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IS LIQUIDITY ASSOCIATED TO PROFITABILITY?
AN ANALYSIS OF THE RETAIL INDUSTRY IN PORTUGAL

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Abstract

This Work Project analyses the relationship between liquidity, proxied by Cash Conversion Cycle and Liquidity Ratios, and Return on Assets, namely how and to what extent these variables associate. Based on a sample of Portuguese retail companies for the period 2016-2018, the results show that Days Payable Outstanding and Days Sales Outstanding have a significant influence in profitability whereas Days Inventory Outstanding does not. Moreover, liquidity profiles and sources of profitability differ between smaller and bigger companies. The research is relevant to working capital management and addresses to managers who can improve profitability by reducing liquidity.

Keywords: Cash conversion cycle; Liquidity ratios; Retail industry; Return on assets.

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1. Introduction

The relationship between profitability and liquidity is of utmost importance to managers. The liquidity of a company is highly dependent on its Cash Conversion Cycle (CCC) that is, “the time companies take to convert inventories and other resources into cash flows from sales” (Investopedia, 2019)¹. This time can be reduced by negotiating “longer payments terms with suppliers”, implementing “new inventory strategies that optimize the amount of inventory held” or even by offering discounts for customers to pay sooner (Katie McClellan 2012: 4 - 5). Working capital management decisions should ensure business keeps running properly and maintaining an equilibrium between levels of liquidity and contribute to maximize operating profitability, namely the return on assets (ROA) that is how the company can efficiently generate return from total investment, regardless of size.

Eljelly (2004) concluded that having an excessive amount of liquidity shows that a company can easily meet its current obligations but will sacrifice profitability as these short-term assets have lower risk and therefore generate lower returns. Whether too much liquidity will, or will not, reduce profitability as the more liquid the assets are the lower the return they will generate or, on the other hand, reducing liquidity to a minimum might be a problem in dealing with current liabilities is a matter of concern.

The association between profitability and liquidity has been extensively tested in different industries, various countries, and several periods of time. However, despite the different methodologies and proxies used to analyse this relationship, the findings are not consensual. The motivation to analyse the association of liquidity and profitability in the Portuguese retailing relies on its unique characteristics. Apart from being highly sensible to operating variables, the retail industry in Portugal shows the characteristic of having

¹ See <https://www.investopedia.com/terms/c/cashconversioncycle.asp>.

two big players - PINGO DOCE and CONTINENTE and a myriad of small retailers. Moreover, particularly in the post-crisis years where the European Central Bank lowered the interest rates to a minimum that had never been reached, resulting in a decrease in the cost of borrowing and affecting the way managers deal with changes in CCC elements and liquidity that may affect profitability, which makes this a relevant topic of research who specially addresses to managers.

This Work Project aims at assessing how and to what extent liquidity and profitability relate, based on a sample of Portuguese retail companies for the period 2016-2018. The paper proceeds as follows. Section 2 introduces the two key concepts in this research, liquidity and profitability, and discusses how to measure them. Section 3 reviews the empirical literature about the relationship between liquidity and profitability, with a special focus in the retail industry. Section 4 outlines the research questions and describes the methodology and sampling. Section 5 presents the data analysis concerning the variables of the research, while Section 6 discuss the findings of the research which are based on univariate analysis, correlation and regression analysis and their implication for working capital management. Section 7 concludes and resumes the contribution of the research and suggestions for future research.

2. Key Concepts: Liquidity and Profitability

Liquidity and *Profitability* are two main concepts in working capital management. Their relevance in this Work Project justifies being introduced, and further discussed.

Both liquidity and profitability can be assessed with absolute or relative variables, named ratios. While absolute values are sensible to company size, ratios allow for comparison within a company over time and among companies in a certain date or period, regardless of size or the currency of reporting (Gibson, 2013).

Liquidity is referred as a company's ability to convert its assets into cash in order to pay its liabilities when due. Managers need to control and rebalance liquidity in order to achieve the optimal efficient liquidity position by controlling its current assets and current liabilities (Ejelly, 2004) as liquidity plays a significant role within the efficient functioning of a business (Adeji et al, 2018). However, it is not straightforward if the company is holding the necessary liquidity or it has excess amount of cash. This efficient position of liquidity is essential in running a business like retailing as not only the existence of sufficient liquidity to pay to suppliers (which is the main expense in this industry) is important to avoid default of current debts but also it is one of the key success factors to prosper in this business as firms with a comfortable liquidity position can negotiate better deals with suppliers. On the other hand, excess liquidity even though it might “give” a sense of security for an unpredictable downturn in the economy, this comes at a cost; retaining too much cash in hands yields lowers returns than investing in long term assets.

One approach to measure liquidity is based on comparing balance sheet items, by summing or calculating differences between them. That is the case, for example, of Working Capital.² Another approach uses liquidity ratios such as Current ratio, Quick ratio, or Cash ratio, which compare Current Assets, Current Assets minus Inventories or solely Cash to Current liabilities, respectively³. These traditional measures of liquidity have been criticised as they only use balance sheet data (static data), and thus measure liquidity in a single moment in the past (Atieh, 2014), and do not control for seasonal variability.

Preventing these critics, Gitman (1974), introduced a new measure (CCC) which determines the time companies take to convert its investments in inventory and other

² *Working Capital* is the excess of Current assets over Current Liabilities.

³ See the three Liquidity ratios in Appendix 1.

resources into cash flows from sales. This new dynamic approach solves a limitation pointed to the traditional measures of liquidity analysis by combining “both balance sheet and income statement date to create a measure with a time dimension” (Jose et al., 1996).

The CCC is composed by three elements: Days Sales Outstanding (DSO), Days Payable Outstanding (DPO) and Days Inventory Outstanding (DIO) and is computed as follows:⁴

$$CCC = DSO + DIO - DPO \quad [1]$$

The CCC increases if Days Sales Outstanding increases, that is if it takes more time, in days or months, for a company to collect cash from sales, that is liquidity decreases. The lower DSO is, the more efficient the company is to collect cash from customers, however, if it is reduced too far it might reduce sales from customers that require credit, but if managers accept longer collection periods, bad debts may occur.

Days Inventory Outstanding measures the time, either days or months, a company takes to convert inventories into sales. A shorter DIO may result from lower inventory levels, and originate a lower CCC, therefore increases liquidity. Even though, lowering DIO shows that a company is becoming more efficient in managing inventories, managers need to be aware that lowering too much DIO increases the risk of losing sales due to stockouts.

Days Payable Outstanding is the number of days, or months, a company waits before paying its suppliers for the acquisition of merchandise, raw materials and services. It is extremely relevant in the retailing industry as retailers can influence CCC the most by extending payment period to suppliers. However, a substantial increase in credit period eliminates the possibility of taking advantage of early payments discounts as well as

⁴ See the formulas and their meaning in Appendix 1.

reduces the flexibility for future debt negotiations, an important issue in times of higher interest rates.

