it is compared to a tabulated value (Fc). If the obtained statistic (F) is larger than the table (Fc), the null hypothesis H0 is rejected. If not, H0 is accepted.

So, [22] presents the analysis of ANOVA comparing F and Fc to identify the most significant factor between temperature, velocity and thickness of pies in the tray, and the results showed that the most significant was the thickness, followed by temperature and speed. According to [21], most of the applications of Fisher's statistics were in the areas of agriculture and biology, however, currently this technique is applied in all areas of knowledge that work with random experiment. Thus, the author also applies the tool to study the variables: length, percentage and resistance of the cotton fiber.

In his research [23], aims to evaluate the effectiveness of different strategies pertinent to the marketing circumspection for non-impulsive and impulsive consumer buying behavior. A total of 137 people participated in this study, in which they received a questionnaire containing the Buying Impulsiveness scale of Rook and Fisher (1995). The regression analysis presented three strategies that are more pertinent to impulsivity: to look for products of well-known brands, to look for offers with good discounts and certainty in receiving the item. The article collaborates for e-commerce and researchers, offering the tactics that from the point of view of the consumer, are accepted as effective to consumption.

Reference [24] in his article on intelligent cities in the Brazilian northeast, conducted in the cities of Maranguape, Barbalha and Mauriti, located in the state of Ceará, applied 575 questionnaires to the inhabitants of these cities. ANOVA was made with the five acquired factors of the analysis of the evolutionary extensions as a function of the levels of proximity, being these: dimensions related to the social group; dimensions related to the neighborhood; dimensions related to the city; dimension on the environment; mobility and information and communication technology. The results showed that to have intelligent cities, it is essential to highlight the social, cultural and economic contexts of cities in an integral and individual way.

Given the importance of this tool for this type of study with randomized experiments, ANOVA and F statistic were used through Minitab software to show the correlation between the knowledge, relevance, contracting and frequency pillars of the consulting services obtained through of the questionnaire.

IV. RESULTS AND DISCUSSION

The results were divided in 4 steps, being: model of conversion of the answers to binary values to obtain the alpha coefficient of Cronbach; calculation of Cronbach's alpha coefficient for validation of the questionnaire; presentation of the results of the socioeconomic profile of the companies studied;

Question	Value 0	Value 1
1	Operational	Management
4	No	Yes
6	No	Yes
7	Do not hire	Other options
8	Workplace safety	Operational Research and Survey and Satisfaction Analysis

Table 1: Binary conversion values

ANOVA and F statistic for the correlation of the data and test of the hypotheses.

The result of the Cronbach alpha coefficient was 0.7067, obtained through the statistical software Minitab 17. For the calculation of the alpha coefficient only questions 1, 4, 6, 7 and 8. The responses were converted into a binary response model, that is, they assumed only two values, being 0 and 1. Thus, the classification of responses was done as shown in table 1.

The study reached 100% of the companies, thus, a total of 61 answers were obtained. Table 2 shows the amount and percentage of the answers obtained to identify the socioeconomic profile of the companies.

From Table 2 it can be seen that the majority of respondents from both sectors occupy managerial positions, and that most of the companies evaluated invoice more than 300 thousand reais per year. In relation to the number of employees, 33.3% of the industries have more than 20 employees, while among the companies in the service sector, only 13.4%. However, most companies in the service sector have 5 to 10 employees, which corresponds to 32.7%.

Through the collected data referring to questions 4 to 7, which is the knowledge and frequency of contracting the consulting services in general and the relevance and contracting of the services of the FIC Júnior, the correlations between them were analyzed using ANOVA 1-factor. For this, the combinations to be analyzed from two to two, and the hypotheses H0 and H1 were created, as shown in table 3.

