

Digital Corporate Social Responsibility Reporting in The Water Industry

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Abstract

Companies in the water industry present to their shareholders their digital corporate social responsibility agendas and their social and environmental commitments on their websites. The purpose of this research is to assess the digital corporate social responsibility of Portuguese companies in the water industry. This research makes theoretical and practical contributions to the existing literature by examining the corporate social responsibility disclosure in a specific type of industry that is rarely studied and is in one of the smallest Organisation for Economic Co-operation and Development countries, thereby expanding previous research in this field. The research also examines factors that affect the digital status of the online disclosure. The authors empirically analyse the corporate social responsibility information published on the websites of the Portuguese companies operating in the bottled water industry. The data was collected based on the Global Reporting Initiative standards which detail the level of disclosure in this industry and highlight areas of underreporting. The results reveal the variables companies' size, number of employees and turnover influence the level of disclosure of Portuguese companies in water industry.

1. Introduction

Water is fundamental for human life. Companies that sell water have started to intensify their use of the Internet as a fundamental tool to disseminate digital information, manage their online reputations, increase their transparency, disclose non-financial information, and improve communication with stakeholders (Helberger et al., 2018; Johnson et al., 2017).

The intensification of digital corporate social responsibility disclosure (CSR D) in recent years has formed a rich new information environment which can improve the competitiveness of companies that offer vital information not only about firm products and services but also about financial, social, and environmental performance (Castelló et al., 2012; Dutot et al., 2016; Jones, 2009; Okazaki et al., 2020).

In the world of today's companies, the web is one of the most cost-effective resources available for communication of CSR initiatives (Lakatos et al., 2011) since it allows companies to link all types of reports and data (annual report, financial report, site-specific reports and sustainability reports) in a regularly updated version, making it an attractive instrument for companies and stakeholders (Dincer & Dincer, 2010; Dutot, 2013; Gray et al., 1995; Wanderley et al., 2008).

In light of these trends, the power of digital corporate social responsibility disclosure is increasing and turning into an important driver to promote future sustainable development of companies (Sardinha et al., 2011). For bottled water companies which depend on a natural resource, it is particularly relevant to pay close attention to corporate social responsibility, specifically the aspects related to environmental protection.

Digital CSR disclosure is a key factor on the European Union agenda. According to the European Commission (EC, 2013), companies regularly disclose less than 10% of their sustainability information; on the other hand, GRI statistics (GRI, 2012) confirm that 47% of the sustainability reports available worldwide in 2012 were from European companies.

In Portugal, digital CSR disclosure was reflected as 'incipient' by Neves and Bento (2005) but an increase in CSR practices was recognised (Branco & Delgado, 2011; Branco & Delgado, 2009 KPMG, 2013). According to Branco and Delgado (2016), research on CSR and Social Responsibility Disclosure (SRD) in the Portuguese field is not abundant, with exceptionally low investigations of the drivers of SRD in Europe, particularly in Portugal. This research intends to address this gap by determining the level of CSR practices in the Portuguese context and identifying the factors that influence disclosure.

The market of the bottled water industry was selected because it has had a sustained growth over the past few years, gaining a prominent place in the beverage sector (PIANSMW, 2021). This is a sector under increasing pressure to manage several contemporary CSR factors, such as an exploration of a natural resource, product safety and concerns related to the environment, including packaging. In addition, these factors are increasingly of concern in Portugal and Europe, with potentially serious consequences for the bottled water industry.

This research makes significant theoretical and practical contributions to the existing literature by examining the CSR disclosure in a specific type of industry that is rarely studied and is in one of the smallest OECD countries, thereby expanding previous

research in this field. The analysis of online reports published by bottled water companies in Portugal will add to the scant research on SRD in Portugal, offering sector-specific details and taking into consideration the geographic and cultural contexts which affect SRD.

