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FINANCIAL ANALYSIS OF A PUBLICLY CAPITAL COMPANY: A QUANTITATIVE CASE STUDY OF MAGAZINE LUIZA S.A.

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Abstract: The proposed work is a quantitative case study of the Brazilian company Magazine Luiza S.A, present in the retail sector for several years, and born in the interior of the State of São Paulo, and which is expanding to this day, under the command of a of the heiresses, Luiza Trajano. The study presents the following research problem "Which indicators are most significant in their influence on the Net Income of the company Magazine Luiza S.A.?" and, according to this question, tools were used for the statistical study and organization of data, such as Excel and SPSS, in addition to the proposed theory itself. The work is justified to complement studies on the subject, which are still scarce in academia, in addition to the evaluation of an important Brazilian company listed on the B3. The objective was to identify, among the indicators studied, which are the most relevant for the formation of the company's Net Income. The study concluded that there are two indicators relevant to the formation of Net Income, one from the family of traditional indicators, and the other from the Dynamic model, which indicates the importance of studying the two techniques, which complement each other when analyzing the financial performance of that company.

Keywords: Financial Analysis, Dynamic Model, Multiple Regression.

INTRODUCTION

Magazine Luiza S.A is an important retail company in Brazil, and today, it is led by Luiza Trajano, current heiress and president. The chain has a strong history of technological and financial growth, and is the result of the purchase of a gift shop by the couple Luiza Trajano and Pelegrino José Renato, in the interior of the State of São Paulo. Together, they decided on a different growth strategy in relation to other well-known retail companies: they chose to seek strengthening in the interior cities of the state, and not head directly to the capital.

Nowadays, it is one of the largest retail chains in Brazil, publicly traded since 2011, and still led by a member of the founding family (MAGAZINE LUIZA, 2021).

This work has an applied research nature, since its purpose was the application of techniques and knowledge previously addressed and validated in previous studies, more specifically, two analysis techniques for analyzing financial performance: Traditional and Dynamic.

Some aspects of each point were analyzed together with statistical procedures (SOARES, LYRA, et al., 2011), in order to provide a basis and reliability for the research carried out (AMBROZINI, BORGES MATIAS and PIMENTA JR., 2014).

Without this statistical care, the research would not be consistent in terms of its results and analyses. In line with nature, the objective of this work was to analyze statistically (SOARES, LYRA, et al., 2011) which accounts influence, in a decisively relevant way, the Net Income of the company Magazine Luiza, using methods of analysis of Traditional and Dynamic balance sheets (MODRO, FAMÁ and PETROKAS, 2012), integrating them to analyze the company more completely (KITZBERGER and PADOVEZE, 2004); (MARQUES and BRAGA, 1995).

The use of statistical tools to carry out this research characterized it as quantitative, in addition to being descriptive (NETO, DIAS and PINHEIRO, 2009) (MACEDO, SOUSA, et al., 2007) (SOARES, LYRA, et al., 2011) , (DUARTE and LAMOUNIER), (REZENDE, DUARTE, et al., 2010) (SILVA, LOPES, et al., 2016), relying on the search for evidence based on the sample of secondary data, that is, the financial statements of the company studied between 2010 and 2019, organized quarterly (March, June, September and December).

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A total of 34 (thirty-four) quarters were analyzed, considering that 2010 has only the fourth quarter and that, in 2019, only the first quarter was included in this study.

With this, we sought to verify not only the financial evolution of the company over time (KITZBERGER and PADOVEZE, 2004) and (GOMES, COELHO, et al.) (PAIXÃO, BRUNI, et al., 2008), but also to organize data in an appropriate way for the use of statistical tools.

Companies, depending on their segment, have a financial health standard that is appropriate to their reality (MARQUES and BRAGA, 1995; DUARTE and LAMOUNIER, 2007).