SOCIOECONOMIC PROFILE	**SERVICE SECTOR**		**INDUSTRY SECTOR**	
Employee	**Amount**	**%**	**Amount**	**%**
2 a 5	12	23,1	2	22,2
5 a 10	17	32,7	2	22,2
10 a 15	13	25,0	0	0
15 a 20	3	5,8	2	22,2
Acima de 20	7	13,4	3	33,3
Job Role	**Amount**	**%**	**Amount**	**%**
Gerencial	33	63,5	9	100
Operacional	19	36,5	0	0
Billing	**Amount**	**%**	**Amount**	**%**
5 to 30 thousand reais	2	3,8	0	0
30 to 50 thousand reais	2	3,8	0	0
50 to 100 thousand reais	5	9,6	1	11,1
100 to 300 thousand reais	19	36,5	1	11,1
Above 300 thousand reais	24	46,2	7	77,8

Table 2: Company profile

COMBINATIONS	HYPOTHESES	
Rated Pillars	**H0**	**H1**
1- Knowledge of consulting services X Relevance of EJ services	Do you find EJ's services relevant to the level of expertise of the consulting services in general	Do not find EJ services relevant to the level of expertise of the general consulting services
2- Knowledge of consulting services X Contracting of EJ	Contract EJ considering the level of knowledge of the consulting services in general	Would not hire the EJ considering the level of knowledge of the consulting services in general
3- Knowledge of consulting services X Frequency of consulting contracts	Frequently contract with a level of knowledge of the consulting services	Would not hire often even with a level of knowledge of the consulting services
4- Relevance of EJ services X Contracting of EJ	Contract EJ considering the relevance of services provided by EJ	Would not contract the EJ considering the relevance of the services provided by the EJ
5- Relevance of services EJ X Frequency of contracting of consultancies	The EJ's services are relevant because of the frequency of consulting services	Does not find the services of EJ relevant due to the frequency of hiring of consultants
6- Contracting the EJ X Frequency of contracting of consultancies	It will hire EJ considering the level of frequency of hiring consultancies	Would not hire EJ considering the level of frequency of hiring consultancies

Table 3 – Combinations and Hypotheses for Correlation

The companies were separated according to the annual billing for a better development of the text, being classified in companies X those that invoice up to 300 thousand reais, and companies that invoice above 300 thousand reais. Thus, we compared the F and Fc values, where the null hypothesis (H0) is affirmed when F <Fc, confirming the correlation of the data.

Analyzing the companies of the industry sector, it is possible to realize that all the values of F are smaller than the values of Fc, as shown in table 4.

So, it can be affirmed that there is a correlation between the pillars, and that for all companies in the industry sector the null hypothesis was accepted, that is, the industries are the ones that most seek, interest and contract some type of consulting service.

Table 5 shows the ANOVA results for the service sector.

Pillars evaluated	Value F Industry X	Value Fc Industry X	Value F Industry Y	Value Fc Industry Y
1 - Knowledge of consulting services X Relevance of EJ services	0,5	7,7	0	4,96
2 - Knowledge of consulting services X Contracting of EJ	0,5	7,7	0	4,96
3 - Knowledge of consulting services X Frequency of consulting contracts	0	7,7	0,38	4,96
4 - Relevance of EJ services X Contracting of EJ	0	7,7	0	4,96
5 - Relevance of services EJ X Frequency of contracting of consultancies	0,5	7,7	0,38	4,96
6 - Contracting the EJ X Frequency of contracting of consultancies	0,5	7,7	0,38	4,96

Table 4: ANOVA results for the industrial sector

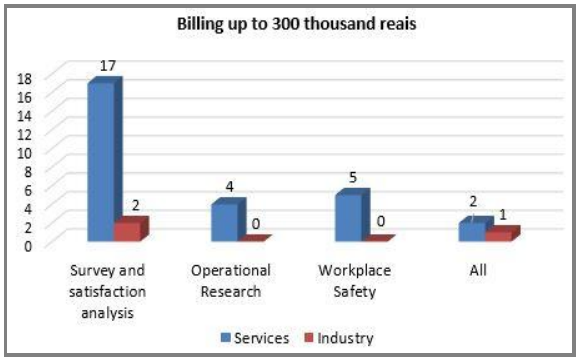
Pillars evaluated	Value F Industry X	Value Fc Industry X	Value F Industry Y	Value Fc Industry Y
1 - Knowledge of consulting services X Relevance of EJ services	4,3	4,01	7,46	4,05
2 - Knowledge of consulting services X Contracting of EJ	0,29	4,01	0	4,05
3 - Knowledge of consulting services X Frequency of consulting contracts	21,69	4,01	7,54	4,05
4 - Relevance of EJ services X Contracting of EJ	2,28	4,01	7,46	4,05
5 - Relevance of services EJ X Frequency of contracting of consultancies	71,29	4,01	41,46	4,05
6 - Contracting the EJ X Frequency of contracting of consultancies	29,79	4,01	7,54	4,05

Table 5: ANOVA results for the services sector

The results showed from table 5 that for companies in the service sector, only pillar 2 was accepted for companies X and Y, and pillar 4 for companies X.