The purpose of this research is to assess the digital CSR in Portuguese companies in the water industry. The research is organised as follows. Section 2 examines factors that affect the digital status of the online disclosure to understand how companies are using that communication channel. Based on Sect. 2, Sect. 3 develops the empirical analysis which begins with a content analysis developed to examine the CSR reports published online and compare them to the Global Reporting Initiative (GRI, 2021b) standard, seen here as the global reporting benchmark (Gray, 2010). Section 4 then presents the regression linear model used to identify the factors that influence the CSRD on the websites of Portuguese bottled water companies based on the literature review of Sect. 2 and the hypotheses presented in Sect. 4. In Sect. 5, the results will be discussed. Finally, Sect. 6 shows the research implications, and Sect. 7 ends the research with conclusions and some future perspectives.

2. Literature Review

The contextual background of this research is focused on digital CSR disclosure, one of the most debated concepts in the business literature (Newman et al., 2020) because of its ability to create enterprise value (Dhaliwal et al., 2014). Thus, it could be considered as an important tool for the sustainability of bottled water companies.

Moreover, corporate social responsibility reporting has been increasing over the last decade and has become a matter of strategic importance to business enterprises (KPMG, 2013; Scholtens & Dam, 2007; Stolowy & Paugam, 2018) as it draws significant attention from several stakeholders (Branco & Rodrigues, 2008). This trend in modern companies will maximise the company's value to shareholders, satisfy the expectations of stakeholders and lead the company to behave in a socially responsible way and to adopt the concept of managing resources for the welfare of present and upcoming generations (Lipunga, 2014).

The authors have observed an increase in the availability of CSR reports, but the level and content of SRD are influenced by several factors. Thus, problems arise with the quality and quantity of the information disclosed. In addition to company size, number of employees, ownership, profitability and the nature of the industry, the company's age and the presence or absence of social responsibility boards (Akin & Yilmaz, 2016) determine the level of digital disclosure. Thus, the following hypotheses are proposed:

H1: CSRD is positively correlated with firm age.

H2: CSRD is positively correlated with number of employees.

Several investigations of European Union (EU) countries by different authors have concluded that CSR reports differ from country to country (Habek, 2014; Mio & Venturelli, 2013; Sierra et al., 2013; Skouloudis et al., 2014) since legislation varies widely in several states (Habek & Wolniak, 2013a; 2013b).

For this reason, it is fundamental to use an internationally recognised tool for the assessment of information, such as the information from the GRI standard used in this research to classify level of disclosure. The GRI reporting framework is widely acknowledged as a leader in the international standardisation of sustainability reporting (Bebbington et al., 2012; Gray, 2010; Mahoney et al., 2013). It is also considered the primary example of sustainability reporting and has multiple applications in firms in several sectors of activity (GRI, 2021a; Joseph, 2010; Lipunga, 2014).

Previous research suggests that the level of CSR policies in large companies is higher than that of small companies (Font et al., 2012). Branco and Rodrigues (2006) concluded that banks with higher visibility show more concern for corporate social disclosure to improve their images than do banks with lower visibility. Similarly, Cuganesana et al. (2010) studied the Australian food and beverage industry and found that firms from industry subsectors with innovative CSR profiles comprise a better disclosure. Thus, the following hypotheses are proposed:

H3: CSRD is positively correlated with firm size.

H4: CSRD is positively correlated with turnover.

Previous research also reports that companies with larger ownership have the highest disclosure levels and respond proactively to stakeholder concerns (e.g., Barnea & Rubin, 2010; Burritt et al., 2016; Li & Zhang, 2010; Paek et al., 2013; Scholtens & Kang, 2013). In contrast, Shnayde et al. (2016) showed that motivations for CSR disclosure in the packaged food industry depend on intrinsic factors and can be explained by external pressures, regulation, normative obligations and social pressure (Shnayder et al., 2016).

Other studies have focused on the relation between CSRD and accounting or finance variables, and most of them have determined that CSR disclosure improves the financial performance of companies (Kartasasmita, 2020; Nair et al., 2019).

Thus, the following hypotheses are proposed:

H5: CSRD is positively correlated with return on equity (ROE).