Hence, balancing the potential benefits and costs of different combination of time lengths of CCC components in the management of working capital in a retail company is essential.

Profitability is the capability of a company to generate revenues that exceeds its expenses. It can be assessed by differences or ratios. Useful indicators of profitability are margins calculated with income statement items, such as Gross Profit, Earnings Before Interests and Taxes (EBIT), Earnings Before Taxes (EBT) or Net Profit. Regarding ratios, Return on Assets (ROA) and Return on Equity (ROE) are two commonly used proxies for profitability.

The ROE is of utmost interest for shareholders, as it compares Net income to Equity, and measures the percentual annually return generated by shareholders' investment in a company. It is affected by taxation, investment decisions, and financing decisions, namely the company's capital structure and cost of debt.

The ROA is a ratio of special interest to managers, as it measures how efficient they are in using assets, that is total investments, in generating return from operations. It is computed by dividing the Earnings Before Interest and Taxes (EBIT) by Total Assets:

$$ROA = \frac{EBIT}{Total\ Assets} \quad [2]$$

The ROA can be broken down into three meaningful ratios, Operational Risk (OR), Return on Sales (ROS) and Asset Turnover (AT), as follows:⁵

$$ROA = \frac{EBIT}{Gross\ Margin} * \frac{Gross\ Margin}{Sales} * \frac{Sales}{Total\ Assets} \quad [3]$$

⁵ See the formulas and meanings in Appendix 1.

The analysis of the ratios in Equation [3] gives useful insights to managers, namely about the drivers of operating profitability. Each company in a certain industry shows a different ROA decomposition, resulting from diverse business strategies, together with working capital decisions, with impact on liquidity, which motivates a research question on this subject to determine if there is any difference between retailers' strategies. However, contextual variables, such as GDP⁶ annual growth, annual inflation rates, labour regulation, and industry characteristics may explain similarities in ROA levels among companies operating in the same country and industry in a certain year as well as variability over time.

3. Literature Review

The relationship between profitability and liquidity has been extensively studied in different industries, many countries, and various periods of time. However, the findings are not consensual. The findings, variables and other methodological issues of relevant papers are reviewed below⁷.

Prior literature has tested liquidity using several proxies, such as Net Trade Cycle, Current Ratio and Quick Ratio, as well as Cash Conversion Cycle and its three components. On the other side, Profitability has been proxied by Gross profit, Operating Income, ROA, and ROE, among others.

Most of the studies concludes that a reduction in CCC is associated to an increase in profitability, such as Shin and Soenen (1998), Deloof (2003), Bieniasz and Gołaś (2011) and Louw, Brummer and Hall (2016), Conversely, few studies found that there is a positive association between liquidity and profitability (Lyroudi & Lazaris, 2000) and Gill, Biger and Mathur (2010).

⁶ Gross Domestic Product.

⁷ See Appendix 2 for summary of literature review.

Deloof (2003) analysed a sample of 1009 large Belgian non-financial firms for the periods 1992-1996. In the context of working capital management, he measures liquidity with Cash Conversion Cycle, and Operating Income is the proxy for profitability. The results of the regression analysis show a negative relationship between operating income and the three CCC components (DSO, DIO and DPO). Deloof (2003) concluded that it is possible to increase a company's profitability by reducing the number of days a company takes to collect sales and the time a company takes to convert inventories into sales.

Karaduman, Akbas, Ozsozgun and Durer (2010) investigated how working capital management affects the profitability of 140 companies listed in the Istanbul Stock Exchange and found a significant negative correlation between ROA and the three CCC components. The research recommends to managers they can influence companies' profitability through liquidity, in the context of Working Capital Management (WCM) by taking decisions about DSO, DIO, DPO in order to reduce CCC to a minimum. The results of Karaduman et al. (2010) are consistent with earlier findings of Shin and Soenen (1998). These are based on a sample of firms from Compustat⁸ for the period of 1975-1994, and a different proxy for liquidity, that is; Net Trade Cycle (NTC)⁹, a variable only based in balance sheet items. Shin and Soenen (1998) conclude that NTC is negatively correlated with profitability¹⁰ and thus managers can create value for the company by decreasing NTC to an acceptable minimum.

On the other hand, Gill, Biger and Mathur (2010) examined the relationship between liquidity and profitability using a sample of 88 American firms listed on New York Stock Exchange for the period 2005-2007 and found a positive relationship between CCC and gross operating profit.

⁸ *Compustat* is a database of financial, statistical and market information on active and inactive global companies throughout the world.

⁹ NTC is calculated as follows: $(Accounts\ receivable + Inventory - Accounts\ payable) / Daily\ sales$.

¹⁰ In this study, Operating income plus Depreciation is used as the proxy for profitability.

Moreover, Muralidhara and Shollapur (2016) in a similar study using 51 companies of the Indian retail sector, found a positive correlation between CCC and profitability as well as between DSO and profitability indicating that “Indian retail firms are increasing their profitability by offering extended credit to customers” (Muralidhara & Shollapur, 2016:1262), and between DIO and profitability (showing that having the right product at the right place at the time the customers want to satisfy customer needs is a key success factors in the retail industry).

In another paper based in a sample of 18 South African retail companies, Louw et al. (2016) found that from the three components of CCC, what influences more profitability, proxied by ROE, is the level of inventories (measured by the average age of inventories) and managers should reduce it to the minimum.

Despite the extensive literature regarding the relationship between liquidity and profitability, and even though most of the papers shows that liquidity, and thus Working Capital Management, has an impact on profitability, the results are not consensual regarding the relationship between the two. Additionally, to the best of our knowledge, apart from a few studies in the retail industry (Muralidhara & Shollapur, 2016; Louw et al., 2016) this relationship has still not addressed the Portuguese retailing industry.

4. Methodology

Research Questions

The purpose of this Work Project is to analyse the relationship between profitability and liquidity in retailing industry, based on a sample of Portuguese retailing companies.

To test the relationship between liquidity and profitability the following research questions (RQ) are addressed:

RQ1: *Is there a relationship between Liquidity and Profitability?*

RQ1.1: *Does a higher Current ratio imply more Profitability?*

RQ1.1: Does a higher Quick ratio imply more Profitability?

As mentioned in Section 3, liquidity ratios, based in balance sheet items, have been extensively analysed in previous literature (Al-Qadi and Khanji (2018); Eljelly 2004). In RQ1, liquidity is proxied by two traditional liquidity ratios (Current Ratio and Quick Ratio), and ROA is used as a proxy for profitability. This Work Project uses ROA as the proxy for profitability instead of ROE because the ROA focusses on operating efficiency and separates the financing activities from operating and investing activities.

RQ2: Is Cash Conversion Cycle related to Profitability?