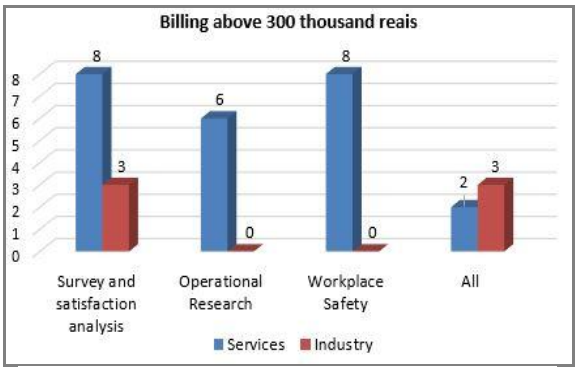
It can be said then that there is no correlation between the other pillars, indicating that the relevance, hiring and frequency of hiring depends on knowing the consulting services offered. In view of this, it is important to emphasize the importance of approaching the institution with Cataguases companies to identify and meet their needs, presenting the opportunities and advantages of a Junior Company.

The survey also showed which services offered by the Junior Company are most relevant to the companies studied. Graph 1 shows the results of companies with revenues up to 300 thousand reais.



Graph 1:EJ's most relevant services for companies X

The Survey and Analysis of Customer Satisfaction is the area considered most relevant for companies in the service sector, accounting for 67.86%, and for industries, 100%. As for the most relevant services for companies with revenues above 300 thousand reais, the result is shown in graph 2.

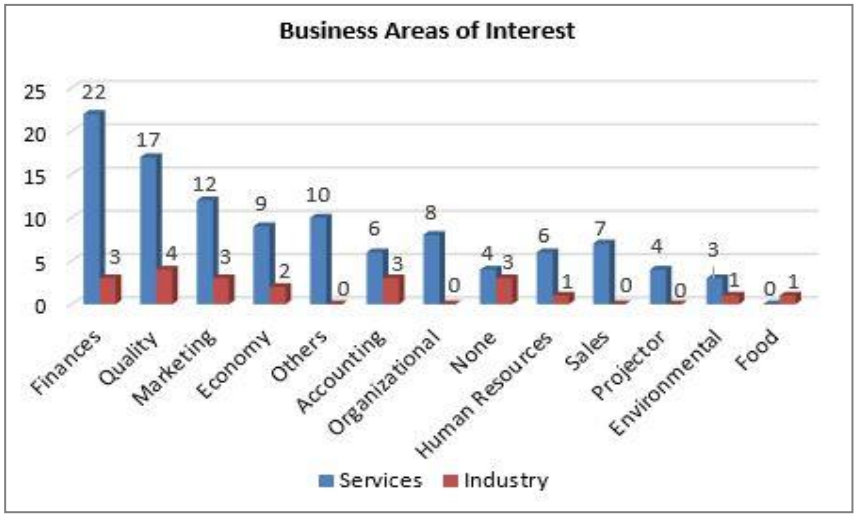


Graph 2: EJ's most relevant services to companies Y

Most of the companies in the service sector shown in figure 2 find the Research and Analysis of Customer Satisfaction and Occupational Safety more relevant, corresponding to 41.67% for each area, and 33.33% opt for Operational Research. For industries, the Customer Satisfaction Survey and Analysis is relevant for 100% of them.

In view of the data presented in graphs 1 and 2, it was found that for all industries and for most service providers, knowing the opinion of customers is fundamental, as maintaining their satisfaction is a constant challenge for companies, and with the facilities provided by the technological advance the public has more and more options, becoming more attentive and more demanding.

In addition to the study carried out on the areas offered by FIC Júnior, it was also sought to identify other areas that are not included in the portfolio, but which are of interest to these companies. Graph 3 shows the results obtained.