With Fleuriet's dynamic method, it is possible to analyze what stage of financial health the company is in and whether it is acceptable or not (SOUZA, NETO et al., 2017). Statistical methods collaborate to visualize the impact that indicators and accounts can influence on results (SOUZA, NETO et al., 2017) and, in the case of this work, the Multivariable Regression method was used.

With its use, it was possible to identify behaviors and interrelationships between the accounts studied (MAROSTICA, BORGERT, SOUZA and PETRI, 2016). By having as a database the financial history of a single company, this article followed the single case study procedure, precisely because it does not involve more than one organization in its data. In addition, all financial information was taken from previously published documents (SOARES, LYRA, et al., 2011) and, until then, immutable, which characterizes the use of secondary data.

The methodology, in a more succinct and objective way, relied on the use of the SPSS program, to carry out the multiple regression studies, having as the dependent variable (y) the Net Income for the Year, to then define, with the aid of this method, which indicators were relevant.

The methodology, together with the objective, contributed to the research answering the problem "Which financial indicators are more significant when analyzing their influence on the behavior of the Net Income of the company Magazine Luiza S.A. considering the period from 2010 to 2019, according to the Multiple Regression statistical method?"

Thus, this article is organized in introduction, literature review, methodology, analysis of results and final considerations.

LITERATURE REVIEW
TRADITIONAL MODEL

In the Traditional Model, for the purposes of this approach, some indicators extracted from the company's financial statements were used (MODRO, FAMÁ and PETROKAS, 2012).

Although widely known, both in academia and in the business world, the method still receives criticism - it opens precedents for the subjectivity of those who analyze it, and still needs validation and credibility of the indexes chosen to be the standards.

In addition, it assumes the liquidation of the entity already in the short term, and is not able to align factors such as the company's activities in progress with the renewal of income and equity accounts.

Criticism of the model also revolves around how its results contribute to a static analysis of the company. However, even if it is criticized, it remains a very useful method if the analyst responsible for its analysis does it correctly.

In general, the indicators used refer to capital structure, liquidity and profitability, which encompass financial and economic aspects of the company (MODRO, FAMÁ and PETROKAS, 2012).

Capital structure indicators demonstrate how the company composes its funding sources, that is, what proportion of equity and third-party capital the entity has to support its activities and investments, thus evidencing its indebtedness and its management (MAROSTICA, BORGERT and PETRI, 2016).

Liquidity indicators demonstrate whether the company is able to pay off its obligations in the event of termination of activities, and profitability indicators, how much the company's activities are able to return and actually yield.

FLEURIET MODEL OR DYNAMIC MODEL

This method of analysis requires a reorganization of the company's balance sheets, so that they adapt to its form of assembly, which will mainly aim at key elements for the short term.

Any asset or right that will be realized within 1 (one) year is classified as current assets. In turn, the obligations to be fulfilled within this same period are considered as current liabilities.

Accounts that do not fit these aspects, including equity accounts, are excluded and classified as non-current accounts, as they are realizable or long-term or permanent (MARQUES and BRAGA, 1995).

With this form of study, it is possible to assess the financial health of an organization in a more focused way in the short term, with emphasis, for example, on the lack or excess of working capital, among other points (VERAS MACHADO, MACHADO and CALLADO, 2006).

These two account groups considered for the analysis still have their respective divisions. All current assets with renewal arising from the company's normal operations, that is, from its work in the field, is recorded as |Operating Current Assets (ACO).

Thus, the asset that does not have this origin, that is, comes from other activities of the company without direct relation to the modality in which it operates, is called Financial or Erratic (ACF) (MARQUES and BRAGA, 1995).

In current liabilities, accounts that arise from the company's normal activities, according to their modality – purchase of raw materials, for example – are considered cyclical (PCC). Therefore, obligations arising from other sources, such as loans or even dividends payable, are Onerous (PCO) (MARQUES and BRAGA, 1995).

This reallocation of accounts and their respective divisions allow the calculation of 3 (three) indicators - Working Capital Need (NCG), Treasury Balance (ST) and Net Working Capital (CCL) - which classify financial health into six defined stages : Excellent, Solid, Unsatisfactory, Terrible, Very Bad and High Risk – (MARQUES and BRAGA, 1995), depending on the level of each one in relation to the other.