RQ2.1: Is there a relationship between DSO and Profitability?

RQ2.2: Is there a relationship between DPO and Profitability?

RQ2.3: Is there a relationship between DIO and Profitability?

As highlighted in section 3, previous literature had not reached to a consensus about the relationship between CCC and profitability. In order to analyse if there is a positive or negative relation between these two variables, RQ2 adds to the literature findings about the association between profitability and CCC in the unique context of the Portuguese retailing in the period 2016-2018. In RQ2, again profitability is proxied by ROA, while liquidity is analysed through CCC and its three components DSO, DIO and DPO.

RQ3: Is there a relationship between Size and CCC?

In Appendix 4 it is mentioned that the Portuguese retailing sector is becoming more and more concentrated as smaller retailers have been acquired by larger retailers. To determine if the Size of a company has any relationship with the length of CCC, in RQ3, Size is proxied by natural logarithm of Total assets¹¹.

¹¹ The natural logarithm reduces heteroskedasticity in the regression model and weakens the influence of large amounts of total assets, corresponding to the two major Portuguese retailer-PINGO DOCE and CONTINENTE.

Two additional RQ give insights into differences in liquidity (RQ4) and profitability (RQ5) between smaller companies and the two largest players in Portuguese retailing.

RQ4: How does CCC and its components differ between smaller retailers and the two dominant players? Why does CCC and its components differ between smaller retailers and the dominant players?

RQ5: Why does ROA differ / not differ between smaller retailers and the two dominant players in the industry?

In RQ4 and RQ5, the two dominant players are excluded from the sample in every year of analysis and are analysed in an individual basis. The comparison between smaller retailers on one side, and the two big retailers on the other side assesses if there are any differences in the ROA drivers and in the three components of the CCC between them.

In view of understanding the differences in CCC and liquidity profiles, RQ4 analyses differences in CCC and CCC components. It is expected that larger companies can negotiate longer payment terms with their suppliers. But whether larger companies take less time to sell their inventories and collect sales from customers than to pay to their suppliers is uncertain.

The decomposition of ROA (RQ5) into ROA drivers, gives insight into the influence of operating risk, return on sales, and efficiency of investment decisions managers take, and resorts to differences in the strategies of the smaller companies *versus* the two dominant ones.

Model of Research

Regarding the variables analysed in all the research questions, this Work Project uses ratio variables to assess liquidity and profitability instead of absolute variables because they allow for inter-firm comparison regardless of size.

The research uses univariate, bivariate ad multivariate analysis. A descriptive univariate analysis provides the feeling of data. Central tendency and dispersion statistics of the liquidity and profitability variables, and their components, are calculated and

interpreted. Additionally, the correlation analysis, and its validation, between those variables gives evidence of the association between liquidity and profitability, and between the components of the two variables.

To answer to RQ1, RQ2 and RQ3 the following linear regression model is used:

$$Y_t = a + b.X_t + c.D_1 + d.D_2 + \varepsilon \quad [4]$$

In equation [4] the coefficient a indicates the effect of exogenous variables, b indicates the effect that the independent variable (X_t) has on the dependent variable (Y_t) and c and d indicate the effect of the respective dummy variables on the dependent variable (Y_t).

Moreover, two dummy variables (D_1 and D_2)¹² are used to capture the influence of aggregate (time-series) trends as generally panel regressions fail to control the year's effect. The use of year-dummy variables is important as other variables (such as economic growth and inflation) may be affecting the relationship between the dependent and independent variables and this misleads results.

In order to answer to RQ1, RQ2 and RQ3 the total sample is considered, the two dominant retail companies included.

The univariate and bivariate statistical analysis, as well as regression models were performed, tested, and validated using SPSS.¹³

Sample

Data for this Work Project was collected from Sabi, a database that contains comprehensive information of over 80.000 Portuguese companies¹⁴. The companies in

¹² Dummy variables assume the following values in the model of regression, depending on the year of analysis: $D_1 = 1$ and $D_2 = 1$ (2016); $D_1 = 1$ $D_2 = 0$ (2017); $D_1 = 0$ and $D_2 = 1$ (2018).

¹³ SPSS (Statistical Package for the Social Sciences) is a software package used for statistical analysis.

¹⁴ <https://www.bvdinfo.com/en-us/our-products/data/national/sabi>. Data was accessed from Nova SBE library.

the sample belong to retailing under the economic activity code NACE 4711-Retail sale in non-specialised stores with food, beverages or tobacco predominating¹⁵.

The analysis covers the three most recent periods for which data is available: 2016-2018. The decision for not analysing periods before 2016 prevents any influence on the results of the 2010 financial crisis¹⁶ as Portuguese retailers were particularly affected with this crisis, and to consider a span of time with levels of low inflation.

The initial sample is composed by the 100 largest Portuguese retail firms (size proxied by total assets). Thirteen companies were excluded from the analysis because they did not meet the requirement of being a retailer that sells mainly food and beverages. Additionally, another 18 companies were excluded because their data was not available for the periods of the research. Therefore, the initial sample reduced to 69 companies. Furthermore, 22 observations were removed from the remaining companies due to having negative EBIT, and negative ROA, thus could be an issue when interpreting the results of the analysis. The final sample includes 185 observations for the period of 2016 to 2018¹⁷.

¹⁵ NACE is the abbreviation for the French title *Nomenclature Générale des Activités Économiques dans les Communautés Européennes* (Statistical Classification of Economic Activities in the European Communities).

¹⁶ In April 2011 Portugal applied for the Bailout programme to cope with the financial crisis and exited in May 2014. Several austerity measures were taken during those years and the GDP had substantially decreased.

¹⁷ See Table 6 in Appendix 3.

5. Data Analysis

Size and Market Concentration

Companies in the sample differ regarding size of activity. The total sales of the smaller retailers together are like the total sales of each of the two major retailers (PINGO DOCE and CONTINENTE), as shown in Chart 1.

Companies' annual sales and total investment (proxied by Total Assets) are presented in Table 1¹⁸. The average values of both variables increased from 2016 to 2018 (12% increase in total assets and 5% increase in total sales). However, these revenues are not equally distributed between the companies in the sample.

As detailed in Appendix 4, the Portuguese food retailing industry is very concentrated, and this characteristic can be observed by the Gini Index¹⁹, which shows that a small number of companies have a high proportion of the total sales of the whole sample. From 2016 to 2018, the Gini index remains relatively high with values of 0.93, 0.89 and 0.89 in the years 2016, 2017 and 2018, respectively.