Graph 3: Business Areas of Interest

The results presented in graph 3 showed that the three most important consulting areas for companies are: Finance, Quality and Marketing, corresponding to 20.37%, 15.74% and 11.11%, respectively, services. In industries, these figures correspond to 19.05% for the Quality area and 14.29% for the Finance and Marketing area.

The analyzes presented the importance of the areas of Finance, Quality and Marketing for the companies studied. In a highly competitive market, properly controlling the finances of the company, offering quality products and services, and performing a good marketing work is paramount for the survival of companies and has a direct impact on customer opinion, since these areas contribute to leverage growth of companies and to attract customers through products and processes that exceed their expectations.

V. CONCLUSION

This study aimed to identify the level of acceptance of a junior consulting company in the Brazilian city of Cataguases - MG through a questionnaire. The validation was performed from a pre-test to identify possible faults using the Cronbach's alpha coefficient. After that, the questionnaire was validated and sent through Google Forms to the companies of the industry sectors and services affiliated to the Commercial and Industrial Association of Cataguases and the Chamber of Warehouse Managers of Cataguases.

Then, the data obtained were correlated through analysis of variance 1-factor ANOVA, and the results showed that for all industries, junior consulting is relevant and largely opposite, according to the level of knowledge of the consulting services in the general. In companies providing services, a high rate of hiring junior consultants could occur if they knew about the services offered by consulting firms in general. But, of these, only companies with revenues above 300 thousand reais would hire a Junior Company considering the relevance of the services provided by it.

It was concluded from this that the services provided by FIC Júnior Consultoria are important for the companies studied, and the Customer Satisfaction Survey and Analysis area is the most relevant for the two sectors analyzed, followed by Work Safety and Operational Research . Other relevant areas that the study identified but did not have in the FIC Junior portfolio were the Finance areas with 20.37% of respondents, Quality with 15.74%, and Marketing with 11.11%.

However, there is a need for more widespread disclosure in the city of Cataguases about FIC Júnior Consultoria, as many companies do not know about general consulting services offered in the region. Through this disclosure FIC Júnior has the opportunity to stand out in the market, and with its growth, the teaching institution linked to it, the client and the community also grows.

REFERENCES

[1] CUNHA, N. C. V. Mecanismos de interação universidade-empresa e seus agentes: o getekeeper e o agente universitário. REAd – Revista Eletrônica de Administração . Porto Alegre, Ed. 09, Vol. 5, nº1, p. 01-23, 1999.

[2] SANTOS, Robson Arruda dos. Desenvolvimento de competências profissionais em alunos de engenharia: estudo de Empresa Júnior como ferramenta de integração teoria-prática. Revista Lugares de Educação, v. 2, n. 1, p. 3-13, 2012

[3] BRASIL JÚNIOR. Conceito Nacional de Empresa Júnior - CNEJ. Confederação Brasileira de Empresas Juniores, 2015

[4] Sangaletti, C. et al. Introdução ao Movimento Empresa Junior. In: NETO, Luíz Moretto. et. al. Empresa Junior: espaço de aprendizagem. Florianópolis: Ed. Pallotti, 2004.

[5] BERVANGER, E. et al. Publicações científicas brasileiras sobre empresas juniores na área de administração: um estudo bibliométrico. Revista de Gestão 23, REGE. Rio Grande do Sul, p. 197-210, 2016

[6] Oliveira, J.G.G. Uma idéia genial. F. Matos (Ed.), A Empresa júnior no Brasil e no Mundo: o conceito, o funcionamento, a história e as tendências do movimento Empresa Junior., Martin Claret, São Paulo (1997), pp. 9-11

