

GLOBAL JOURNAL

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VOLUME 14

ISSUE 1

VERSION 1.0



GLOBAL JOURNAL OF MANAGEMENT AND BUSINESS RESEARCH : D
ACCOUNTING AND AUDITING



GLOBAL JOURNAL OF MANAGEMENT AND BUSINESS RESEARCH : D
ACCOUNTING AND AUDITING

VOLUME 14 ISSUE 1 (VER. 1.0)

OPEN ASSOCIATION OF RESEARCH SOCIETY

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GLOBAL JOURNAL OF MANAGEMENT AND BUSINESS RESEARCH: D
ACCOUNTING AND AUDITING
Volume 14 Issue 1 Version 1.0 Year 2014
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

Does Corporate Environmental Disclosure Affect the Cost of Capital? Evidence from Tunisian Companies

By Dr. Toukabri Mohamed & Pr. Jilani Faouzi

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Abstract- We examine the effect of corporate environmental disclosure on the cost of equity capital for a sample of Tunisian firms over the period 2003-2011. Using an approach based on increasing dividends to estimate firms' cost of equity, we find that firms with better environmental disclosure scores exhibit cheaper equity financing. In particular, our findings suggest that investment in practices corporate environmental disclosure contributes substantially to reducing firms' cost of equity. Our paper contributes to the literature by adding evidence on effects of corporate environmental disclosure voluntary on long term economic forecasts of the cost of equity and on the financial value of firms.

Keywords: stakeholder theory, corporate environmental disclosure, cost of equity capital tunisian company.

GJMBR-D Classification : JEL Code: M59, Q56



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Does Corporate Environmental Disclosure Affect the Cost of Capital?

Evidence from Tunisian Companies

Dr. Toukabri Mohamed ^α & Pr. Jilani Faouzi ^σ

Abstract- We examine the effect of corporate environmental disclosure on the cost of equity capital for a sample of Tunisian firms over the period 2003-2011. Using an approach based on increasing dividends to estimate firms' cost of equity, we find that firms with better environmental disclosure scores exhibit cheaper equity financing. In particular, our findings suggest that investment in practices corporate environmental disclosure contributes substantially to reducing firms' cost of equity. Our paper contributes to the literature by adding evidence on effects of corporate environmental disclosure voluntary on long term economic forecasts of the cost of equity and on the financial value of firms.

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I. INTRODUCTION

The association between the environmental corporate disclosure quality and the cost of equity capital is a significant theme in economic theory and practice. Therefore, the objective confirmation and the extensive observation of its role between practitioners propose that environmental disclosure strategy is somehow related to a company's costs of equity funding. In addition, academic study also sustain the positive effect of superior environmental voluntary disclosure to decreasing cost of equity capital by emphasizing its consequence on stock market liquidity and assessment risk. Though, little experiential evidence exists on the precise nature of this correlation, particularly when it comes to so-called regulations law countries member to a "stakeholder" practice of company governance.

The pressure of voluntary disclosure measures on the cost of independence funding has forever been a motivating theme in the financial-accounting research, which can be ranked to academic and empirical. From a theoretical point of vision, an adverse relationship between quality of disclosure Company and cost of equity financing is confirmed, particularly accentuate on

communication ability to power stock market liquidity and evaluation risk. Empirical maintain for the recommended association is also offered by a rising body of studies, trying to measure the correlation between cost of equity capital and quality of environmental corporate disclosures.

This research founded on previous and simultaneous study that present inconsistent results contradictory the relation between corporate social responsibility and corporate environmental disclosure and the cost of equity capital. Richardson and Welker (2001) support a significant positive relationship between social disclosure and the cost of equity capital. In this context, Tsang and Yang (2010) expose confirmation consistent with an opposite relation, while Clarkson, Fang, Li, and Richardson (2010) not succeed to bring a important relation after instruct for firms relative environmental performance. Conclusion in Connors and Silva-Gao (2009) and Sharfman and Fernando (2008) imply that relative environmental performance catch a measurement of firm danger that matters to investors and eventually affects the cost of equity.

Our study is associated to but also impede from the research of Plumlee et al. (2008) and Richardson and Welker (2001). Plumlee et al. (2008) analyses the effect pact of voluntary environmental disclosure on firm value. We examine a broader concept of corporate social responsibility (CSR), which incorporated environmental protection, community development, corporate governance practices, employee relations, multiplicity practices, individual rights, and merchandise quality. In addition, we use a measure of CSR that is diverse from Plumlee et al. (2008). These researchers employ a self-constructed index to measure firms' environmental disclosure quality.

Indeed, to the insufficiency of empirical study on the relation between environmental corporate disclosure and the cost of capital, our attention in firms' equity financing costs is stimulated by the next thoughtfulness. Firstly, the cost of equity capital is the inside price of return so as to the market indented to a firm's potential cash flows to establish its current market value. Accordingly, it is the necessary rate of efficiency specified the market's observation of a company's

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riskiness. If environmental corporate disclosure influences the estimation riskiness of a firm, as we discuss afterward, subsequently socially responsible firms must avail from reduced equity financing costs. Next, correlated research recommends that successful corporate governance, and in particular stricter reporting standards, abase firms' cost of equity capital means of a decrease in agency and information asymmetry problems (Chen et al., 2009).

As we discuss in the following, information asymmetry is considered among technical through which environmental corporate disclosure affects the cost of equity capital. According to the third idea research, the cost of equity correspond to investors' necessary rate of return on corporate investments and consequently is a solution input in firms' long-term investment choice. Exploratory the relation between environmental corporate disclosure and the cost of equity must then assist managers appreciate the result and therefore have significant repercussion for strategic planning. Furthermore, the cost of capital possibly will be the intermediary through which capital markets promote firms to become more socially responsible (Heinkel et al., 2001).

Based on the theoretical study of Merton (1987) and Heinkel et al. (2001), we examine the following hypothesis, environmental corporate disclosure have decrease cost of equity capital than low corporate environmental reporting justification to poor corporate environmental disclosure being related through a modest investor foundation and elevated perceived risks. To calculate firms' cost of equity capital, we will rely an important number of studies in accounting (Hail and Leuz, 2006; Chen et al., 2009) and employ the ex ante cost of equity indirect in analyst earnings forecasts and stock prices. This accounting supports approach present two major advantages. Primary, contrasting usual measures of firm value (Tobin's Q), it permit one to organize for dissimilarity in development rates and predictable future cash flows when approximation firms' cost of equity (Hail and Leuz, 2006). Next, it avoids the use of noisy appreciated returns and the deterioration of traditional asset pricing models to introduce precise approximation of firm-level cost of equity capital (Pástor et al., 2008).

Our studies add to the literature in some level. Indeed, as preceding studies examine whether environmental corporate disclosure influence firm value, this is the first study to our knowledge to use a large panel of Tunisian firms to study the consequence of corporate environmental disclosure on the cost of equity capital.

Our analysis is incite by prior research propose that a significant instrument through which corporate environment disclosure concern firm value is its effects on firm risk (McGuire et al., 1988; Starks, 2009). Our empirical results propose supportive evidence.

The remainder of the paper is organized as follows. In section 2 we review the relevant literature and develop hypotheses. Section 3 provides details of research design, variable measurement, and sample selection, and presents descriptive statistics of the sample. We present our empirical results in section 4 and conclude in section 5.

II. LITERATURE REVIEW

Financial and environmental information disclosure represents an essential function in decrease information asymmetry among firms and investors. Revelation practices harmonize the role performed by accounting numbers in producing more accurate pictures of firms' economic positions. We can classify communication practices in two axis: (a) obligatory and (b) not required and voluntary or firm-specific. Obligatory disclosure practices are necessary by laws, policy, and widely used company practices. In this class, we can organize all practices that are common to all firms submerged in the same environment. Essential and obligatory disclosure practices complement official disclosure and depend on firms' encouragement to improve enquire external user.

According to Ullmann (1985), the association between corporate environmental disclosure and financial performance is compound and the subsistence of any correlation between these two variables is unexpected. The study to Barnett and Salomon (2006), this correlation is nonlinear. The majority of the empirical research reveals a significant relationship between corporate environmental disclosure and financial performance and no significant relationship with the cost of capital (Botosan and Plumlee, 2002; Graham et al., 2005). This affirmation attracts more the concentration of financial analysts as it provide them specific information which facilitate them to reduce the cost of collecting and treating the information and hence reduce the firm information asymmetry. In this context, the results of Cormier et al. (2009) illustrate information disclosure about the environmental disclosure of Canadian companies decrease information asymmetry. Welker et al. (2001) analysis the relationship between the cost of equity and social and environmental disclosure for a sample of Canadian firms. However, they corroborate a significant positive relationship between the quality of environmental disclosure and .the cost of equity. They involve their result to the problem of endogeneity between disclosure and firm characteristics which wasn't taken into consideration.

Required and voluntary disclosure practices can be complements or substitutes. Some firms can round of general regulations by providing information about especial aspects off their business that are not necessary by the measure and standard. Accordingly, a general improvement in the mandatory disclosure level may replacement for disclosure practices that were

earlier voluntarily announced by some firms. Consequently, we suppose voluntary disclosure practices to be slightly more important in countries where the general disclosure environment is poor. We also anticipate discovering advanced cross-sectional difference among firms in that environment. Some firms may have inducement to furnish disclosure levels superior to the normal, while others do not thus generate a larger deviation in disclosure levels than those observed in countries where the general disclosure environment is lofty.

First research exploratory the relationship between environmental reporting and firm value focus on the correlation linking specific environmental concern or actions and stock price or stock price changes. In this context, Barth and McNichols (1994) study that the market evaluates environmental liabilities in excess of that declared by firms reliable with them having an unrealized environmental liability, while Blacconiere and Patten (1994) and Blacconiere and Northcutt (1997) present confirmation of the profit of enhanced environmental reporting.

In another study that analyzed disclosures absent specific actions or liabilities, Richardson, and Welker (2001) explore the association between social disclosures include on annual reports (which contained environmental and social disclosures) and the cost of capital for a illustration of Canadian firms.

They find a surprising positive relation between environmental disclosures and cost of capital and explore whether that relation is due to partiality in social disclosures. While their conclusion propose that enhanced social disclosures amplify cost of capital, which would decrease firm value, the authors confirmed that this does not involve that environmental disclosure has an in general negative effect on the firm and advocate that additional research discuss other favorable effects of environmental disclosures.

Voluntary environmental corporate disclosures possibly will take various profits (Dedman et al., 2008). For example, Dedman et al. (2007) confirmed that corporate from the elevated R&D biotechnology segment advantage as of liberate voluntary disclosures on medicine improvement statement. Prior study has commonly found a negative association between voluntary environmental corporate disclosure and the cost of capital. Hypothetically, Diamond and Verrecchia (1991) conceive that superior environmental corporate disclosure decrease adverse selection cost suitable to information asymmetry, thus improve market liquidity and diminish the cost of capital.

In a similar context, Barry and Brown (1985) established that better environmental corporate disclosures may diminish the evaluation risk that is related with the cost of capital. Indeed, Welker (1995) illustrate that environmental corporate disclosure levels are negatively connected with information asymmetry.

Botosan (1997) arouse a negative dependence between environmental corporate disclosure level and the cost of equity capital for firms with a low analyst subsequent. Additional, Mensah et al. (2003) explain that better corporate environmental corporate disclosure is linked with reduced analyst estimate mistake and dispersions.

This works of research analyze the incidence of environmental corporate disclosure level on the cost of capital and suppose a unique sense association between environmental corporate disclosure and the cost of capital. Nevertheless, we cannot detect a straightforward negative relationship between environmental corporate disclosures and the cost of capital because under some situation, disclosures will amplify investor ambiguity and information asymmetry.

In the same line, Kothari et al. (2009) conceive that the information signaling of environmental disclosure effects the cost of capital and they recommend a strong link between environmental corporate disclosure and the cost of capital (i.e., positive environmental corporate disclosures decrease investors' improbability and the cost of capital while adverse environmental corporate disclosures increase investors' uncertainty and the cost of capital). They content analyze environmental corporate disclosures from management, market analyst, and business press. Nevertheless, they discover that the estimated directional relationship between environmental corporate disclosure and the cost of capital only be present for credible business press environment corporate disclosures and that the market be inclined to reduction environment corporate disclosures from management. In testing environmental corporate disclosures by management, Kothari et al. (2009) center of attention on directive environmental corporate disclosures such as 10-K and 10-Q documents. Though, little attention in the literature has been committed to exploratory the directional effect of voluntary environmental corporate disclosure on the cost of capital.

III. HYPOTHESES DEVELOPMENT AND METHODOLOGY

a) *Hypotheses Development*

Further, the signaling theory speculates the solution choice would encourage managers to offer more voluntary environmental corporate disclosures when information asymmetry is elevated (Verrecchia, 1983). Reliable with signaling theory, Mak (1996) notes that Initial Public Offering (IPO) firms are more tending to environmental corporate disclose management forecasts when they have higher deviation of returns. Verrecchia (1983) suggests that managers are encouraged to environmental corporate disclose good news forecasts to collect a higher firm valuation from investors. Likewise, Trueman (1986) posits that goods news release can translate into a higher market value by

generous investors a more optimistic measurement of managers' talent. Management profits forecasts can affect firm values in two approaches. First, communication of profits forecasts might result in an adjustment in predictable future earnings. Second, management forecasts may enhance the percentage of investors holding the company's securities, thus decrease necessary rates of return. In general, good news forecasts may diminish the adverse-selection component of information asymmetry. Basing on all above arguments, we predict that:

H_7 : There is a positive relationship between the expected cost of equity capital and the quality of corporate environment disclose

b) Methodology

i. Data description

Companies in our study are characterized by a low level of environmental disclosure. Tunisia appears principally adequate for such type of examination, since Tunisian companies have significant disclosure discretion and approved level of revelation is notably low. The just obligation for companies to be listed on the local exchange is compliance with Tunisia Financial Market Council, which authorized firms with important autonomy in deciding their voluntary disclosure policy. Moreover, a number of prior studies also focus on Tunisian, or comprise it in a supplementary international sample. Consequently, this specific research should make the subtle influence of amplified environmental disclosures voluntary on firms' cost of equity capital more simply measurable.

Overall, there are 32 companies listed on the Tunisian Stock Exchange. The type of firms includes greatest capitalized Tunisian companies, along with some small publicly held companies, trading on the local exchange. This sample of firms involve that a significant bias in a potential environmental disclosure score may exist, because environmental disclosure quality is positively correlated with company's market value (Lang and Lundholm, 1993). Corporate environmental disclosure is negatively related with the firm size and large companies are generally assumed to have a richer environmental disclosure in terms of media and analyst coverage. Though, if there is an adequate cross-sectional variation in the score of environmental corporate disclosure, this should not cause problems for the empirical research.

ii. Independent Variable- Cost of equity capital

Cost of equity capital is calculated of the rates of returns implied by current prices and future cash flows, and thus is not straight observable. Prior research affords some approaches to approximation the cost of equity capital (Ohlson and Juettner-Nauroth, 2005; Easton, 2004). The fundamental theory in all methods is

to use analyst forecast data to procure the cost of equity capital by associate the existing stock price to a series of predictable future and abnormal cash flows. Thus, Botosan and Plumlee (2005) evaluate these choice approaches by exploratory the dependence between cost of capital estimates and firm-specific risk (i.e., market risk, leverage, information risk, firm size, and growth). They appraise that the target price technique utilize by Botosan and Plumlee (2002), and the PEG ratio (price/earnings to growth ratio) method explained by Easton (2004) are more consistent as opposed to new methods. The Easton model approximate the cost of capital has been extensively utilized in the literature (Francis et al., 2005).

iii. Corporate Environmental Disclosure

To examine the method by which the environmental performance or environmental information is communicated between (2003-2011) by Tunisian companies listed at Tunis Stock Exchange Securities in the first, second and third level (Environmental Reporting) we composed an index publication (PI) on all of the following information:

$$\text{EnvRepPI} = \frac{\sum_{i=1}^n P_i}{m}$$

Where,

n: number of element disclosed, n=3

m: number of possible elements to disclose, m=3

pi: group of elements disclosed

- $[p_1]$ Non-financial information concerning the environmental objectives, the management, the policy and other appearances that can broadcast environment performance in non-financial information. This measure can procreate a value "1" if the company disseminates this information or category "0" if the companies no account information.
- $[p_2]$ Performance indicators have a significant impact on the environment (water, air, soil). These indicators are defined by the Global Reporting Initiative, and other organizations. The indicator is "0" if the company does not disclose such information, "1" if the company reports communicate these indicators, although these indicators are not associated with the indicators set out in international guidelines and recommendations.
- $[p_3]$ Financial indicators (investments and acquisitions of environmental assets, costs, provisions). These indicators expose in monetary terms the behavior of firms regarding environmental reporting. Values can be "0" if the company does not advertise this information or "1" if the company indicates such information.

This way of quantifying environmental information allows the incorporation of all kinds of information in single figure comparable companies and is not very subjective and based, as it is not a review qualitative analysis. According to researchers is not always the same with the point of view of the investor in terms of environmental reporting importance and transparency.

Indeed to test empirically the association between Environmental Corporate disclosure score and the cost of equity (r), we estimate the following model:

Where r = cost of equity capital

$$r_{i,t} = D_{i,t+1}/V_{i,t} + g$$

Where:

$r_{i,t}$: the cost of equity of the firm i in t .

$D_{i,t+1}$: the dividend paid by the firm i in $t + 1$.

$V_{i,t}$: the market value of the share of the firm i in t .

g : the growth rate of the dividend yield predictable as the dividend growth over the previous year.

iv. Control Variables

In order to control the effect of additional determinants of the cost of capital, we utilize firm characteristics variables such as market capitalization, leverage, and market to-book ratio.

As the research work of Kothari et al. (2009), these three measures are important determinants of the cost of capital. Because we examine the evolution in cost of capital as a replacement for of examining its level, these intervening effects are expected to be less significant in the models. Though, to be reliable with prior studies, we employ these control variables.

Little firms are riskier than big firms, thus, we anticipate a negative coefficient on market capitalization (Rogers et al., 2009). Extremely levered firms are correlated with higher risks, so we predict a positive coefficient on leverage. Furthermore, prior studies use development opportunity (i.e., the market to book ratio) as a proxy for proprietary cost (Ajinkya et al., 2005). Growth opportunities show the availability of beneficial projects. Bushman and Smith (2001) argue that environmental corporate disclosure is a mechanism through which a firm can lower its cost of capital to back growth opportunities. We consequently contain market-to book ratio in our regressions, and we anticipate a negative coefficient on growth opportunity.

Therefore, hypothesis one is tested by taking all variables into consideration and using the following regression model:

$$\text{Cost of Capital}_{i,t} (r_{i,t}) = \alpha + \beta_1 (PI) + \beta_2 MC + \beta_3 MB + \beta_4 LEV + \epsilon_i$$

Where:

$r_{i,t}$: the cost of equity of the firm i in t .

PI: index publication of corporate environmental disclosure.

MC: represents log of the market capitalization estimated by total number of outstanding common shares multiplied by stock price at the beginning of the year.

MB: is log of market-to-book ratio at the beginning of the year.

LEV: is long-term debt at the beginning of the year deflated by total assets at the beginning of the year.

IV. RESULTAS AND DISCUSSION

In this study, the method used is panel data because we have data for 23 companies and 8 years, which gives us 168 observations. The variables of this study can be classified into three types: dependent variable, independent variables and control variables.

The data are consolidated over time or eight years examined 2003-2011 inclusive. Panel data are better able to absorb and measure effects that are just downright not visible in pure transverse or pure time series data.

a) Descriptive Analysis

Descriptive statistics are tested for each Corporate governance systems and firms specificities. The results of the descriptive statistics are shown in Table 1.

Table 1: Descriptive Statistics

Variables	Mean	SD	Max	Min
r_i	0.082	0.212	0.326	0.041
PI	1.494	0.823	3	0
MC	0.762	0.017	1.820	0.173
MB	0.185	0.161	1.483	0.092
LEV	0.406	0.292	1.468	0.064

Table 1 also analyzes the descriptive statistics related to our cost of equity capital approximated and control variables. To determine the descriptive statistics, we use 168 sample observations. We compute the descriptive statistics of the cost of capital employing all observations across the years 2003–2011. The mean (median) estimates of the cost of capital and corporate environmental disclosure are 9.2% and 1.494, respectively. On the other hand, the median MC is 0.762, while mean (median) LEV is 0.432. When we measure MB, we took the natural log of market-to-book ratio to control for the outliers. However, the majority of the sample companies are in debt. There seems to be a wide variation between the minimum values among the society and maximum attributes. This result is expected due to the consideration of a wide range of companies of different sizes, degrees of environmental sensitivity and different levels of profitability, debt, as well as various positions on the list.

b) Correlation Analysis and Examination of Multicollinearity

Concerning the most information from of corporate environmental disclosure, it is also significant positive relationship between board independence and the disclosure quantity of each environmental issue related to environmental policy changes, products, environmental auditing and sustainability. There is a negative significant correlation between the role of leverage and the cost of equity. Index publication of corporate environmental disclosure significantly and positively associated with cost of equity.

Results exhibit a significant positive identically dependence between the cost of equity and companies specificity, including firm size (market capitalization), and ratio of market-to-book. No significant relationship was found between cost of equity and each log-term debt (LEV) measure.

In an exclusive way the coefficient of correlation between the two independent variables, measuring the financial value of company, more particularly, there is little multicollinearity between market capitalization and ratio market-to-book, where Pearson and Spearman coefficients dependency are 0.781 and 0.792 correspondingly. We confirm this result given that are two measures that getting close and gathered to determine the value of the firm. Furthermore, as such multicollinearity is simply somewhat higher than the ideal limit, results signify that multicollinearity is improbable to be a powerful problem.

The likely existence of multicollinearity is also considered by the explanation of the variance inflation factor (VIF). Table 2 analyzes the variance inflation factor

(VIF) and tolerance coefficients of each illustrative variable. The table illustrates that the maximum VIF is 3.53, in addition, the smallest tolerance coefficient is 0.28. Finally, the results of VIF and tolerance coefficients discover that there is no intolerable degree of multicollinearity between the variables in our study dealing with Tunisian firms, ensures that there is no require to worry about the correlation between the illustrative variables.

Table 2 : Variance inflation factor (vif) of corporate environmental disclosure and corporate characteristics

Variable	VIF	Tolerance 1/VIF
PI	1.78	0.56
MC	3.53	0.28
MB	2.91	0.34
LEV	2.41	0.41

The results of the tests show the absence of a multivariate multicollinearity problem. The Hausman test results indicate that the random effect is preferred.

c) Regression Analysis

Multiple regression examination by Ordinary Least Squares (OLS) longitudinal panel regression with robust standard error is engaged to test the developed research hypotheses. Such multivariate study supposes to analyze the association between cost of equity and corporate environmental disclosure and control variables measuring the financial value of company and debts.

Empirical results of the Ordinary Least Squares (OLS) regression of cost of equity and corporate environmental disclosure quantity are exposed in Table 3.

Table 3 : OLS Longitudinal Panel Regression with Robust Standard Error of Cost of Equity (r_{it})

Variable	Cost of Equity (r_{it})	
	Coeff.	p-value
<i>Intercept</i>	4.38	0.341
<i>PI</i>	0.28**	0.001
<i>MC</i>	0.31**	0.024
<i>MK</i>	12.76**	0.058
<i>LEV</i>	-0.72**	0.081
<i>Adjusted R² (%)</i>	27.96	

*PI: Index Corporate Environmental Disclosure, MC: Market Capitalization, MK: Market-to Book, LEV: Leverage; *** $p \leq 0.01$, ** $p \leq 0.05$, and * $p \leq 0.10$.*

Table 3 analyses the results of Ordinary Least Squares (OLS) longitudinal panel regression with robust standard error cost of equity.

Correlation coefficients of the cost of equity (r_{it}) variable with the control variables show a statistically significant correlation with corporate environmental disclosure, market capitalization, ratio of market-to book and % leverage. These results are consistent with the descriptive analysis in Table 3, supporting the relationship between cost of equity and corporate environmental disclosure voluntary.

In this context, we find that, the results show a significant positive association between cost of equity and total corporate environmental disclosure ($p \leq 0.01$). Results also indicate a strong significant positive association of cost of equity total with each of market capitalization ($p \leq 0.05$), market-to book ratio ($p \leq 0.1$). The adjusted R square of the model is 27.96% which indicates that 27.96% in the changes in cost of equity are explained by changes in the examined determinants. Results also expose an important negative relationship between cost of equity and corporate specifics including

company leverage ($\rho \leq 0.1$); the insignificant relationship of debt to cost equity is confirmed for most of the disclosure categories.

V. IMPLICATIONS AND CONCLUDING REMARKS

The focus of this study is to examine the effects of corporate environmental disclosure on the cost of equity capital. Specifically, we posit that good news of environmental disclosure contain different information content and therefore have asymmetric impacts on the cost of equity capital. Using a sample spanning from 2003 to 2011, we find that environmental disclosure voluntary a significant increases in the cost of equity capital.

This paper extends the previous literature by directly examining the effects of corporate environmental disclosure voluntary on the cost of equity capital. Our study also contributes to a better understanding of the costs and benefits of voluntary disclosure. However, our results recommend that there is an asymmetric function of good news of corporate environmental disclosure versus bad news on the cost of equity capital. As a matter a fact, not all types of voluntary disclosures decrease investors' uncertainty about future cash flows. This finding suggests that policy makers emphasize the credibility of corporate environmental disclosure voluntary to fully achieve the target of reducing the cost of capital.

This research has some limits, based little company size and short horizon. It has considered the environmental information disclosed only in management annual reports, while other reporting media are used by companies such as websites and the press. Other variables that can explain the societal process of the company could be used as well as other methods of calculating the future cost of equity.

Our study uses environmental disclosure as a proxy for voluntary disclosures. However, a firm's cost of equity capital can be affected by other types of voluntary disclosures (e.g., voluntary disclosures of future cash flow and corporate research, development, corporate social reporting, reports of sustainable development). In addition, there are other technical and strategy to estimating underlying market uncertainties related to firm valuation.

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GLOBAL JOURNAL OF MANAGEMENT AND BUSINESS RESEARCH: D
ACCOUNTING AND AUDITING
Volume 14 Issue 1 Version 1.0 Year 2014
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

Role of Accounting Information in Strategic Decision Making in Manufacturing Industries in Bangladesh

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Abstract- Accounting information is a part and parcel of today's life which is necessary to understand the accurate financial situation of the organization and used as the basis of making strategic decisions. Since strategic decisions have long-term effect on the business and therefore it is important to analyze accounting information for making long-term strategic decisions. The present study is an endeavor to evaluate the usage of accounting information by the decision makers in practices in strategic decision areas. Five strategic decision areas such as basic strategic decision, manufacturing decision, human resource decision, long term investment decision and marketing decision were considered for the study. The results of the study prove that there is significant relationship between accounting information and strategic decisions and strategic decisions in all the selected areas significantly depend on accounting information and it is also observed from the analysis of the opinion of the respondents that 44.44% of the respondents always use accounting information in making strategic decision in manufacturing industries in Bangladesh.

Keywords: *accounting information, strategic decision, manufacturing industries, Bangladesh.*

GJMBR-D Classification : *JEL Code: M00*



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Role of Accounting Information in Strategic Decision Making in Manufacturing Industries in Bangladesh

Md. Hafij Ullah ^α, Jamil Ahmed Khonadakar ^σ & Syeda Tamanna Fahim ^ρ

Abstract- Accounting information is a part and parcel of today's life which is necessary to understand the accurate financial situation of the organization and used as the basis of making strategic decisions. Since strategic decisions have long-term effect on the business and therefore it is important to analyze accounting information for making long-term strategic decisions. The present study is an endeavor to evaluate the usage of accounting information by the decision makers in practices in strategic decision areas. Five strategic decision areas such as basic strategic decision, manufacturing decision, human resource decision, long term investment decision and marketing decision were considered for the study. The results of the study prove that there is significant relationship between accounting information and strategic decisions and strategic decisions in all the selected areas significantly depend on accounting information and it is also observed from the analysis of the opinion of the respondents that 44.44% of the respondents always use accounting information in making strategic decision in manufacturing industries in Bangladesh.