H6: CSRD is positively correlated with return on assets (ROA).

However, the new trends for the companies that disseminate online information have changed the line of research in this field. Previous studies focused only on the annual report, while current studies are also based on a company's online reporting (e.g., Campbell & Beck, 2004; Capriotti & Moreno, 2007; Chaudhry et al., 2007; Choi J., 1998; Esrock & Leichty, 1998, 2000; Maignan & Ralston, 2002).

For this reason, company websites play a significant role in CSRD through easy access to CSR agendas and circulation of updated data about social and environmental management performance to a varied group of internal and external stakeholders that is accessible twenty-four hours a day, seven days a week (Adams & Frost, 2006; Cooper, 2003; Darus, 2009; Frost et al., 2005; Gautam & Shagun, 2018; Hinson, 2011).

Online channels are an important tool for bottled water companies since researchers have suggested that company websites could provide organisations with numerous opportunities to present and explain to their stakeholders their CSR identity, product sales and management subjects (Campbell et al., 2011, Rolland & Bazzoni, 2009).

It is unquestionable that communication through company websites is crucial in today's world of globalisation and liberalisation (Dehkordi et al., 2012; Lipunga, 2014). It is an extremely powerful tool to influence the success of companies by increasing their visibility and disclosing information in a cost-efficient way to a target audience that is more aware of CSR and to potential financial investors that tend to capitalise companies with better environmental and social performance (O'Rourke, 2004; Penczar, 2003). It is clear that a company's website image has a considerable influence on stakeholder behaviour (Chen & Lee, 2005).

Essentially, research on digital information is of particular interest since the web offers several benefits for communication purposes which can increase the information that is communicated to customers and other stakeholders (Amran, 2012). The Internet and its channels have opened a track for personalisation of messages and real interaction with both existing and potential customers which could lead to a better fit between customer expectations and firm growth (Dutot et al., 2016). However, the content of websites is not standardised, and companies voluntarily determine the information that they desire to disclose (Amran, 2012). This provides an opportunity from the academic point of view to research the CSR online disclosure phenomenon, from the context of bottled water companies. For that reason, the bottled water industry must develop high quality websites which provide a better online experience to attract all stakeholders, explain the identity of the brand and simplify access to information in a perceivable, operable, comprehensible, and robust way (Chen & Lee, 2005).

In the wider society, digital SR disclosure is on the rise, and Portugal is no exception (Barros, 2008). A few years ago, Branco and Rodrigues (2006) found that most Portuguese companies did not disclose social responsibility information on their websites, but small- to medium-sized business enterprises are now considered active with CSR agendas (Branco, 2015; Coupland, 2006). Similarly to other EU countries such as Italy and Spain, Portugal has adopted CSR policies that depend most of the time on the promotion of government initiatives (Albareda et al, 2007; Knudsen et al., 2015; Maon et al., 2017), and only a few Portuguese companies are included in international sustainability indexes (e.g., Dow Jones Sustainability Index [DJSI] or the FTSE4Good

Index), typically with a low classification in terms of CSR reporting and the inclusion of voluntary CSR standards in their businesses (Branco, 2015; Branco & Delgado, 2011; Moon et al., 2012).

Therefore, it is important to know the current Portuguese reality. The data presented in this study are used to evaluate the level of CSR reporting in the Portuguese field in the context of online disclosure by bottled water companies and to identify the aspects that influence this disclosure. This is a sector of extreme economic importance for the country, and it is considered to be a global industry (Carlucci et al., 2016), but due to recent pressures from the market and stakeholders, the fulfilment of environmental laws needs to demonstrate commitment to the environment through the preservation of a pure and natural resource bottled in 100% recyclable packaging with the incorporation of recyclable materials, factors that are included within CSR agendas nowadays.

3. Research Methodology

This section details the research methodology that was developed to obtain answers to this research focus relative to all companies in the water industry that operated in Portugal in 2021. The population has a total of 20 companies, but only 15 had accessible websites. The data for the research was based on the digital CSR information provided on each company's website.