This form of analysis was born from the evolution of the world economic environment, which witnessed scenarios of strengthening the competitive market with increasing speed. Thus, a method of analysis like the traditional one, very broad and considered "static" no longer met the business needs, which faced a reality of raw material prices constantly changing and seasonally, inflation, among other aspects.

It was necessary to focus on short-term evaluations (MARQUES and BRAGA, 1995) However, even though the world continues to face unstable and turbulent circumstances, the dynamic method is often seen as complementary to the Traditional method (MARQUES and BRAGA, 1995).

METHODOLOGY

The execution of this research required a solid database to provide solidity in its results. With the organization of all the data, that is, the accounts by quarter, the calculations of the indicators were chosen and carried out, following the Traditional and also the Dynamic model.

Thus, the Traditional method had seven (7) indicators calculated – these are: Participation in Third-Party Capital, Fixed Assets and Fixed Assets of Non-Current Resources, all related to the company's capital structure; General Liquidity, Current Liquidity and Dry Liquidity, referring to the organization's liquidity status, and; Asset Turnover, an indicator referring to the financial return that the company offers.

Then, the indicators for the analysis were calculated following the Dynamic method. The 3 (three) considered in the classification of Marques and Braga (1995) for the financial health of the company were calculated. These are: Working Capital Need, Treasury Balance and Net Working Capital. Thus, 10 (ten) indicators were analyzed as independent variables, that is, that are not affected by other results, but that affect other components. Here in this work, they were addressed as X variables. Each calculated index has 34 (thirty-four) results, referring to the quarters covered, from 2010 (with the fourth quarter) to 2019 (with the first quarter). The other years have 4 (four) quarters each.

The independent variables were used for the analysis of 1 (one) dependent variable, which was the Net Income. Thus, it was studied which main indicators are the most relevant and with the greatest influence on the company's Net Income within this period studied.

After organizing data and calculating indicators, all done in Excel 2016, the database was used in SPSS for the appropriate statistical applications.

The model was tested until it was significantly reliable, that is, until all the independent variables present were able to be in the model. Thus, the analysis rounds performed in the program could even exclude some variables considered irrelevant for the assessment of Net Income.

RESULTS

This work had a database organized by the authors, obtained by publications of the studied company. The accounts, allocated on a quarterly basis, were used for the calculations necessary for the study of the chosen indicators, following the chosen models - Traditional and Dynamic, which are: Participation of Third Party Capital, Immobilization of Equity and Immobilization of Non-Current Resources, General Liquidity, Current Liquidity and Dry Liquidity, Asset Turnover, Working Capital Need, Net Working Capital and Treasury Balance.

The first round of data analysis in SPSS excluded the independent variable NCG from the model, since it does not have any criteria to justify its permanence, not even a Sig value. (meaningfulness). Therefore, it is already possible to say that the Working Capital Need has no relevance to the formation of the company's Net Income within the studied period. In this way, also, all the following results no longer counted on this variable, so that only the relevant independent variables that influence the dependent variable can be considered.

The model summary presents other results on the calculation of variables, such as R, R^2, adjusted R^2 and Standard Error of the Estimate., already with the exclusion of the NCG, it presents $R^2=0.860$ and adjusted $R^2 =0.807$. With this first result, the value of R^2 indicates that at least 86% of the variation in the dependent variable occurs due to the independent variables. It is possible to say, by

INDICATOR	ACRONYM	EQUATION
Third-party capital participation	PCT	Third-party capital/equity) x 100
Immobilization of equity	IPL	Non-current assets/equity) x 100
Immobilization of non-current resources	IPNC	Non-current assets/equity) + long-term liabilities x 100
General liquidity	LG	Current assets + long-term receivables) / (Current liabilities + long-term liabilities)
Current liquidity	LC	(Current Assets / Current Liabilities)
Dry liquidity	LS	Non-Current Assets/Inventories) / Current Liabilities
Asset turnover	GAT	Net sales / assets
Working capital need	NCG	Net Current Assets - Operating Current Liabilities
Working liquid capital	CCL	Current Assets - Current Liabilities
Treasury	STE	Working capital need