Keywords: accounting information, strategic decision, manufacturing industries, bangladesh.

I. INTRODUCTION

Accounting information is a part and parcel of today's life which is necessary to understand the accurate financial situation of the organization and used as the basis of making any decisions. Since strategic decisions have long-term effect on the business and therefore it is important to analyze accounting information for making strategic decisions. Accounting information helps managers understanding their tasks more clearly and reducing uncertainty before making their decisions (Chong, 1996). Accounting is sometimes referred to as a means to an end, with the ending being the decision that is helped by the availability of accounting information (Arneld and Hope, 1990). Accounting systems can aid in decision making

providing information relevant to the decision and to the decision maker (Gray, 1996). Effective and efficient accounting information plays a central role in management decision making (Trimisiu Tunji, 2012). Accounting information is one type of information recognized as a 'learning machine' that can help to evaluate how objectives might be achieved by quantifying the financial impact of each alternative available to the decision (Burchell et al., 1980). Accounting and financial information are among the most important information widely used in the managerial decisions (Royae, Salehi, & Aseman, 2012). Within contemporary economic conditions, a successful manager needs a lot of reliable accounting information in order to be able to make quality business decisions (Miko, 1998). Economical information especially financial and accounting ones are the information which always managers use in short term and strategic decisions and they may have most application among different variables effective in decision-making and in all types of decisions (Royae, Salehi, & Aseman, 2012 and Hubber, 1990).

Strategic decisions, when the decision maker aims for long periods of time, allocates all or part of the company's core assets to achieve that goal; such decisions are usually adopted at top management (Eugenia1 and Tiberiu, 2013). Strategic decisions are among the most distinctive decisions in an organization and these are used for determining the goals and direction for long-term company development. Basically top management is involved in these sorts of decisions. They decide on company policy, long-term and annual business plans and the organizational structure, i.e. anything that is linked to the future of the company. A wrong strategic decision have far-reaching, negative effects on the company, which in turn places a lot of responsibility on the shoulders of the strategic decision maker (Sikavica, et al.1994).

In this study, five strategic decision making areas such as basic, manufacturing, human resource, marketing, long-term investment were selected. These strategic decisions making somehow depend on accounting information. Without accounting information manufacturing department can't know what is going on with the production cost and equipment cost. For hiring, training and promotions, human recourse manager

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somehow depends on accounting information. For developing new product or determining the sales commission, a sales manager needs proper accounting information. Accounting information also helps to take long term investment decisions by giving the proper view of present condition and would be condition of the organization. Though top management needs accounting information in every step to take any sorts of strategic decisions but no significant study were found to be conducted on the role of accounting information in strategic decisions making in manufacturing industries in Bangladesh. Therefore, the study was initiated to evaluate the importance of accounting information in strategic decision making.

The remaining parts of the paper were arranged as: part 2 highlights the objectives of the study; part 3 delineates the methodology of the study; part 4 presents the analysis of the findings; part 5 identifies summary of findings; part 6 provides recommendations for improvement of use of accounting information in strategic decision making; part 7 identifies the limitations of the study; part 8 identifies the implications of the study; part 9 highlights the directions to further study and finally the paper concludes with a short conclusion in part 10.

II. OBJECTIVES OF THE STUDY

The main objective of the study is to evaluate the role of accounting information in strategic decision making in manufacturing industries in Bangladesh. The specific objectives of the study are:

- a) To identify the frequency of using accounting information in decision making in manufacturing industries in Bangladesh.
- b) To know about the effectiveness of accounting information in long-term strategic decisions in Bangladesh.
- c) To identify the problems in generating accounting information in manufacturing organization in Bangladesh; and
- d) To recommend suggestions to overcome the identified problems.

III. METHODOLOGY OF THE STUDY

The following methodology has been followed in conducting the study:

- i. *Sources of Data:* The study basically used primary data collected through opinion survey to evaluate the use of accounting information in making strategic decisions.
- ii. *Sources of Primary Data:* Primary data have been collected through questionnaire survey among the Director, Manager, AGM, and Senior officers of the selected Manufacturing industries in Bangladesh.
- iii. *Preparation of Questionnaire:* The questionnaire has been prepared based on the relevant literature of

the study. Some expert opinion has been taken in preparing the questionnaire.

- iv. *Method of Data Collection:* Data has been collected through direct interview method. So there is very low percentage of failure in collecting data.
- v. *Tools used for Analysis:* Statistical Package for the Social Sciences (SPSS) was used for data analysis. Furthermore, mean, percentages, standard deviation and t-test were used to determine the effectiveness of the accounting information in long-term strategic decisions.
- vi. *Hypotheses of the Study:* The following hypotheses were taken to be tested under the present study:

H_1 : There is no relationship between Accounting Information and Basic strategic decisions in Manufacturing Industries in Bangladesh.

H_2 : There is no relationship between Accounting Information and Manufacturing Decisions in Manufacturing Industries in Bangladesh.

H_3 : There is no relationship between Accounting Information and HR Management Decisions in Manufacturing Industries in Bangladesh.

H_4 : There is no relationship between Accounting Information and (Long-Term) Investment Decisions in Manufacturing Industries in Bangladesh.

H_5 : There is no relationship between Accounting Information and Marketing Decisions in Manufacturing Industries in Bangladesh.

IV. FINDINGS AND ANALYSIS

a) *Demographic Information of the Respondents*

The demographic information of the respondents is as provided below to depict the basis of the study:

Table 1 : Demographic Information of the Respondents

Factor		Frequency	Percentage
1. Position of the Respondent	Director	12	26.67
	Manager	11	24.43
	AGM	12	26.67
	Senior officer	10	22.22
	Total	45	100
2. Name of Department/ Section	Accounts	18	40.00
	Accounts & Finance	11	24.44
	HR & Admin	6	13.33
	Marketing	5	11.11
	Finance	5	11.11
	Total	45	100
3. Name of Organization	KSRM	5	11.11
	TK Group	5	11.11
	BSRM	4	8.89
	Taher Group	4	8.89
	GPH Group	5	11.11
	PHP Group	5	11.11
	Mashud Group	4	8.89
	MEB Group	5	11.11
	S. Alam Group	4	8.89
	Sunman Group	4	8.89
	Total	45	100
4. Duration of Professional Experience (Year)	Below 5	0	0.00
	5-10	19	42.22
	10-15	16	35.56
	Above 15	10	22.22
	Total	45	100
5. Professional Educations in Accounting	B.Com/B.B.S	3	6.67
	M.Com/M.B.S	20	44.44
	B.B.A	3	6.67
	M.B.A (Major in Accounting)	8	17.78
	C.M.A	6	13.33
	C.A	5	11.11
	Total	45	100
6. Age group of the respondent:	Below 30	0	0.00
	30-35	13	28.89
	35-40	7	15.56
	40-45	12	26.67
	45-50	8	17.78
	50 & Above	5	11.11
	Total	45	100

Source: Own analysis from the opinion survey during April-May, 2013

b) Use of accounting information in strategic decisions

Table 2 shows the frequency and percentage of using accounting information in strategic decision making. From the analysis, it is observed that 55.56%

respondents use the accounting information frequently and 44.44% respondents always use accounting information.

Table 2 : Frequency of Using Accounting Information in Strategic Decision Making

Opinion	None	Rarely	Sometimes	Frequently	Always	Total
Frequency	-	-	-	25 (55.56%)	20 (44.44%)	45 (100%)

Source: Own analysis from the opinion survey during April-May, 2013

Table 3 shows the frequency and percentage of the reason of using accounting information in strategic decision making. It shows that maximum 57.78% of the respondents use accounting information for increasing

the accuracy of decisions and 35.56% use accounting information because they think that decision making is not possible without accounting information.

Table 3 : Showing the Reason of Using Accounting Information in Strategic Decision Making

Opinion	Frequency	% in total
1) Since other people use	0	0
2) Simply to have a basis of analysis for decision making	1	2.22
3) For increasing the accuracy of decisions	26	57.78
4) Decision making is not possible without Accounting information	16	35.56
5) Other	2	4.44
Total	45	100

Source: Own analysis from the opinion survey during April-May, 2013

i. Using Accounting Information in Basic Strategic Decisions

Table 4 shows the frequency and percentage of using accounting information in basic strategic decision. It shows that 51.11% respondents agreed that they use accounting information in corporate vision related decision and 11.11% disagreed in this regard. The table represents that 66.67% respondents agreed that they use accounting information in Corporate Objectives related decision and 4.44% disagreed in this case. It also represents that 66.67% respondents agreed that

they use accounting information in Corporate Growth Strategies related decision where 4.44% disagreed. The table proves that 64.44% respondents agreed that they use accounting information in Geographic domain and Business Unit Composition related decision and 8.89% strongly agreed in this case. Data also prove that 71.11% respondents agreed that they use accounting information in Core competencies and competitive advantage related decision where 6.667% disagreed in this regard.

Table 4 : Using Accounting Information in Basic Strategic Decision (in %)

No	Item details	Strongly Agree	Agree	Neutral	Disagre	Strongy Disagre	Total
1	You use accounting information in Corporate Vision related decisions.	9 (20%)	23 (51.11%)	8 (17.78%)	5 (11.11%)	0 (0%)	45 (100%)
2	You use accounting information in Corporate Objectives related decisions.	7 (15.56%)	30 (66.67%)	6 (13.33%)	2 (4.44%)	0 (0%)	45 (100%)
3	You use accounting information in Corporate Growth Strategies related decisions.	6 (13.33%)	28 (62.22%)	6 (13.33%)	5 (11.11%)	0 (0%)	45 (100%)
4	You use accounting information in	4 (8.89%)	29 (64.44%)	7 (15.56%)	5 (11.11%)	0 (0%)	45 (100%)
5	You use accounting information in Core competencies and competitive advantage related decisions.	4 (8.89%)	32 (71.11%)	6 (13.33%)	3 (6.667%)	0 (0%)	45 (100%)

Source: Own analysis from the opinion survey during April-May, 2013

Table 5 Shows that all the items have an arithmetic means greater than 3.00 and p-value is less than 0.05, which means that they are statistically significant, that means, accounting information significantly affects basic strategic decisions in manufacturing industries in Bangladesh. Among the items, item No. 2 measures use of accounting

information in corporate objectives related decisions, received the highest arithmetic mean, which indicates that it is the most accepted whereas item No. 4 measures the uses of accounting information in geographic domain and business unit composition related decisions, received the lowest arithmetic mean, this indicates that it is the least accepted.

Table 5 : Using Accounting Information in Basic Strategic Decisions (mean, std. deviation, t- value, p- value)

No.	Item details	Mean	Std. deviation	t-value	P-Value
1	You use accounting information in Corporate Vision related decisions.	3.8444	.87790	29.376	0.000
2	You use accounting information in Corporate Objectives related decisions	3.9111	.70137	37.408	0.000
3	You use accounting information in Corporate Growth Strategies related decisions	3.7778	.79455	31.895	0.000

4	You use accounting information in Geographic domain and Business Unit Composition related decisions	3.7333	.78044	32.089	0.000
5	You use accounting information in Core competencies and competitive advantage related decisions.	3.7778	.63564	39.869	0.000
	Total	3.81	.758	75.350	.000

Source: Own analysis from the opinion survey during April-May, 2013

The table 5 shows that all items as a group have a mean of 3.81, and 0.00% level of significance (P-value), which means that the null hypothesis (H_0) is rejected meaning that there is a significant relationship between accounting information and basic strategic decisions in manufacturing industries in Bangladesh.

ii. Using Accounting information in Manufacturing Decisions

Table 6 reveals the frequency and percentage of using accounting information in manufacturing decisions. It also reveals that 60% of the respondents agreed that they use accounting information in production equipment related decision and 8.89%

disagreed in this regard and 51.11% of the respondents agreed that they use accounting information in facilities related decision where 11.11% disagreed. Table also shows that 48.89% respondents agreed that they use accounting information in production planning and control related decision where 13.33% strongly agreed. The table provides that 48.89% respondents agreed that they use accounting information in vertical integration related decision and 6.667% disagreed in this point. Data also represents that 51.11% of the respondents strongly agreed that they use accounting information in production cost controlling & product quality trade off related decision where 6.667% disagreed.

Table 6 : Using Accounting Information in Manufacturing Decisions (in %)

No	Item details	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
1	You use accounting information in Production Equipment related decisions (that is, Degree of automation, technology choices, configuration of equipment, maintenance policies and the potential for developing new processes in-house)	5 (11.11%)	27 (60%)	9 (20%)	4 (8.89%)	0 (0%)	45 (100%)
2	You use accounting information in Facilities related decisions (that is, The size, capacity, location and focus of manufacturing resources)	6 (13.33%)	23 (51.11%)	11 (24.44%)	5 (11.11%)	0 (0%)	45 (100%)
3	You use accounting information in Production planning and control decision (that is, Production and order, material control systems)	6 (13.33%)	22 (48.89%)	11 (24.44%)	6 (13.33%)	0 (0%)	45 (100%)
4	You use accounting information in Vertical integration, that is, Strategic	8 (17.78%)	29 (64.44%)	5 (11.11%)	3 (6.667%)	0 (0%)	45 (100%)
5	You use accounting information in Production Cost Controlling & Product Quality Trade off decisions.	23 (51.11%)	14 (31.11%)	5 (11.11%)	3 (6.67%)	0 (0%)	45 (100%)

Source: Own analysis from the opinion survey during April-May, 2013

Table 7 Shows that all the items have an arithmetic mean greater than 3.00 and p-value is less than 0.05, which means that they are statistically significant and it means that accounting information significantly affect manufacturing decisions in manufacturing industries in Bangladesh. Item No. 5 measures the use of accounting information in production cost controlling & product quality trade off decisions received the highest arithmetic mean which indicates that it is the most accepted. Item No. 3 measures the use of accounting information in use accounting information in production planning and

control decision received the lowest arithmetic mean which indicates that it is the least accepted.

Table 7 : Using Accounting Information in Manufacturing Decisions (mean, std. deviation, t- value, p- value)

No.	Item details	Mean	Std. deviation	t-value	P-Value
1	You use accounting information in Production Equipment related decisions (that is, Degree of automation, technology choices, configuration of equipment, maintenance policies and the potential for developing new processes in-house)	3.7333	.78044	32.089	0.000
2	You use accounting information in Facilities related decisions (that is, The size, capacity, location and focus of manufacturing resources)	3.6667	.87905	27.981	0.000
3	You use accounting information in Production planning and control decision (that is, Production and order, material control systems)	3.5778	.91674	26.180	0.000
4	You use accounting information in Vertical integration, that is, Strategic make versus buy, supplier policies, extent of dependence on suppliers	3.8889	.77525	33.650	0.000
5	You use accounting information in Production Cost Controlling & Product Quality Trade off decisions.	4.2889	.92004	31.271	0.000
	Total	3.83	.885	64.908	.000

Source: Own analysis from the opinion survey during April-May, 2013

The above table also depicts that all items as a group have a mean of 3.83 and 0.00% level of significance (P-value), which means that the null hypothesis (H_0) is rejected meaning that there is significant relationship between accounting information and manufacturing decisions in manufacturing industries in Bangladesh.

iii. Using Accounting information in HR Management Decisions

Data in table 8 reveals the frequency and percentage of using accounting information in human resource management decisions. As per the data,

62.22% of the respondents agreed that they use accounting information in human resources policies related decision and also in promotion, transfer; retrenchment related decision where 11.11% strongly agreed in this point. Data also provides that 57.78% respondents agreed that they use accounting information in training and development related decision where 8.88% strongly agreed. The table indicates that 42.22% respondents agreed that they use accounting information in organization culture and management style related decision and also in responsibilities determination, performance measurement and reward/punishment related decisions.

Table 8 : Using Accounting information in HR Management Decisions

No	Item details	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
1	You use accounting information in Human resources policies [Acquisition, Recruitment (internal and external), Selection and hiring decisions] related decisions	4 (8.89%)	28 (62.22%)	7 (15.56%)	6 (13.33%)	0 (0%)	45 (100%)
2	You use accounting information in Promotion, Transfer, Retrenchment related decisions.	5 (11.11%)	28 (62.22%)	6 (13.33%)	6 (13.33%)	0 (0%)	45 (100%)
3	You use accounting information in Training and development related decisions.	4 (8.88%)	26 (57.78%)	10 (22.22%)	5 (11.11%)	0 (0%)	45 (100%)
4	You use accounting information in Organization culture and management style related decisions	5 (11.11%)	19 (42.22%)	16 (35.56%)	5 (11.11%)	0 (0%)	45 (100%)
5	You use accounting information in Responsibilities determination, Performance measurement and reward/punishment related decisions	4 (8.89%)	26 (57.78%)	8 (17.78%)	7 (15.56%)	0 (0%)	45 (100%)

Source: Own analysis from the opinion survey during April May, 2013

Table 9 Shows that all the items have an arithmetic means greater than 3.00 and p-value is less than 0.05, which means that they are statistically significant which means that accounting information significantly affects manufacturing decisions in manufacturing industries in Bangladesh. Among the items, item No. 2 measure the use of accounting

information in promotion, transfer, retrenchment related decisions, received the highest arithmetic mean indicating that it is the most accepted whereas item No. 4 measures the use of accounting information in organization culture and management style related decisions, received the lowest arithmetic mean which indicates that it is the least accepted.

Table 9 : Using Accounting Information in HR Management Decisions (mean, std. deviation, t- value, p- value)

No.	Item details	Mean	Std. deviation	t-value	P-Value
1	You use accounting information in Human resources policies [Acquisition, Recruitment (internal and external), Selection and hiring decisions] related decisions	3.6667	.82572	29.788	0.000
2	You use accounting information in Promotion, Transfer, Retrenchment related decisions.	3.6889	.84805	29.180	0.000
3	You use accounting information in Training and development related decisions.	3.6222	.80591	30.150	0.000
4	You use accounting information in Organization culture and management style related decisions.	3.5111	.84267	27.951	0.000
5	You use accounting information in Responsibilities determination, Performance measurement and reward/ punishment related decisions	3.6000	.86340	27.970	0.000
	Total	3.62	.832	65.209	.000

Source: Own analysis from the opinion survey during April-May, 2013

The table shows that all items as a group have a mean of 3.62 and 0.00% level of significance (P-value), which means that this hypothesis (H_0) is rejected meaning that there is a significant relationship between accounting information and human resource management related decisions in manufacturing industries in Bangladesh.

iv. Using Accounting information in Strategic Investment Decisions

Table 10 shows the frequency and percentage of using accounting information in strategic investment decisions. Data shows that 68.89% of the respondents

agreed that they use accounting information in capital raising (through share issue) related decision whereas 64.44% of them agreed that they use accounting information in borrowings (bank and financial institutions) related decision. It also indicates that 75.56% respondents agreed that they use accounting information in liquidation (repayment of capital) related decision and also in dividend payout related decision. It also represents that 55.56% respondents agreed that they use accounting information in investment in fixed assets (lease or purchase) related decision where 33.33% strongly agreed in this case.

Table 10 : Using Accounting Information in Investment Decisions

No.	Item details	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
1	You use accounting information in Capital raising (through share issue) related decisions	8 (17.78%)	31 (68.89%)	5 (11.11%)	1 (2.22%)	0 (0%)	45 (100%)
2	You use accounting information in Borrowings (bank and financial institutions) related decisions	9 (20%)	29 (64.44%)	3 (6.67%)	4 (8.89%)	0 (0%)	45 (100%)
3	You use accounting information in Liquidation (repayment of capital) related decisions	5 (11.11%)	34 (75.56%)	4 (8.89%)	2 (4.44%)	0 (0%)	45 (100%)
4	You use accounting information in Dividend payout related decisions	6 (13.33%)	34 (75.56%)	5 (11.11%)	0 (0%)	0 (0%)	45 (100%)
5	You use accounting information in Investment in fixed assets (lease or purchase) related decisions	15 (33.33%)	25 (55.56%)	5 (11.11%)	0 (0%)	0 (0%)	45 (100%)

Source: Own analysis from the opinion survey during April-May, 2013

Table 11 Shows that all the items have an arithmetic means greater than 3.00 and p-value is less than 0.05, which means that they are statistically significant which means that accounting information significantly affects manufacturing decisions in manufacturing industries in Bangladesh. Among the items, item No. 5 measure the use of accounting

information in investment in fixed assets (lease or purchase) related decisions, received the highest mean which indicates that it is the most accepted whereas item No. 3 measures the use of accounting information in liquidation (repayment of capital) related decisions, received the lowest arithmetic mean which indicates that it is the least accepted.

Table 11 : Using Accounting Information in Investment Decisions (mean, std. deviation, t- value, p- value)

No.	Item details	Mean	Std. deviation	t-value	P-Value
1	You use accounting information in Capital raising (through share issue) related decisions	4.0222	.62118	43.437	0.000
2	You use accounting information in Borrowings (bank and financial institutions) related decisions	4.0000	.79772	33.637	0.000
3	You use accounting information in Liquidation (repayment of capital) related decisions	3.9333	.61791	42.701	0.000
4	You use accounting information in Dividend payout related decisions	4.0222	.49949	54.018	0.000
5	You use accounting information in Investment in fixed assets (lease or purchase) related decisions	4.2000	.66058	42.651	0.000
	Total	4.04	.647	93.586	.000

Source: Own analysis from the opinion survey during April-May, 2013

The table shows that all items as a group have a mean of 4.04 and 0.00% level of significance (P-value), which means that this hypothesis (H_0) is rejected meaning that there is a significant relationship between accounting information and (long-term) investment decisions in manufacturing industries in Bangladesh.

v. Using Accounting information in Marketing Decisions

Table 12 depicts the frequency and percentage of using accounting information in marketing decisions. It shows that 37.78% respondents agreed that they use accounting information in selling and marketing strategic related decision whereas 37.78% opined

neutrally. The table also reveals that 40% respondents agreed that they use accounting information in promotional policies related decision whereas 40% also opined neutrally in this case. The data shows that 46.67% respondents agreed that they use accounting information in market segmentation related decision and 44.44% respondents agreed that they use accounting information in sales commission related decision and 28.89% strongly agreed in this point. It also provides that 33.33% respondents were neutral in case of using accounting information in marketing research.

Table 12 : Using Accounting information in Marketing Decisions

No	Item details	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
1	You use accounting information in Selling and Marketing strategic (Own-sale, Agent or dealer appointment) decisions.	4 (8.889%)	17 (37.778%)	17 (37.78%)	7 (15.56%)	0 (0%)	45 (100%)
2	You use accounting information in Promotional Policies (Advertising & others) related decisions.	3 (6.67%)	18 (40%)	18 (40%)	6 (13.33%)	0 (0%)	45 (100%)
3	You use accounting information in Market Segmentation related decisions.	4 (8.89%)	21 (46.67%)	15 (33.33%)	5 (11.11%)	0 (0%)	45 (100%)
4	You use accounting information in Sales Commission related decisions.	13 (28.89%)	20 (44.44%)	7 (15.56%)	5 (11.11%)	0 (0%)	45 (100%)
5	You use accounting information in Marketing Research (that is, New product Development and Marketing role in concurrent engineering) related decisions.	1 (2.22%)	15 (33.33%)	20 (44.44%)	9 (20%)	0 (0%)	45 (100%)

Source: Own analysis from the opinion survey during April-May, 2013

Table 13 Shows that all the items have an arithmetic means greater than 3.00 and p-value is less than 0.05, which means that they are statistically significant meaning that accounting information significantly affects manufacturing decisions in manufacturing industries in Bangladesh. Out of the items, item No. 4 measures the use of accounting

information in sales commission related decisions, received the highest arithmetic mean indicating that it is the most accepted and item No. 5 measures the use of accounting information in marketing research related decisions, received the greater arithmetic mean indicating that it is the least accepted.

Table 13 : Using Accounting Information in Marketing Decisions (mean, std. deviation, t- value, p- value)

No.	Item details	Mean	Std. deviation	t-value	P-Value
1	You use accounting information in Selling and Marketing strategic (Own-sale, Agent or dealer appointment) decisions.	3.4000	.86340	26.416	0.000
2	You use accounting information in Promotional Policies (Advertising & others) related decisions.	3.3778	.83364	27.181	0.000
3	You use accounting information in Market Segmentation related decisions.	3.5111	.81526	28.891	0.000
4	You use accounting information in Sales Commission related decisions.	3.9556	.95240	27.861	0.000
5	You use accounting information in Marketing Research (that is, New product Development and Marketing role in concurrent engineering) related decisions.	3.1778	.77720	27.428	0.000
	Total	3.48	.882	59.269	.000

Source: Own analysis from the opinion survey during April-May, 2013

The table shows that all items as a group have a mean of 3.48 and 0.00% level of significance (P-value), which means that this hypothesis (H_0) is rejected meaning that there is a significant relationship between accounting information and marketing decisions in manufacturing industries in Bangladesh.

vi. *Problems of Accounting System in your Organization*

Table 14 shows the frequency and percentage of the problems of using accounting information in manufacturing organization. It provides that 40% respondents disagreed and 60% strongly disagreed that

they do not use modern techniques/ instruments/ approaches of accounting. The table reveals that 48.89% respondents disagreed and 51.11% strongly disagreed that the higher authority does not use accounting information in strategic decision making process and same the percentage response observed regarding the accounting staff working for this sector is not up to standard. The table finally presents that 46.67% respondents disagreed and 53.33% strongly disagreed that the used accounting systems do not keep pace with information technology's requirements.

Table 14 : Problems of Accounting System in Manufacturing Organization under Study

No	Item details	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
1	The used accounting systems do not use modern techniques/ instruments/ approaches of accounting	0 (0%)	0 (0%)	0 (0%)	18 (40%)	27 (60%)	45 (100%)
2	The higher authority does not use accounting information in strategic decision making process	0 (0%)	0 (0%)	0 (0%)	22 (48.89%)	23 (51.11%)	45 (100%)
3	The accounting staff working for this sector is not up to standard.	0 (0%)	0 (0%)	0 (0%)	22 (48.89%)	23 (51.11%)	45 (100%)
4	The used accounting systems do not keep Pace with information technology's requirements	0 (0%)	0 (0%)	0 (0%)	21 (46.67%)	24 (53.33%)	45 (100%)

Source: Own analysis from the opinion survey during April-May, 2013

V. SUMMARY OF FINDINGS OF THE STUDY

The followings are the summary of the findings of the study:

- a) The analysis of the study proves that there is significant relationship between accounting information and strategic decisions. Strategic decisions in all the selected areas significantly depend on accounting information.
- b) It is observed from the analysis of the opinion of the respondents that 44.44% of the respondents always use accounting information in making strategic decision in manufacturing industries in Bangladesh.
- c) After analyzing the use of accounting information in basic strategic decision, it is found 15.56% respondents strongly agreed that they use accounting information for setting the organizational objective and 71.11% respondents agreed that they use accounting information in Core competencies and competitive advantage related decisions.
- d) The analysis of use of accounting information in manufacturing decisions reveals that 13.33% respondents don't use accounting information in production planning and control decision and 51.11% respondent strongly agreed that they use accounting information in production cost controlling & product quality trade off decisions.
- e) After analyzing the use of accounting information in Human resource decision, it is found that 8.89% respondents strongly agreed that they use accounting information in Human resources policies related decisions and 15.56% disagreed that they use accounting information in responsibilities determination, performance measurement and reward/ punishment related decisions.
- f) The analysis of the use of accounting information in strategic investment decisions shows that 8.89% respondents disagreed that they use accounting information in borrowings (bank and financial institutions) related decisions and 75.56% agreed that they use accounting information in investment in fixed assets (lease or purchase) related decisions.
- g) From the analysis of the use of accounting information in marketing decisions, it is found that 15.56% respondents don't use accounting information in selling and marketing strategic related decisions and 28.89% respondents strongly agreed that they use accounting information in sales commission related decisions. The analysis also provides that use of accounting information in marketing decisions is the lowest followed by manufacturing decisions (64.44%).
- h) There is no major problem faced by management of manufacturing organizations in Bangladesh in using

the accounting system. They all are using the updated accounting system and maintaining the standard of accounting system. They keep the pace with information and technological requirements.