The analysis of the web pages was done in the most objective and rigorous way possible, and all web pages were analysed in a similar manner to avoid subjective analysis (Hackson et al., 1996). The content analysis of the companies' websites was performed from 8–12 March 2021.

For the construction of our CSR disclosure index, the authors hand-collected data from the CSR information voluntarily provided within the firm web pages of bottled water companies, which included information such as published annual reports, follow-up documents for standards certification, news, brochures, prints and bulletins, as well as evidence contained in other related pages that had an access link mentioned on the web pages.

The digital data for the bottled water companies was collected based on Hinson et al. (2010), who built a scoring method to assess the measure with a quantitative index level of CSR disclosure. The scoring system involved assigning a point for each corporate social responsibility disclosure theme connected to any of the categories based on a list of 20 items, divided into 4 categories or blocks of information in accordance with the GRI food sector guidelines as presented in Table 1: general, economic, environmental and social.

Table 1
Categories of GRI food sector guidelines

CATEGORY	ITEM
Category 1: General Information	Organisational Profile Strategy and Analysis Stakeholder Engagement Ethics, Integrity and Transparency
Category 2: Economic Information	Economic Performance Market Presence
Category 3: Environmental Information	Energy Water Emissions Effluents and Waste Compliance Transport Overall Supplier Environmental Assessment Environmental Grievance Mechanisms
Category 4: Social Information	Labour Practices and Decent Work Human Rights Society Local Communities Product Responsibility

This research employs a model adopted from Hossain and Reaz (2007) and Lipunga (2014) based on a dichotomous procedure: a score of 1 was awarded if an item was reported; if not, a score of 0 was awarded as shown in the model presented in Fig. 1.

$$CSR\ Score = \sum_{j=1}^n \frac{d_j}{n}$$

$d_j = 1$ if item j is disclosed; 0 if item j is not disclosed

$n =$ number of items

4. Research Hypotheses

This section of the paper aims to provide answers to the two research questions:

R1: What is the current state of digital CSR reports in bottled water companies in Portugal?

R2: What are the factors that influence the level of CSR disclosures in bottled water companies in Portugal?

To answer these questions, the authors statistically tested the relationship between CSR (score of disclosure per company) as the dependent variable and the following independent variables: firm age, number of employees, turnover, return on equity (ROE),

return on assets (ROA) and size of the company. The information on the independent variables was collected from the base Balance Sheet Analysis System Iberians (SABI). The Statistical Package for Social Sciences (SPSS: version 23) was used to analyse the collected data and to examine the variables in the research.

A Pearson correlation was conducted to find the association between the variables in each case before the regression model was determined. The research only considered independent variables that showed a significant correlation ($p > 0.05$) with the dependent variable CSR. Table 2 presents the correlation test (Andrade, 2004). According to Table 2, the variables that present significant correlations are: company size (COMPS), employees and turnover. With respect to COMPS, the National Statistics Institute (NSI, 2021) defined the size of companies in accordance with Decree-Law N° 372/2007. Thus, a large company is defined as a company that employs more than 250; a medium company is defined as a company that employs more than 50; a small company is defined as a company that employs less than 50; and a micro company is defined as a company that employs less than 10 people. Number of employees is characterised by the number of persons employed full time in one year (Baehr & Renck, 1958). Turnover is the measure for a business's performance and reflects the total sales made by a business in a certain period (Burja & Burja, 2009).