Table 1. Indicators used in the study and their equations and acronyms.
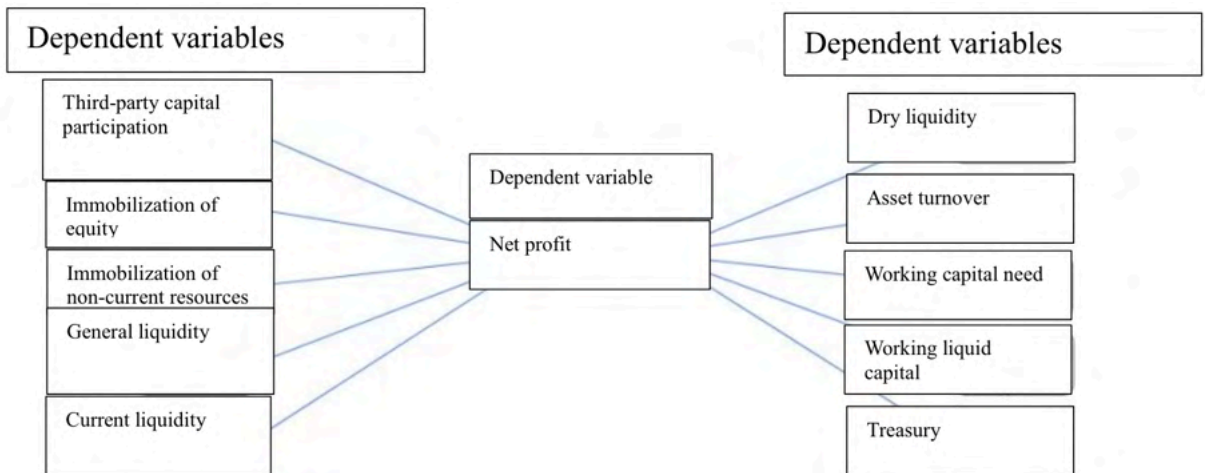Source: (MARQUES and BRAGA, 1995), (MATARAZZO, 2010).

Figure 1: model of the research project.
Source: prepared by the authors.

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1	NCG	.[b]	.	.	.	,000

a. Dependent Variable: LLI

b. Predictors in the Model: (Constant), CCL, PCT, SDT, LIC, GDA, LIG, LIS, IRNC, IPL

Figure 2: excluded variables.

Source: prepared by the authors.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,927[a]	,860	,807	25,86655

a. Predictors: (Constant), CCL, PCT, SDT, LIC, GDA, LIG, LIS, IRNC, IPL

Figure 3: model for CCL, PCT, SDT, LIC, GDA,LIG, LIS, IRNC and IPL.

Source: prepared by the authors.

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	-171,197	263,443		-,650	,522
	PCT	,097	,177	,292	,549	,588
	IPL	-,723	,557	-,941	-1,298	,207
	IRNC	1,972	3,181	,290	,620	,541
	LIG	385,332	131,368	,821	2,933	,007
	LIC	-143,557	73,332	-,338	-1,958	,062
	LIS	-131,787	118,647	-,289	-1,111	,278
	GDA	-48,668	111,520	-,059	-,436	,666
	SDT	,053	,023	,262	2,252	,034
	CCL	-,027	,023	-,283	-1,165	,255

a. Dependent Variable: LLI

Figure 4: Coefficients.

Source: prepared by the authors.

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-260,567	69,366		-3,756	,001
	LIG	236,103	61,232	,503	3,856	,001
	SDT	,080	,026	,397	3,042	,005

a. Dependent Variable: LLI

Figure 5: LIG and SDT coefficients.