Liquidity Variables

For the 185 observations the minimum, maximum, mean, median, and standard deviation, are presented in Table 2. From the analysis of data shown in Table 2, some characteristics of the operating cycle and liquidity of retail companies emerge. First, DSO is low (about six days in average in the period 2016-2018) as these companies normally

Chart 1 -Total Sales in % (2016-2018)

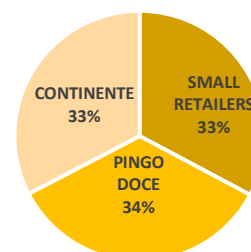


Table 1 –Size and Concentration in Retailing

Years	Gini index	Total Assets (10 ³ Euros)	Total Sales (10 ³ Euros)
2016	0.93	87.738	184.218
2017	0.89	87.913	180.021
2018	0.89	98.385	194.037

¹⁸ The average number of employees could also be taken as a proxy for company size.

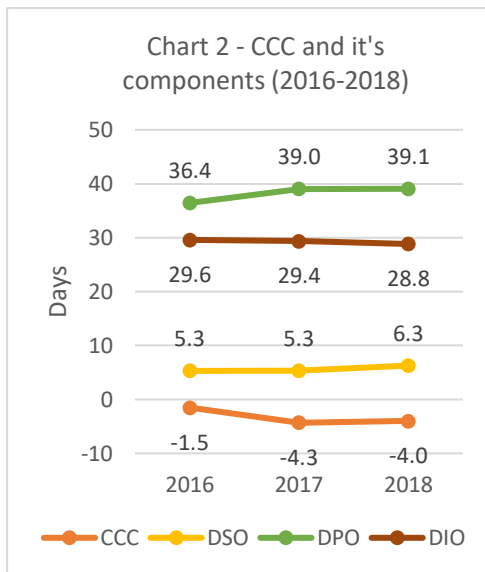
¹⁹ The Gini Index is a measure of statistical dispersion.

collect trade debts as they sell their products. Second, the time companies take to pay to their suppliers is normally high, the average DPO is 38.2 days, much larger than DSO. However, its variability is higher.

Table 2 - Descriptive Statistics for Liquidity Ratios:

	DSO (days)	DPO (days)	DIO (days)	CCC (days)	Current Ratio	Quick Ratio
Mean	5.6	38.2	29.3	-3.3	1.77	1.3
Median	1.2	34.1	28.4	-1.8	1.06	0.69
Standard Deviation	10	23.3	15.4	25.6	2.19	2.03
Minimum	0.0	2.9	0.0	-103.8	0.25	0.08
Maximum	53.5	146	83.2	88.2	17.10	17.1

The average CCC is -3.3 days. This means that companies can finance their operations for free from their suppliers, meaning that they sell their inventories and receive the payments from customers before paying to their suppliers.



Concerning the evolution of CCC across 2016-2018, Chart 2 shows a reduction from -1.5 days to an even more negative number (-4.0 days), which demonstrates the industry, on average, continues to be able to sell its inventory and collect from costumers faster than paying to suppliers. The reduction observed in CCC is mainly due to DPO, as the average period of

payment to suppliers extended from 36.4 days in 2016 to 39.1 days in 2018), together with the shortened time that retail companies take to sell inventories (less 0.8 days); even though the average collection period, DSO, had very slightly increased (less than one day).

The negative CCC observed in every year of the analysis is a characteristic of the retailing industry, that has a low CCC but also happens due to criteria of sampling, as

previously mentioned in section 4, the companies in the sample are the ones with the biggest total assets operating in food and beverage retail in Portugal thus have a high bargaining power over suppliers and are able to negotiate longer credit periods.

Profitability Variables

Average ROA in the Portuguese retail companies has changed, on average, from 5.9% in 2016 to 8.3% in 2017 and 6% in 2018.

Table 3 - Return on Assets and its Drivers:

Year	ROA	Return on Sales	Assets Turnover	Effect of Fixed Costs
2016	0.059	0.192	2.519	0.098
2017	0.083	0.194	2.445	0.262
2018	0.060	0.202	2.485	0.156

Even though retail companies in the sample became less efficient in using their assets to generate sales (it is observed a decrease from 2.519 € per euro of Total assets in 2016 to 2.485 € in 2018), the slight increase of ROA is explained by a compensation of the increase in the gross sales margins, that is the amount of earnings per unit of sales rose from 19.2% to 20.2%. The effect of fixed costs, however, contributes to a significant reduction of the ROA, as the ratio is less than one, showing that fixed costs are present and very relevant in the industry

Correlation Analysis

Concerning the three components of CCC (DSO, DPO, DIO), with respect to ROA the latter has a negative correlation with all those liquidity variables²⁰.

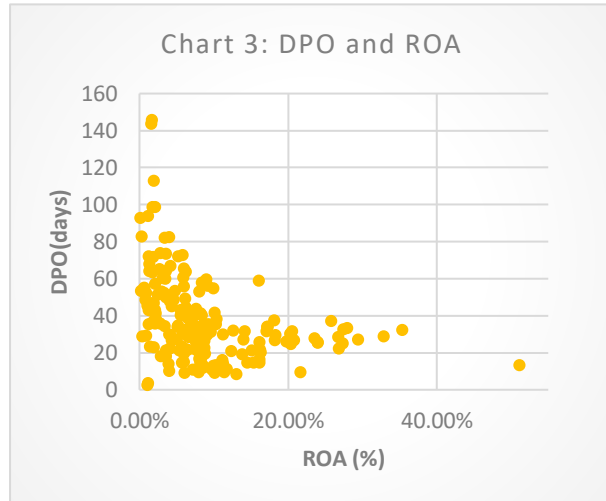
The DSO correlates negatively with ROA – ($c = -0.186$, significant at the 1% level). Even though collect period is less than one week in this industry (and represents a small portion in CCC compared with the two other components), managers can reduce the

²⁰ See Appendix 6, the matrix of correlation.

length of the collection period by offering cash discounts which would result in less sales on credit, and less bad debts.

Also with negative correlation, but with a stronger correlation coefficient of (-0.376, significant at the 5% level) is credit period, DPO. This negative correlation is explained

by the fact that less profitable firms wait longer to pay their bills (Chart 3). Lastly, DIO is also negatively correlated with ROA with a correlation coefficient of -0.068, although not significant. This might be induced by declining sales, leading to lower profits



and more inventory. Another plausible explanation is that a reduction in the amount of investments in inventories by lowering the selling price, reducing DIO, would result in an increase in profitability.

6. Findings²¹

6.1. Relationship between Liquidity Ratios versus Profitability (RQ1)

A company that has higher Current Ratio (CR) is expected to have lower returns as it means that the company may have more current assets than the necessary, therefore lowering returns as current assets, as the name suggests, are more liquid assets that yield a lower return than long term assets.

$$\widehat{ROA} = 0.076 + 0.005 \widehat{CR} + 0.009 \widehat{D1} - 0.009 \widehat{D2} \quad [6]$$

$$\widehat{ROA} = 0.077 + 0.005 \widehat{CR} \quad [7]$$

²¹ See Appendix 7, the Output from SPSS, with the results of the estimation.