VI. RECOMMENDATIONS OF THE STUDY

The following are the recommendations of the study:

- a) There is some opportunity in increasing the percentage of using accounting information in strategic decision making in manufacturing industries in Bangladesh. Therefore, manufacturing industries should use accounting information always for increasing the accuracy of their decisions.
- b) Manufacturing organizations should increase the percentage of using accounting information in setting accurate organizational objective.
- c) The study also recommends that manufacturing organization should increase the uses of accounting information in marketing decisions to increase the sales volume and to take better marketing strategy.
- d) The study recommends that manufacturing organizations should increase the use of accounting information also in manufacturing decisions.
- e) Manufacturing organizations should increase the use accounting information in human resource related decisions for increasing the accuracy and effectiveness of the decisions.

VII. LIMITATIONS OF THE STUDY

The limitations of the study are as given below:

- a) The study could not show the whole scenario of the all manufacturing organizations in Bangladesh. Because the sample is chosen from the one region of Bangladesh. That's why the findings and analysis is varying slightly in organization to organization.
- b) The questionnaire was not understood by some respondent.
- c) Some respondent did not give enough concentration to understand the significant of analysis.
- d) More samples could give a better result
- e) The time was not enough to collect the data from the respondent.

VIII. IMPLICATIONS OF THE STUDY

The study will give benefits to the:

- a) Manufacturing organizations and their decision makers. Because by this study they will know how should they increase the uses of accounting information in their organizations?
- b) Accountants of the organizations.
- c) Researchers. From this study they can get some directions and benefits.

IX. DIRECTIONS TO FURTHER STUDY

The study gives some direction to the following study:

- a) Uses of accounting information in short term decision making in manufacturing organizations in Bangladesh.
- b) The role of accounting information in strategic decision making in service sector in Bangladesh.
- c) The impact of accounting information on strategic decision.
- d) The impact of accounting information on organization's financial performance in Bangladesh.

X. CONCLUSION

The study revealed that accounting information performs a crucial role on management decisions and organization performance which has been shown to be major force in decision making. This is achieved by implementing the best fundamental concept of accounting suitable for each company. The study also showed that accounting information plays a vital role in taking the effective, accurate and significant strategic decision in manufacturing, human resource, long term investment and marketing related factors. The study also tried to find out the problems of the accounting system facing by the manufacturing organization in Bangladesh. The study got the that accounting information is using by the manufacturing organizations in Bangladesh significantly. And the problem of using accounting system is poor. It is really a satisfactory result for the manufacturing organizations in Bangladesh.

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APPENDIX

Questionnaire
On

Role of Accounting Information in Strategic (long-term) Decision Making in Manufacturing Industries in Bangladesh

Dear Sir,

Assalamualaikum Warahmatullah-----

Accounting information is a part and parcel of today's life which is necessary to understand the accurate financial situation of the organization and used as the basis of making strategic decisions. Since strategic decisions have long-term effect on the business and therefore it is important to analyze accounting information for making long-term strategic decisions. The present study is an endeavor to evaluate the usage of accounting information by the decision makers in practices in strategic decision areas. Your valuable comment in this regard is necessary for research purpose only and would retain confidential. Your few minutes time for the purpose will help to reach this work to a success.

Thanks for your time and efforts.

Questionnaire
On

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Role of Accounting Information in Strategic (long-term) Decision Making in Manufacturing Industries in Bangladesh

PART-1: Personal Information:

- 1) Name of the Respondent:
- 2) Position of the Respondent:
- 3) Name of Department/ Section:
- 4) Name of Organization:
- 5) Duration of Service: Year: Month:
- 6) Educational Qualifications:
- 7) Professional Educations in Accounting:

<input type="checkbox"/> B.Com/B.B.S	<input type="checkbox"/> M.Com/M.B.S	<input type="checkbox"/> B.B.A	<input type="checkbox"/> M.B.A	(Major in Accounting)
<input type="checkbox"/> C.M.A	<input type="checkbox"/> C.A	<input type="checkbox"/> M. Phil	<input type="checkbox"/> Ph. D	

- 8) Which Accounting experience do you have? (Please put tick One)

<input type="checkbox"/> None	<input type="checkbox"/> Worked / Working as a bookkeeper	<input type="checkbox"/> Attended appropriate course(s) in Accounting
<input type="checkbox"/> Served/Serving as an Account Executive	<input type="checkbox"/> Served/Serving as Head of Accounts	
<input type="checkbox"/> Others (Specify Please):		

- 9) Age group of the respondent:

<u>Group</u>	<u>Years</u>	<u>Group</u>	<u>Years</u>
Below 30	<input type="checkbox"/>	45 – 50	<input type="checkbox"/>
30 – 35	<input type="checkbox"/>	50 – 55	<input type="checkbox"/>
35 – 40	<input type="checkbox"/>	55 – 60	<input type="checkbox"/>
40 – 45	<input type="checkbox"/>	Above 60	<input type="checkbox"/>

PART-II Specific Information to the study:

- 10) How frequently do you use Accounting information in **strategic (long-term) decision making**?

<input type="checkbox"/> None	<input type="checkbox"/> Rarely	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Frequently	<input type="checkbox"/> Always
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- 11) **Why do you use** Accounting information for decision making?
 - a) Since other **people** use
 - b) Simply to have a **basis** of analysis for decision making
 - c) For increasing the **accuracy** of decisions
 - d) Decision making is **not** possible without Accounting information
 - e) Other:

(A) *Using Accounting information in Basic Strategic Decisions:*

- 12) You use accounting information in **Corporate Vision** related decisions.

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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- 13) You use accounting information in **Corporate Objectives** related decisions.

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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- 14) You use accounting information in **Corporate Growth Strategies** related decisions.

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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- 15) You use accounting information in **Geographic domain and Business Unit Composition** related decisions

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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- 16) You use accounting information in **Core competencies and competitive advantage** related decisions.

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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(B) *Using Accounting information in Manufacturing Decisions:*

17) You use accounting information in **Production Equipment** related decisions (that is, Degree of automation, technology choices, configuration of equipment, maintenance policies and the potential for developing new processes in-house)

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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18) You use accounting information in **Facilities** related decisions (that is, The size, capacity, location and focus of manufacturing resources)

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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19) You use accounting information in **Production planning and control** decision (that is, Production and order, material control systems)

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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20) You use accounting information in **Vertical** integration, that is, Strategic **make** versus **buy**, **supplier** policies, extent of **dependence** on suppliers

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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21) You use accounting information in **Production Cost Controlling & Product Quality Trade off** decisions.

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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(C) *Using Accounting information in HR Management Decisions:*

22) You use accounting information in **Human resources policies** [Acquisition, Recruitment (internal and external), Selection and hiring decisions] related decisions

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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23) You use accounting information in **Promotion, Transfer, Retrenchment** related decisions.

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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24) You use accounting information in **Training and development** related decisions.

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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25) You use accounting information in **Organization culture and management style** related decisions.

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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26) You use accounting information in **Responsibilities** determination, **Performance** measurement and **reward/punishment** related decisions

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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(D) *Using Accounting information in (Long-Term) Investment Decisions:*

27) You use accounting information in **Capital raising** (through share issue) related decisions

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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28) You use accounting information in **Borrowings** (bank and financial institutions) related decisions

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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29) You use accounting information in **Liquidation** (repayment of capital) related decisions

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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30) You use accounting information in **Dividend pay out** related decisions
 Strongly Agree Agree Neutral Disagree Strongly Disagree

31) You use accounting information in **Investment in fixed assets** (lease or purchase) related decisions
 Strongly Agree Agree Neutral Disagree Strongly Disagree

(E) Using Accounting information in Marketing Decisions:

32) You use accounting information in **Selling and Marketing strategic** (Own-sale, Agent or dealer appointment) decisions.
 Strongly Agree Agree Neutral Disagree Strongly Disagree

33) You use accounting information in **Promotional Policies** (Advertising & others) related decisions.
 Strongly Agree Agree Neutral Disagree Strongly Disagree

34) You use accounting information in **Market Segmentation** related decisions.
 Strongly Agree Agree Neutral Disagree Strongly Disagree

35) You use accounting information in **Sales Commission** related decisions.
 Strongly Agree Agree Neutral Disagree Strongly Disagree

36) You use accounting information in **Marketing Research** (that is, New product Development and Marketing role in concurrent engineering) related decisions.
 Strongly Agree Agree Neutral Disagree Strongly Disagree

(F) Problems of Accounting System in your Organization:

37) The used accounting systems do not use modern **techniques/ instruments/ approaches** of accounting.
 Strongly Agree Agree Neutral Disagree Strongly Disagree

38) The higher authority **does not use** accounting information in strategic decision making process.
 Strongly Agree Agree Neutral Disagree Strongly Disagree

39) The accounting staff working for this sector is **not up to standard**.
 Strongly Agree Agree Neutral Disagree Strongly Disagree

40) The used accounting systems **do not keep Pace** with information technology's requirements.
 Strongly Agree Agree Neutral Disagree Strongly Disagree

*** Your suggestions for improving accounting information in your organization-

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GLOBAL JOURNAL OF MANAGEMENT AND BUSINESS RESEARCH: D
ACCOUNTING AND AUDITING
Volume 14 Issue 1 Version 1.0 Year 2014
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

The Effect of Applying the Information Technology Audit Standard # 21 on the Risk Related to ERP System in the Jordanian Companies

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Abstract- Because of the importance of institutions' resources and their risks where changes related to Enterprise Resources Planning Systems as commercial operations are not easily to be implemented in terms of time and cost This paper came to identify the impact of applying standard 21 which is one of the standards used in auditing information technology on reducing the risks of Enterprise resource planning (ERP) systems, A random sample consisted of 30 person who are specialized in information technology and auditing in the Jordanian industrial companies was selected, the result of the paper shows that there is an impact of applying standard 21 on reducing Enterprise resource planning (ERP) systems risks. Also shows that the auditors of information technology realize Enterprise resource planning (ERP) systems risks.

Keywords: *information technology, erp, standard 21.*

GJMBR-D Classification : *JEL Code: O14, M42*



THE EFFECT OF APPLYING THE INFORMATION TECHNOLOGY AUDIT STANDARD 21 ON THE RISK RELATED TO ERP SYSTEM IN THE JORDANIAN COMPANIES

Strictly as per the compliance and regulations of:



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The Effect of Applying the Information Technology Audit Standard # 21 on the Risk Related to ERP System in the Jordanian Companies

Audeh Ahmad Bani-Ahmad ^α & Abedel-Rahman Kh. El- Dalabeeh ^σ

Abstract- Because of the importance of institutions' resources and their risks where changes related to Enterprise Resources Planning Systems as commercial operations are not easily to be implemented in terms of time and cost This paper came to identify the impact of applying standard 21 which is one of the standards used in auditing information technology on reducing the risks of Enterprise resource planning (ERP) systems, A random sample consisted of 30 person who are specialized in information technology and auditing in the Jordanian industrial companies was selected, the result of the paper shows that There is an impact of applying standard 21 on reducing Enterprise resource planning (ERP) systems risks. Also shows that the auditors of information technology realize Enterprise resource planning (ERP) systems risks.

Keywords: information technology, erp, standard 21.

1. INTRODUCTION

It is agreed upon in the field of information technology that information technology is the basic for Change. After the period of 1950s and 1960s had been characterized by efficiency, 1970s and 1980s by quality, and 19890s by flexibility, the second Millennium was characterized by the decade of innovation whether this was in the level of (technology, operations, and the product) or in the level of the organizational models (Mansor, 2008, p1)

Information technology and its audit are considered as one of the new subjects these days. Information Systems Audit and Control Association (ISACA) issued different standards to adjust the control and audit process, including standard 21 of reviewing Enterprise resource planning (ERP) systems where this standard reviews information technology and ensures the professionalism of the Enterprise resource planning (ERP) systems and evaluates the degree of complication of information technology in the institutions. On the other hand, the integration of the

systems of information, internally and externally, led to establish a new kind of business organizations which is mainly called Extended Enterprise.

Concerning this issue, (ERP) is included within a set of information systems which works on achieving the integration of operations which is considered as the basic of the applications of E-business in one hand, and the basic of the traditional business on the other hand. ERP systems try to achieve this integration by providing a mechanism that helps in using the available data system (Shehab et.al, 2004) - regardless the occupational field- and in saving timing and the accuracy which reflect on the over all performance of organization (Wieder, et.al. 2006)

a) Problem of the study

In the world of technology and accounting and with an increase in using Accounting Information Systems and the movement towards Enterprise resource planning (ERP) systems which are characterized by complexity and comprehensiveness, the interest of risks associated with information technology as Enterprise resource planning (ERP) systems have shown up. And because of these risks as security risks, there was a need to control and audit these systems to protect the researchers also recommended making ERP research in developing countries (Addo and Helo, 2011)

Based on this, the problem of the study is to identify the impact of applying standard 21 which is one of the standards used in auditing information technology on reducing the risks of Enterprise resource planning (ERP) systems, and more specifically the study tries to answer the following major question:

"What is the impact of applying standard 21 on reducing the risks of Enterprise Resources Planning Systems"?

Answering this question will be through the following sub questions:

- To what extent do the auditors of information technology realize the risks of Enterprise Resources Planning System?
- To what extent do the auditors of information technology commit to apply standard 21?

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- What is the importance of standard 21 as one of the standards of auditing information technology?
- What is the impotence of auditing Enterprise Resources Planning System?

b) *Importance of the study*

The importance of this study is connected with importance of institutions' resources and their risks where changes related to Enterprise Resources Planning Systems as commercial operations are not easily to be implemented in terms of time and cost which agree with the contest of (Esteves and Pastor, 1999) study of chalanges facing the full spread and implementation of ERP package .And many institutions cannot implement Enterprise Resources Planning Systems for their huge size and the need for a high care in addition to that the institution will be affected by these changes. And the importance of this study emerged from the importance of standard 21, one of the standards of information technology audit, and its impact on reducing Enterprise Resources Planning Systems risks. And this study also focused on the companies which applied Enterprise Resources Planning Systems (ERP) in Jordan.

c) *Hypotheses of the study*

Based on the problem of the study, this study will examine the following hypotheses:

1. *HO*: there is no impact of applying standard 21 on reducing the risks of Enterprise resource planning (ERP) systems.
2. *HO*: the auditors of information technology do not realize the risks of Enterprise resource planning (ERP) systems.
3. *HO*: auditors of information technology do not commit to apply standard 21
4. *HO*: there is no significance for the application of standard 21.
5. *HO*: there is no significance for auditing Enterprise resource planning (ERP) systems.

d) *Methodology of the study*

This study adopted the analytical descriptive approach where it depends on two sources for collecting data. First: books, studies, previous researches and internet. Second: a questionnaire which was arbitrated by the researcher of this study and other specialized in accounting information systems. This questionnaire consisted of 19 questions which were distributed as follows:

- (1-4) Measures the impact of applying standard 21 on reducing ERP Risks.
- (5-7) measure the extent of technology auditors' realization of ERP Risks.
- (8-13) measure the extent of technology auditors' commitment to the application of standard 21.

(14-15) measure the importance of applying the standard 21.

(16-19) measure the importance of auditing in the ERP systems.

e) *Population of the study and the sample*

The population of the study consisted of specialized people in the field of information technology and information technology auditing in Jordan. A random sample consisted of 30 persons who are specialized in information technology and auditing in the Jordanian industrial companies was selected.

f) *Statistical Analysis Method*

Statistical Package for Social Science (SPSS), which was used to analyze the results of the study, includes the following:

- Dispersion Measures (means, standard deviations)
- Reliability measure (Cronbach alpha) audit equals 76.00%

g) *Literature Review*

i. *Audit and Control on Information Technology*

Information technology, nowadays, is considered as one of the basics of business management in the public and private institutions. Information technology, databases and communication nets have transferred the world from the industrial age to knowledge age and became a basic component in any sector.

As the importance of information increases, the interest of keeping the information away from risks increases as well and so the science of information security appeared. Information security is not considered as a pure technical operation done only by a specialized one in information technology but it is the fruit of corporation between all of the employees of one entity where roles and responsibilities are distributed to serve the entity's work. And consequently, any plan is put by the entity regarding information security should contain elements and comprehensive items of all the operations and policies concerning the technology and human aspects. And because of the importance of information security ,a group of governmental and nongovernmental entities put forward standards of information security to have a specific level of information protection and to ensure that technology and computerized resources are used correctly and free of mistakes and to adopt best practices of information security. So many parties proposed standards and rules which monitor control and supervision of information resources systems of the institutions and the most well-known one of these is Information Systems Audit and Control Association (ISACA) which issued standards and different rules to monitor audit and control of information technology as standard 21(Guidance of audit and control of Enterprise resource planning (ERP) systems 21).

ii. *Standards of Audit and Control Of Information Technology*

Information Systems Audit and Control Association defined auditing standards as the compulsory requirements to audit information systems and issue financial reports concerning them. While the evidences are the information used by the auditor to estimate the information which will be audited is mentioned regarding the established standards.

h) *Importance of Using the Standards Of Auditing*

According to studies and researches, the most important reasons of using the standards in auditing are as follows:

Knowledge Sharing: Information security standards follow a changeable sector so having a group of people who are interested in a specific standard provides more participatory in the information and grant fast access into the required information and provide the knowledge of future attitudes and the new technologies used in the field of information security. (www.isaca.org/socialmedia).

Better Control: auditing standards of any entity help in control and monitor its activities and information security special tasks and they ensure its distinguished level as compared to other similar entities (Kumar, 2000).

Best practices : these standards include a big set of best practices existed in the field of information security and they cannot be compared to the effort and expertise of one entity but their combination with these practices will lead definitely to a better level in this field. (www.isaca.org/socialmedia)

Structure clarity: standards audit provide a clear model of the organizational and administrative structure that can be followed by the entity. (www.isaca.org/socialmedia)

Saving tim: according to the importance of time in this competitive world, organizations are no more need to establish and develop a plan or a model for the project which may takes time while there is an international standard that was developed by the help of common expertise (www.isaca.org/socialmedia)

i) *Information Systems Audit and Control Association*

Information systems audit and control association (ISACA) is considered the responsible of audit and control of information security operations at international level .This association includes more than 95.000 members of different countries where this association provides a number of accredited certificates and programs in the field of auditing and information security as :CISM, CRIS,CGEIT, CISA. ISACA updates the objectives of information control and technology which is associated with continuously so that it helps businessmen to carry out their responsibilities in the fields of information technology governance and supports the ideal value of their business (ISACA, 2011)

i. *Standard (21) of Information Technology Audit*

Standard 21 (auditing guidance) is guidance issued by Information Systems Audit and Control Association, where this standard ensured that the auditor has to commit to the application of the audit evidences to implement the standards efficiently and he has to clarify the reasons of not being committed to the evidences. And every one who is a Certified Information Systems Auditor has to commit to the standards of information systems auditing and to standard 6 concerning the performance audit where this performance of Enterprise resource planning (ERP) systems which is done by an information systems auditor has to be subjected to the supervision of another auditor. And the auditor has to commit to standard 2 concerning the independency of information systems' auditor and the importance of reviewing the guide of audit (N 26 of reengineering business process) and to the ensure the auditor's coverage, during the process of auditing Enterprise resource planning (ERP) systems, regarding the following areas which –from the authors perspective- result from the serious conditions of vendors (Dixit and Prakash, 2011):

- *Process integration area:* information systems auditor identifies the control's objectives of control operations, evaluates business risks and potential financial risks of the operations which should be implemented.
- *Software (applications) security area:* information systems auditor audits the documentation of the design regarding the extent of the security and control's appropriateness and the evaluation of the software security efficiency.
- *Infrastructure Integration area :* identifying the potential problems and the security risks , identifying structural issues of the internal control system that may cause problems in the operations' performance and reviewing the emergency plans continuously.
- *Implementing integration area:* taking into account the gradual transition of the new system of Enterprise Resources Planning syst-ems

ii. *Enterprise Resources planning systems*

O'Leary (2000) defined Enterprise Resources Planning systems as a set of powerful software that enable business activities to have an integration of separated jobs while Sumner (2005) defined Enterprise Resources Planning systems as software tools used to manage the entity's data. And these systems help the entities to deal with supply chain, receipt, inventory management, production planning, shipping, computer, human resources management, and other related functions with business. (Sumner, 2005).

The fundamental structure of Enterprise Resources Planning systems extended from 1950s

and 1960s with the use of computers in business (Moller, 2005). And table (1) illustrates the historical development of entity's systems.

In 1960s, Software Packages were represented by control's systems of the inventory and the prediction of it. But in 1970s, material requirements planning appeared, where Master production Schedules and bills of materials files with a list of materials required to produce every material were used. Later, new methods were added to material requirements planning as sales planning, client's needs' processing, and Capacity Constraints. These methods provide inputs to Production Planning Tables known as Closed-Loop Planning. In 1980s, Manufacturing Resources Planning (MRP) included accounting systems, manufacturing

system and materials management systems. And in 1990s, Enterprise Resources Planning systems provide an integration of all the functional operations in the entity (Sumners, 2005).

At the beginning of this century, a new generation of Enterprise Resources Planning systems which was called Extended Enterprise Resources Planning systems (eERP) appeared and its basic functions were as follows: e-commerce, Supply Chain Management, Client relationship management, business intelligence and other functions. And Enterprise Resources Planning systems is one of the basic component of the system of eERP and for the purposes of the functional cooperation, the system of eERP is opened for information flow.

Table 1 : Development of the entity's systems (Moller, 2005)

(new concept)	Kinds of systems	time
Using computer to manage the programs (applications)	Control system of inventory and prediction of t.	1960
Material statement	Material Requirement Planning Systems (MRP)	1970
.(Closed-Loop Planning MRP)	Manufacturing Resource Planning Systems (MRP II)	1980
Integrated database, human resources management ,quality management	ERP systems	1990
(Inter-organizational Collaboration)	Extended ERP(eERP)	2000

One of the challenged problems that faced Enterprise Resources Planning systems is that the software of this system imposed operations on the implemented companies of this system the issue of modifications or ignoring them is considered as a great challenge which every implemented company of this system face (Sumner,2005)(Hawari and Heeks 2010). Job of information system was represented by design, development, and software implementation but with Enterprise Resources Planning systems, the functions of design, development and implementation were prepared from another party. These systems have been adopted by many companies recently because of the expectations of low operations costs, shortest time of the operational sessions and satisfying the customers' needs. And these systems include many software (applications) of business as: salaries, manufacturing, business intelligence, supply change management and general ledger. One of the most important suppliers of these systems is SAP, Oracle and PeopleSoft.

Implementing Enterprise Resources Planning systems is not an easy task and to achieve the desired efficiencies and to satisfy the customers' needs, the companies should be subjected to an extensive rebuilding of business operations or they face customizing ERP package to achieve the functional operation .(Scheer & Habermann, 2000).

j) *Types of Audit Risks*

It is possible that the financial statements contain errors or hidden physical problems, or the auditor came up with unsatisfied results. And while a

number of theoretical approaches pointed to ways that the auditor can follow when he deals with audit risks which are the systems and auditing based risks(Thneibat,2006) but the modern studies regarding auditing enterprise resource planning systems ensured that the two ways became an old-fashioned when enterprise resource planning systems, which depend on integrated auditing, appeared in the world(Cooke, 2004) and since risks are considered a basic aspect in this study, the types of risks are:

Planned detection risks: they are risks resulted from the possibility of the auditor's incapability of detecting material misstatement using the tests and the analytical procedures (Thneibat, 2006)

Inherent risk: it is a measure used by the auditor to evaluate the possibility of having material misstatement in the absence of internal control (Thneibat, 2006).

Control risks: it is a measure used by the auditor to evaluate the possibility of having material misstatement that exceed amount of money could be tolerated as security risks of database (Hunton et al., 2004).

Acceptable Audit Risk: it is a measure of the auditor's desire of accepting financial statements that could be material misstatement after finishing the audit process and announced his decision as Unqualified.

i. *Model of Audit Risk*

This model is considered as one of the best method used to deal with risk when planning a guide of auditing. And this model is used basically for planning

purposes in the report of the amount of proof that should be collected in every step of the process which is represented by courses of sales and collection , revenues and expenditures, salaries and individuals , inventory and the model is usually be according to the following formula :

$$\text{Planned Detection Risk} = \text{Acceptable Audit Risk} / \text{Inherent Risk} * \text{Control Risk}$$

$$\text{PDR} = \text{AAR} / \text{IR} * \text{CR}$$

ii. *Security Risks of Enterprise Resource Planning Systems*

Security in an integrated environment of Enterprise Resource Planning requires a new way of thinking and much more concern of business operations which are exposed to material misstatement that affect the entity's financial results negatively. So the companies have to care of an integrated set of security and control functions which provide operations and they have to update its systems of business continuously at each level. The common regions which are exposed to security risks in an environment of Enterprise Resource Planning are as follows (Holsbeck and Johnson, 2007):

- *Net energy* (Holsbeck and Johnson, 2007): Enterprise Resource Planning systems will be provided into the system through Internet, Intranet or Extranet.
- *Relational Database*: Relational Database should store information in one place so there should be copies of the project database.

- *Operational systems*: they are software or a set of orders and instructions to control the physical part of the computer.
- *A computerized server*: it is the common shape for the computerization which is followed in an environment of enterprise resource planning systems.

k) *Software security risks*:

Having the legal and logical access varies from batch to another, in some cases, the rights of logical access is granted according to the operation symbol or its number. And when control of logical access is revised , it is important to make sure that the general control of the security program or the application are revised too and security program control includes the following : (the length of the user's name or the user's identification, the length of the password , changing the password from time to time ,prohibit the user's access into the system if he/she did many wrong attempts.

II. RESULTS OF THE STUDY

Mean and standard deviation were calculated to describe the responses of the sample of the study as follows:

Table 2 : Mean and standard deviation

ST.d	Mean	Item
0.59471	3.8889	1- Applying standard 21 is enough to reduce enterprise resources' errors.
0.56761	4.0417	2- Applying standard 21 reduce risk of stopping work in enterprise resource planning (ERP) systems.
0.55665	4.0000	3- Applying standard 21 reduces security risks as risks of net security and database security in enterprise resource planning (ERP) systems.
0.85018	3.8472	4- Applying standard 21 on enterprise resource planning (ERP) systems leads to more accurate and reliable outputs and results than the traditional systems.
0.81793	3.9167	5- Information technology auditors have knowledge of enterprise resource planning (ERP) systems risks.
0.80491	3.8333	6- Risks related to enterprise resource planning (ERP) systems are important and need auditing.
0.88003	3.9861	7-there is a specialized auditor in information technology where you work.
0.94943	3.5000	8-standards and systems issued by Audit and control Association on information systems (ISACA) are put into practice at your work.
0.94932	3.5139	9-information technology auditors commit to apply standard 21 issued by ISACA.
1.34851	3.1111	10-the reason for information technology auditors' non-compliance to the application of standard 21 is the weakness of standard's content.
		11- The reason for information technology auditors' non-compliance to the application of standard 21 is their ignorance of the standard and its importance.
0.61983	3.6944	12- The reason for information technology auditors' non-compliance to the application of standard 21 is that there are more efficient standards to audit enterprise resource planning (ERP) systems.
0.70489	3.6944	13- There are legislations oblige carrying out audit on enterprise resources.
0.85580	3.8333	14-applying standard 21 protect enterprise resources from manipulation and theft.
0.70322	4.1111	

0.82602	4.2222	15- Applying standard 21 prohibit people who are not authorized to enter the enterprise resource planning (ERP) systems.
0.89851	3.8472	16- Reason for lack of interest in auditing enterprise resource planning (ERP) systems may refer to the high cost of audit.
0.75669	3.9306	17- lack of interest in auditing enterprise resource planning (ERP) systems may refer to the companies' lack of use the software of enterprise resource planning (ERP)
0.79501	3.7083	18- Reason for lack of interest in auditing enterprise resource planning (ERP) systems is that auditing needs more effort and time.
0.87914.	3.6250	19- The current control procedures in the organization are sufficient to protect enterprise resource planning (ERP) systems from manipulation.