Table 2. Pearson correlation test

		FIRMAGE	EMPLOYEES	COMPD	TURNOVER	ROE	ROA	CSRD
FIRMAGE	Pearson Correlation	1						
	Sig. (bilateral)							
	N	20						
EMPLOYEES	Pearson Correlation	.064	1					
	Sig. (bilateral)	.789						
	N	20	20					
COMPD	Pearson Correlation	.304	.678**	1				
	Sig. (bilateral)	.192	.001					
	N	20	20	20				
TURNOVER	Pearson Correlation	-.051	.965**	.591**	1			
	Sig. (bilateral)	.830	.000	.006				
	N	20	20	20	20			
ROE	Pearson Correlation	-.097	-.104	-.193	-.083	1		
	Sig. (bilateral)	.683	.663	.414	.729			
	N	20	20	20	20	20		
ROA	Pearson Correlation	-.044	.102	.259	.152	.018	1	
	Sig. (bilateral)	.854	.669	.269	.522	.941		
	N	20	20	20	20	20	20	
CSRD	Pearson Correlation	.127	.466*	.545*	.550*	-.257	.045	1
	Sig. (bilateral)	.595	.039	.013	.012	.273	.849	
	N	20	20	20	20	20	20	20
** Sig correlation at 0.01 level								
* Sig correlation at 0.05 level								

A regression model was developed to measure the factors that influence the CSRD in bottled water companies. The multiple linear regression analysis is a technique for modelling the linear relationship between a dependent and one or more independent variables and is one of the most widely used of all statistical methods (Nataraja, 2018; Ongore & Kusa, 2013; Sharifi & Akhter, 2016). The following research model was utilised to test the causal hypotheses of the research which was previously presented in econometric form.

$$CSR D = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_k X_k + \varepsilon$$

Y = dependent (explained variable)

X_i = ith independent (explanatory variable), i = 1, 2...k

β₀, β₁, β₂, β₃...β_k are the partial regression coefficients of independent variables. The coefficient of independent variables reflects how dependent variable Y changes when the independent variable, X_i (i = 1, 2...k), changes by one unit while the other independent variables are held constant (Nataraja, 2018).

4. Results

4.1. Exploratory analysis

The descriptive statistics on CSR Disclosure are presented in Table 3, with the most relevant aspects summarised as follows: Only 15 of a total of 20 companies in the bottled water industry have an accessible website and 25% of these bottled water companies are not emphasising their websites as a tool for improving this communication with their stakeholders.

Table 3
Descriptive statistics about CSR Disclosure

CATEGORY	ITEM	CSR DISCLOSURE (%)
Category 1: General Information	Organizational Profile	85.71
	Strategy and Analysis	57.14
	Stakeholder Engagement	14.29
	Ethics, Integrity and Transparency	7.14
Category 2: Economic Information	Economic Performance	21.43
	Market Presence	71.43
Category 3: Environmental Information	Energy	57.14
	Water	35.71
	Emissions	28.57
	Effluents and Waste	71.43
	Compliance	42.86
	Transport	21.43
	Overall	78.57
	Supplier Environmental Assessment	21.43
	Environmental Grievance Mechanisms	0.00
Category 4: Social Information	Labour Practices and Decent Work	14.29
	Human Rights	14.29
	Society	71.43
	Local Communities	42.86
	Product Responsibility	14.29

The authors find that in terms of space devoted to topics, organisation profile (85.71%), market presence (71.43%), effluents and waste (71.43%), overall environmental information (78.57%) and society information (71.43%), as opposed to Environmental Grievance Mechanisms (0.00%), Ethics, Integrity and Transparency (7.14%) Stakeholder Engagement, Labour Practices and Decent Work, Human Rights and Product Responsibility (14.29%), are the most prominent.

Finally, the research finds a lack of CSR reporting since the total of the information disclosed is only 27.00%, mainly in aspects related to Stakeholder Engagement, Labour Practices and Decent Work, Human Rights and Product Responsibility. It is clear the sector in research is very related to environmental aspects, and over the last years, the bottled water companies have developed several activities in this field. It is also clear that the last EU legislation about plastic packaging has led companies to disclose more information related to environmental aspects.

4.2. Confirmatory Analysis

The confirmatory analysis has been supported on the methods proposed by Greene (2018) and Hair et al. (2018). From Table 4, it is evident that CSRD has a positive correlation with all other explanatory variables. This indicates that CSRD increases when the variables of company size (COMPS), employees and turnover increase.