In RQ1, the estimated model with the two dummy variables (Equation [6]) is not significant ($p\text{-value} = 0.189$) and the two dummy variables are also not significant ($p\text{-values}$ over 0.5), so to use a significant model the dummy variables were removed from the regression, and Equation [7] was found.

The model [7] shows a positive relationship between Current ratio and ROA ($c= 0.005$). Although this relationship is positive in this sample, it is not significant at a 5% significance level ($p\text{-value}= 0,073$). This result is somehow in accordance to the findings from Al-Qadi and Khanji (2018), who concluded that there is a significant and positive relationship between current ratio and ROA in 11 Jordanian trade companies listed at Amman Stock Exchange (ASE).

$$\widehat{ROA} = 0.078 + 0.005 \widehat{QR} + 0.009 \widehat{D1} - 0.009 \widehat{D2} \quad [8]$$

$$\widehat{ROA} = 0.0789 + 0.0051 \widehat{QR} \quad [9]$$

Regarding Quick Ratio (QR), both models [8] and [9] are not significant, with $p\text{-values}$ amounting to 0.187 and 0.072, respectively. Model [9] also shows a positive relationship between QR and ROA ($c= 0.005$) although again it is not significant ($p\text{-value}= 0.072$).

6.2. Relationship between Cash Conversion Cycle and Profitability (RQ2)

From the analysis of the Pearson correlation coefficient, it is concluded that CCC and ROA are significantly and positively correlated in the Portuguese retail companies ($c= 0.229$; $p\text{-value}= 0.002$, at a 95% confidence level), meaning that the higher the CCC is, the higher the returns on assets of the company will be. The regression between these two variables explains how and to what extent CCC affects ROA, i.e. what happens to ROA when CCC increases by one day.

$$\widehat{ROA} = 0.091 + 0.001 \widehat{CCC} + 0.006 \widehat{D1} - 0.011 \widehat{D2} \quad [10]$$

From the analysis of the regression, CCC is positively related to ROA at a 1% significance level ($p\text{-value} = 0.002$). As the coefficient is 0.001, if CCC increase by one day, ROA will increase by 0.1 percentage points. Besides this, regarding the two dummy variables, it is concluded that the years variable does not have any significant influence on the dependent variable as D_1 and D_2 ($p\text{-value}$ is 0.673 and 0.432, respectively).

These results are in line with those of Muralidhara and Shollapur (2016) who also found a positive relationship between Return on Assets and Cash Conversion Cycle in a sample of Indian retail firms. Conversely, they oppose to the findings of Karaduman et al. (2010) and Nobanee (2009) who found a significant negative relationship between the two variables.

6.3. Relationship between size and CCC (RQ3)

$$\widehat{CCC} = 55.118 - 6.594 \ln \widehat{Assets} + 1.970 \widehat{D1} + 2.654 \widehat{D2} \quad [11]$$

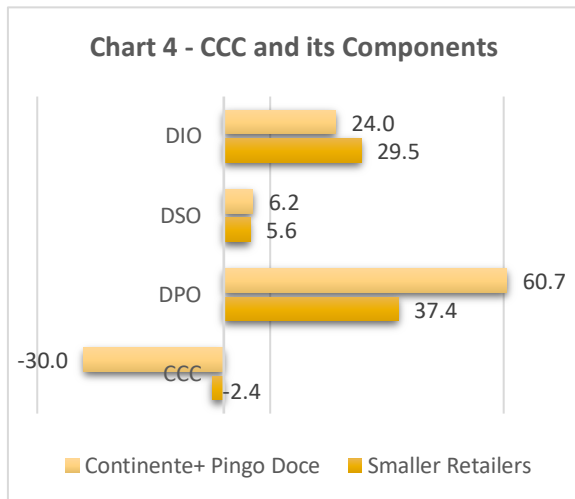
Considering all the companies in the sample, the correlation coefficient between size (proxied by the natural log of Total Assets) and CCC is negative ($c = -0.382$). This negative coefficient means that the bigger the company is, the lower its CCC would be.

The coefficient of the regression is negative and significant ($c = -6.594$; $p\text{-value} = 0$). Moreover, the intercept value is also significant but high (55,118), suggesting that other variables may explain CCC rather than just the total amount of investments. Regarding the two dummy variables (D_1 and D_2), both show high $p\text{-values}$ (0.652 and 0.533 respectively) suggesting that the year variable does not influence the dependent variable.

Uyar (2009) concluded as well that there is a significant negative correlation between the length of CCC and the size of the company, using two measures net sales and total assets. Conversely, Bhutto et al. (2011) did not found a significant relationship between CCC and size.

6.4. Additional Analysis of Liquidity: CCC of Smaller Retailers versus Dominant Players (RQ4)

Observing Chart 4, it is noticeable that CCC differs significantly between CONTINENTE and PINGO DOCE on one side and the other smaller retailers, as in the former,



the CCC is 27.6 days shorter than in the latter group. The analysis is concordant with the results found in RQ3 where it was found that size and CCC correlate negatively ($c = -0.38$).

More important than just knowing that CCC differs between these two groups, it is

relevant to know which components differ and why.

Regarding collection period (DSO), there is almost no difference between retailers, as customers generally pay as they make their purchase regardless of the type of food retailer they go. Thus, this variable is not relevant for working capital management in the retail industry and size does not add advantage to companies here.

Differences arise from the two other components of the CCC, that is DIO and DPO. Regarding DIO, the two dominant retailers, CONTINENTE and PINGO DOCE, show lower DIOs (29 days and 18 days, respectively) than smaller retailers (29.5 days). This may be explained by the fact that the two giant retailers may sell products that stay longer in their stores by offering promotions that are an important factor for Portuguese consumers when choosing what to buy. This result is in line with a study by Nielsen (2018)²², which found that products on sale account for 46% of total sales of consumer goods in the national market. This number overcomes the European average of 29% and makes Portugal the fourth country in Europe with the largest number of promotion sales.

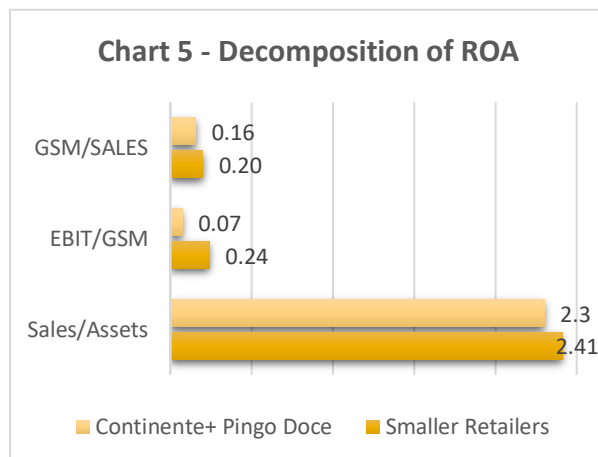
²² “Winning into the Promo Jungle”. This analysis includes products from food to hygiene.