Source: prepared by the authors.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,792^a	,627	,603	37,12856	1,364

a. Predictors: (Constant), SDT, LIG

b. Dependent Variable: LLI

Figure 6: model for SDT and LIG.

Source: prepared by the authors.

observing the adjusted R^2 result, that there is a significant linear relationship between the independent variables and the dependent variable so far, since its result is very close to 1.

With Figure 4 above, it was possible to visualize more results among the variables, as well as their Significance levels – used to test the hypotheses (null and alternative) – in the Sig column. With these values, which must always be the smallest possible to guarantee a better model, it was defined that the independent variables to be kept in the next model calculation would be LIG, with 0.007 and SDT, with 0.034.

The variables PCT, IPL, IRNC, LIS, GDA and CCL had very high results, with 0.588, 0.207, 0.541, 0.728, 0.666 and 0.255 respectively, which make it impossible to remain in the formation of the predictive model, as they greatly exceed the value of 0, 05 defined as a criterion.

The LIC variable, among those excluded, was the closest in terms of the criterion value, with 0.062. Thus, these two variables were tested again with the dependent variable in the next step of calculations, to define the definitive predictive model.

In the table above, it was possible to visualize the results of the second round of Multiple Regression in SPSS, with the independent variables being approved to remain in the model, considering that they had Sig results. that followed the criterion of not exceeding 0.05, with LIG=.001 and SDT=.005.

With this, it was possible to say that the alternative hypothesis was accepted, that the dependent variable was influenced and that it could be explained by at least one of the variables.

The indicators were analyzed again in the program, however, only those that met the previous criteria, that is, Treasury Balance (SDT) and General Liquidity (LIG).

When calculated together to build the model, they show an adjusted R^2 of 0.603, which demonstrates a median relationship between these independent variables and the dependent variable Net Income.

RESULTS ANALYSIS

The work in question sought to answer the suggested research problem, "Which indicators are most significant in their influence on the Net Income of the company Magazine Luiza S.A.?", and its production is justified by the importance of the company studied in the retail sector in Brazil, in addition to complementing research on the subject in academia, with a statistical approach. For this, Excel programs were used to organize the data, and SPSS for their analysis.

The research involved the analysis of indicators, with the goal of understanding which of them were the biggest influencers and responsible for the variations in the company's Net Income. For this, the following indicators were calculated: Interest in Third-Party Capital, Fixed Assets, Fixed Assets of Non-Current Resources, General Liquidity, Current and Dry, Asset Turnover, Net Margin, Return on Assets, Return on Shareholders' Equity, Need of Working Capital, Treasury Balance and Net Working Capital. The last three indicators described are part of the studies by Marques and Braga (1995), and were used to analyze the financial health of companies, based on the studies by Fleuriet; the other indicators are present in the literature of traditional analysis. For this research, all indicators were taken as Independent Variables, so that the study of the Dependent Variable Net Income was carried out, that is, to verify the influence of all these factors on the Net Income results of the company Magazine Luiza S.A.

After organizing the indicators from all 34 (thirty-four) quarters in Excel, the data were transferred to SPSS, in order to perform the necessary statistical calculations for the chosen method, the Multiple Regression.

The first round of tests already excluded one of the variables, the NCG – Working Capital Need. According to Table 1, it was found that this variable did not include all the necessary requirements to be part of the mathematical regression model. With that, the program has already removed it from the analyses.

Then, it was necessary to define which other variables would be removed, to improve the model. The criterion used was that of significance, considering a limit of 0.05 – thus, all variables that presented results equal to and/or lower than this would be considered suitable for the formation of the model. In the last test, only two indicators could be chosen: SDT and LIG. All others had better than established results and were removed from the analysis.

As a result, a new test round was carried out, involving only the two validated indicators. Both continued to obey the limit of 0.05 of "Sig", that is, valid for the assembly of the final mathematical model, with SDT= .005 and LIG= .001. Thus, they are considered the most relevant for the formation of the company's Net Income within the period of 34 (thirty-four) quarters studied, between the fourth quarter of 2010 and the first quarter of 2019.