Table 4. Model Summary

MODEL	R	R SQUARE	ADJUSTED SQUARE R	STANDARD ERROR OF ESTIMATE	DURBIN-WATSON
1	.758a	.575	.495	19.81448	2.150
a. Predictors: (Constant), TURNOVER, COMPD, EMPLOYEES					

Table 5
ANOVA results

MODEL		TOTAL SQUARES	GL	MEDIUM SQUARE	F	SIG.
1	Regression	8488.183	3	2829.394	7.207	.003 ^b
	Residual	6281.817	16	392.614		
	Total	14770.000	19			
a. Dependent Variable: CSRD						
b. Predictors: (Constant), TURNOVER, COMPD, EMPLOYEES						

The adjusted R2 value in Table 4 clearly shows that 57.50% of variation in the dependent variable (CSRD) is explained by the explanatory variables. This indicates a reasonably good power of the regression model (Greene, 2018; Hair et al., 2018). The value obtained in the Durbin-Watson test ($1.5 < 2.150 < 2.5$) also indicates the independence of the residuals, that is, the differences between the predicted value and the observed value. Table 5 contains the results of the ANOVA technique applied to test our hypotheses against the null hypothesis. The sig. value clearly indicates that the model is significant at 5% of the chosen level of significance ($0.003 < 0.05$).

Table 6
Coefficient test

MODEL	NONSTANDARD COEFFICIENTS		STANDARDISED COEFFICIENTS	T	SIG.	CORRELATIONS		COLLINEARITY STATISTICS	
	B	STANDARD ERROR	BETA			ZERO ORDER	PARTIAL	TOLERANCE	VIF
(Constant)	-29.709	21.182	-1.959	-1.403	.180				
EMPLOYEES	-.287	.105		-2.730	.015	.466	-.564	.052	19.369
COMPS	26.885	9.521	.662	2.824	.012	.545	.460	.484	2.067
TURNOVER	1.106E-6	.000	2.049	3.133	.006	.550	.617	.062	16.091
a. Dependent Variable: CSRD									

Thus, Hypotheses 2, 3 and 4 are accepted, which state that turnover, company size and the number of employees have a significant effect on the CSRD of bottled water companies. Further, the significance of each explanatory variable on CSRD can be also assessed through the tsig value provided in Table 6. Table 6 tells us that the explanatory variables of turnover, company size and the number of employees have a significant effect on CSRD (tsig values < 0.05).

According to the results in Fig. 1, the histogram for the residues has a normal distribution.

The results in Fig. 2 show the residues have proximity to the normal distribution.

The results in Fig. 3 reveal the existence of homoscedasticity, so the statistical inference is valid.

As per the results obtained, the model can be fit as:

$CSR = \beta_0 + \beta_1 \text{EMPLOYEES} + \beta_2 \text{COMP} + \beta_3 \text{The results of all hypotheses are summarised in Table 7.}$

Table 7
The summary of hypotheses test results

HYPOTHESES	RELATED VARIABLES	EXPECTED SIGN	ACTUAL SIGN	SUPPORTED OR NOT
1	CSR Firm's Age	Positive (+)	Negative (-)	Akin and Yilmaz, 2016
2	CSR Employees	Positive (+)	Positive (+)	Akin and Yilmaz, 2016
3	CSR Firm's Size	Positive (+)	Positive (+)	Font et al. 2012
4	CSR Turnover	Positive (+)	Positive (+)	Font et al. 2012
5	CSR ROE	Positive (+)	Negative (-)	Not
6	CSR ROA	Positive (+)	Negative (-)	Not

5. Research Implications

This research adds the following implications to the existing state-of-the-art. Unlike previous studies on digital CSR disclosure, this research assesses the information obtained from all of the websites of the companies in the water industry, since the recognition of this type of communication receives significant attention from stakeholders.

The research explores the digital CSR research and expands previous research on CSR disclosure in Portugal from a theoretical analysis and empirical analysis based on real case context aspects, research that is exceptionally rare in the bottled water industry.