We notice the attitudes of the sample were positive towards all the items, because all of means are more than the mean of the measurement's tool (3)

a) Reliability of the test

Cronbach Alpha test has been used to measure the reliability of the tool of the study which reached (76.00%) and it is a good percent since it is higher than the acceptable percent (60%).

b) Testing the hypotheses

Hypothesis (1):

Ho: there is no impact of applying standard 21 on reducing the risks of Enterprise resource planning (ERP) systems.

Ha: there is an impact of applying standard 21 on reducing the risks of Enterprise resource planning (ERP) systems.

Table 3 : Results of testing the hypothesis

Result of null hypothesis	SIG T	Tabulated T	Calculated T
Rejection	0.000	1.9939	15.959

As the value of calculated (T) is bigger than the value of tabulated (T) , We reject the null hypothesis and accept the alternative one according to the rule : " Null hypothesis is rejected when the value of calculated (T) is bigger than the value of the tabulated one and vice versa . So this means that there is an impact of applying standard 21 on reducing the risks of Enterprise resource planning (ERP) systems.

Hypothesis (2):

Ho: the auditors of information technology do not realize the risks of the systems of planning the project's resources.

Ha: the auditors of information technology realize the risks of Enterprise resource planning (ERP) systems.

Table 4 : Results of testing the hypothesis

Result	SIG T	Tabulated T	Calculated T
Rejection	0.000	1.9939	13.63

As the value of calculated (T) is bigger than the value of tabulated (T), we reject the null hypothesis and accept the alternative one according to the rule: "Null hypothesis is rejected when the value of calculated (T) is bigger than the value of the tabulated one and vice versa. So this means that the auditors of information technology realize the risks of Enterprise resource planning (ERP) systems.

Hypothesis (3):

Ho: auditors of information technology do not commit to apply standard 21.

Ha: the auditors of information technology commit to apply standard 21.

Table 5 : Results of testing the hypothesis

Result	SIG T	Tabulated	Calculated
Rejection	0.000	1.9939	7.62

As the value of calculated (T) is bigger than the value of tabulated (T), we reject the null hypothesis and accept the alternative one according to the rule: "Null hypothesis is rejected when the value of calculated (T) is bigger than the value of the tabulated one and vice versa. So this means that the auditors of information technology commit to apply standard 21 as one of the standards of information technology audit.

Hypothesis (4):

Ho: there is no significance for the application of standard 21.

Ha: there is significance for the application of standard 21.

Table 6 : Results of testing hypothesis

Result	SIG T	Tabulated T	Calculated T
Rejection	0.000	1.9939	14

As the value of calculated (T) is bigger than the value of tabulated (T) , We reject the null hypothesis and accept the alternative one according to the rule : “ Null hypothesis is rejected when the value of calculated (T) is bigger than the value of the tabulated one and vice versa . So this means that there is significance for the application of standard 21.

Hypothesis (5):

Ho: there is no significance for auditing Enterprise resource planning (ERP) systems.

Ha: there is significance for auditing Enterprise resource planning (ERP) systems.

Table 7 : Results of testing the hypothesis

Result	SIG T	Tabulated T	Calculated T
Rejection	0.000	1.9939	13.22

As the value of calculated (T) is bigger than the value of tabulated (T) , We reject the null hypothesis and accept the alternative one according to the rule : “ Null hypothesis is rejected when the value of calculated (T) is bigger than the value of the tabulated one and vice versa . So this means that there is significance for auditing Enterprise resource planning (ERP) systems.

3. Establishing a local association in Jordan to follow up the specialized people in the field of information technology audit and issuing standards and local specialized systems in information technology audit.
4. Carrying out further studies in information technology audit and Enterprise resource planning (ERP) systems and on other different samples .

III. RESULTS

According to the statistical analysis, the researchers concluded the following:

- a) There is an impact of applying standard 21 on reducing Enterprise resource planning (ERP) systems risks.
- b) Auditors of information technology realize Enterprise resource planning (ERP) systems risks.
- c) Auditors of information technology commit to apply standard 21 as one of the standards of information technology audit.
- d) There is significance to the application of standard 21 as one of the standards of information technology audit.
- e) There is significance for auditing on Enterprise resource planning (ERP) systems.

IV. RECOMMENDATIONS

Based on the results of the study, the researchers recommended the following:

1. The companies and the institutions' movement from the traditional systems of information technology to Enterprise Resource Planning systems (ERP).
2. There should be within the financial and management specializations in the Jordanian universities special courses in information technology audit.

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GLOBAL JOURNAL OF MANAGEMENT AND BUSINESS RESEARCH: D
ACCOUNTING AND AUDITING
Volume 14 Issue 1 Version 1.0 Year 2014
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

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GJMBR-D Classification : *JEL Code: E58, G21*



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I. INTRODUCTION

Islamic banking is a growing worldwide phenomenon; in particular, the number of Islamic financial institutions has increased significantly in the Middle East and Southeast Asia. Moreover, more International financial Institutions in Europe and the United States are adopting some Islamic.

Instruments to attract investors who prefer the use of Islamic credit instruments, such as Murabaha, Mudaraba, Musharaka and Ijara. "It is expanding not only in nations with majority Muslim populations, but also in other countries where Muslims are a minority, such as the United Kingdom and Japan" (Solé j,2008).

In Saudi Arabia, there are 23 banks of which 12 banks are national and 11 banks are foreign. Out of the 12 national banks, there are only 4 Islamic banks and the remaining 7 are commercial banks. Saudi national banks contribute by 8.2 percent to the total global Islamic finance assets. The total assets of the Saudi banks has increased from SR 1,075 billion (about US\$ 287 billion) in 2007 to SR 1,544 billion (about US\$ 412 billion) in 2011 (SAMA, 2012). The total assets of Islamic banks has increased from SR 7.1 billion (about US\$ 1.9 billion) in 2007 to SR 182.6 billion (about US\$ 49.6 billion) in 2011.

The main aim of this study is to investigate the accounting differences in performance between the Saudi national Islamic banks and national commercial banks. The paper also investigates different factors influencing the two sets of banks' performance. Due to

the impact of the current financial crisis, there is a high demand for Islamic banking services, which encouraged one Saudi conventional bank to switch to Islamic accounting practices and to offer Islamic banking services. This new development in Islamic banking industry motivates the writer to investigate some factors influencing Saudi Islamic banks' accounting performance compared with that of the national conventional banks.

The next section of the paper provides a brief literature review related to the bank performance. Section two presents the methodology employed while section three presents the study estimations and results. In the final section a brief summary of the paper and conclusions of the main results is provided.

II. RELATED LITERATURE

The enormous influence of banking sector on economic growth has encouraged many studies on factors affecting banking accounting performance. Most of the studies have concentrated in few countries, mainly developed countries while few concentrated in developing countries such as Saudi Arabia.

Sun et al. (2010) evaluated the relationship between ownership structure and bank performance for 221 banks in 17 MENA countries. The authors differentiated between private and governmental banks and clarified the effects of numerous structural and reform measures on the inconsistency of bank performance in the MENA region. As a result, private banks, specifically foreign banks, perform better than government banks. Moreover, foreign publicly traded banks from the same region, or any foreign banks are tend to have better performance.

Kosmidou (2008) using an unbalanced pooled time series dataset of 23 banks investigated the determinants of performance of Greek banks during the period of EU financial integration in the period 1990-2002. The author used the ratio of return on average assets (ROAA) as a measurement of bank performance and classified them into internal and external determinants. The internal set included: the cost to-income ratio, the ratio of equity to total assets, the ratio of bank's loans to customer and short-term funding, the ratio of loan loss reserves to gross loans and the bank's total assets. The external set included: the annual change in GDP, inflation rate, the growth of money

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supply, the ratio of stock market capitalization to total assets, the ratio of total assets to GDP and concentration. The results showed that ROAA was found to be associated with well-capitalized banks and with lower cost to income ratios. The results also indicated that the impact of size and the growth of GDP was positive, while inflation had a significant negative impact. Elmoussawi et al. (2009) compared the efficiency of banks with majority of domestic ownership, banks with majority of foreign banks, and foreign banks subsidiaries operating in Lebanon from 1996-2005. They used DEA methodology for three groups of banks to calculate the yearly scores for cost effectiveness, technical and allocation. In addition, they extended their study to determine the factors that shape bank efficiency. Their results didn't show big differences between the three groups. In spite of this, their evaluation of the efficiency scores shows an improvement in the performance of banks with majority foreign ownership, and weakening in performance of banks with majority of domestic ownership and foreign banks subsidiaries. They also concluded that bank efficiency is differently determined based on bank ownership.

Okpara (2009) determined the major factors that influence the banking system in Nigeria. Using factor analysis techniques, the author concluded that undue interference from board members, political crises, undercapitalization, and fraudulent practices are considered the most critical factors that impact the performance of banking system in Nigeria.

Sufian (2009) investigated the determinants of bank profitability in Malaysian financial sector during the period 2000-2004. The results showed that higher credit risk and higher loan concentration lead to lower profitability level. On the contrary, banks with higher income from noninterest sources, higher level of capitalization, and higher operational expenses face higher profitability level.

Tarawneh (2006) divided the commercial banks in Oman in cohesive categories depending on their financial characteristics revealed by financial ratios. Using simple regression analysis, the followings were determined: the effect of asset management, operational efficiency, and bank size on the financial performance of five Omani commercial banks with more than 20 branches. The results indicated that bank with higher total capital, deposits, credits, or total assets do not always represent a better profitability performance.

Athanasoglou et al. (2006) investigated the bank-specific, industry-specific and macroeconomic determinants of bank profitability in Greek. The results indicate that all bank specific determinants, excluding size, significantly affect bank profitability in the anticipated way.

Jham et al. (2008) considered satisfaction with banking services as the main determinant of bank Performance, The authors demonstrated how adoption

of satisfaction variables can lead to better performance, and how customer satisfaction was linked with the performance of the banks.

Unal et al., (2007) conducted a comparative performance analysis between the Turkish state-owned and private commercial banks during the period 1997-2006. They used net profit-loss, return on assets and return on equity as proxies to measure profitability. To measure operating efficiency they used net profit, net assets efficiencies relative to total employment and total number of branches. The findings suggested that state-owned banks are as efficient as private banks.

Chirwa (2003) investigates the relationship between market structure measured by concentration and profitability of commercial banks in Malawi using time series data between 1970 and 1994. He concluded that there was a positive relationship between concentration and performance.

Ahmed et al (1999) used three measures of profitability (ROE, ROA and percentage change in earnings per share) as dependent variables and four independent variables (business risk, market concentration, market size and size of the bank). The results indicated that the business risk and the bank size were the main determinants of the banks' performance.

Based on the above previous studies, it can be concluded that several studies have been conducted all over the world that investigated some factors influencing bank performance, however, no studies have investigated Saudi bank accounting performance with full differentiation between Islamic and commercial banks.

III. PRESENTATION OF VARIABLES

In order to examine the determinants of Saudi bank's performance, we try to present a model linking the profitability of banks and a set of factors that takes into consideration the patterns of banks and the macroeconomic situation in Saudi Arabia.

In its simplest form, the linear equation that must be estimated for each bank i at each time period t is:

$$perf_{i,t} = \alpha' Z_{i,t} + \beta' V_{i,t} + \varepsilon_{i,t} \quad (1)$$

Where $perf_{i,t}$ is an indicator of bank's profitability, $Z_{i,t}$ is a vector of the bank's characteristics, $V_{i,t}$ is a vector of macroeconomic indicators and $\varepsilon_{i,t}$ is the disturbance term.

In this study, the dependent variable is the bank profitability. Basing on banking literature, there are several proxies that can measure the performance of banks. Among these proxies, one can cite the return on assets (ROA), the return on equity (ROE), the profit margin (PBT) and net non-interest margin. Most studies have used ROA and ROE as a measure of profitability (Sinkey, 2002, Ta Ho et al., 2006, Beck et al., 2005). In our empirical work, we add PBT these two

measures to give more explanations about the determinants of performance of Saudi banks.

Concerning the ROA, this proxy is measured as the ratio of net profit after tax over average assets. It reflects the ability of bank to manage its real investment and financial resources. However, the ROE is defined as the net profit after tax over the shareholders' equity. This indicator assesses whether a bank operates perfectly its shareholders funds. The third and last indicator of profitability in this study is the PBTA. The profit margin is expressed as the net profit before taxes as a percent of the total assets. The PBTA shows the ability of a bank to obtain high profits due to the diversification of their portfolio.

In the banking literature, each measure of profitability depends not only on internal-bank factors but also on the macroeconomic situation of the country where the bank is located. For the internal-bank factors, the performance determinants are the capital, the asset quality, the efficiency, the liquidity, the size, the bank's weight, the number of branches. Whereas the GDP growth, the GDP per capital and the inflation are the external-bank determinants.

The ratio of total equity over total assets (TETA) is the most used ratio to measure the capital variable. This ratio reflects the bank's capacity to cover losses. An increase in this ratio can be explained by a decrease in the risk exposure and thus an improvement in the capital adequacy and in bank profitability (Samad, 2004). The asset quality is defined in this paper as loan loss reserves as percentage of gross loan assets (LLRGLA). It is not the only indicator used in the literature to measure the asset quality¹. The LLRGLA expresses the percentage of the total portfolio that has been anticipated but not charged off. For a high profitability, a bank may have lower LLRGLA ratio in order to restrain their credit risk. To measure the bank's efficiency determinant, the majority of studies employs the cost over income ratio (COST) or the overheads over total assets ratio (OVTA). In our empirical work, we use the proxy COST as a measure of the efficiency. We thus expected a negative relationship between the COST and the indicators of performance (Kosmidou et al., 2006). For the measure of bank liquidity, there are several indicators. Among the most wide-spread indicators, we find net loans over total assets ratio (NLTA) and net loans over deposits and short-run funding ratio (NLDF). These liquidity ratios tend to be higher for high-profitability bank due to the increase in interest income. The NLTA will be our proxy to measure the bank liquidity. The bank size is presented by total assets.

Berger et al. (1987) and Shaffer (1985) assumed that size may positively affect the company performance. Therefore, in this study, we consider that there is a positive relationship between bank size and accounting performance. To examine the variables influencing the performance of banks, we try to evaluate the effects of the weight of each bank assets in total assets of Saudi banks and also the effects of the number of branches on the profitability ratios. According to Delis et al., 2009, and Chirwa, 2003, we expected a positive sign for these variables.

Concerning the external variables or the macroeconomic situation that can be affected the accounting Performance, we introduce the GDP growth (gwth), the GDP per capital (RGDPC) and the inflation (INF). For the two first indicators, we expected a positive relationship with the performance ratios if they have an effect (Wang, 2009; Beck et al., 2008 and Tang, 2006). In contrast, it is hypothesized in our study that inflation affects profitability proxies negatively, according to Pasiouras and Kosmidou (2007).

The definitions, the measures and the sources of variables used in descriptive and regression analysis are presented in Appendix A.

IV. DATA DESCRIPTION AND METHODOLOGY

The dataset on profitability ratios, bank's characteristics and macroeconomic variables consists of 12 Saudi banks in the period 2005-2011. Our sample of banks includes 9 commercial banks and 3 Islamic banks. Appendix B lists the Saudi banks in our sample.

Table 1 presented below describes the minimum, maximum, mean and standard deviation values for all dependent and internal explanatory variables for both commercial and Islamic banks.

Our study is elaborate on annual data covering period 1989-2011 for a heterogeneous panel of 38 developed and developing countries. The choice of countries retained in our work was founded on criterion of data availability for variables in definite period.

¹ There are also loan loss provisions over net interest revenue, loan loss reserves over impaired loans, impaired loans over gross loans, net charge-off over average gross loans, and net charge-off over net income before loan loss provision.

Table 1: Descriptive statistics: Commercial banks vs. Islamic banks

	Commercial banks				Islamic banks			
	Min	Max	Mean	S.D	Min	Max	Mean	S.D
Profitability								
ROA	0.09	13.2	2.58	1.88	-2.1	7.29	2.43	2.39
ROE	0.58	54.58	20.38	11.08	-8.00	47.63	11.47	15.47
PBTA	0.01	1.25	0.26	0.18	-0.14	0.69	0.24	0.22
Quality								
llrgl	0.78	6.00	3.00	1.32	0.21	5.71	3.40	1.51
Capital								
teta	8.84	27.05	13.10	3.21	14.17	89.80	38.20	28.12
Efficiency								
cost	17.74	69.64	34.41	10.82	20.41	160	53.03	33.50
ovta	8e-06	3e-04	1.5e-04	5e-06	6e-10	4.5e-04	2e-04	1.7e-04
Liquidity								
nlta	39.91	64.7	56.07	6.49	51.55	87.10	65.62	9.50
nldf	51.28	84.49	68.46	8.13	66.55	133.10	93.23	20.54
Size								
assets	1.4e+07	3e+08	1e+08	7e+07	7e+06	2e+08	6.3e+07	7e+07
Wgh	1.87	20.48	9.33	5.13	0.94	14.60	5.34	5.58
Branch	21	284	89.78	61	22	528	224.37	202.84

The table suggest that there are differences between both groups of banks, but it is not important. Indeed, the statistics suggest that the commercial banks had higher profitability ratios (ROA, ROE, PBTA), lower efficiency ratios (COST, OVTA), and higher size (ASSETS) and weights (WGH) ratios with a lower levels volatilities measured by the standard deviation than the Islamic banks. Contrariwise, the others proxies of bank characteristics (quality, capital and liquidity ratios and number of branches) are at mean higher in Islamic bank than in commercial bank, but they had higher levels of volatilities.

To check whether these differences are significant, we perform the test of mean equality for each variable in each group of banks. The results are supported in the table 2 (see below).

In comparing the profitability ratios for commercial and Islamic banks, we remark that there are a significant difference only in the ratio ROE but the differences of means for ROA and PBTA are not significant. Commercial banks tend to have more net profit after taxes (as percent of shareholders' equity) than Islamic banks. This result indicates that Saudi commercial banks operate perfectly its shareholders' funds than Saudi Islamic banks. The significant difference in the mean of ROE and the non-significant difference in the mean of ROA and PBTA can be observed in the figures that describe the evolution of profitability ratios in the time. These figures show that the difference in the mean of ROE ratio between Saudi commercial and Islamic banks is very higher compared to ROA and PBTA ratios.

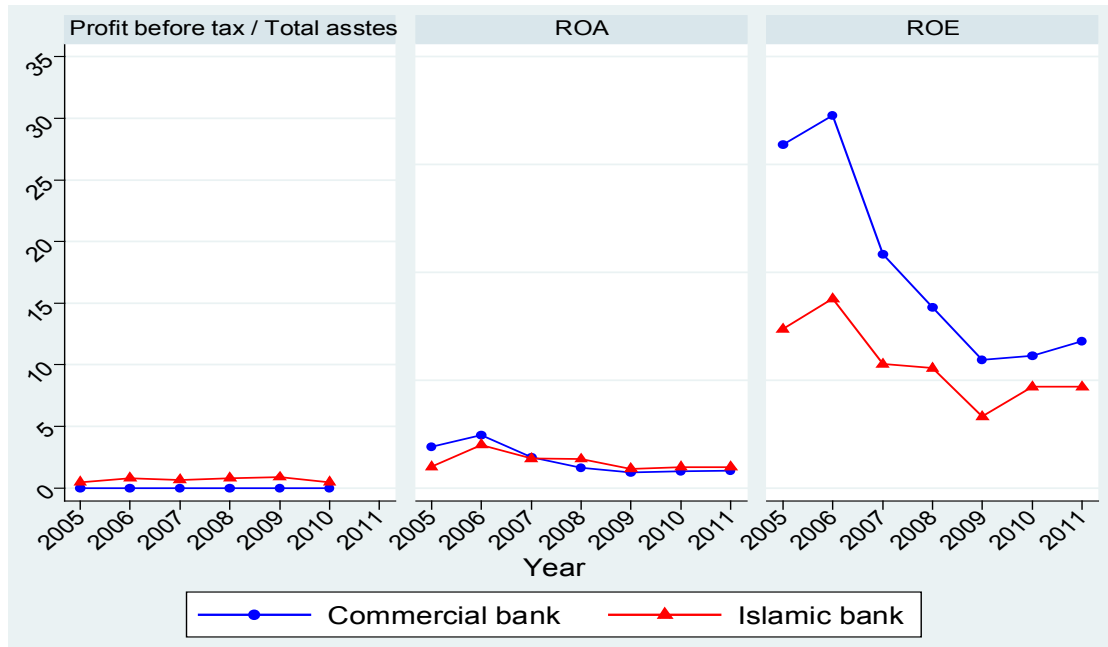


Figure 1 : Trend of profitability ratios : Commercial vs. Islamic banks

When the quality ratios are compared, the test equality of mean shows that there is no difference between commercial and Islamic banks. This result implies that the two groups of banks have the same quality of the loan portfolio.

Another significant difference exists when comparing the capital adequacy. Indeed, the ratio of total equity over total assets is significantly higher in Islamic banks than in commercial banks. This implies that the Islamic banks had a better ability to withstand losses than the commercial banks. Concerning the

efficiency ratios, we observe a significant difference in the cost over income (COST) ratio, but no difference in the ratio overheads to total assets (OVTA). Commercial banks have a lower levels of cost to income than Islamic banks conducting to conclude that commercial banks are more efficient than Islamic banks. This results can be explained as the commercial banks have a higher lending margins than Islamic banks. It also can be explained by high net income from associates or volatile trading income in commercial banks.

Table 2 : Mean-comparison test: Commercial bans vs. Islamic banks

Ratios	Test equality of mean			t-stat
	Commercial banks	Islamic banks	Difference	
Profitability				
ROA	2.58	2.43	0.15	0.28
ROE	20.38	11.47	8.91***	2.88
PBTA	0.26	0.24	0.03	0.39
Quality				
llrgl	3.00	3.40	-0.40	-1.08
Capital				
teta	13.10	38.20	-25.10***	-7.03
Efficiency				
cost	34.41	53.03	-18.62***	-3.88
ovta	1.5e-04	2e-04	-4.34e-06	-1.63
Liquidity				
nlta	56.07	65.62	-9.55***	-5.16
nldf	68.46	93.23	-24.77***	-6.88
Size				
assets	1e+08	6.3e+07	4.5e+07***	2.67
Wgh	9.33	5.34	3.99***	3.02
Branch	89.78	224.37	-134.59***	-4.23

Notes: *** indicate the significance level at 1%. The reject of the null hypothesis implies that the means of two bank groups are different.

When we test the equality of mean for the liquidity ratios, the two ratios that are net loans to total assets and net loans over deposits and short term funding are significantly different between commercial banks and Islamic banks. These ratios suggest that commercial banks are more liquid than Islamic banks. Generally, the liquidity ratios tend to be higher for the high performance of banks.

The test of size ratio shows that the mean of total assets is significant different between the two

$$perf_{i,t} = \alpha + \beta * llrgl_{i,t} + \gamma * teta_{i,t} + \delta * nlta_{i,t} + \theta * assets_{i,t} + \partial * cost_{i,t} + \vartheta * wgh_{i,t} + \mu * branch_{i,t} + \rho * gwth_{i,t} + \pi * rgdpc_{i,t} + \sigma * inf_{i,t} + \varepsilon_{i,t} \quad (2)$$

Where $perf_{i,t}$ is the profitability ratios including the ROA, ROE or PBTA proxy, $llrgl_{i,t}$ is the quality proxy, $teta_{i,t}$ is the capital adequacy proxy, $nlta_{i,t}$ is the liquidity proxy, $assets_{i,t}$ is the size proxy, $cost_{i,t}$ is the efficiency proxy, $wgh_{i,t}$ is the weight variable, $branch_{i,t}$ is the number of branches, $gwth_{i,t}$ is the real GDP growth rate, $rgdpc_{i,t}$ is the real GDP per capital, $inf_{i,t}$ is the inflation rate, $\varepsilon_{i,t}$ is the disturbance term, $i=1,2,\dots,N$ is the bank indicator and $t=2005,\dots, 2011$ is the time indicator.

To check for potential multicollinearity between the variables, we perform a correlation analysis for each

Thus, the model that will be estimated is:

$$perf_{i,t} = \alpha + \beta * llrgl_{i,t} + \gamma * teta_{i,t} + \delta * nlta_{i,t} + \partial * \left(\begin{matrix} wgh_{i,t} \\ branch_{i,t} \\ cost_{i,t} \end{matrix} \right) + \rho * gwth_{i,t} + \pi * rgdpc_{i,t} + \sigma * inf_{i,t} + \varepsilon_{i,t} \quad (3)$$

The profitability model (equation 3) will be estimated using the Prais-Winsten method for each group of banks. Assuming that the disturbances are heteroskedastic and contemporaneously correlated across panels, this technique presents panel-corrected standard error estimates for linear panel models.

VI. RESULTS AND DISCUSSIONS

In this section, we present and analyze the regression results of equation (3) using Prais-Winsten method for Saudi bank sample including 9 commercial banks and 3 Islamic banks over the period 2005-2011. To take into account the multicollinearity problem, several specifications of equation (3) were estimated for each group of banks. The first includes the weights variable (denoted I). The second contains the number of branches (denoted II). The third introduces the cost proxy (denoted III). The four takes in the macroeconomic variables (denoted IV). Tables 3 through 5 detail the estimated coefficients of the panel regression respectively for ROA, ROE et net profit before taxes.

In examining the effect of Loan loss reserves over gross loan ($llrgl$) on profitability measures, we remark a statistically significant negative relationship between $llrgl$, as a measure of asset quality and ROA, ROE or PBTA, particularly in Islamic banks. This

groups of banks. Commercial banks have a bigger size than Islamic banks. About the weights ratios, we find that commercial banks are more weighted than Islamic banks. Finally, the number of branches in Islamic banks is significantly very important than in commercial banks.

V. SPECIFICATION OF MODEL

In order to examine the determinants of Saudi commercial and Islamic banks' profitability, we present the following model:

group of banks (see Appendix C). Most explanatory variables are not highly and significantly correlated except for the proxy of size, cost, weights and branch variables, particularly in Islamic banks. In order to improve the estimations of our model, we remove the assets proxy because it had a very important correlation with the most explanatory variables and we will introduce the cost, weights and branch variables in separated models.

indicates that high asset quality ratio reduces profitability measures of Islamic banks. In the case of commercial banks, the $llrgl$ also has a negative and significant effect on the ROE (Table 4, specifications II and IV) but it has no effect on ROA and PBTA. This implies that asset quality is an important determinant for the profitability of Islamic banks.