Considering the results of the analyses, it is possible to define the mathematical model as:

$$\hat{Y} = -260{,}567 + 236{,}103x1 + 0{,}080x2, \text{ in which}$$

$\hat{Y}$ = Net profit
X1 = General Liquidity
X2 = Treasury Balance

Thus, the Multiple Regression mathematical model of the present research was concluded. The most relevant indicators for the formation of Net Income were General Liquidity, which is part of the subgroup of indicators referring to liquidity within the indicators of the Traditional method, and the Treasury Balance, which in turn was part of the Dynamic method, and that could be used to assess the financial health of the company.

It was possible to declare that the company's net income was heavily influenced by short-term indicators, since liquidity referred to the ability to pay the company's obligations, and the Treasury Balance was part of the working capital studies also for the short term. term.

With this, it was visible that short-term capital management was of great importance for the company, and that it must receive special attention from its managers, even though its model had an adherence considered average, since the second round of tests showed R^2 adjusted = 0.603, a value that is not considered too high for the Multiple Regression parameters.

FINAL CONSIDERATIONS

Currently led by Luiza Trajano, the retail store Magazine Luiza S.A is highly present and relevant for the sector in Brazil, mainly due to its growth strategy focused on establishing itself in smaller cities, before moving to the capital. and, moreover, because of its large investments in the technological and financial area. Despite being publicly traded only in 2011, its results had been published since 2010.

This work therefore sought to carry out a case study on the company, justifying its production precisely because of the importance of this organization within the country's economy, in addition, of course, seeking to complement the studies on the subject. In order to identify relevant indicators in the determination of net income, the work was guided by the following research problem: "Which indicators are most significant in their influence on the net income of the company Magazine Luiza S.A.?". In order to answer this problem, the research used tools such as Excel – for data organization – and SPSS – for statistical treatment – in order to process the collected data (34 quarters, between 2010 and 2019) and carry out the calculations of the selected indicators, belonging to the Traditional and Dynamic methods, following the Multiple Regression method. At the end of the analysis of results, the mathematical model reached was: $\hat{Y}$ = -260.567 + 236.103x1 + 0.080x2, where $\hat{Y}$ = Net Income X1 = General Liquidity X2 = Treasury Balance.

This way, the mathematical model explained that the Net Income – variable studied as Dependent – is mainly influenced by the results of General Liquidity and Treasury Balance, which is the answer to the research problem followed by this work.

The General Liquidity indicator belongs to the family of indicators of the Traditional method, and shows how much the company has in its Current and Long-Term Assets for each R$1.00 of total debt. When evaluated in isolation, it shows the company's ability to pay its debts, and whether or not it will depend on the production of future resources for this.

The Treasury Balance is part of the group of indicators of the Dynamic method. It is the result of the difference between all active and passive financial accounts and, depending on its result as an indicator, it demonstrates whether the company has enough working capital to fully finance the Working Capital Need, even indicating a possible risk of insolvency.

With this result, it was possible to further confirm the importance of the two methods of

balance sheet analysis, considering that both had an indicator present in the mathematical model that sought to understand which indicator influenced another result as important as the Net Income of a company.

As a suggestion for future research on the subject, it is proposed to apply the Multiple Regression method in other companies in the sector and to compare them, so that one can have an idea of how other Brazilian companies behave, their similarities and differences in terms of management. financial.

REFERENCES

AMBROZINI, M. A.; BORGES MATIAS, A.; PIMENTA JR., T. Análise dinâmica de capital de giro segundo o modelo Fleuriet: uma classificação das empresas brasileiras de capital aberto no período de 1998 a 2013. **Contabilidade Vista & Revista**, v. 25, p. 15-37, maio-agosto 2014. ISSN num. 2.