Last, but not least, CCC's component most significantly differentiates the two major retailers from the smaller ones: DPO. The CONTINENTE and PINGO DOCE observed, on average, a credit period of around two months (58 days and 63 days, respectively) whereas smaller retailers are only able to get 37.4 days. It is noticeable that DPO in the two big companies is much higher than DIO, while in the smaller retailers the two ratios are similar and close to one month. These results confirm the association between size, proxied by the natural log of Total Assets and DPO (corr = 0.357, significant at 1%) which means that the bigger the company is, the higher is its ability to negotiate longer and delayed payment terms with suppliers.

6.5 Additional Analysis of Profitability: ROA of Smaller Retailers versus Dominant players (RQ5)

From the analysis of Chart 5, it is noticed that in the decomposition of ROA, both in smaller and the two larger retailers, the asset turnover represents most of the ROA decomposition as it is expected in this industry as sales are relatively high compared to total assets in other industry, such as real state there is large asset bases and low asset turnover. Through the observation of the

medians of Total Sales (17,640 thousand euros) and Total Assets (6,322 thousand euros) it is also noticeable that sales are much higher than the total amount of investments. However, it is not the



efficiency of how companies use their assets to generate sales that mainly differentiates the two dominant players and the other retailers as the smaller retailers only have more 4.7% of asset turnover than the two dominant companies.

One relevant difference of ROA drivers between the two biggest retailers and the other companies is Gross Sales Margin. Smaller retailers obtain 25% more than the two

major players (0.20 and 0.16, respectively). PINGO DOCE and CONTINENTE have lower margin on sales but as they sell their products in huge quantities, they can afford having lower margins, which are compensated by size of activity, as they sell enormous amounts of sales compared to the smaller competitors.

Lastly, the major difference in ROA comes from the operating risk, where small retailers have on average over three times the values of the two dominant players. This result can be explained by the fact that smaller retailers do not have a large workforce and amount of depreciation, both fixed expenses are usually lower but as the business grows these expenses represent a higher proportion of total costs.

Limitation of the analysis

All studies face limitations, and this one is no exception. Three limitations of the analysis concern to accounting issues and are worth being mentioned, namely it was not possible to control data regarding the basis of inventory valuation, the recognition of operating interests, and the amount of total financial investments of the companies.

This Work Project retrieved data from the financial reports of the companies. The two largest companies in the sample, PINGO DOCE and CONTINENTE, have their shares listed in the Euronext Stock Exchange, and thus have adopted the International Financial Reporting Standards (IFRS) when preparing the financial reports. Following the publication of EC Regulation No. 1606/2002, IFRS have become mandatory for companies with shares listed any regulated capital market located in the European Community for the years 2005 onwards. The reports of smaller retailers were possibly prepared using domestic accounting standards, as they adopted the national reporting standards, the *Sistema de Normalização Contabilística* SNC, however, they may have adopted IFRS, by choice. This issue may be a limitation of the analysis.

The effects of accounting choice permitted by the accounting standards may have affected the findings. One accounting choice made by retail companies, regardless of the adopted reporting standards, concerns the inventory measurement. Companies may have chosen either FIFO (First-In-First-Out) or the weighted average cost criteria, for inventories valuation and cost of goods sold measurement. The effects of this choice are more sensible in periods of high inflation rates, however, this is not the case of the time span of this Work Project. This research did not control for these variables that may influence both CCC and ROA, the former via DIO analysis and the latter through Gross Sales Margin, as the variables Inventories and Cost of Goods Sold change together and in opposite direction, depending on which basis is used for inventory measurement by companies.

Another choice permitted by both national and international financial reporting standards concerns to the presentation of financial expenses in the income statement. This item may be posted either above or below EBIT line in the income statements. Thus, this choice may affect ROA calculation, as a ratio that measures the operational component of profitability. This issue is possibly more relevant in periods of high interest rates.

Furthermore, when computing ROA, the total amount of financial investments was not deducted from total assets, thus the denominator of the ratio is biased (overstated), what justifies the calculated ROA ratios being possibly lower than actually they are.

7. Conclusion

The purpose of this Work Project was to analyse the relationship between Liquidity and Profitability in the Portuguese retail industry, namely how and to what extent the two variables are associated.

Based on a sample of the largest /top 100 companies operating in the food & beverage retail industry in Portugal, in the years 2016-2018, this research analysed Liquidity,

proxied by Liquidity Ratios and Cash Conversion Cycle and its components, and Return on Assets (ROA).

The CCC is usually negative in retailing companies, where payments to suppliers occur much later than the time it takes to collect receivables from sales. Throughout the years 2016 to 2018, the Days Sales Outstanding remain stable, around six days, however, while Days Payable Outstanding increased year after year, Days Inventory Outstanding decreased. The Industry is highly concentrated around two dominant companies, PINGO DOCE and CONTINENTE. (size, as proxied by Sales and Total assets). These big players show higher levels of liquidity when compared to smaller companies in retailing.

Days Payable Outstanding, Days Sales Outstanding and company Size are significant explanatory variables of the ROA in the industry. In this research, a positive relationship was found between ROA and CCC and a negative correlation between ROA and three components of CCC – DSO, DPO, and DIO. However, the latter was not significant. These results suggest that managers can increase profitability by reducing DSO and DPO. The results show that DPO is the CCC component with highest weight in its computation as well as the one with highest statistically significant influence on profitability.

This study expands the existing literature in the retailing industry, by getting evidence from the analysis of a sample of companies from Portugal and its findings may contribute to assist managers in Working Capital Management decisions. Attention of managers should direct to avoid delaying payments to supplier as this may undermine payment terms along with a deterioration of the relationship between suppliers and retailers (Deloitte, n.d.). Moreover, in periods of higher interest rates (cost of capital), paying early might result in less costs of sales as suppliers usually offer discounts for early payments (Deloitte, n.d). Furthermore, managers should balance the relationship between the cost of delaying the collection of cash from sales and the benefits of

increasing sales on credit, as for several firms the high cost of financing eliminates any potential benefits from the increase in sales (Louw et al. 2016). Extending this research to periods of high levels of interest rate may bring useful insights to managers about Working Capital Management.

As from 2016 to 2018 the rate that determines the cost of credit in the economy remained unchanged at 0%²³, it did not affect neither DPO variable nor the results of the findings. Therefore, future research could determine if interest rates affect DSO by considering a longer period of analysis. Another suggestion for future research regards the effects of accounting choice in the relationship between liquidity and profitability, as well as comparing between the Portuguese retail industry and the retail industry from other countries to test if the effect of the inventory costing system impacts CCC and its relationship with profitability.

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²³ Fixed rate determined by the European Central Bank (ECB).