Table 3 : Determinants of Return On Assets: Commercial vs. Islamic banks

Variables	Commercial banks				Islamic banks			
	I	II	III	IV	I	II	III	IV
Ratios								
llrgl	-0.233 (-0.64)	-0.351 (-1.25)	-0.137 (-0.80)	-0.254 (-1.46)	-0.289*** (-2.67)	-0.092 (-0.60)	-0.583*** (-4.90)	-0.553*** (-3.74)
teta	0.348*** (3.19)	0.314*** (2.87)	0.385*** (6.25)	0.367*** (6.81)	0.048*** (8.26)	0.059*** (8.27)	-0.004 (-0.35)	-0.003 (-0.37)
nltat	-0.086 (-1.56)	-0.137*** (-2.61)	-0.024 (-0.87)	-0.051** (-2.04)	0.011 (0.61)	0.044 (0.97)	-0.000 (-0.01)	0.027 (0.95)
wgh	0.046 (0.81)				0.456*** (4.54)			
branch		-0.000 (-0.10)				0.013*** (3.78)		
cost			-0.123*** (-6.16)	-0.091*** (-4.73)			-0.093*** (-6.04)	-0.093*** (-5.80)
Macro								
gwth				0.081 (1.11)				-0.038 (-0.51)
inf				-0.136* (-1.87)				0.051 (0.56)
rgdpc				0.005 (0.87)				0.014 (1.50)
Constant	3.379 (0.83)	7.419** (2.09)	4.220** (2.09)	3.148 (1.27)	-1.415 (-1.13)	-4.362 (-1.48)	9.186*** (4.15)	2.292 (0.48)
Wald	12.75**	38.17***	81.18***	90.31***	115.36***	97.35***	121.35***	99.10***
R ²	0.50	0.65	0.84	0.84	0.73	0.80	0.71	0.79
N	54	43	54	54	17	13	17	17

Notes: Significance levels are denoted by ***: 99%, **: 95%, *: 90%.

Next, the total equity over total assets (teta), as a measures of capital adequacy, has a statistically significant positive effect on ROA, ROE and profit before tax for commercial banks except in specifications I and II when ROE had been choosing as measures of profitability (Table 4). For Islamic banks, the capital measure has a positive and significant effect on ROA, ROE and profit before tax when macroeconomic variables were not controlling, implying that high capital

ratios increases profitability ratios. In introducing these control variables, we find a statistically significant inverse relationship between the equity variable and ROE (Table 4, specification IV). This negative relationship also is verified when including cost to income ratio (Table 4, specification III). We thus can conclude that capital adequacy is a major performance Determinants in both groups of banks.

Table 4 : Determinants of Return On Equity: Commercial vs. Islamic banks

Variables	Commercial banks				Islamic banks			
	I	II	III	IV	I	II	III	IV
Ratios								
llrgl	-2.290 (-0.99)	-2.971* (-1.76)	-1.649 (-1.31)	-2.580*** (-2.61)	-0.710 (-1.29)	-0.047 (-0.05)	-2.068** (-2.20)	-2.060* (-1.91)
teta	0.840 (1.34)	0.578 (1.06)	0.788** (2.30)	0.548** (2.09)	0.078*** (3.31)	0.134*** (4.40)	-0.225*** (-3.97)	-0.232*** (-4.82)
nltat	-0.392 (-1.09)	-0.695** (-2.10)	-0.107 (-0.58)	-0.199 (-1.31)	0.161* (1.74)	0.534* (1.79)	0.144 (1.39)	0.207 (1.23)
wgh	0.519 (1.45)				2.863*** (5.14)			
branch		-0.006 (-0.31)				0.073*** (3.98)		
cost			-0.739*** (-5.81)	-0.468*** (-4.65)			-0.555*** (-6.12)	-0.547*** (-5.85)
Macro								
gwth				0.823 (1.49)				0.198 (0.39)

inf				-1.578***				-0.018
				(-3.28)				(-0.03)
rgdpc				0.039				0.067
				(1.10)				(1.38)
Constant	36.02	61.940***	49.493***	37.846***	-14.171**	-40.226**	45.097***	16.300
	(1.29)	(2.62)	(3.62)	(2.94)	(-2.10)	(-2.05)	(3.80)	(0.68)
Wald test	8.57*	6.60	45.82***	73.35***	68.12***	43.35***	40.07***	47.66***
R ²	0.48	0.59	0.72	0.83	0.75	0.70	0.76	0.76
N	54	43	54	54	17	13	17	17

Notes: Significance levels are denoted by ***: 99%, **: 95%, *: 90%.

In analyzing the effects of macroeconomic variables used as control variables to isolate the impacts of bank characteristics variables, we find that the effects of GDP growth (gwth) and real GDP per capita (rgdpc) on ROA, ROE and PBTA are all statistically insignificant in both groups of banks (All tables, specification IV). However, the inflation variable has a negative and statistically relationship with the ROA, ROE and profit before tax only in commercial bank indicating that a high rate of inflation tend to decrease the performance of banks.

At 5% level of significance, the coefficients of net loans over total assets (nlta) are statistically

insignificant across all specifications of Islamic banks profitability measures. For commercial banks group, these coefficients however are negative and significant in the ROA (Table 3, specification II and IV), ROE (Table 4, specification II) and PBTA (Table 5, specification II). This result shows an increase in the ratio indicating a decrease in liquidity declines the profitability of commercial banks due to a rise in defaulting borrowers. Generally, in empirical research, the effect of liquidity ratios on banks' profitability is ambiguous. Basing on our estimation results, the liquidity measures cannot be considered as major determinants of commercial and Islamic banks' profitability.

Table 5: Determinants of Profit before taxes/Total assets: Commercial vs. Islamic banks

Variables	Commercial banks				Islamic banks			
	I	II	III	IV	I	II	III	IV
Ratios								
llrgl	-0.019	-0.030	-0.009	-0.022	-0.026**	-0.009	-0.052***	-0.054***
	(-0.55)	(-1.14)	(-0.55)	(-1.33)	(-2.52)	(-0.59)	(-4.51)	(-3.53)
teta	0.033***	0.029***	0.037***	0.035***	0.004***	0.005***	-0.001	-0.001
	(3.25)	(2.80)	(6.92)	(7.20)	(8.16)	(8.02)	(-0.60)	(-0.61)
nlta	-0.008	-0.013***	-0.002	-0.004*	0.001	0.004	-0.000	0.001
	(-1.45)	(-2.63)	(-0.58)	(-1.85)	(0.33)	(0.85)	(-0.15)	(0.52)
wgh	0.005				0.044***			
	(1.03)				(5.13)			
branch		0.000				0.001***		
		(0.16)				(3.94)		
cost			-0.011***	-0.008***			-0.009***	-0.009***
			(-6.26)	(-4.80)			(-6.82)	(-6.51)
Macro								
gwth				0.006				-0.006
				(0.98)				(-0.82)
inf				-0.014				0.002
				(-2.12)**				(0.20)
rgdpc				0.000				0.001
				(0.85)				(1.43)
Constant	0.265	0.678**	0.315*	0.262	-0.110	-0.388	0.888***	0.352
	(0.68)	(2.07)	(1.72)	(1.14)	(-0.89)	(-1.35)	(4.62)	(0.77)
Wald	12.80**	41.40***	84.43***	97.16***	110.69***	101.09***	106.75***	86.72***
R ²	0.50	0.65	0.85	0.85	0.71	0.79	0.72	0.76
N	54	43	54	54	17	13	17	17

Notes: Significance levels are denoted by ***: 99%, **: 95%, *: 90%.

Our results also suggest that there is a positive and statistically significant relationship between bank' weight (wgh) and all performance measures in Islamic banks (All tables, specification II). This indicates that higher bank' weight improves its performances. Contrary, in commercial banks, there is no effect of bank' weight on performance indicators, as all coefficients are statistically insignificant. Thus, the bank' weigh is an important determinant of Islamic bank's performance.

Same Conclusion Were finding when the coefficient of number of branches (branch) is estimated. Indeed, number of branches has a positive and significant effect on the performance measures only in Islamic banks (All tables, specification III). The number of branches appears to be a crucial determinants of performance in Islamic banks.

The cost over income (cost) is our final bank characteristics variable that was estimated. Whatever the type of banks, the cost over income as a proxy of bank efficiency has a important positive and significant effect on the all performance measures (All tables, specification III). This implies that high cost to income ratio reduces the efficiency of banks and thus decreases the bank's performances. The efficiency can be considered as an important determinant of bank's performance.

VII. CONCLUSION

The number of studies that have addressed the issue of determinants of bank performance is very important, but their results are not consensual. In this study, we tried to distinguish the determinants of performance in Saudi commercial and Islamic banks. We have used a data for 12 Saudi banks including 9 commercial banks and 3 Islamic banks over the period 2005-2011. The estimation technique used in this study is the Prais-Winsten method. This technique is employed to ensure that the linear regression is with panel-corrected standard errors.

The estimation results show that there are no a very important and significant differences between conventional banks and Islamic banks in the context of Saudi Arabia for all variables except Bank cost. This finding is consistent with Unal et al (2007) findings.

Performing a comparative study, the empirical results found that efficiency measured by cost to income, capital measured by total equity over total assets, and inflation rate were the most variables affecting the Saudi commercial banks' performance measured by return on assets, return on equity and profit after taxes. Indeed, efficiency, capital and inflation variables could have a negative relationship with banks' performance.

However, Saudi Islamic banks' performance depends heavily on asset quality measured by loan loss reserves over gross loan, capital adequacy, efficiency,

bank' weigh variable measured by assets of each bank over total Saudi banks assets and number of branches. These variables were the most determinants that can affect ROA, ROE and profit before taxes. Asset quality has a negative effect on Islamic banks' performance. This implies that the higher the loan loss reserves over gross loan ratio the poorer will be the quality of the loan portfolio. This concluding is consistent and intuitive with previous works. A high level of capital ratio leads to more return on assets, return on equity and particularly profit before taxes. This finding implies that larger equity over total assets ratio signals decline in risk exposure and thus increased ability of Islamic banks to withstand losses. Therefore, it can improve the performance of Islamic bank. This result is consistent with the works of Kosmidou, Tanna, and Pasiouras (2006), Pasiouras and Kosmidou (2007), Athanasoglou, Brissimis and Delis (2008) and Heffernan and Fu (2008). In addition, costto income ratio measuring efficiency tend to have a big impact on all proxies of Islamic banks' performance. As such, high cost ratio leading to decrease of efficiency substantially reduces Islamic banks' performance (Pasiouras and Kosmidou, 2007 and Olson and Zoubi, 2008). While bank weight and number of branches variables were the most variables affect the performance measured by ROA, ROE and net profit margin. For Instance, weight and number of branches could have a positive impact on banks' performance. In further research, if number of banks increased, we will have more accurate results for evaluating banks' performance.

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APPENDIX A

Definitions and sources of variables used in descriptive and regression analysis

Variables	Definitions	Sources
Profitability		
• Return on assets (ROA)	Ratio of net profit after tax over average assets	BankScope database
• Return on equity (ROE)	Ratio of net profit after tax over average equity	BankScope database
• Profit before taxes (PBTA)	Before-tax profit as a percent of total assets	BankScope database
Quality		
• Loan loss reserves /Gross loan (llrgla)	Reserves for losses as a percent of total loans.	BankScope database
Capital		
• Equity / assets (teta)	Total equity expressed as a percentage of total assets	BankScope database
Efficiency		
• Cost / income (cost)	Expressed as total salaries as a	BankScope database

	percentage of income generated before provisions.	
• Overheads / assets (ovta)	Percentage of total assets in personnel expenses and other non-interest expenses.	BankScope database
Liquidity		
• Net loans / assets (nlta)	Percentage of total assets in net loans.	BankScope database
• Net loans / Dep and ST funding (nldf)	Net loans as a percent of deposits and short term funding	BankScope database
Size		
• Assets (assets)	Total assets	BankScope database
Weights (wgh)	Measured as assets of each bank as a percent of the sum of Saudi bank assets.	BankScope database
Branches (branch)	Number of bank branches	BankScope database
Macroeconomic variables		
• Economic growth (gwth)	Percentage change in GDP	WDI, Word Bank
• GDP per capital (rgdpc)	Ratio of real GDP in constant 2005 US\$ to total population.	IFS, International Monetary Fund (IMF)
• Inflation (inf)	Percentage change of CPI	WDI, Word Bank

APPENDIX B

List of Saudi bank

Commercial bank	Islamic bank
Arab National Bank	Al Rajhi Banking & Investment Corporation-Al Rajhi Bank
Bank Al-Jazira	Bank AlBilad
Banque Saudi Fransi	Islamic Development Bank
National Commercial Bank (The)	
Riayd Bank	
Samba Financial Group	
Saudi British Bank (The)	
Saudi Hollandi Bank	
Saudi Investment Bank (The)	

APPENDIX C

Correlation matrix : Commercial banks

	llrgl	teta	cost	nlta	assets	wgh	branch	gwth	inf	rgdpc
llrgl	1.00									
teta	0.32	1.00								
cost	0.23	0.05	1.00							
nlta	-0.54	-0.52	0.03	1.00						
assets	-0.25	-0.24	-0.27	-0.05	1.00					
wgh	-0.26	-0.25	-0.34	-0.08	0.9*	1.00				
branch	-0.11	-0.13	-0.11	-0.03	0.60	0.77*	1.00			
gwth	-0.13	-0.03	-0.01	0.01	0.01	0.05	0.06	1.00		
inf	-0.30	-0.16	0.18	0.26	0.20	-0.05	-0.23	0.28	1.00	
rgdpc	0.15	0.08	0.03	-0.21	-0.07	-0.05	-0.14	0.04	-0.07	1.00

Notes: * indicate strong correlation

Correlation matrix : Islamic banks

	llrgl	teta	cost	nlta	assets	wgh	branch	gwth	inf	rgdpc
llrgl	1.00									
teta	0.25	1.00								
cost	-0.48	0.09	1.00							
nlta	-0.25	-0.34	-0.24	1.00						
assets	0.15	-0.47	-0.80*	0.24	1.00					

wgh	0.17	-0.51	-0.87*	0.41	0.94*	1.00				
branch	0.14	-0.57	-0.83*	0.36	0.97*	0.99*	1.00			
gwth	-0.15	-0.03	-0.07	-0.02	0.01	0.04	0.02	1.00		
inf	-0.11	0.27	0.28	-0.64	-0.13	-0.33	-0.28	0.37	1.00	
rgdpc	0.39	0.63	0.08	-0.53	-0.36	-0.38	-0.40	-0.01	0.14	1.00

Notes: * indicate strong correlation.



GLOBAL JOURNAL OF MANAGEMENT AND BUSINESS RESEARCH: D
ACCOUNTING AND AUDITING
Volume 14 Issue 1 Version 1.0 Year 2014
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

O Perfil Profissional Do Controller E as Funções De Controladoria: Um Estudo Da Atual Necessidade Do Mercado De Trabalho

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Abstract- The objective of the study was to analyze the current profile professional skills and abilities required for a controller in the levels of management and supervision as well as investigate whether the profile of this professional association is the size of the company, their source of capital hierarchy from office, academic and salary offered by the current labor market. It searched to identify the requirements for contractors, through the listings of selection and recruitment companies online. We used 295 valid announcements and information were dealt with content analysis, and validated by means of nonparametric statistics chi-square and Fisher's exact test. The significance level was used 10% ($\alpha = 0.10$) which makes the confidence interval of 90%. The data were organized in Profile technical, managerial and behavioral.

Keywords: professional profile. controller. functions.

GJMBR-D Classification : JEL Code: M00



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O Perfil Profissional Do Controller E as Funções De Controladoria: Um Estudo Da Atual Necessidade Do Mercado De Trabalho

Professional Profile of the Controller and Controllership Functions: A Study of Current Labor Market Needs

Celma Duque Ferreira ^α, Gilberto Crispim Da Silva ^ο, Jeronimo Jose Libonati ^ρ & Luiz Carlos Miranda ^ω

Resumo- O objetivo do estudo foi analisar o atual perfil profissional de competências e habilidades exigidas para a função de *controller* nos níveis de diretoria e supervisão, bem como investigar se o perfil deste profissional tem associação ao porte da empresa, a sua origem de capital, a hierarquia do cargo, formação acadêmica e salário ofertado pelo atual mercado de trabalho. Buscou-se identificar os requisitos exigidos pelas empresas contratantes, através dos anúncios de empresas de seleção e recrutamento on line. Foram utilizados 295 anúncios válidos e as informações foram tratadas com análise de conteúdo, e validadas por meio de testes estatísticos não paramétricos qui-quadrado e teste exato de Fisher. O nível de significância mínimo utilizado foi de 10% ($\alpha = 0,10$) o que torna o intervalo de confiança de 90%. Os dados foram organizados em perfil técnico, de gestão e comportamental. Chegou-se à conclusão que o perfil profissional do *controller* no atual mercado de trabalho não estão associadas ao porte da empresa, origem de capital, hierarquia do cargo, formação acadêmica e salário ofertado.

Palavras Chave: perfil profissional controller funções.

Abstract- The objective of the study was to analyze the current profile professional skills and abilities required for a controller in the levels of management and supervision as well as investigate whether the profile of this professional association is the size of the company, their source of capital hierarchy from office, academic and salary offered by the current labor market. It searched to identify the requirements for contractors, through the listings of selection and recruitment companies online. We used 295 valid announcements and information were dealt with content analysis, and validated by means of nonparametric statistics chi-square and Fisher's exact test. The significance level was used 10% ($\alpha = 0.10$) which makes the confidence interval of 90%. The data were organized in Profile technical, managerial and behavioral. The activities of the professional profile of the controller in the current labor market are not associated with company size, source of capital hierarchy of office, educational background and salary offered.

Keywords: professional profile. controller. functions.

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I. INTRODUÇÃO

A ênfase do nascimento da contabilidade, tanto na literatura quanto na prática, surgiu como um auxílio no gerenciamento dos negócios considerando o contexto que as contas eram para uso exclusivo dos proprietários. Most (1974) destaca que a contabilidade teve sua origem restrita ao uso gerencial, pois, não há na literatura sobre as origens da contabilidade, relatos de demonstrativos financeiros nem pareceres de auditoria, tais informações acompanharam o desenvolvimento da contabilidade e sua regulamentação. A contabilidade visava auxiliar o gestor a interpretar as situações com as quais conviviam e reunir informações para propiciar controles e tomar decisões relativas a eventos futuros, cujo objetivo tem a contabilidade gerencial.

A proposta do estudo foca as habilidades e competências do *controller*, identificar quais tendências ou desempenho tem sido exigido nos dias atuais pelos profissionais que exercem a função de *controller* nas organizações, seja de pequeno, médio ou grande porte. Pois, ainda não há consenso na literatura sobre as funções da controladoria, sendo estas sujeitas à cultura organizacional e adequação às reais necessidades das empresas. O porte e a origem do capital da empresa podem influenciar na atuação do perfil profissional do *controller*, assim sendo, cabe ao profissional de controladoria adaptar suas habilidades e competências ao objetivo da empresa que pretende trabalhar.

Tomando por base a formação do profissional, especialização, relação de liderança com a equipe, conhecimentos técnicos da profissão, habilidades e competência necessárias ao profissional no desempenho adequado de sua função, surge o problema da pesquisa: O perfil profissional do *controller* exigido pelo atual mercado de trabalho tem associação ao porte da empresa, sua origem do capital, a hierarquia do cargo, formação acadêmica e o salário ofertado?

O objetivo geral da pesquisa é analisar se as atividades do atual perfil profissional de competências e

habilidades exigidas pelas empresas contratantes para a função de *controller* estão associadas ao Porte, origem, hierarquia do cargo, formação acadêmica e salário ofertado.

Pela a importância econômica atual e futura, que representa a controladoria na gestão das empresas, por seu auxílio nas decisões e resultados decorrentes, é necessário realizar pesquisas que identifique a função da controladoria nas organizações. Pois, a partir da identificação das funções do *controller* e de suas habilidades e competências exigidas pelo mercado de trabalho haverá preparação apropriada aos interessados em exercer a profissão na função de *controller*.

II. REERENCIAL TEÓRICO

a) Perfil Profissional: uma visão da área de recursos humanos

i. Da definição de competência

O conceito de competência está associado à idéia de agregação de valor e entrega a determinado contexto de forma independente do cargo, isto é, a partir do próprio indivíduo. Essa entrega que a organização espera das pessoas deve estar focada no que é essencial aos objetivos da empresa. A agregação de valor das pessoas, conforme Dutra (2009) é a sua contribuição efetiva ao patrimônio de conhecimento da organização, permitindo-lhe manter suas vantagens competitivas no tempo.

David McClelland (1973) foi o primeiro a propor o conceito de competência. O conceito foi ampliado para dar suporte a processos de avaliação e para orientar ações de desenvolvimento profissional. Os autores Le Boterf (1994) e Zarifian (1996) exploraram o conceito de competência associado à idéia de agregação de valor.

Já para Hipólito e Silva (2009) há certa dificuldade para se definir "competência" visto serem múltiplas as interpretações dadas ao termo ao longo dos últimos 30 anos. Essa dificuldade ocorrena medida em que o termo implica comportamento, atitude e gestão da parte dos seres que estão sob julgamento. Durand (1998) instalou um conceito de competência baseado em três dimensões, sendo: conhecimentos, habilidades e atitudes. Dimensões interdependentes na medida em que para a exposição de uma habilidade, se presume que o indivíduo conheça princípios e técnicas específicas.

Autores, como Boyatzis, Stubbs e Taylor (2002), bem como McClelland (1998) defendem que as competências, no mundo do trabalho, dizem respeito a comportamentos que resultem em desempenho superior, podendo-se considerar como competências: conhecimentos aplicados, manifestações das habilidades, capacidade empregada e comportamentos manifestados pelas características pessoais com busca de realização. Esta é a linha a ser usada neste trabalho.

b) O Surgimento da profissão Controller

Para Tung apud Schmidt (2002), a palavra *controller* surgiu em países Como Estados Unidos e Inglaterra. Nesses países, *controller* ou *comptroller* indicava um executivo designado para controlar ou verificar as contas.

Contraopondo a afirmativa de Tung, Ricardino Filho (1999) em sua dissertação, afirma ter evidências que prova a origem da figura do *controller* desde o período medieval, devido as adaptação de antigas práticas utilizadas por Stewards e Baillfs no controle das propriedades rurais. O autor ainda afirma que há evidências suficientes para sustentar que as práticas gerenciais, adotadasna Revolução Industrial, já eram conhecidas e utilizadasna Inglaterra pré-industrial.

Horvath (2006) afirma que a empresa *General Electric Company* em 1892, foi a primeira indústria que, formalmente, instituiu a posição de *controller*, consequência da institucionalização da função da controladoria nas empresas privadas, resultado da industrialização ocorrida nos EUA na metade do século XIX.

c) Principais funções de controladoria

Wilson, Roehl-Anderson e Steven (1999) defendem que o papel do *controller* se expandiu ao papel de um contador para um profissional com ampla gestão e habilidades interpessoais para interagir com outros departamentos, bem como gerir as atividades de grupos que lhe são subordinados. E que podem variar drasticamente conforme o tamanho e complexidade operacional da empresa.

Autores como Mann (1973), Brasmsemann (1980), Welge (1988), Reichmann, Hahn, Almeida, Parisi e Pereira (2005), Peleias (2002), Weber (2004), Kupper (2005), Horvath (2006), Nascimento e Reginato (2007) destacam que planejamento, controle, sistema de informação e avaliação são funções fundamentais do *controller*.

Para Kanitz (1976) a função primordial do *controller* é zelar para que as coisas ocorram bemem termos de resultados finais. E que a atitude do *controller* não pode ser confundida com centralização de poder, poder autocrático, administração rígida, entre outros. E que o *controller* pode ter várias funções, dependendo das dimensões da empresa e da filosofia que orienta seus dirigentes. Desta forma, propõe como funções da controladoria a informação, acompanhamento, avaliação, planejamento, motivação e coordenação.

Heckert e Wilson (1963), Roehl-Anderson e Bragg (2000) defendem que as funções do *controller* evoluíram ao longo do tempo, pois requer não apenas o gerenciamento dos custos e dos departamentos, mas também um profissional que assume tarefas adicionais para trabalhar com outros departamentos e oferecer assessoria para a alta gerência da empresa.

d) *O Controller no Desempenho de suas Funções*

De acordo com as necessidades organizacionais de cada empresa, o profissional em controladoria terá uma atuação equivalente. Dutra (2009) cita diferentes níveis de atuação de um profissional, quanto à abrangência da atuação, sua responsabilidade, o

nível de estruturação das atividades, a relação com o tratamento das informações e seu grau de autonomia e supervisão dentro da empresa. O quadro 1 detalha com base no trabalho de Dutra (2009) a definição das atividades do profissional de controladoria.

Quadro 1 : Variáveis diferenciadoras da atuação do controller

Nível de atuação	Abrangência da atuação	Escopo de responsabilidade	Nível de estruturação das atividades	Tratamento da informação	Autonomia e grau de supervisão
Estratégica	Internacional	Organização	Baixo nível de padronização, estruturação e rotina	Decide / responde	Alto nível de autonomia
	Nacional	Várias unidades de negócio	↑	Participa da decisão	
Tática	Regional	Unidade de negócio		Analisa e recomenda	
Operacional	Local	Área		Alto nível de padronização, estruturação e rotina	Sistematiza / organiza
		Atividade		Coleta	

Fonte: Adaptado de Dutra (2009)

De acordo com o perfil hierárquico quanto maior o escopo de responsabilidade maior são as atribuições ao grau de impacto causado e sua autonomia junto à organização. O impacto das decisões deve estimular a cooperação entre grupos que realizam diferentes funções.

e) *Pesquisas similares para identificação do perfil profissional*

Vários autores buscaram identificar, ao longo do tempo, quais atribuições estão sob a responsabilidade do controller com o intuito de identificar as necessidades do mercado de trabalho e assim fornecer aos profissionais da área de controladoria um perfil da função.

Libonati *et al* (2000) identificou como funções da controladoria: elaboração de relatórios gerenciais; avaliação das informações e projetos; orçamento e planejamento; controle e acompanhamento; contábil e financeira; coordenação. E as habilidades do controller: conhecimento contábil, financeiro e de auditoria; conhecimento das atividades da empresa e do mercado que empresa atua; e facilidade de comunicação.

Santos *et al* (2005), obteve como resultados: experiência do controller de 3 a 10 anos, com MBA ou

especialização; formação em ciências contábeis, administração e economia; iniciativa, visão econômica, liderança e ética; as principais funções: implantação e supervisão do plano contábil, compilação dos custos de produção e distribuição, preparação, apresentação e supervisão de assuntos referentes a impostos; preparação e interpretação das estatísticas e relatórios para decisão administrativa; foco no orçamento global da empresa; e conhecimento na área fiscal, tributária e contábil.

Achados de Oro *et al* (2006): as empresas que solicitam os profissionais são as de pequeno porte para o nível operacional e gerencial e, as de grande porte para o nível estratégico; as funções são as de análise empresarial e Planejamento, conhecimento ou vivência em US GAAP, Lei Sarbanes Oxley, sistemas ERP JD e SAP, recurso humanos, matemática financeira, e inglês fluente; formação acadêmica com graduação em contabilidade e Administração, com experiência de 5 a 6 anos.

Lunkes *et al* (2009), realizaram pesquisa nos Estados Unidos, Alemanha e Brasil, com base na literatura daqueles respectivos países. O objetivo da pesquisa foi identificar as principais funções da

controladoria, tomando como referência o Financial Executives Institute. O resultado da pesquisa, comum aos três países, foram as funções de: planejamento, controle, elaboração e interpretação de relatórios e alimentação do sistema de informação.

III. METODOLOGIA

a) Amostra e instrumento de coleta de dados

Os elementos de pesquisa foram os anúncios das empresas de seleção e recrutamento *on line*: *Catho*, *Manager*, *Michel Page* e *Rhobert Half*. O foco centrou-se nas vagas relacionadas à controladoria. Utilizou-se para a amostra o método de acessibilidade, de forma aleatória e não probabilística. No que diz respeito ao espaço geográfico pesquisado, a investigação foi efetuada dentro do âmbito de empresas situadas em todo território nacional, sendo contempladas empresas de pequeno, médio e grande porte, não se limitando à origem de capital ou atividade da organização. Foram coletados de janeiro a agosto de 2013 o total de 295 anúncios para a realização deste estudo.

Inicialmente, foi realizada uma pesquisa no site das empresas de seleção e recrutamento *on line* *Catho*, *Manager*, *Robert Half* e *Michel Page*, refinando a busca para anúncios que continham a palavra *controller* ou controladoria no título ou corpo do anúncio.