CVM - COMISSÃO DE VALORES MOBILIÁRIOS. Consulta de documentos de companhias abertas. **Site da Comissão de Valores Mobiliários**, 2011. Disponivel em: <http://cvmweb.cvm.gov.br/SWB/Sistemas/SCW/CPublica/CiaAb/ResultBuscaParticCiaAb.aspx?CNPJNome=magazine&TipoConsult=C>. Acesso em: 15 Maio 2019.

DUARTE, H. C. F.; LAMOUNIER, W. M. Análise financeira de empresas da construção civil por comparação com índices-padrão.

GOMES, E. A. D. O. et al. A importância da análise das demonstrações contábeis numa perspectiva organizacional.

KITZBERGER, H.; PADOVEZE, C. L. Integração do modelo Fleuriet com a abordagem tradicional de análise das demonstrações contábeis. **Pensar contábil**, Fev/Abr 2004.

MACEDO, M. Á. D. S. et al. Desempenho de empresas socialmente responsáveis: uma análise por índices contábil-financeiros. **Revista Produção**, 2007.

MAROSTICA, J.; BORGERT, A.; PETRI, F. R. D. S. S. M. Comportamento dos custos e indicadores de endividamento e liquidez em empresas do setor de consumo listadas na BM&FBovespa. **Contabilidade y Negocios**, 2016.

MARQUES, J. A. V. D. C.; BRAGA, R. Análise dinâmica do capital de giro: o modelo Fleuriet. **Revista de Administração de Empresas**, São Paulo, v. v. 35, p. 49-63, Mai./Jun. 1995.

MEDEIROS, V. Z. et al. **Métodos quantitativos com Excel**. São Paulo: Cengage Learning, 2008.

MODRO, W. M.; FAMÁ, R.; PETROKAS, L. A. Modelo Tradicional x Modelo Dinâmico de análise do capital de giro: um estudo corporativo entre duas empresas do mesmo setor com diferentes performances financeiras. **Revista FACEF - Pesquisa, Desenvolvimento e Gestão**, p. 90-106, Jan, Fev, Mar, Abr 2012.

NETO, J. E. B.; DIAS, W. D. O.; PINHEIRO, L. E. T. Impacto da convergência para as IFRS na análise financeira: um estudo em empresas brasileiras de capital aberto. **Contabilidade Vista & Revista** , Belo Horizonte, v. v. 20, n. n. 4, p. 131-153, out./dez. 2009.

PAIXÃO, R. B. et al. Análise dinâmica do setor comercial nacional: uma aplicação do modelo Fleuriet. **Revista Gestão e Planejamento**, Salvador , v. v. 9, n. N. 2, p. 199 - 216, jul./dez. 2008.

REZENDE, I. C. C. et al. Análise da performance empresarial da Petrobras: um estudo sob o enfoque dos indicadores econômico-financeiros. **Revista Ambiente Contábil**, Natal, v. v. 2., n. n. 1., p. 54-69, jan./jun. 2010.

SELL, I. Utilização da regressão linear como ferramenta da decisão na gestão de custos. **IX Congresso Internacional de Custos**, Florianópolis , p. 14, novembro 2005.

SILVA, G. R. D. et al. Um estudo sobre o modelo Fleuriet aplicado na gestão financeira de empresas do setor elétrico listados na BM&Bovespa. **Revista Ambiente Contábil**, Universidade Federal do Rio Grande do Norte, v. Vo. 8, n. n. 2, jul./dez. 2016.

SOARES, M. et al. O emprego da análise de balanços e métodos estatísticos na área pública: o ranking de gestão dos municípios catarinenses. **Revista de Administração Pública**, Rio de Janeiro, set./out. 2011.

VERAS MACHADO, M. A.; MACHADO, M. R.; CALLADO, A. L. C. Análise dinâmica e o financiamento das necessidades de capital de giro das pequenas e médias empresas localizadas na cidade de João Pessoa, PB: um estudo exploratório. **Revista Base (Administração e Contabilidade) da UNISINOS**, São Leopoldo, v. vol. 3, p. 139-149, maio-agosto 2006.