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Appendices

Appendix 1 – Dependent and Independent Variables

Table 4 – Dependent and Independent Variables

Variable	Proxy	Meaning
Size	Ln Total Assets	Overall dimension of a company.
Days Sales Outstanding (DSO)	$DSO = \frac{\text{Average Debtors}}{\text{Sales}} * 360$	The time a company takes to collect cash from customers.
Days Payments Outstanding (DPO)	$DPO = \frac{\text{Average Creditors}}{\text{Cost of Sales}} * 360$	The number of days, or months, a company waits before paying its suppliers for the acquisition of merchandise, raw materials and services.
Days Inventory Outstanding (DIO)	$DIO = \frac{\text{Average Inventories}}{\text{Sales}} * 360$	The time, either days or months, a company takes to convert inventories into sales
Return on Assets (ROA)	$ROA = \frac{EBIT}{\text{Total Assets}}$	The firm's ability to utilize its assets to create profits by comparing profits with the assets that generate the profits.
Operational Risk (OR)	$OR = \frac{EBIT}{\text{Gross Margin}}$	The effect of fixed costs on profitability.
Gross Sales Margin (GSM)	$GSM = \frac{\text{Gross Margin}}{\text{Sales}}$	The amount of earnings per unit of sales.
Asset Turnover (AT)	$AT = \frac{\text{Sales}}{\text{Total Assets}}$	The ability of assets to generate sales.
Current Ratio (CR)	$CR = \frac{\text{Current Assets}}{\text{Current Liabilities}}$	The relationship between the size of the current assets and the size of current liabilities.
Quick Ratio (QR)	$QR = \frac{\text{Current Assets} - \text{Inventories}}{\text{Current Liabilities}}$	Evaluates a company's overall liquidity position, considering current assets (inventory is removed) to current liabilities.

Adapted from: Gibson (2013)

Appendix 2 – Summary of Literature Review

Table 5 – Summary of Literature Review

Author	Objective	Method of Analysis	Independent Variables	Dependent Variable	Sample	Periods of Analysis	Results
Deloof (2003)	To examine the relation between WCM and corporate profitability	Correlation and regression analysis	DPO, DSO, DIO, CCC,	Gross operating income	1009 large Belgian non-financial firms	1992-1996	Negative relation between gross operating income and CCC components.
Shin and Soen (1998)	To examine the relation between CCC and corporate profitability	Correlation and regression analysis	Net Trade Cycle, CCC, Accounts Payables, Accounts Receivable, Inventory	Corporate profitability	58,985 firm-year records	1975-1994	Strong negative relation between the CCC and Corporate profitability.
Karaduman, Akbas, Ozsozgun and Durer (2010)	Provide empirical evidence on the effects of working capital management on the profitability	Correlation and regression analysis	DPO, DSO, DIO, CCC	ROA	140 companies listed in the Istanbul Stock Exchange	2005-2008	Negative relation between ROA and DPO, DSO, DIO, and CCC.
Louw, Hall and Brummer (2016)	To investigate the effect of WCM on profitability	Correlation and regression analysis	DPO, DSO, DIO	ROA, ROE Gross Profit Margin, Economic Value added	18 retail firms listed on the Johannesburg Securities Exchange	2004-2012	Reducing investment in inventory and trade receivables and increasing trade payables improves profitability.
Anser and Malik (2013)	To evaluate and measure how the changes in CCC affect profitability	Correlation and regression analysis	DSO, DIO, DPO	ROA, ROE	155 listed manufacturing companies of Karachi Stock exchange of Pakistan	2007-2011	Shortening the receivable collection period and inventory selling period and increasing the payment period increases profitability.
Muralidhara and Shollapur (2016)	Analyse the relationship between elements of working capital and profitability	Correlation and regression analysis	DSO, DIO, DPO, CCC	ROA	51 firms of the Indian retail sector	2006/2007 - 2011/2012	Reduction in payment period tends to positively impact on profits.

Appendix 3 – The Sample: Initial Sample, Criteria for Exclusion and Final Sample

Table 6 - Initial Sample, Criteria for Exclusion and Final Sample

	Number of Observations			
	2018	2017	2016	2016-2018
Initial Sample	100	100	100	300
Criteria to exclude companies				
No data is available	18	18	18	54
Food and beverages are not the main retailer sales	13	13	13	39
Negative EBIT	10	4	8	22
Final Sample	59	65	61	185

Appendix 4 – Retailing Industry

According to the Oxford's dictionary, retailing is defined "as the business of selling goods to the public, usually through shops/stores"²⁴. Being the last ring in the supply chain between manufacturers and consumers, retailers should pay special attention to the three elements of CCC in order to properly run the business. To illustrate, inventory management is crucial in the retailing industry as even though a low number of DIO might fit well in reducing CCC in order to foster more liquidity, would it be too low, the probability of running out of stocks increases substantially. Furthermore, proper inventory management is a crucial issue to retain and attract customers as supermarkets with empty shelves fail to fill all the customers' needs and thus, they may be more reluctant to revisit in the future.

Regarding collection period, even though in retailing this period is short, the increasing use of debit and credit cards may affect this variable. As Deloitte mentioned in a recent study²⁵ (2018), cash payments will reduce, and cryptocurrencies will be more and more used. And this

²⁴ See <https://www.oxfordlearnersdictionaries.com/definition/english/retailing?q=retailing>.

²⁵ Deloitte (2018): *Global Powers of Retailing 2018: Transformative Change, Reinvigorated Commerce*.

will increase retailers' costs, as these payment methods imply retailers to pay a fee for their acceptance therefore reducing profitability.

PWC (2017) analysed the key working capital trends in various sub-sectors within retail on the forty biggest retailers of Germany, Switzerland and Austria and concluded that not only retail is characterised by low receivable days but also days of inventory outstanding (DIO) is the key performance differentiator for retail companies. Moreover, even within the retail, CCC differs between sub-sectors as this study shows that Hypermarkets have a negative CCC (11.7 days) others like accessories and luxury goods take more time to “convert its investments in inventory and her resources into cash flows from sales” (84.2 days) as they sell more expensive goods that take more time not only to sell (higher DIO) but also to receive as clients often take longer to pay more expensive items (higher DSO). Despite having higher CCC that Hypermarkets these companies do not show worse economic performance as they obtain higher margins which result in achieving higher ROA.

Besides this, the company's competitive environment (bargaining power of buyers and bargaining power of suppliers)²⁶ influences DSO and DPO, which will consequently affect the liquidity of retailers. The bargaining power of buyers in the food and beverages retailing industry is low as the population is large and consumers' diversity is high and because their size is relatively small when compared to the seller, and this disproportion makes it difficult for consumers to collectively put pressure on the seller.