Os dados coletados foram organizados em seis grupos no intuito de caracterizar a identificação das empresas quanto ao porte, origem, nível hierárquico referente à vaga e faixa salarial; informações sobre a graduação, pós graduação e necessidade de experiência para ocupar a vaga; atividades que

caracterizam o perfil de nível de supervisão; atividades que caracterizam o perfil de gestão ou nível de diretoria; perfil das competências e habilidades do indivíduo que agregam valor ao profissional, definidas como perfil comportamental; e as informações sobre as vantagens e benefícios ofertados aos profissionais.

Para tratar os dados utilizou-se de análise de conteúdo, a qual segundo Cooper & Schindler (2003) trata-se de uma técnica de pesquisa para a descrição objetiva, sistemática e quantitativa do conteúdo manifesto de uma comunicação.

Foi utilizada a análise de contingência associando duas variáveis dispostas em linhas e colunas a qual evidencia uma variável em linha e outra variável em colunas. Por meio dos testes estatísticos não paramétricos qui-quadrado e teste exato de Fisher as variáveis foram analisadas quanto sua independência. O nível de significância mínimo utilizado foi de 10% ($\alpha = 0, 10$) o que torna o intervalo de confiança de 90%.

Os dados foram identificados e organizados com auxílio da planilha eletrônica *Microsoft Office Excel* 2012. Já a análise descritiva e estatística foi realizada com o auxílio do software *Statistical Package of The Social Sciences* (SPSS), versão 19.0.

IV. DESCRIÇÃO E ANÁLISE DOS RESULTADOS

Quanto à identificação das empresas contratantes segue:

Porte: O porte das empresas foi identificado no próprio anúncio. As empresas de médio e grande porte correspondem a 42% e 40% das vagas, respectivamente conforme a tabela 1.

Tabela 1 : Porte das empresas contratantes

Porte das empresas	Frequência	%	% válido	% acumulado
Pequeno	50	16,9	18,1	18,1
Médio	116	39,3	42,0	60,1
Grande	110	37,3	39,9	100,0
Total	276	93,6	100,0	
Não declarado	19	6,4		
Total	295	100%		

Desconsiderando 6% que não declarou a atividade, o percentual válido dentre as que identificaram as empresas de pequeno porte correspondem a 18% dos anúncios.

Origem da Empresa: Considerando pesquisas anteriores, as empresas nacionais estão utilizando funções antes consideradas de empresas de origem estrangeira, conforme apresentado na tabela 2.

Tabela 2 : Origem das empresas contratantes

Origem das empresas	Frequência	%	% válido	% acumulado
Nacional	152	51,5	55,9	55,9
Multinacional	120	40,7	44,1	100,0
Total	272	92,2	100,0	
Não Mencionado	23	7,8		
Total	295	100%		

Tal situação se verifica pelo percentual de empresas nacionais buscando profissionais de controladoria, 56% do percentual válido de empresas nacional e 44% com origem de capital estrangeiro, as multinacionais.

Hierarquia da Função: Para os cargos referente à diretoria (gerência ou chefia) a oferta corresponde a 59% das vagas, e 41% para os cargos relativos a supervisão (encarregado ou assistente). Para o primeiro cargo, o nível de atuação é estratégica e com abrangência total na empresa e possui alto nível de

autonomia. Já para o segundo cargo, o nível de atuação é planejamento tático ou operacional, com abrangência parcial na empresa e com baixo grau de autonomia.

Faixa Salarial: 50% dos anúncios não continham informação relativa a valores salariais identificando apenas que o salário é um item a combinar, no entanto, a faixa salarial com maior percentual válido, diante dos que informam, é para salário acima de R\$ 8.000,00, conforme tabela 3.

Tabela 3 : Faixa salarial divulgada nos anúncios

Salário informado nos anúncios	Frequência	%	% válido	% acumulado
Até R\$ 4.000,00	35	11,9	23,8	23,8
De R\$ 4.001,00 à R\$ 8.000,00	39	13,2	26,5	43,5
Acima de R\$ 8.000,00	73	24,7	49,7	50,3
Total informado	147	49,8	100,0	100,0
A combinar	148	50,2		
Total não informado	148	50,2		

Do percentual válido informado 24% das empresas pagam salário até R\$ 4.000,00, 26% pagam entre R\$ 4.000 a R\$ 8.000 e 50% pagam acima de R\$ 8.000,00 aos profissionais de controladoria. Já quanto à hierarquia do cargo, os anúncios para profissionais com cargo de diretoria, tem maior percentual nos valores acima de R\$ 8.000,00 que os anúncios para cargos de supervisão.

Formação Requisitada: O atual mercado de trabalho busca profissionais ligados à gestão e aos negócios. Esses profissionais podem ser contadores, administradores, economistas entre outros. A tabela 4 evidencia quais profissionais são os mais requisitados para a controladoria.

Tabela 4 : Formação dos profissionais de controladoria

Formação	Frequência	%	% válido	% acumulado
Contabilidade e afins	122	41,4%	56,7%	56,7%
Contabilidade	69	23,4%	32,1%	88,8%
Administração	12	4,1%	5,6%	94,4%
Engenharia	9	3,1%	4,2%	98,6%
Outros	3	1,0%	1,4%	100%
Total	215	72,9%	100%	
Não mencionado	80	27,1%		
Total	295	100,0%		

Predomina a procura por profissionais formados em contabilidade e áreas afins, administração e economia, com 57% do percentual válido. Há uma procura significativa por profissionais com formação apenas em contabilidade o que corresponde 32% do percentual válido. Os profissionais com formação em contabilidade, contabilidade e afins somam 89% do total válido dos anúncios.

Pós Graduação: Predominantemente, a formação dos profissionais de controladoria para o requisito pós graduação correspondeu a especialização (*lato-sensu*) com 37% constante nos anúncios analisados e 63% das vagas analisadas através dos anúncios não mencionavam nenhum tipo de pós graduação. Para a pós graduação *Stricto Sensu*, mestrado e doutorado, não houve nenhuma menção nos anúncios.

Área de especialização: A área de especialização mais solicitada pelas empresas contratantes foi em controladoria, seguida de gestão de negócios e finanças. 67% do total dos anúncios apenas evidenciaram que um profissional com pós graduação é uma vantagem ou diferencial para contratação.

Das empresas contratantes que especificam a pós graduação como requisito necessário à contratação, 28% delas paga acima de R\$ 8.000,00 mensais. Já as empresas que não identificam a necessidade de profissionais com pós graduação (23%) pagam acima de R\$ 8.000,00. Esse fato demonstra que profissionais com especialização tendem a obter melhores salários, pois 61% da necessidade em pós graduação é para os cargos de diretoria ou chefia e 39% para os cargos de supervisão ou assistente.

a) Descrição E Análise do Perfil Técnico

Na análise dos anúncios, foram identificadas 13 atividades: classificação das contas; conciliação de contas; elaboração das demonstrações contábeis; legislação tributária; legislação societária; rotinas contábeis; rotinas financeiras; rotinas para exigências burocráticas legais; sistemas de informação; estatística; consolidação das demonstrações contábeis; uso de planilhas eletrônicas e sistemas integrados; e normas internacionais de contabilidade.

Tabela 5 : Resumo da associação das atividades do perfil com as variáveis

% Anúncio	Atividades	Porte	Origem	Hierarquia	Formação	Faixa Salarial
52%	Rotinas financeiras	*		*	*	
50%	Legislação societária			#	*	
49%	Legislação tributária / rotinas fiscais	*		#		
49%	Rotinas contábeis			*		
42%	Elaboração Demonstrações Contábeis	*	#	*		
41%	Sistemas de informação			*		#
40%	Normas internacionais	*	*	*	#	*
33%	Uso de planilhas / sistemas integrados		#	*		
26%	Rotinas exigências burocráticas legais		*	*		
13%	Estatística			*		
13%	Consolidação das demonstrações		*			*
10%	Conciliação			#		
8%	Classificação das contas					
-	Total	31%	38%	84%	23%	23%

Para as colunas assinaladas o símbolo * representa grau de significância de até 5%. Para # o grau de significância entre 5% e 10%

A composição das atividades do perfil técnico, conforme tabelas a seguir, trazem ao leitor uma síntese das atividades requeridas ao perfil em relação ao porte da empresa, origem de capital, hierarquia da função, formação do profissional e faixa salarial. Das atividades ou tarefas que correspondem ao perfil técnico as menos requisitadas foram classificação das contas, conciliação, consolidação das demonstrações contábeis e estatística. Já as mais solicitadas foram conhecimento em rotinas financeiras, legislação societária, legislação tributária e rotinas contábeis, como vemos na tabela 5.

A tabela 6 traz um resumo da associação das atividades com as variáveis analisadas. A hierarquia dos cargos está associada com as atividades do perfil técnico em maior grau que as demais variáveis testadas. Há associação estatisticamente significativa em onze das treze atividades do perfil técnico com a variável hierarquia do cargo. O porte das empresas e a origem de capital não estão associados ao perfil técnico, mas esta associação ocorre através da hierarquia do cargo.

Ao analisar a tabela 6, observa-se que há associação entre as atividades do perfil técnico e a

hierarquia do cargo com predominância para os cargos de diretoria, pois 84% das atividades do perfil estão associadas. Quanto ao porte, origem, formação

acadêmica e faixa salarial não há associação, pois apenas algumas atividades se associam às variáveis e o percentual representado é inferior a 50%.

Tabela 6 : Resumo da associação das atividades do perfil técnico

% Anúncios	Atividades	Porte	Origem	Hierarquia	Formação	Faixa Salarial
	Classificação das contas					
	Conciliação			#		
	Elaboração Demonstrações Contábeis	*	#	*		
	Legislação tributária / rotinas fiscais	*		#		
	Legislação societária			#	*	
	Rotinas contábeis			*		
	Rotinas financeiras	*		*	*	
	Rotinas exigências burocráticas legais		*	*		
	Sistemas de informação			*		#
	Estatística			*		
	Consolidação das demonstrações		*			*
	Uso de planilhas / sistemas integrados		#	*		
	Normas internacionais	*	*	*	#	*
	Total	31%	38%	84%	23%	23%

b) Descrição e análise do Perfil de Gestão

O perfil de gestão envolve atividades cujas funções e responsabilidades identificam um profissional que participa das decisões da empresa, seja através de

informações ou assessoria aos gestores da empresa. A tabela 7 apresenta os percentuais de cada atividade, ou seja, quanto cada atividade foi requisitada em percentual, e sua posição ordinal.

Tabela 7 : Ordem decrescente das atividades requisitadas pelo perfil de gestão

ATIVIDADES	%	ATIVIDADES	%	ATIVIDADES	%
Relatórios	76	Estudo dirigido e Projetos	55	Conhecimento Diversos	18
Controle	71	Controle Interno	55	Governança Corporativa	17
Custos	68	Assessoria	35		
Orçamento	67	Avaliação Desempenho	33		
Análise Financeira	65	Fluxo de Caixa	30		
Análise Contábil	65	Indicadores	27		
Planejamento	63	Auditoria	19		

Das dezesseis atividades do perfil de gestão apenas cinco estão associadas à faixa salarial, o que representa 31% do perfil, de acordo com esse

percentual pode-se afirmar que o perfil de gestão não está associado ao salário do profissional de controladoria.

Tabela 8 : Associação das atividades do perfil de gestão

Atividades	Porte	Origem	Hierarquia	Formação	Faixa Salarial	Total
Análise Financeira	*		*	*	*	4
Análise Contábil	*	*	#	#	#	5
Planejamento	*	*		*	*	4
Controle		*		*	*	3
Custos						-
Fluxo de Caixa			*			1

Relatórios	#	*		*		3
Avaliação de Desempenho			*			1
Orçamento						-
Estudos Dirigidos e Projetos		*			*	2
Controle Interno						-
Assessoria			*			1
Indicadores	#	*		#		3
Governança Corporativa – SOX		*	*			2
Auditoria			*			1
Conhecimentos Diversos		*	*			2
Total	31%	50%	50%	38%	31%	32

As atividades do perfil de gestão não estão associadas ao porte da empresa por esta apresentar apenas 31%, a formação acadêmica com 38% e o salário com 31% de atividades associadas. Já a origem da empresa e a hierarquia do cargo por conter 50% das atividades associadas e indicar predominância em empresas multinacionais e cargos de supervisor, respectivamente, não podem ser consideradas associação do perfil e apenas de algumas atividades.

c) *Descrição e análise do Perfil Comportamental*

Aproximadamente 20% do total de empresas contratantes evidenciam nos anúncios o perfil comportamental desejado de seus profissionais para a controladoria. Dentre as competências mais solicitadas pelo perfil comportamental, a gestão de pessoas foi a mais observada com 37% do total dos anúncios, em

seguida a importância ao trabalho em equipe com 35%, liderança com 34%, visão de mercado com 33%, proatividade com 30% e visão empresarial com 26%. As menos requisitadas foram motivação em 8% das vagas, equilíbrio emocional com 5% e um profissional paciente com 3%.

Um fato curioso acerca das competências de equilíbrio emocional e paciência, quando analisadas em relação à formação desejada dos profissionais, a graduação exclusiva em contabilidade obteve o maior percentual comparada às outras competências: 56% e 50%, respectivamente.

A tabela 9 informa a síntese da associação das atividades do perfil comportamental com o porte da empresa, a origem do capital, a hierarquia do cargo, a formação do profissional e o salário oferecido.

Tabela 9 : Atividades do perfil comportamental

Atividades	Porte	Origem	Hierarquia	Formação	Salário	Total
Liderança	*	*	*		*	4
Trabalho em equipe		#			*	2
Proatividade	*		*		#	3
Trabalhar sob pressão	*		*			2
Comunicação oral	*		*			2
Equilíbrio emocional	*			*		2
Gestão de pessoas	*				*	2
Visão global	*	#	*		*	4
Comprometimento	*		*			2
Visão empresarial	*		*		*	3
Motivação			#			1
Enfrentar desafios	*		*		*	3
Flexibilidade	*		*		*	3
Paciente			#			1
Total	79%	21%	79%	7%	57%	34

As atividades do perfil comportamental não estão associadas à origem do capital da empresa e à formação acadêmica do profissional, pois representam 21% e 7%, respectivamente. No então, observa-se que o porte da empresa e a hierarquia do cargo estão associados a 79% das atividades do perfil comportamental e o salário oferecido está associado a 57% das atividades. Logo, pode-se afirmar que o perfil comportamental tem associação estatística significativa com o porte da empresa, a hierarquia do cargo e o salário oferecido.

d) *Descrição e Análise dos Benefícios*

Este estudo identificou nos anúncios analisados 13 (treze) benefícios oferecidos pelas empresas contratantes. Dentre eles, os cinco mais ofertados foram assistência médica 43%, alimentação (ticket ou refeitório) 36%, transporte 34%, assistência odontológica 29%, seguro de vida 25%, participação nos lucros 15,6%, Farmácia 11,5% e 21,4% para cursos, combustível, previdência privada, creche e carro da empresa.

Analisando a relação dos benefícios com a remuneração, constatou-se que das vagas que oferecem carro da empresa a seus funcionários todas pagam salário acima de R\$ 8.000,00 e deste total 57% das empresas são de grande porte, 29% de médio porte e 14% de pequeno porte. Já com combustível, apenas 25% das empresas oferecem combustível aos

seus funcionários sendo que deste total quem oferece o maior percentual são as empresas de médio porte correspondendo a 44%, as grandes representam 19% e as empresas de pequeno porte correspondendo a 37%. Quanto à formação 57% são para formados em apenas em contabilidade, conforme observa-se na tabela 10.

Tabela 10 : Relação entre os benefícios e a remuneração oferecida

Benefícios	% Acima de R\$ 8.000,00	Benefícios	% Acima de R\$ 8.000,00
Carro da empresa	100,0	Seguro de vida	21,6
Creche	71,4	Assistência médica	20,2
Previdência privada	54,5	Farmácia	20,0
Celular	32,4	Transporte	19,8
Cursos/estudos	31,8	Assistência Odontológica	18,6
Participação nos lucros	26,1	Alimentação	18,2
Combustível	24,7		

Quando associado os benefícios oferecidos pelas empresas contratantes com o porte da empresa houve associação em apenas dois benefícios: convênio farmácia com significância de 3,2% e combustível com

significância de 6,6%. Logo, com base na tabela 11 pode-se afirmar que nas empresas de médio porte o convênio com farmácia predomina nas empresas de médio porte.

Tabela 11 : Resultado análise da associação dos benefícios oferecidos x porte das empresas

Benefícios Oferecidos	Porte			Teste Qui-quadrado de Pearson N= 276		
	Pequeno 50 anúncios	Médio 116 anúncios	Grande 110 anúncios	χ^2	α	Signif. ¹
Assistência médica	52%	41%	44%	1,595	0,450	
Assistência Odontológica	38%	28%	27%	2,207	0,332	
Farmácia	6%	20%	11%	6,886	0,032	*
Alimentação	56%	46%	44%	1,970	0,373	
Seguro de vida	22%	26%	26%	0,372	0,830	
Transporte	46%	34%	31%	3,473	0,176	
Cursos/estudos	10%	8%	7%	0,361	0,835	
Participação nos lucros	12%	17%	17%	0,829	0,661	
Creche	-	4%	2%	3,008	0,222	
Previdência privada	2%	4%	4%	0,637	0,727	
Carro da empresa	2%	2%	4%	0,906	0,636	
Celular	18%	14%	8%	3,470	0,176	
Combustível	12%	6%	3%	5,433	0,066	#

¹Para esta coluna assinalam-se as associações significativas. O símbolo * representa grau de significância de até 5%. E # entre 5% e 10%.

Quanto ao combustível, de acordo com os testes, prevalecem as empresas de pequeno porte o que de certa forma surpreende, pois a expectativa é que as empresas de médio porte oferecessem combustível em maior quantidade que as pequenas.

Com base nos resultados dos testes pode-se afirmar que os benefícios oferecidos aos profissionais de controladoria não tem associação ao porte da empresa contratante, pois apenas 15% dos benefícios estão associados.

Já a tabela 12 demonstra que do total de treze benefícios houve associação com a origem da empresa em seis, sendo: assistência odontológica (4,8%), seguro de vida (9,9%), patrocínio de cursos ou estudos (4,5%), participação nos lucros (1%), previdência privada (0,2%) e carro da empresa (3%). Apenas 46% dos benefícios mantêm associação com a origem do

capital, logo pode-se afirmar que não há associação entre os benefícios oferecidos pelas empresas e a discriminação da origem de seu capital. Apesar de haver maior percentual de benefícios oferecidos nas empresas multinacionais essa diferença não é explicada estatisticamente.

Tabela 12 : Resultado da análise da associação benefícios oferecidos x origem das empresas

Benefícios Oferecidos	Origem		Testes Estatísticos N = 272				Signif ¹ .
	Nacional 152 anúncios	Multinacional 120 anúncios	Qui-quadrado de Pearson		Exato de Fisher		
			χ^2	α	Exato de Fisher	α	
Assistência médica	42%	48%	1,052	0,305	0,328	0,183	
Assistência Odontológica	25%	35%	3,230	0,072	0,082	0,048	*
Farmácia	14%	13%	0,073	0,788	0,861	0,465	
Alimentação	48%	47%	0,050	0,824	0,903	0,460	
Seguro de vida	22%	30%	2,043	0,153	0,165	0,099	#
Transporte	38%	32%	1,237	0,266	0,307	0,162	
Cursos/estudos	5%	12%	3,599	0,054	0,72	0,045	*
Participação nos lucros	11%	22%	6,333	0,012	0,013	0,010	*
Creche	2%	3%	0,494	0,482	0,703	0,372	
Previdência privada	1%	8%	10,180	0,001	0,003	0,002	*
Carro da empresa	1%	5%	5,043	0,025	0,046	0,030	*
Celular	11%	14%	0,545	0,460	0,467	0,289	
Combustível	5%	7%	0,239	0,625	0,796	0,406	

¹Para esta coluna assinalam-se as associações significativas. O símbolo * representa grau de significância de até 5%. E # entre 5% e 10%.

Quanto a associação entre os benefícios oferecidos e a formação acadêmica do profissional, apenas quatro benefícios estão associados à formação acadêmica do profissional de controladoria o que representa 31% dos benefícios. Com isso, pode-se afirmar que não há associação entre os benefícios oferecidos e a formação do profissional.

Entretanto, analisando a associação dos benefícios em relação a faixa salarial ofertada, constatou-se que há predominância na associação entre a faixa R\$ 4.000,00 e R\$ 8.000,00, porém não foi observado essa ocorrência nas demais faixas salariais ofertadas.

Já quanto aos benefícios em relação a hierarquia do cargo, dos treze benefícios, oito estão

associados com representação em 62%, conforme demonstrado na tabela 13 a seguir:

Tabela 13 : Análise da associação dos benefícios oferecidos com a hierarquia do cargo

Benefícios Oferecidos	Hierarquia/cargos		Testes Estatísticos N = 295				Sig ¹
	Diretor 173 anúncios	Supervisor 122 anúncios	Qui-quadrado	de	Exato	de	
			Pearson		Fisher		
			χ^2	α	Exato de Fisher	α	
Assistência médica	55%	28%	21,266	0	0	0	*
Assistência Odontológica	35%	21%	6,193	0,013	0,014	0,009	*
Farmácia	14%	12%	0,284	0,594	0,730	0,362	
Alimentação	56%	32%	15,592	0	0	0	*
Seguro de vida	32%	14%	11,8141	0,001	0,001	0	*
Transporte	41%	25%	8,599	0,003	0,004	0,002	*
Cursos/estudos	10%	4%	3,402	0,065	0,074	0,050	*
Participação nos lucros	18%	11%	2,680	0,102	0,107	0,069	#
Creche	2%	2%	0,007	0,935	1,000	0,611	
Previdência privada	4%	3%	0,117	0,732	1,000	0,495	
Carro da empresa	2%	3%	0,737	0,391	0,453	0,315	
Celular	17%	4%	11,254	0,001	0,001	0	*
Combustível	6%	4%	0,712	0,399	0,477	0,284	

¹Para esta coluna assinalam-se as associações significativas. O símbolo * representa grau de significância de até 5%. E # entre 5% e 10%.

Portanto, pode-se afirmar que os benefícios oferecidos pelas empresas contratantes estão associados à hierarquia do cargo. Logo, os cargos de diretoria oferecem maiores benefícios em relação aos cargos de supervisão.

V. CONCLUSÃO

Este estudo buscou investigar o perfil profissional do controller exigido pelo atual mercado de trabalho quanto à associação do perfil ao porte da empresa e a sua origem de capital. Quanto às atribuições dos profissionais de controladoria, o resultado da pesquisa identificou as atividades mais solicitadas em cada perfil e os benefícios mais oferecidos:

- Perfil técnico – rotinas financeiras, legislação societária e tributária, rotinas contábeis, elaboração das demonstrações contábeis, sistemas de informação e normas internacionais;
- Perfil de gestão – relatórios, controle, custos, orçamento, análise financeira e contábil, planejamento, estudos e projetos dirigidos e controle interno;
- Perfil comportamental – gestão de pessoas, trabalho em equipe, liderança, visão global, proatividade, comunicação oral e flexibilidade;
- Benefícios – assistência médica, alimentação, transporte, assistência odontológica, seguro de vida, e participação nos lucros.

A tabela 14 apresenta uma síntese das atividades com associação significativa de cada perfil. Para fim dessa análise foi considerado perfil com associação significativa o que obtiver acima de 50% de atividades associadas.

Tabela 14 : Identificação da associação estatisticamente significante perfis e benefícios

Variáveis	% de associação significativa estatisticamente			
	Técnico	Gestão	Comportamental	Benefícios
Porte	31%	31%	79%	15%
Origem	38%	50%	21%	46%
Hierarquia	84%	50%	79%	62%
Formação	23%	38%	7%	31%
Salário	23%	31%	57%	46%

De acordo com os dados acima pode-se afirmar que o apenas o perfil comportamental está associado estatisticamente com o porte da empresa predominando as empresas de médio porte. A origem do capital das empresas contratantes está não está associada ao perfil de gestão por haver apenas 50% de atividades associadas ao perfil o qual predomina a preferência pelas empresas multinacionais. Quanto a hierarquia do cargo, está associada ao perfil técnico e comportamental assim como aos benefícios. Quanto ao perfil técnico há predominância aos cargos de diretoria, no perfil comportamental a predominância é para os cargos de supervisor e quanto aos benefícios os cargos de diretoria recebem benefícios em maior proporção. Em relação ao perfil de gestão não há associação, no entanto entre as atividades associadas a predominância é para cargos de supervisor. Já a formação acadêmica do profissional de controladoria não está associada a nenhum perfil, o que expressa a multidisciplinaridade da profissão, pois não há homogeneidade quanto a uma formação em específico. A procura maior ocorre para profissionais formados em contabilidade e áreas afins, no entanto essa procura não tem associação estatística quanto aos perfis. Por fim, o salário tem associação apenas com o perfil comportamental o qual a faixa salarial com maior oferta é para salários a partir de R\$ 8.000,00.

Apesar de haver estatisticamente associação significativa no perfil técnico quanto à hierarquia; no perfil comportamental quanto ao porte, hierarquia e salário; e os benefícios também quanto à hierarquia não se pode afirmar que a soma dos três perfis juntamente com os benefícios, o que forma o perfil do *controller*, tenha associação estatística significativa com o porte da empresa, a origem do capital, a hierarquia do cargo, a formação acadêmica e o salário.

Portanto, conclui-se que o perfil do controller exigido pelo atual mercado de trabalho não tem associação ao porte da empresa e a sua origem do capital, a hierarquia do cargo, a formação acadêmica do profissional e o salário oferecido apesar de ter apresentado estatisticamente associação significativa de alguns perfis referentes às variáveis conforme tabelas de associação apresentado na análise dos resultados.

VI. LIMITAÇÃO DO ESTUDO

Uma limitação encontrada no estudo foi o fato de não ter a disponibilidade em número considerado de empresas para realizar a coleta desses dados de forma individual e diretamente *in loco*. Há uma resistência por parte das empresas em fornecer informações presenciais ou mesmo por e-mail, o que pode ser justificado pela dinâmica e competição entre as empresas que torna o tempo cada vez mais precioso. Portanto, esse estudo concentrou-se nos anúncios disponíveis e qualificáveis para a análise dos dados. Contudo, outra limitação existente no estudo é o fato de cada empresa valorar o *controller* conforme sua realidade e necessidade, havendo diferentes perfis de atuação conforme a cultura organizacional da empresa. Como sugestão para futura pesquisa identificar o perfil do *controller* através das necessidades das empresas com os dados coletados diretamente com o gestor da empresa visando captar a necessidade ou expectativa de cada gestor e em sua respectiva atividade e porte de empresa.

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GLOBAL JOURNAL OF MANAGEMENT AND BUSINESS RESEARCH: D
ACCOUNTING AND AUDITING
Volume 14 Issue 1 Version 1.0 Year 2014
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

Custo Do Lixo: Em Estudo Sobre A Inexistência De Critérios Na Elaboração Dos Editais De Licitação Para Contratação De Empresas Para Serviços De Coleta Do Lixo

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Abstract- Os serviços de limpeza pública, dentre os quais se destacam os serviços de coleta do lixo, são extremamente dispendiosos aos cofres públicos, em especial quando tais serviços são terceirizados, pois conforme pesquisa realizada por Souza (1999) nos municípios da região sul em 2006, verificou-se que o orçamento municipal aplicado em limpeza urbana varia de acordo com o tamanho da população ficando entre 1,94% a 8,19% do orçamento total. Nos últimos tempos, muito se tem falado a respeito do custo dos serviços de limpeza urbana, devido às propostas e os valores para o serviço de coleta do lixo praticados pelas empresas terceirizadas, ou mesmo diretamente pelo poder público municipal serem diversas vezes superiores aos custos que a Administração Pública deveria pagar, sendo abusivos e conseqüentemente onerando o orçamento público.