In addition, the research presents important conclusions for managers of the bottled water industry to understand the factors that influence the level of digital CSR disclosure in their companies and areas of underreporting that need to be improved.

6. Conclusions

The results indicate a generally low level of disclosure on the websites of the Portuguese bottled water companies; thus, these businesses are not emphasising their websites as a tool for the improvement of CSR practices. The managers of bottled water companies do not see the dissemination of social responsibility information on their companies' websites as a competitive advantage and as an important tool to demonstrate to their stakeholders their commitments to social, environmental and financial aspects.

Managers in the bottled water industry need to consider CSR as an indication of improved social and environmental behaviour in bottled water companies because disclosure influences a company's external perception and reputation. By demonstrating that they operate in accordance with social and ethical criteria, companies can build up a good reputation with their stakeholders and attract investors.

The authors suggest that Portuguese bottled water companies should adapt to modern market requirements and improve their websites by introducing CSR elements into their vision, mission and objective statements and by providing CSR reports with social, environmental and economic aspects. Considering that 25% of the companies do not have websites, the first step is to introduce one and to follow the recommendations provided in this paper. The companies would generate more visibility and therefore more business opportunities. This research includes all the Portuguese beverage industry companies; in their next research, the authors will compare the water industry in another EU country.

Declarations

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Datasets and other materials are available with the authors and may be accessible at any time upon request.

Code availability:

The SPSS code is available for the authors.