Likewise, Portuguese retailers are becoming more and more concentrated. The five biggest distribution groups have a combined market share of 64% in 2007, and an increase of four percentage points was observed after the acquisitions of retailers made by CONTINENTE and PINGO DOCE in the same year. These two companies have been the biggest retailers in Portugal. Their market shares (based on total sales) were 21% and 16% in 2007, respectively

²⁶ Porter's five forces.

and ten years later the market shares increased to 21.9% and 20.8%.²⁷ As a result of this, and with the fact that the number of suppliers in this industry is relatively high and that there is intense competition for the limited space in the retailers' shelves, the bargaining power of suppliers is very limited resulting in large payment periods for the retailer which makes credit period high in this industry.

The Portuguese macro environment is worth mention. After Portugal had been hit hard by the financial crisis, having negative GDP growth in all years from 2009 to 2013 (except in 2010), GDP started to increase steadily from 2014 while unemployment rate decreased from 16.2% in 2013 to 7% in 2018. These two factors contributed to an increase in consumption of Portuguese families, which positively affected the performance of Portuguese retailers. In 2018, consumers' confidence reached its highest level in 30 years; disposable income increased by 4% in the same year and private consumption reached and surpassed of the pre-crisis levels and is expected to increase at a compound annual growth rate of 3.6% until 2022 (Source: OECD).

Table 7 – GDP growth, Unemployment and Inflation Rate

Year	2011	2012	2013	2014	2015	2016	2017	2018
Real GDP Growth (%)	-1.7	-4.1	-0.92	0.8	1.8	2.0	3.51	2.4
Unemployment Rate (%)	12.7	15.5	16.2	13.9	12.4	11.1	8.9	7.0
Rate of inflation	3.7	2.8	0.3	-0.3	0.5	0.6	1.4	1.0

Source: Pordata

²⁷ Source: <https://web3.cmvm.pt/sdi/emitentes/docs/FR69841.pdf>.

Appendix 5 – CCC and its components and ROA decomposition for small retailers, Pingo Doce and Continente.

Table 8 – DSO, DPO, DIO, CCC 2016 - 2018

Company	Year	DSO	DPO	DIO	CCC
Pingo Doce	2018	7	64	18	-39
	2017	6	64	19	-38
	2016	6	61	18	-37
Continente	2018	6	66	29	-30
	2017	6	54	29	-19
	2016	6	55	30	-19
Small Retailers	2018	6	38	29	-3
	2017	5	38	30	-4
	2016	5	36	30	-1

Numbers were rounded.

Table 9 – ROA decomposition 2016 - 2018

Company	Year	ROA	Sales/Assets	EBIT/GSM	GSM/Sales
Pingo Doce	2018	3.54	2.77	0.09	0.14
	2017	1.71	2.58	0.05	0.14
	2016	5.87	2.91	0.14	0.14
Continente	2018	5.93	1.85	0.12	0.26
	2017	0.18	1.89	0.01	0.12
	2016	0.61	1.80	0.03	0.13
Small Retailers	2018	7.83	2.42	0.21	0.21
	2017	9.64	2.37	0.30	0.20
	2016	8.67	2.43	0.20	0.20

Numbers were rounded.

Appendix 6 – Correlation Coefficients

Table 10 – Pearson Correlation Coefficients from SPSS

Correlations								
	In total assets	CCC	DSO (days)	DPO (days)	DIO	Current ratio	Quick Ratio	ROA
In total assets	1	-.382**	-.075	.357**	-.045	-.158*	-.131	-.129
CCC	-.382**	1	.283**	-.713**	.401**	.447**	.369**	.229**
DSO (days)	-.075	.283**	1	.144*	.043	.400**	.393**	-.186*
DPO (days)	.357**	-.713**	.144*	1	.237**	-.330**	-.309**	-.376**
DIO	-.045	.401**	.043	.237**	1	-.016	-.109	-.068
Current ratio	-.158*	.447**	.400**	-.330**	-.016	1	.991**	.132
Quick Ratio	-.131	.369**	.393**	-.309**	-.109	.991**	1	.133
ROA	-.129	.229**	-.186*	-.376**	-.068	.132	.133	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Appendix 7 – SPSS Output

Table 11 and 12 – SPSS Output (RQ1) – ROA and Current Ratio

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.029	3	.010	1.608	.189 ^b
	Residual	1.107	181	.006		
	Total	1.136	184			

a. Dependent Variable: ROA
b. Predictors: (Constant), D2, Current ratio, D1

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.076	.018		4.224	.000
	Current ratio	.005	.003	.136	1.856	.065
	D1	.009	.014	.054	.638	.524
	D2	-.009	.014	-.052	-.615	.540

a. Dependent Variable: ROA

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.020	1	.020	3.252	.073 ^b
	Residual	1.116	183	.006		
	Total	1.136	184			

a. Dependent Variable: ROA
b. Predictors: (Constant), Current ratio

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.077	.007		10.446	.000
	Current ratio	.005	.003	.132	1.803	.073

a. Dependent Variable: ROA

Table 13 and 14 – SPSS Output (RQ1) – ROA and Quick Ratio

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.030	3	.010	1.619	.187 ^b
	Residual	1.106	181	.006		
	Total	1.136	184			

a. Dependent Variable: ROA
b. Predictors: (Constant), D2, Quick Ratio, D1

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.078	.018		4.377	.000
	Quick Ratio	.005	.003	.137	1.865	.064
	D1	.009	.014	.055	.643	.521
	D2	-.008	.014	-.052	-.609	.543

a. Dependent Variable: ROA

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.020	1	.020	3.286	.072 ^b
	Residual	1.116	183	.006		
	Total	1.136	184			

a. Dependent Variable: ROA
b. Predictors: (Constant), Quick Ratio

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.079	.007		11.570	.000
	Quick Ratio	.005	.003	.133	1.813	.072

a. Dependent Variable: ROA

Table 15 – SPSS Output (RQ2) – ROA and CCC

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.069	3	.023	3.877	.010 ^b
	Residual	1.067	181	.006		
	Total	1.136	184			

a. Dependent Variable: ROA
b. Predictors: (Constant), D2, CCC, D1

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.091	.017		5.335	.000
	CCC	.001	.000	.230	3.194	.002
	D1	.006	.014	.035	.423	.673
	D2	-.011	.014	-.066	-.787	.432

a. Dependent Variable: ROA

Table 16 – SPSS Output (RQ2) – CCC and Size

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17805.660	3	5935.220	10.441	.000 ^b
	Residual	102887.773	181	568.441		
	Total	120693.433	184			

a. Dependent Variable: CCC
b. Predictors: (Constant), D2, In total assets, D1

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	55.118	12.330		4.470	.000
	In total assets	-6.594	1.188	-.381	-5.551	.000
	D1	1.970	4.354	.036	.452	.652
	D2	2.654	4.250	.050	.624	.533

a. Dependent Variable: CCC