GJMBR-D Classification : JEL Code: H83



CUSTO DO LIXO EM ESTUDO SOBRE A INEXISTÊNCIA DE CRITÉRIOS NA ELABORAÇÃO DE EDITAIS DE LICITAÇÃO PARA CONTRATAÇÃO DE EMPRESAS PARA SERVIÇOS DE COLETA DO LIXO

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Custo Do Lixo: Em Estudo Sobre A Inexistência De Critérios Na Elaboração Dos Editais De Licitação Para Contratação De Empresas Para Serviços De Coleta Do Lixo

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I. INTRODUÇÃO

Os serviços de limpeza pública, dentre os quais se destacam os serviços de coleta do lixo, são extremamente dispendiosos aos cofres públicos, em especial quando tais serviços são terceirizados, pois conforme pesquisa realizada por Souza (1999) nos municípios da região sul em 2006, verificou-se que o orçamento municipal aplicado em limpeza urbana varia de acordo com o tamanho da população ficando entre 1,94% a 8,19% do orçamento total.

Nos últimos tempos, muito se tem falado a respeito do custo dos serviços de limpeza urbana, devido às propostas e os valores para o serviço de coleta do lixo praticados pelas empresas terceirizadas, ou mesmo diretamente pelo poder público municipal serem diversas vezes superiores aos custos que a Administração Pública deveria pagar, sendo abusivos e consequentemente onerando o orçamento público.

O negócio do lixo é interessante para o setor privado que, segundo o Jornal Nova Democracia (2008), o grupo Queiroz Galvão desdobrou-se, criando uma ramificação para operar apenas na área de saneamento, principalmente na coleta e destinação final de lixo em oito Estados da federação, um nicho que já representa 20% do faturamento da construtora, que somou R\$ 1,2 bilhão em 2004.

A coleta de lixo é um serviço público prestado pelo Município ou por seus delegados, sob regime jurídico de direito público, com vistas ao saneamento das áreas urbanas e a saúde básica da coletividade. Sendo um serviço público, a coleta de lixo, que normalmente é feita por empresas privadas, deverá ser escolhida através de prévio processo de licitação pública, em obediência à norma contida no art. 5º, inciso XXI, da Constituição Federal de 1988.

O Ministério Público tem investigado possíveis existências de irregularidade em licitações para contratação de diversas empresas para coleta do lixo em vários municípios. Como exemplo, pode-se citar a Prefeitura do Recife que está sofrendo uma “auditoria especial” do Tribunal de Contas de Pernambuco cujo objeto é investigar o contrato do lixo firmado pelo Município do Recife e a empresa privada Vital Engenharia Ambiental S/A, do grupo Queiróz Galvão, pois há indícios de superfaturamento o que levou o TCE a propor a auditoria especial no contrato milionário (Jornal do Comércio, 2009).

Segundo Pesquisa FAPESP (2009), os valores que as cidades paulistas pagam atualmente às empresas coletoras de lixo têm uma grande variação: de R\$ 13 a R\$ 120 por tonelada, com média de R\$ 37.

Assim, este artigo objetivou analisar os critérios de elaboração dos editais para a contratação de serviço de limpeza urbana, buscando observar se há critérios objetivos, que garantam o atendimento aos preceitos constitucionais da legalidade, impessoalidade, moralidade, publicidade, eficiência e economicidade, bem como se são apoiados em informações produzidas com embasado na teoria da contabilidade de custos, para definição dos preços dos serviços e medição do custo da limpeza urbana para Gestão Municipal.

II. REVISÃO DA LITERATURA

a) *Gerenciamento dos serviços de limpeza urbana*

Os resíduos sólidos podem ser classificados de várias formas, sendo que a origem é o principal elemento para a caracterização desses resíduos. Segundo Fonseca e Gonzaga (2006), os diferentes tipos de lixo podem ser agrupados em cinco classes:

1. Lixo doméstico ou residencial: são os resíduos gerados nas atividades diárias em casa, apartamentos e demais edificações residenciais.
2. Lixo comercial: são os resíduos gerados em estabelecimentos comerciais, cujas características dependem da atividade ali desenvolvida.

3. Lixo público: são os resíduos presentes nos logradouros públicos, em geral resultantes da natureza, tais como folhas, e aqueles descartados irregular e indevidamente pela população, como papeis, restos de embalagens e alimentos etc.
4. Lixo domiciliar especial: grupo que compreende os entulhos de obras, pneus etc.
5. Lixo de fontes especiais: são resíduos que, em função de suas características peculiares, passam a merecer cuidados especiais em seu manuseio, acondicionamento, estocagem, transporte ou destinação final. Ex.: resíduos dos serviços de saúde.

Resíduos sólidos urbanos, para Schübeler (1996), incluem os lixos das famílias, bem como os resíduos sólidos considerados não perigosos das indústrias, comércio e estabelecimentos institucionais (incluindo hospitais) e etc. Pelas suas peculiaridades, os resíduos industriais e médicos, não são componentes de resíduos sólidos urbanos, tendo um tratamento diferenciado e não sendo objeto deste estudo. Mesmo assim, a definição de resíduos sólidos para efeito de recolhimento pelo serviço de coleta regular varia de uma cidade para outra. As leis e os regulamentos de limpeza pública de um município procuram definir o conceito de resíduos sólidos para efeito de remoção.

Os serviços de limpeza urbana, segundo Fonseca e Gonzaga (2006), são de responsabilidade do poder público municipal que podem executá-los diretamente ou por meio de terceiros mediante licitação e contrato de prestação de serviços. Tais serviços, segundo esses autores, indicam que, em média, dez por cento do orçamento anual das municipalidades são despendidos com a limpeza pública, que engloba os serviços de coleta, varrição, capina, raspagem, lavagem de feiras, disposição final e tratamento dos resíduos etc.

Gestão dos resíduos sólidos urbanos é uma grande responsabilidade dos governos municipais, segundo Schübeler (1996), sendo uma tarefa complexa que depende tanto da organização e cooperação entre as famílias, comunidades, empresas privadas e autoridades municipais quanto da seleção e aplicação de soluções técnicas adequadas para o recolhimento dos resíduos, transporte, reciclagem e eliminação. Além disso, a gestão dos resíduos é uma tarefa essencial que tem importantes consequências para a saúde pública e bem-estar, a qualidade, a sustentabilidade do ambiente urbano, bem como a eficiência e produtividade da economia urbana.

Ainda conforme Schübeler (1996), na maioria das cidades dos países em desenvolvimento, a gestão de resíduos é insuficiente: parcela significativa da população não tem acesso ao serviço de coleta de resíduo e apenas uma fração dos resíduos gerados é

recolhida. Sistemas de transferência, reciclagem e / ou eliminação de resíduos sólidos são insatisfatórios do ponto de vista ambiental, econômico e financeiro.

A gestão dos resíduos sólidos é um processo cíclico de fixação de objetivos, que institui a longo prazo planos, programação, orçamentação, execução, operação e manutenção, acompanhamento e avaliação, controle dos custos, a revisão dos objetivos e planos, e assim por diante, segundo Ferreira e Carvalho (2007), que permitam a execução eficiente do serviço de limpeza urbana.

Gestão de infra-estrutura urbana de serviços é uma responsabilidade básica do governo municipal, de acordo com Mugagga (2006), essa tarefa pode ser executada com parceria empresas privadas e / ou com os usuários dos serviços (participação), mas a responsabilidade final continua a ser a do governo.

As empresas privadas podem, sob determinadas condições, prestar serviços de limpeza urbana de forma eficiente, ou seja, com menor custos do que o setor público. No entanto, o envolvimento do setor privado, por si só, não garante a eficácia e o baixo custo. Os problemas surgem quando, na contratação, não estão claras as condições de sob as quais o serviço será prestado ao município, quando não são especificadas nos editais de licitação o custo base para a realização do serviço e quando a concorrência entre os fornecedores é inexistente, ou ainda, quando há formação de cartel ou acerto entre os participantes do referido certame.

b) *A licitação e o projeto básico*

Para a contratação de empresas terceirizadas, a entidade pública realiza licitação, que é o procedimento administrativo formal em que a Administração Pública convoca, mediante condições estabelecidas em ato próprio (edital ou convite), empresas interessadas na apresentação de propostas para o oferecimento de bens e serviços.

A licitação objetiva, de acordo com a lei nº 8.666/93 e suas alterações posteriores, destina-se garantir a observância dos princípios constitucionais da isonomia, da legalidade, da impessoalidade e da eficiência, a fim de selecionar a proposta mais vantajosa para a Administração, de maneira a assegurar oportunidade igual a todos os interessados e possibilitar o comparecimento ao certame do maior número possível de concorrentes.

A Lei nº 8.666 de 1993, ao regulamentar o artigo 37, inciso XXI, da Constituição Federal, estabeleceu normas gerais sobre licitações e contratos administrativos pertinentes a obras, serviços, inclusive de publicidade, compras, alienações e locações no âmbito dos Poderes da União, dos Estados, do Distrito Federal e dos Municípios.

Para que a administração possa contratar um serviço de coleta que atenda aos melhores interesses

do município (legalidade, impessoalidade, moralidade, publicidade e eficiência, além de menor custo), é necessário que o edital de licitação seja bem formulado, contendo todas as indicações que garantam o bom entedimento do objeto da licitação e conseqüentemente o cumprimento efetivo deste objeto. Diante disto, a lei de licitação estabelece que toda licitação de obra ou serviço deve ser precedida da elaboração do projeto básico¹.

A lei estabelece que o projeto básico deve estar anexado ao ato convocatório, dele sendo parte integrante, e deve ser elaborado segundo suas exigências. Este projeto é o conjunto de elementos necessários e suficientes, com nível de precisão adequado, para caracterizar a obra ou o serviço, ou complexo de obras ou serviços, o qual deve ser elaborado com base nas indicações de estudos técnicos preliminares. O projeto básico tem como objeto assegurar a viabilidade técnica e o adequado tratamento do impacto ambiental do empreendimento e possibilita a avaliação do custo da obra ou serviços e a definição dos métodos e do prazo de execução. A título de exemplo, um projeto básico bem elaborado, para contratação de serviços de manutenção preventiva e corretiva, deve fornecer, dentre outras informações essenciais:²

1. detalhamento do objeto;
2. periodicidade de visitas; se diária, semanal, quinzenal, mensal, etc.
3. horário do recolhimento dos resíduos sólidos;
4. prazo para atendimento às chamadas;
5. equipe mínima/composição da equipe técnica, com registro na entidade profissional competente;
6. quantidade de equipamentos necessários;
7. orçamento detalhado do custo global da obra, fundamentado em quantitativos de serviços e fornecimentos propriamente avaliados;
8. relação do material de reposição que deverá estar coberto pelo futuro contrato;
9. material mínimo necessário para estoque no local dos serviços;
10. local para eliminação dos resíduos sólidos;

Para Nunes (2009), o projeto básico, além de ser peça imprescindível para execução de obra ou prestação de serviço, é o documento que propicia à Administração conhecimento pleno do objeto que se quer licitar, de forma detalhada, clara e precisa. Deve permitir ao licitante as informações necessárias à boa elaboração de sua proposta, mediante regras estabelecidas pela Administração, a que estará sujeito.

c) Custos e preços nos serviços de limpeza urbana

Os custos e preços dos sistemas de limpeza pública diferem de região para região do nosso país, sendo que as quantidades e características dos equipamentos utilizados também influenciam esses valores, segundo Fonseca e Gonzaga (2006).

Os aspectos financeiros do gerenciamento da coleta do lixo são analisados sob a ótica dos custos referentes aos serviços de limpeza pública, estes custos estão relacionados com compra de equipamentos, como caminhões coletores, construção de estações de triagem, transbordo, aterro sanitário e outras melhorias na coleta, tratamento e disposição final. Os custos podem ser definidos, para D'Almeida (2000, p.65), como: "a soma dos instrumentos (mão-de-obra, energia, materiais, equipamentos, instalações, etc.), o necessário para realizar determinado serviço ou operação".

Na cidade de São Paulo, Calderoni (1998) cita que em agosto de 1996 foram consumidos 35 milhões de reais com coleta, transporte e disposição final, sendo que a coleta representava 26% do total dos gastos.

Uma das metodologias para estimar os custos operacionais com serviços de coleta e transporte de resíduos é o custo padrão, em que, segundo D'Almeida (2000, p.66), "para cada item de custo é definido um coeficiente técnico unitário que é multiplicado por um preço ou custo unitário daquele item".

Azambuja (2005) dá um exemplo para estimar os custos com serviços de limpeza: para determinar o custo do combustível, o coeficiente técnico é o consumo unitário (medido em litros/km) multiplicado pelo preço unitário do combustível (R\$/litro) resultando no custo unitário do combustível.

Ainda de acordo com a autora, os custos fixos que normalmente se relacionam com a atividade da coleta são: (1) custos relacionados com a frota de veículos – depreciação dos veículos (despesa com desvalorização do veículo), remuneração do capital aplicado na frota (estabelece o retorno do investimento na frota) e outros custos relacionados com a frota, tais como os impostos, as taxas e os seguros obrigatórios; (2) custos relacionados com instalações de equipamentos – prédios, garagens, máquinas, veículos auxiliares e móveis; e (3) custos com mão-de-obra – direta e indireta (salários, benefícios).

Os custos variáveis são aqueles que variam conforme com o aumento ou diminuição das atividades: custo por quilômetro percorrido (\$/km); custo por hora de operação dos veículos.

Para custear as despesas decorrentes dos serviços de limpeza pública, o município pode executar a cobrança sob diferentes formas legais de arrecadação, como taxas de prestação de serviços

¹ Inciso IX, art. 6º da Lei nº 8.666/93.

² Alíneas "a" a "f" do inciso IX, art. 6º da Lei nº 8.666/93.

públicos, de acordo com a legislação do município, normalmente cobrada junto com outros impostos como Imposto Predial Territorial Urbano – IPTU. Porém, as despesas com os serviços de limpeza pública nem sempre são integralmente cobertas pelas receitas provenientes das cobranças dessas taxas, exigindo que a prefeitura faça uma suplementação de recursos ou, ainda, busque outras fontes de financiamento desse serviço.

A terminologia de custos fixos e variáveis é muito empregada em planilhas que determinam as tarifas das passagens ônibus, segundo Fonseca e Gonzaga (2006), no entanto, nos cálculos de custos e preços nas atividades de limpeza pública, apesar de correta, não é comum depararmos com tais definições. O custo da prestação de serviços em limpeza pública, segundo Fonseca e Gonzaga (2006), consiste basicamente na soma das despesas relacionadas às atividades necessárias para sua execução, que são:

- mão-de-obra operacional e administrativa (salários, leis sociais e benefícios);
- uniformes e equipamentos de segurança individuais (EPI's);
- operação e manutenção dos veículos, combustível, pneus, lubrificação, impostos (IPVA), seguros, licenciamento; e
- remuneração e depreciação do investimento, e demais equipamentos utilizados, tais como os contêineres.

No caso de terceirização dos serviços, para determinarmos os preços há necessidade de calcularmos os custos diretos, acrescendo a taxa de Benefícios e Despesas Indiretas (B.D.I), que cubram os gastos incorridos com a administração central da empresa que presta o serviço e a margem de lucro da empresa contratada.

Para o caso de os serviços serem executados diretamente pelo poder público, é necessário também identificar os gastos com a administração de tal serviço (custos do órgão que vai controlar esse serviço, tais como aluguel do imóvel no qual o mesmo funcionará, contas telefônica, de energia elétrica, água e esgoto, material para escritório e almoxarifado, dentre outros);

Dentre as atividades de limpeza pública, a coleta e transporte regular de resíduos sólidos urbanos é a que gera mais reclamações por parte da população quando da sua não realização. É o sistema que possui o maior número de equipamentos/caminhões. Seu orçamento é estimado em 35% a 50% de todos os custos de um sistema de limpeza urbana. Caso esses serviços não sejam equacionados corretamente ocasionam gastos excessivos.

Segue abaixo os aspectos considerados mais importantes, por Schübeler (1996), para a composição do custo da coleta:

- a) Veículos coletores: Os caminhões compactadores normalmente são utilizados na coleta domiciliar, sendo que o número de veículos tem influência direta no custo dos serviços. Para o cálculo da frota desses caminhões há necessidade de se conhecer diversas peculiaridades, como quantidade de lixo a ser coletada, a distância do centro de coleta ao sistema de destino final, a capacidade dos caminhões compactadores, o percurso de coleta, a frequência e horário da coleta, dentre outros;
- b) Guarnição: Em um sistema de coleta e transporte de resíduos sólidos, o conjunto máquina (caminhões coletores) e mão de obra (guarnição coletora) deve ser muito bem equacionado para sucesso dos serviços. Em nada adianta possuir um bom caminhão coletor, caso não existam boas guarnições coletoras (motoristas e garis).
- c) Frequência da Coleta: As cidades brasileiras que adotam frequência diária para toda a coleta de resíduos sólidos domiciliar dispõem de consideráveis recursos, tais como: equipamentos, pessoal, combustível, pneus, óleo lubrificante e outros. Esses recursos poderiam ser melhores aplicados em outros serviços de limpeza pública, caso houvesse uma coleta de resíduos sólidos com frequência mista, ou seja, parte diária, parte alternada ou mesmo periódica.

As guarnições de um caminhão coletor compactador traseiro variam de dois a quatro garis por veículo. De acordo com levantamentos efetuados, o gari coletor de resíduos sólidos consegue sem grande esforço físico, coletar 5 a 6 toneladas de resíduos em 7,33 horas de trabalho geralmente divididas em dois turnos.

A mão de obra total (operacional e administrativa) em um sistema privatizado, cujo empreiteiro opera somente a atividade de coleta de resíduos sólidos, representa geralmente 50% de seus custos totais. Daí a importância da menor quantidade possível de guarnições coletoras sem afetar o grau de qualidade que uma cidade requer quanto à prestação desses serviços.

A coleta domiciliar diária somente é necessária em vias públicas com grande produção de resíduos sólidos, como por exemplo, área central da cidade, ruas de intenso comércio (mesmo aquelas situadas em bairros) e vias de intenso tráfego e acesso ao centro da cidade. Em logradouros públicos com média e baixa produção de resíduos, por razões econômicas, a coleta alternada é mais aconselhável.

A frequência anteriormente mencionada traz uma economia da ordem de 30% a 40% em relação à coleta diária. Em locais de pouca quantidade de resíduos sólidos, que são geralmente áreas muito afastadas dos centros das cidades, podemos pensar

em uma coleta periódica. Esta periodicidade pode ser de duas vezes por semana.

Além desses, há também o custo de oportunidade do capital aplicado (taxa de retorno sobre o capital aplicado) e a margem de lucro desejada pelo empresário, em nível suficiente para cobrir o risco do empreendimento.

III. METODOLOGIA

O primeiro passo para a elaboração do artigo foi revisão de literatura, com a finalidade de aprofundar as questões relacionadas à gestão dos resíduos sólidos. Essa etapa, envolveu a consulta a livros, revistas especializadas, publicações em meios eletrônicos, artigos, periódicos e essencialmente a legislação adequada.

A partir da revisão bibliográfica, elaborou-se um check-list (ver Anexo 1), que define os critérios utilizados para avaliar cada edital, relativos à definição dos custos da prestação de serviços de limpeza urbana. Esses critérios foram definidos à luz da teoria contábil, da legislação brasileira sobre licitações e de estudos empíricos, com o objetivo de avaliar se o edital garantia a garantir a eficiência, eficácia e a economicidade na contratação dos serviços de limpeza urbana.

O check-list foi aplicado a uma amostra de 18 editais, elaborados para contratação de empresas

prestadora do serviço de coleta de lixo. Os editais foram obtidos por busca na internet., especificamente em sites de pesquisa como Google, através da consulta por palavras chaves, tais quais: “editais”, “coleta do lixo” e “limpeza urbana”.

IV. ANÁLISE DOS EDITAIS PROCESSOS DE LICITAÇÃO PARA CONTRATAÇÃO DE EMPRESAS PARA O SERVIÇO DE LIMPEZA URBANA

Foram analisados 18 editais de licitação, elaborados por 18 prefeituras diferentes, para a contratação de empresas para o serviço de limpeza urbana, no intuito de verificar se os mesmos são elaborados de maneira clara, evidenciando bem o objeto da licitação. A seguir apresenta-se a análise dos mesmos.

a) Modalidade de licitação

Conforme pode ser visto na Tabela 1, a maioria das prefeituras pesquisadas (55%) utilizou a “Tomada de Preços”, para realizar a licitação de contratação da empresa responsável pela limpeza urbana. A tomada de preços é a modalidade de licitação utilizada para contratações que possuam um valor estimado médio, compreendidas até o montante de R\$ 650.000,00, para a aquisição de materiais e serviços, e de R\$ 1.500.000,00 para a execução de obras e serviços de engenharia.

Tabela 1 : Modalidade de Licitação

Modalidade	Quant.	%
Convite (para contratos até R\$ 150.000,00)	1	5,56%
Tomada de Preços (para contratos de R\$ 150.000,01 a R\$ 1.500.000,00)	10	55,56%
Concorrência (para contratos acima de R\$ 1.500.000,00)	4	22,22%
Pregão Presencial (qualquer valor)	3	16,67%
Total de Editais analisados	18	100,00%

Fonte: Lei nº 8.666/93

b) Requisitos para participar da licitação

Foi verificado nos editais quais os requisitos eram mais utilizados para que as empresas pudessem participar das licitações, como tamanho da empresa, indicadores contábeis e experiência. Nas análises, observou-se que o tamanho das empresas não foi utilizado como critério para participação da empresa no processo licitatório, uma vez que poderiam participar empresas de grande, médio ou pequeno porte, desde que estivesse com todas as certidões regulares.

Quanto à situação financeira, os indicadores contábeis são critérios de avaliação em 72% dos editais analisados, destacando-se os indicadores de liquidez e grau de endividamento geral como critério para a participação das empresas no processo. Além dos indicadores financeiros, são exigido um valor mínimo do

capital social para participar da licitação que varia de um percentual sobre o objeto ou de um valor estipulado.

Em relação à experiência das empresas, 72% dos editais exigiam qualificação técnica, solicitando que as empresas comprovassem que estavam aptas a realizarem o serviço técnico, bem como que comprovassem a realização destes serviços anteriormente, mediante declaração.

c) Existência de preços mínimos ou preço de referência?

A pesquisa investigou se os municípios estabeleciam valores máximos para a contratação das empresas. Dez dos dezoito editais analisados (55%) definem preços de referência, ou seja, estabelecem

limites superiores para a contratação das empresas. Nos editais com preços de referência (ver Tabela 2), estes preços mínimos se diferenciam bastante, ficando os valores entre 2.200 a 179.296.946,26. O município

que tinha o menor preço de referência tem 40.063 habitantes e o município com maior preço de referência possui 218.080 habitantes.

Tabela 2 : Existência de preços mínimos ou preço de referência (classificado por custo por habitante)

Município	Preço de referência	Nº de habitantes ¹	Valor por Habitante Em R\$
Município 1	R\$75,00/ton	2.440	-
Município 2	2.200,00	40.063	0,05
Município 3	3.350,00	15.041	0,22
Município 4	70.000,00	34.487	2,03
Município 5	8.000,00	2.484	3,22
Município 6	88.077,50	23.000	3,83
Município 7	5.000,00	1.000	5,00
Município 8	348.000,00	14.254	24,41
Município 9	546.000,00	10.751	50,79
Município 10	179.296.946,26	218.080	822,16

¹Fonte: IBGE

d) *Existência de planilha, detalhando os custos dos serviços de coleta do lixo*

Dos editais analisados, 78% não contêm planilha detalhada dos custos para o serviço de coleta do lixo (ver Tabela 3), não havendo, portanto discriminação dos custos fixos e variáveis necessários para a realização do serviço. Ou seja, a maioria dos editais deixa a cargo das empresas contratadas estabelecerem os custos que compõe o serviço.

Tabela 3 : Planilha detalhando os Custos

	Quant.	%
Sim	4	22%
Não	14	78%
Total	18	100%

A Planilha de Custos e Serviços sintetiza o orçamento e deve conter, no mínimo, discriminação de cada serviço, unidade de medida, quantidade, custo unitário e custo parcial e custo total orçado, representado pela soma dos custos parciais de cada serviço. A ausência destes dados, juntamente com a falta de estabelecimentos de preço de referência pode dar margem a contratação dos serviços com preços supervalorizados.

e) *Existência de projeto básico*

Observou-se que dos editais analisados, 78% não continham o projeto básico (Tabela 4), ferindo a lei 8.666/93, que obriga a elaboração do projeto no intuito de deixar clara o objeto da licitação, definindo todos os elementos necessários à plena identificação da obra ou

serviço e, por conseguinte, todas as informações que possibilitem aos licitantes formularem suas propostas em igualdade de condições. A falta deste instrumento não assegura a viabilidade técnica e o adequado tratamento do impacto ambiental do empreendimento e não possibilita a avaliação do custo do serviço e a definição dos métodos e do prazo de execução.

Tabela 4 : Existência de Projeto Básico

	Quant.	%
Sim	4	22%
Não	14	78%
Total	18	100%

f) *Solicitação de descrição do serviço executado*

Dos editais analisados, 61% não solicitam que as empresas apresentem a metodologia de execução dos serviços, através da qual a empresa evidencia quais os procedimentos para a realização do serviço (Tabela 5). Este ponto é importante, pois o município poderá confrontar a proposta da empresa com o seu plano de trabalho e após a contratação, o gestor pode cobrar que os serviços sejam realizados conforme plano de trabalho e proposta. A falta descrição da metodologia de execução pode fazer com que a execução do serviço não seja realizada da maneira desejada e conseqüentemente a entidade não terá parâmetros para confrontar o realizado com o contratado.

Tabela 5 : Solicitação de descrição dos serviços executados

	Quant.	%
Sim	7	39%
Não	11	61%
Total	18	100%

g) *Existência de termo de referência*

Dos editais analisados, apenas 39% possuem termo de referência (tabela 6), que serve para referenciar o objeto da licitação, listando os serviços que estão sendo contratados. Alguns editais listam os serviços a serem contratados no projeto básico, porém como foi visto anteriormente, a maioria dos editais não possuem projeto básico. Este ponto no edital é importante, pois serve para especificar o objeto da licitação, bem como torna-lo clara a compreensão para as empresas interessadas.

Tabela 6 : Termo de Referência

	Quant.	%
Sim	7	39%
Não	11	61%
Total	18	100%

h) *Existência de especificações técnicas dos equipamentos?*

Observou-se que além da maioria dos editais não apresentarem planilha de custos, 67% dos editais não contém especificações sobre os equipamentos que serão utilizados na realização do serviço de coleta do lixo do Município, como por exemplo, quantidade de veículos coletores, tamanho das caçambas, volume dos sacos de lixo e etc (ver Tabela 7).

Tabela 7 : Especificações Técnicas

	Quant.	%
Sim	6	33%
Não	12	67%
Total	18	100%

Estabelecer as características técnicas dos equipamentos é importante, pois diminui os custos dos serviços, uma vez que determina-se a quantidade e equipamentos adequados ao tamanho da cidade e ao volume do lixo gerado por ela. Mas para que haja a diminuição do custo deste serviço, é preciso que os gestores junto com sua equipe técnica elaborem o projeto básico, bem como detalhe todos os custos na planilha de custo. Sendo assim, os gestores poderão contratar os serviços a preços justos, uma vez que nos editais já estão esboçados todos os custos e preço máximo para a contratação do serviço.

i) *Descrição da organização técnica, administrativa e operacional?*

Tabela 8 : Descrição da organização técnica, administrativa e operacional

	Quant.	%
Sim	4	22%
Não	14	78%
Total	18	100%

Observou-se que 78% dos editais não tinham descrição da organização técnica, administrativa e operacional a ser adotada para a execução dos serviços e dimensionamento quantitativo da mão-de-obra operacional por categoria, com descrição das principais funções. A descrição técnica, administrativa e operacional faz parte da composição do custo dos serviços de coleta do lixo, por isso é importante que os editais estabeleçam todos os critérios para a composição do custo, no intuito de fazer uma contratação mais econômica para o Município.

j) *Descrição de como foi determinado o custo?*

A maioria dos editais analisados (78%) não estabelece os custos, não tem preço de referência, determinando apenas que as empresas apresentem suas propostas em termos de custo mensal (ver Tabela 9).