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Figures

Normal P-PPlot of Regression Standardised Residual

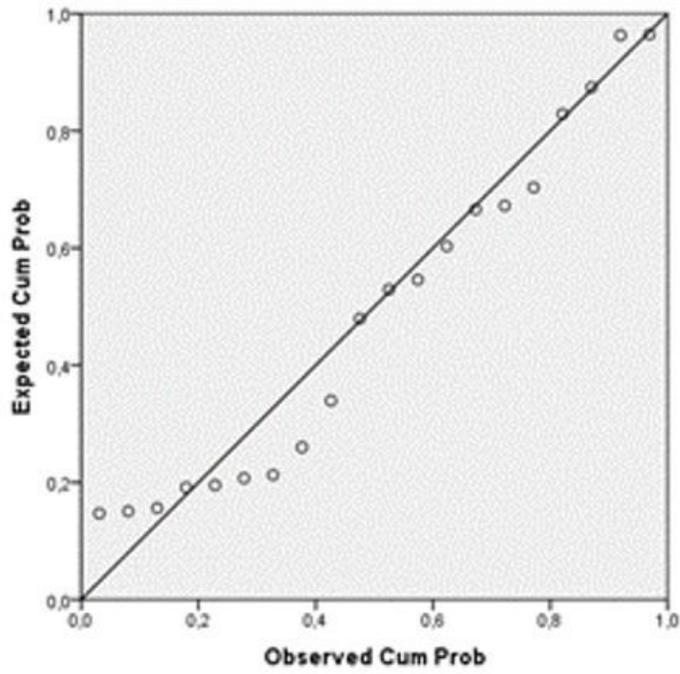


Figure 1

Histogram of the model

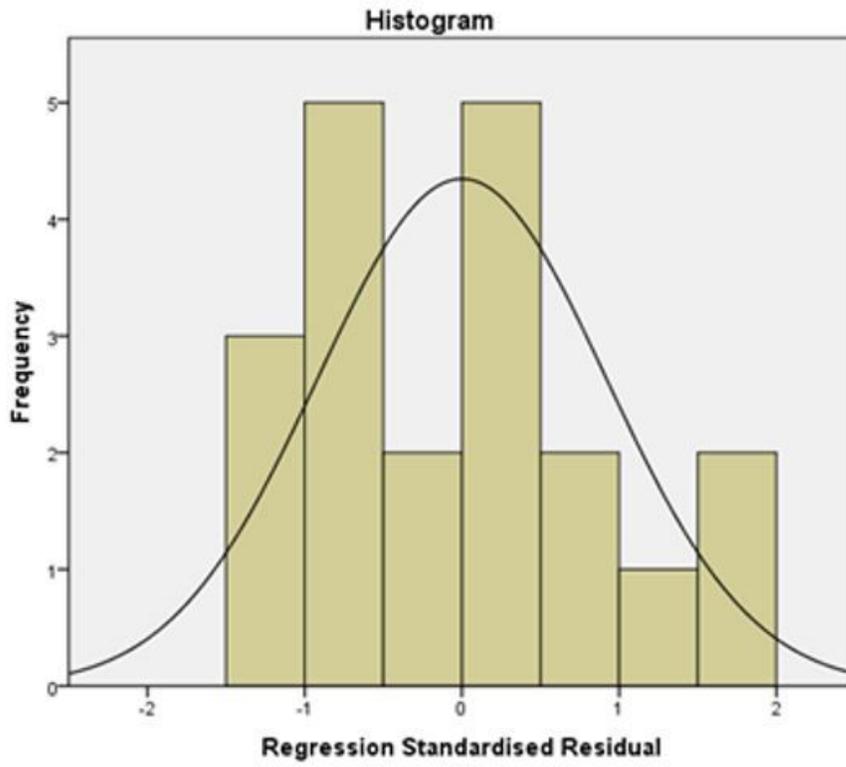


Figure 2

P-Plot Regression of the model

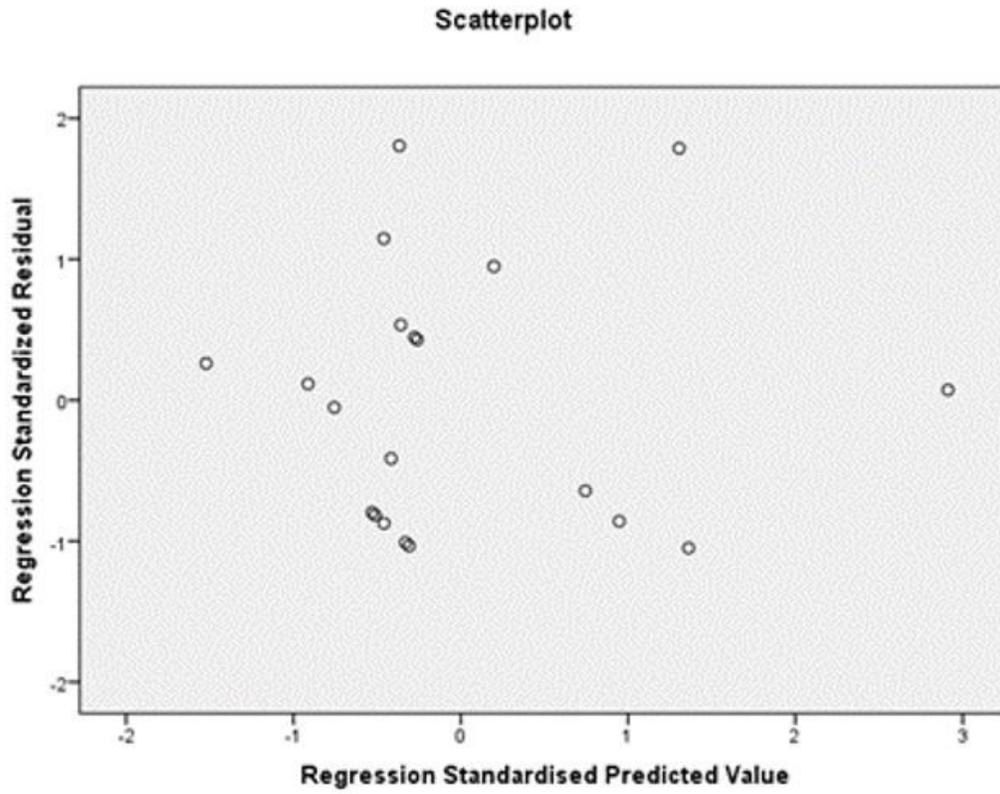


Figure 3

Scatterplot of the model