[7] Junior Association for Development opment in Europe, JADE, 2016. Europa. Available in: http://www.jadenet.org/ Accessed in: 02.23.2018
[8] BRASIL JÚNIOR. Conhecendo o MEJ – Livro I. Confederação Brasileira de Empresas Juniores, 2015
[9] PRODANOV, Cleber Cristiano; FREITAS, Ernani Cesar de. Metodologia do Trabalho Científico: Métodos e Técnicas da Pesquisa e do Trabalho Acadêmico. 2ª ed., Novo Hamburgo: Feevale, 2013
[10] GIL, Antônio Carlos. Métodos e Técnicas de Pesquisa Social. 6ª ed., São Paulo: Atlas, 2008
[11] FONSECA, J. J. S. Metodologia da pesquisa científica. 1ª ed., Fortaleza: UEC, 2002
[12] Serviço de Apoio às Micro e Pequenas Empresas, SEBRAE. Como elaborar uma pesquisa de mercado. Edição 2013. Available in: <http://www.sebrae.com.br/Sebrae/Portal%20Sebrae/UFs/MG/Sebrae%20de%20A%20a%20Z/Como+Elaborar+uum+Pesquisa+de+Mercado.pdf> Accessed in: 08.11.18
[13] MARCONI, Marina de Andrade; LAKATOS, Eva Maria. Fundamentos de metodologia científica. 5ª ed., São Paulo: Atlas, 2003
[14] ALMEIDA, Diogo et al. Aplicação do coeficiente alfa de Cronbach nos resultados de um questionário para avaliação de desempenho da saúde pública. XXX ENEGEP - Encontro Nacional De Engenharia De Produção. São Carlos, SP, 2010
[15] CORTINA, J. M. What is coefficient alpha? An examination of theory and applications. Journal of Applied Psychology. v. 78, p. 98-104. 1993.
[16] JUNIOR, Júlio César Urdangarin Batista. Alinhamento estratégico de TIC: avaliação da percepção dos gestores públicos e gestores de TIC na prefeitura da cidade do Rio de Janeiro. Dissertação de Mestrado, Fundação Getúlio Vargas, Rio de Janeiro, RJ, 2016. Available in: <http://bibliotecadigital.fgv.br/dspace/handle/10438/17718> Accessed in: 09.04.18
[17] FREITAS, André Luís Policani; RODRIGUES, Sidilene Gonçalves. A avaliação da confiabilidade de questionários: uma análise utilizando o coeficiente alfa de Cronbach. XII SIMPEP - Simpósio de Engenharia de Produção. Bauru, SP, p. 2, 2005
[18] STREINER, D. L. Being inconsistent about consistency: when coefficient alpha does and doesn´t matter. Journal of Personality Assessment. v. 80, p. 217-222. 2003.
[19] PESSOA, Francisco Hélio Caitano. Avaliações funcional e estrutural de trechos de rodovias no Distrito Federal construídos com diferentes materiais. Tese de Doutorado, Universidade de Brasília, Brasília, DF, 2012. Available in: <http://repositorio.unb.br/handle/10482/12272> Accessed in: 10.20.18
[20] ANJOS, A. dos. CE003 Estatística II - Notas de Aula. Departamento de estatística UFPR, Cap. 7. Curitiba, PR, 2009. Available in: <http://www.est.ufpr.br/ce003/material/apostilace003.pdf> Accessed in: 10.20.18
[21] ALBU QUERQUE, Adrícia Mirelly Marques de Oliveira. Análise estatística de um experimento aninhado com uma aplicação em dados de algodão. 2016. Trabalho de Conclusão de Curso, Universidade Estadual da Paraíba, Paraíba, PB. Available in: <http://dspace.bc.uepb.edu.br/jspui/handle/123456789/10141> Accessed in: 10.25.18
[22] SILVA, Andréia Souto da. Avaliação da secagem do bagaço de cajá usando planejamento fatorial composto central. 2008. Dissertação de Mestrado, Universidade Federal do Rio Grande do Norte. Available in: <http://www.repositorio.ufrn.br:8080/jspui/bitstream/123456789/15745/1/AndreiaSS.pdf> Accessed in: 10.13.18
[23] DIAS, Suzi Elen Ferreira et al. Efeitos das estratégias de marketing de compras coletivas sobre o comportamento impulsivo. Revista Brasileira de Marketing – ReMark, v. 13, n. 3, 2014
[24] CÂMARA, Samuel Façanha et al. Cidades inteligentes no nordeste brasileiro: análise das dimensões de trajetória e a contribuição da população. Cadernos Gestão Pública e Cidadania, São Paulo, v. 21, n. 69, 2016. Available in: <http://bibliotecadigital.fgv.br/ojs/index.php/cgpc/article/view/57739/61867> Accessed in: 10.22.18