Tabela 9 : Determinação do custo

	Número de Editais	%
Custo por tonelada	3	17%
Custo por M2	1	6%
Valor fixo mensal	14	78%
Total	18	100%

A falta de definição de como os custos são formados demonstra que não há uma preocupação com a objetividade no edital, deixando-se de considerar importantes variáveis que afetam a formação dos custos da coleta, como é o caso do tamanho do Município, que afeta diretamente o volume de lixo gerado. Com isso, perde-se referência para avaliar a economicidade do contrato a ser firmado. Sendo assim, fica difícil estabelecer qual custo médio por tonelada de lixo, dificultando que os gestores analisem se estão pagando um preço justo ou não, e conseqüentemente a transparência e a possibilidade de accountability (controle e prestação de contas aos cidadãos).

k) *Existência de memorial dos trechos de via percorrida por viagem?*

Nos editais analisados, 67% não possuem memorial descritivo apresentando seqüencialmente os trechos de via percorrida por viagem, incluindo o horário de início e fim das jornadas, o horário previsto para passagem do veículo de coleta em cada via. A Tabela 10 sumariza os resultados da pesquisa.

Tabela 10 : Memorial Descritivo

	Quant.	%
Sim	6	33%
Não	12	67%
Total	18	100%

Indicação da quilometragem produtiva (coletando) e improdutiva (não coletando) de cada viagem (km/viagem), a produtividade da viagem (peso/viagem). Este tipo de memorial permite estabelecer o custo por viagem percorrida para a coleta do dia, o que ajuda na composição do custo total da limpeza urbana.

J) *Existência de critérios para avaliar a qualidade dos serviços prestados?*

Tabela 11 : Critérios de avaliação

	Quant.	%
Sim	7	39%
Não	11	61%
Total	18	100%

Dos editais analisados, 61% não contêm critérios para avaliar a qualidade dos serviços de limpeza urbana e nem critérios para fiscalizar se a execução destes serviços estava de acordo com o contratado. Dos editais que abordavam algum tópico de fiscalização do serviço, nenhum indica os critérios, apenas informando que seria de responsabilidade da contratada, ou seja, do Município. E dos editais analisados, não há critérios de avaliação da qualidade dos serviços prestados, não havendo definição de indicadores de desempenho, para avaliação dos serviços prestados.

V. CONCLUSÃO

Este artigo procurou estudar a importância da existência de critérios mais detalhados nos editais de licitação para contratação de empresas prestadoras de serviços de coleta do lixo, uma vez que o custo do lixo vem sendo alvo de diversas investigações por parte do Ministério Público que por muitas vezes tem considerado abusivos os serviços contratados, onerando assim parte significativa dos orçamentos municipais.

Tendo por base a análise do trabalho, verificou-se que os editais para contratação de serviços de limpeza urbana não possuem os critérios suficientes para estabelecer os custos necessários para a prestação deste serviço. A falta da elaboração destes critérios por parte dos gestores municipais leva muitas vezes a contratação de empresas com valores supervalorizados e que não prestem o serviço corretamente, pois os editais não detalham os serviços contratados ou há falta de fiscalização, o que pode levar a irregularidades ou fraudes.

Diante do exposto, conclui-se que os editais para a contratação dos serviços de limpeza urbana são mal elaborados, pois não contém critérios suficientes para estabelecimento dos custos dos serviços e estabelecimento do preço justo para o serviço. Para isto, os gestores municipais devem procurar elaborar os editais para contratação dos serviços de limpeza urbana estabelecendo todos os critérios necessários para compreensão do objeto da licitação, bem como realizar um estudo sobre os custos existentes para a prestação dos serviços, no intuito de que a contratação e prestação do serviço sejam realizadas de maneira eficiente, eficaz e econômica.

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GLOBAL JOURNAL OF MANAGEMENT AND BUSINESS RESEARCH: D
ACCOUNTING AND AUDITING
Volume 14 Issue 1 Version 1.0 Year 2014
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

Truth Telling Activity: A Practice beyond the Norms

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Abstract- The focus of this study is the ethical conduct of Brazilian accountants, based on the Foucault (2001b) approach concerning the practice of Parrhesia. It is aimed to find out how characteristics of truth-telling activities can be framed as perceived by Brazilian accountants according to their beliefs and identify differences between these beliefs and how they actually practice in their profession. The motivation for using this approach was the fact that the existence of a professional ethical code hasn't proven itself enough to curb moral deviations in professional conduct. This is an exploratory and descriptive study with a quantitative approach. A survey was made through a structured questionnaire and featured a final sample composed of 5,087 respondents. Data were treated by descriptive analysis, Exploratory Factor Analysis (EFA) and Technical Analysis of Paired Data.

Keywords: *parrhesia – professional ethics – accountants – brazil.*

GJMBR-D Classification : *JEL Code: M40*



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Truth Telling Activity: A Practice beyond the Norms

Maria Thereza Pompa Antunes ^α, Octavio Ribeiro De Mendonça Neto ^ο, Hilmi Erdoğan Yayla ^ρ,
Rodrigo Takashi Okimura ^ω, João Paulo Cavalcante Lima [¥] & Claudio Rafael Bifi [§]

Abstract- The focus of this study is the ethical conduct of Brazilian accountants, based on the Foucault (2001b) approach concerning the practice of *Parrhesia*. It is aimed to find out how characteristics of truth-telling activities can be framed as perceived by Brazilian accountants according to their beliefs and identify differences between these beliefs and how they actually practice in their profession. The motivation for using this approach was the fact that the existence of a professional ethical code hasn't proven itself enough to curb moral deviations in professional conduct. This is an exploratory and descriptive study with a quantitative approach. A survey was made through a structured questionnaire and featured a final sample composed of 5,087 respondents. Data were treated by descriptive analysis, Exploratory Factor Analysis (EFA) and Technical Analysis of Paired Data. Two different models were found. One for the beliefs composed of the factors: Courage, Duty and Sincerity. And another for practices, composed of the factors: Transparency, Competence and Critique. The analysis of the frequencies of the mode of the paired variables (beliefs *versus* practice) showed higher frequencies for the assertions related to practice suggesting that Brazilian accountants are more effective in truth-telling activities in daily practices. Suggestions for educational institutions and professional entities were made, in order to enhance the ethical behavior based on the practices of the self.

Keywords: *parrhesia* – professional ethics – accountants – brazil.

I. INTRODUCTION

The main motivation for this study comes from the finding that the mere existence of standards expressed, even with coercive power, has not been enough to curb misappropriation of conduct in professional activity, in general, and with the accountants, in particular. As noted Hyman, Skipper and Tansey, in early 1990, companies giving much more attention to the rules than for the ethical dilemmas that its professionals face in their daily practice, however well intentioned, may not have contributed effectively to development of the moral character of the same (Hyman, Skipper e Tansey, 1990, pg. 15)

Therefore, the focus of this study is the individual ethical conduct of accountants in Brazil and is based on the Foucault idea, about the individual's

relationship with himself (Foucault, 2001a) and that constitutes the practice of *Parrhesia* (Foucault, 2001b).

According to Foucault (2001b), the truth of the human beings involve first, a set of rational principles that are rooted in world knowledge, human life, needs, happiness, freedom and so on; and, on the other hand, in the practical rules of behavior. The question that arises is oriented to the following problem: "are we sufficiently familiar with these rational principles? Are they sufficiently well established in our minds to become practical rules for our daily behavior?" (Foucault, 2001b, part5, pg.9). Therefore, the author suggests that the path is in self-reflection about what we do, think and feel in order to reactivate our rational principles making them, thereby, as permanent and effective as possible in our lives.

The most recent financial scandals, widely reported in the media, and that covered not only private and public companies but also the governments of certain countries; cast some doubt on the ethical conduct of accountants to the point of questioning the credibility of the profession and its social role, despite all the regulations and codes of ethics, formally established. In this context, according to Buchan (2005), it is relevant to examine the personal and contextual factors that influence ethical behavior in their professional activities.

The main purpose of this paper is to find out how characteristics of truth-telling activity can be framed as perceived by Brazilian accountant's beliefs and identify any differences between their beliefs and how they actually practice in their profession (praxis), in the sense proposed by Foucault (2001b).

This study is justified because it is a pioneer in the Brazilian accounting field while using Foucault's approach in the study of professional ethics of accountants, i.e., focusing on an individual's moral values (subjectivity and practices of the self) and not emphasizing on the formal code (Foucault, 1986). Another aspect that justifies and contributes to its relevance is the fact that the present study demonstrates results that involve the perception of accounting professionals from all States of Brazil, portraying therefore a significant representativeness of the Brazilian accounting profession.

In terms of contributions, it is understood that the findings of this study provide a reflection on the importance of individual moral values that, in general,

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come from the reflections of philosophers since antiquity (Marcondes, 2009); passing through the studies in the field of psychology (Fromm, 1970), and is present incisively in the concerns of Arthur Schopenhauer (Schopenhauer, 2010), among other philosophers. In particular, the focus is on the professional conduct of the accountants, especially in this current time in which a paradigm shift in the field of the accounting practices is being experienced.

This paradigm shift stems from the internationalization process of Brazilian accounting (IFRS), in which the accounting practice shall be much more based on principles rather than rules, leading to greater analysis and subjective judgments. This process aims to produce higher quality accounting information, but that "depends on the quality with which the accountants exercises their profession" (Iudícibus, Martins, Gelbcke, & Santos, 2010, pg. 21). We can infer from this statement that this quality is related not only to technical knowledge, but also to the ethical conduct of this professional.

II. LITERATURE REVIEW

a) *Previous Studies*

Within the sociology framework of professions, ethics has occupied an important role. Both the defenders of professionalism, such as Parson (1939), Wilensky (1964) and Freidson (1994), as their critics, like Johnson (1972) and Larson (1977), highlight this point. In addition, the adoption of a code of ethics is one of the attributes that in Hall's (1968) and Moore's (1970) opinions define a profession.

Research on the professional ethics of accountants has concerned scholars in recent decades. Recent studies on this theme have covered many different topics. Professional ethics, ethical decision making, ethics in Accounting education, auditor independence, accounting practices and professional ethical codes and business codes of ethics are some examples, according to a survey conducted by Uysal (2010). Although with different focus, these studies have in common the search for some understandings to the complex interactions between: ethical conduct, values and professional/organizational standards in the professional practice, as accountants play an important societal role.

Armstrong (1993), Leung and Cooper (1995) and Jeffrey and Weatherholt (1996) were concerned with the evaluation of ethics in the accounting profession; Cohen and Sharp (1995) and Gul, Ng and Tong (2003) investigated the ethical behavior of auditors; Hilttebel and Jones (1992), Mintz (1995), Gren and Weber (1997), Mele (2005) and Persons (2009) analyzed the ethical aspects of undergraduate accounting classes and the ethical tendency of students, like Lang, Hall and Jones (2010), sought to understand the perception of students facing ethical situations; Finn, Chonko and Hunt (1988),

Shearer (2002) and Brown, Mendenhall and Khamer (2003) addressed the role of ethics in accounting organizations; Tsui and Gul (1996), Godwin, Godwin and Fieldler (2000) and Ho and Lin (2008) were interested by the cultural values on accounting ethics, while the moral development was explored, among others, by StPierre, Nelson and Gabbin (1990), Shaub (1994) and Yayla and Demi (2009).

In Brazil we have the study of Alves, Lisbon, Weffort and Antunes (2007) which investigated the influence of the ethical code in the accountants decision process; the studies of Cardoso de Almeida and Souza (2006); Pires, Damacena and Ott (2009) and Cardoso (2006) that focused on the skills required for the practice of the accounting profession; the research of Borges and Medeiros (2007) who studied the influence of ethical values in professional commitment; the study conducted by Linguitte, dos Santos and Sa (1997) which addressed the ethical conflicts in the professional practice and, more recently, the research of Antunes, Mendonça Neto, Oyadomari and Okimura (2011) in which the authors analyzed the ethical conduct of accounting researchers focusing on their beliefs and practices.

b) *Subjectivity and Practices of the self and Parrhesia*

According to Levy (2004, pg.1), Foucault in his later writings, distinguished in the ethical field, two primary elements. In the first one, code is emphasized, while in the other one the emphasis is on forms of subjectivity and practices of the self. In the latter case, the code can even be rough and its observance is of little importance when compared to what is required by the individual in his relationship with himself (Foucault, 1986, 29 and 30).

This new way of thinking is based on the archeology of problematizations - "ways in which the human being reflects on what he is and what he does", and in the genealogy of practices - "the way in which men set for themselves, rules of conduct and transform themselves" (Pradeau, 2008, pg.131) or, in the words of Foucault (2001a, pg. 1437): "An ontology of our relationship with morality, which allows us to constitute ethical agents in us."

The moral problem is not a simple problem, nor is the blind acceptance of rules of conduct that are supplied and already prepared from outside, neither is the affirmation of a radical freedom to establish ourselves, alone, our values and our purposes (Garaudy, 1982). The moral problem in a man's life is made of vivid contradictions, always renewed, between the demands of the discipline necessary for the effectiveness of our struggle and the sense of personal responsibility that each of us have in the preparation and in the application of the laws themselves of our combativeness (Garaudy, 1982).

In this sense, the question of morality was developed by Foucault (1986, pg 33), as the following: 1) A set of values and action rules (norms) for individuals and groups, through the prescription of several instruments that can be explicitly and clearly disclosed, or transmitted diffusely, and 2) The actual behavior of individuals regarding these rules and values (norms) that are proposed, designating; thereby, the way they submit or comply or resist, or respect, or neglect, more or less completely a set of values. This second statement results in the understanding of the reflections of the human being himself, whose emphasis lies on forms of subjectivity and in the practices of the self, and not merely by the observance of a code / norm established.

According to the explanation of Díaz (2005), Foucault analyzed the pagan and Christian texts and he found recurring themes that permeated Western culture and that the Christian texts have become standards of conduct that were brought from Greek and Latin texts. In this set of texts it is noticeable that beyond the rule of conduct and the conduct that is taken place and that is measured by this rule, the disposition of each individual in relation to oneself, namely, the way in which the individual must establish himself as a moral subject who acts in reference to the prescriptive elements that make up the code (Foucault, 2004).

Thus, according to the understanding of Foucault, given an ethical code, there are different ways for an individual to act morally and to be the moral subject of his action, thereby transforming himself into a subject of ethics, and not simply in an agent of ethics. The constitution of the subject is determined by his relationship with himself, defined in four instances: 1) Determination of the ethical substance, 2) Modes of subjection, 3) Preparation of ethical study and 4) the subject's moral teleology (Diáz, 2005).

The determination of ethical substance (1st instance) is based on how the individual, while belonging to a group, gives form to himself, since it arises from a moral value that is accepted as such, so the value of the group serves as raw material for moral conduct. Take as an example the moral value of fidelity. Fidelity is instrumentalized taking what one considers essential in terms of value, that is, being faithful in thought, with the body, with sentiments, under certain conditions, always, unconditionally etc. The constitution of the ethical substance answers the following question: what part of me, or my conduct, concerns the moral conduct?

The mode of subjection (2nd instance) is the way in which an individual is connected to the recognized rules and establishes his relationship with it. This aspect of ethics has to do with the way a person is invited or incited to recognize their moral obligations. In this instance one can formulate the following questions: Should I obey the divine law which was revealed in a

text? Do the laws of nature react in the same manner for every living thing?

The conduction of ethical study (3rd Instance) is characterized by the transformation made by the one. In a broader perspective, it is an asceticism through which man becomes the subject of their moral conduct. Objectively, it is the moderation of acts, to decipher the desires of control upon certain acts, positive or negative. In this case, one can propose steps to achieve a desirable behavior or, conversely, one suddenly decides to stop bad habits and get others.

Last resort (4th instance) is the teleology of the moral subject. That relates to the insertion of each action in a line of conduct. A moral action tends to its self-compliance, aims at creating a moral behavior that leads not only to the individual actions in conformity with certain values, but also the sense of being that characterizes every moral subject. Some questions of teleology of ethics, in which the subject falls within while performing research may be: Looking for self-control, how? How does one cultivate a beautiful soul? How does one save his soul? Or aspire to be a good citizen? Finally, according to Foucault, a moral action is part of: a) a code of which moral action refers to and is not dependent on the subject, b) conduct which depends on the relation of the subject with the code; and c) a certain relationship of the subject with self, defined as: i) the ethical substance, ii) modes of subjection, iii) work on oneself and iv) Teleology (dependent relationship with self-code.)

Díaz (2005) also highlights an observation of Foucault according to whom the transformation of man to act as a moral subject of his action takes place gradually through the course of practice and the construction of his speech, which is related to the practice the *Parrhesia*.

Foucault presented the concept of Parrhesia in a series of six classes taught at the University of California, Berkeley, in October and November 1983 and published by Joseph Pearson in *Fearless Speech* (2001b).

In general, Parrhesia refers, on one hand, to the moral quality, also to the moral attitude (*êthos*) and, secondly, to the technical procedure (*Tékhne*), both necessary and essential to convey the true discourse to those who need it " say what you have to say, the way you want to say it, when you want to say it and in the manner that is believed to be necessary to say it" (Foucault, 2006, pg. 450).

In other words, the activity is to speak the truth (truth-telling activity) in terms of: Frankness - Truth - Danger - Criticism and Duty (Foucault, 2001b).

Parrhesia is normally translated into English as "free speech" and *parrhesiastes* is the one who uses *Parrhesia*, i e., is the one who speaks the truth. According to Zapata (2005), the qualities of Parrhesia

are filtered through the notions of Frankness – Truth – Danger - Criticism and Duty as a means of analyzing how the word “evolved” and influenced different dimensions of Greek society and cultures. According to Foucault (2001b), the word *Parrhesia* refers to a type of relationship between the speaker and what he says.

In this paper we use the meaning of the word *Parrhesia* presented by Michel Foucault’s six lectures on the Greek concept of *Parrhesia* delivered in the fall of 1983, as a part of his seminar “Discourse and Truth” at the University of California in Berkeley. In the lecture,

Foucault aims to construct a genealogy of the critical attitude in western philosophy by historically examining the problematizations of the *parrhesiastes*, the truth-teller. In Foucault’s words “My intention was not to deal with the problem of truth, but with the problem of truth-teller or truth-telling as an activity” (Foucault, 2001b, pg.121).

Table 1 presents briefly the main features of the five qualities of *Parrhesia*, i.e: Frankness – Truth – Danger - Criticism and Duty.

Table 1 : Qualities of *Parrhesia*

Qualities of <i>Parrhesia</i>	Meaning
Frankness	The one who uses <i>parrhesia</i> , is someone who says everything he has in mind: he does not hide anything, but opens his heart and mind completely to other people through his discourse. In this sense, the speaker is supposed to give a complete and exact account of what he has in mind so that the audience is able to comprehend exactly what the speaker thinks. For in <i>parrhesia</i> , the speaker makes it manifestly clear and obvious that what he says is his own opinion. And he does this by avoiding any kind of rhetorical form which would veil what he thinks. In this way, the specific "speech activity" of the <i>parrhesiastic</i> enunciation thus takes the form: "I am the one who thinks this and that".
Truth	There is always an exact coincidence between belief and Truth. But not in a pejorative sense of the word not very far from "chattering" and which consists of saying anything or everything one has in mind without qualification. The <i>parrhesiastes</i> says what is true because he knows that it is true; and he knows that it is true because it is really true. It presupposes that the <i>parrhesiastes</i> is someone who has the moral qualities which are required, first, to know the truth, and secondly, to convey such truthfulness to others.
Danger	Someone is said to use <i>Parrhesia</i> and merits consideration as a <i>parrhesiastes</i> only if there is a risk or danger for him or her in telling the truth. It means, when a philosopher addresses himself to a tyrant, and tells him that his tyranny is disturbing and unpleasant because tyranny is incompatible with justice, then the philosopher speaks the truth, believes he is speaking the truth, and, more than that, also takes a risk (since the tyrant may become angry, may punish him, may exile him, may kill him). The risk is not always a risk to his/her life, it could hurt somebody, lose popularity or status, or cause a political scandal, for example. <i>Parrhesia</i> is linked to courage in the face of danger: it demands the courage to speak the truth in spite of some danger.
Criticism	<i>Parrhesia</i> is a form of criticism, either towards another or towards oneself, but always in a situation where the speaker or confessor is in a position of inferiority with respect to the interlocutor. The <i>parrhesiastes</i> is always less powerful than the one with whom he or she speaks. The <i>Parrhesia</i> comes from "below", as it were, and is directed towards "above".
Duty	Telling the truth is regarded as a duty. No one forces him to speak; but he feels that it is his duty to do so. If someone is compelled to tell the truth, for example, under duress of torture, then his discourse is not a <i>parrhesiastic</i> utterance. But if he voluntarily confesses his crime to someone else out of a sense of moral obligation, then he performs a <i>parrhesiastic</i> act by criticizing a friend who does not recognize his wrongdoing, or insofar as it is a duty towards the city to help the king to better himself as a sovereign.

Source: Foucault, (2001b)

Summarizing the foregoing, according to Foucault (2001b):

Parrhesia is a kind of verbal activity where the speaker has a specific relationship with the truth through frankness, a certain relationship with his

own life through danger, a certain type of relation with himself or other people through criticism (self criticism or criticism of other people), and a specific relationship with moral law through freedom and duty.

More precisely, Parrhesia is a verbal activity in which a speaker expresses his personal relationship with truth, and risks his life because he recognizes truth-telling as a duty to improve or help other people (as well as himself). In Parrhesia, the speaker uses his freedom and chooses frankness instead of persuasion, truth instead of falsehood or silence, the risk of death instead of life and security, criticism instead of flattery, and moral duty instead of self-interest and moral apathy.

c) *Accounting Profession in Brazil*

In Brazil, the accounting profession involves two categories. The Accounting Technician, whose educational background provides a high school diploma with a technical course of Accounting, and the other category, is that of an Accountant, whose education is a Bachelors degree of Science in Accounting (graduation). The professional prerogatives of these two categories are defined in Article 25 of Legislative Decree 9.295/46 which one also regulates the profession and established the Federal Accounting Council (CFC) and the Regional Councils that represent and regulate the profession with the power to supervise and establish duties.

With the enactment of Law 12.249/10, the professional registration for the Accounting Technician will be granted only to those who until June 1, 2015 have been approved in a Professional Exam and for professionals who are already registered in that category the right to practice the profession will be guaranteed. It is important to note that the main objective of the Professional Exam is to contribute to the quality of accounting activity in Brazil.

The first code of ethics was approved in 1950 and had no power to enforce punishment. In 1970 a new code was created by the Federal Accounting Council (CFC). This new code came to formalize the professional standards of conduct with coercive power. Currently there is a new code that was approved in 1996, which was updated in 2010 (Resolução CFC, 1.307/10) given the intensification of the relationship of accounting with the companies and the subsequent groups as whole.

Recently, Law 12.249/10 brought significant changes to the accountants, aiming to rigorously increase the detection of professional misconduct that the accounting professionals may do, which covers technical competence and ethical performance. This Law establishes the following penalties for the accountants, depending on the infraction committed: fines, temporary suspension from the practice of the profession and forfeiture of the professional practice.

In fact, a professional ethics code cannot cover all the problems that may occur in the practice, but it contains the basis of the expected conduct requiring compliance, and penalties that can be imposed on

violators. Therefore, one should ask: what explains the continuing practice of acts that flout the rules of the Code of Professional Ethics of the Accountant? The existence of a code of ethics, by itself, does not guarantee ethical conduct?

The findings of research carried out by Alves, Lisbon, Weffort and Antunes (2007, pg.67), in a sample of 2034 chartered accountants in the Regional Councils of Rio de Janeiro, Sao Paulo, Rio Grande do Sul and Minas Gerais (Brazil), illustrate the reality of the complex interaction between ethical and professional standards. This study investigates the influence of the Code of Ethics on the ethical decision-making process of Brazilian accountants and showed a contradiction. Its empirical results showed that not all professionals who completely agree that the code statement is an important guide of conduct (73% of professionals) are predisposed to follow it (only 44.4% of respondents agree with this statement).

The reality is that professionals experience different situations every day, leading to moral dilemmas (as a result of the practiced behavior that runs contrary to what most of society believes to be appropriate), or rationalizations (excuses for misconduct) or even the belief that nothing immoral was committed.

In general, the expected behavior is formalized, materialized in the form of a code, implicitly explicit. Therefore, considering the prerogative of free will, the assessment of the risks and of the consequences of the transgressions depends on the individual, the decision is on a personal level. But on the other hand, it is understood that while the prevailing thoughts that ethics, deep down, are the rules that a group establishes and that an unethical person is one who does not follow them (pejorative use of ethical relativism) has in mind a game of personal interests, established not on moral standards accepted by society, but for the benefit of the few.

As a last note, it can be observed that society has granted the accounting class a monopoly to practice the profession with the economic benefits that result from it, and at least it is expected is that they (accountants) act for their benefit (society).

III. METHODOLOGY

Given the objectives, this current research is of an exploratory and descriptive nature. According to the procedures for data collection it's classified as a survey, with a quantitative approach (Collis & Hussey, 2009).

The data was gathered through a structured questionnaire that followed the guidelines of Hill & Hill (2008) divided into three parts. This questionnaire was available via web from June to September 2012.

The first part characterizes the respondent in terms of age, professional category (accountant or accounting technician), geographical region and primary professional activity.

The second part identifies the characteristics of the *truth-telling activity* according to the Brazilian accountant's beliefs. To do this, we have prepared 25 assertions on truth-telling activity for the five *Parrhesia* characteristics (variables): Frankness – Truth – Danger – Criticism – Duty based on Michel Foucault's six lectures on Greek of *Parrhesia* as quoted before (see assertions G_01 to G_25; Appendix A). Survey items were measured using the seven-point Likert-scales with semantic anchored on both ends. All items were converted so that the score of 1 = strongly disagree and 7 = strongly agree.

The third and final part consisted of 25 assertions also related to notions of Frankness - Truth - Danger - Criticism and Duty, but featuring situations of the professional accounting practices (see assertions P_01 to P_25; Appendix A). With this procedure we also identify the similarities and differences between beliefs and practices (praxis), comparing these answers with the answers of the second part of the questionnaire. In the same way, survey items were measured using the seven-point Likert-scales with semantic anchored on both ends. All items were converted so that the score of 1 = strongly disagree and 7 = strongly agree.

After a pre-text, the questionnaire was sent to Brazilian accountants (accountants and accounting technicians) who were registered in one of the 27 Regional Councils (26 states and 1 Federal District), totaling 483,395 professionals. A total of 5,087 questionnaires were returned, which represents 1,05% of the population and all of them were valid.

As mentioned previously, the statements of the questionnaire were categorized into two groups. The first one composed by assertions G1 to G25, and refers to the belief among professionals about truth-telling activity. This number is preceded by the letter "G" for "Generalized", in other words, primarily linked to personal values. The second one composed by assertions P1 to P25, and refers to truth-telling activity in the professional practices. This number is preceded by the letter "P" for "Professional" to indicate the practices (praxis). These assertions are paired, so in other words, G1 (beliefs) is linked to P1 (practices), G2 to P2, G3 to P3 and so on (see Appendix A). Therefore, it was possible to compare the belief and practice of the professionals as provided in general purpose of this study.

The data were organized in frequency tables and summary measures for conducting descriptive analyzes, we also adopted the statistical techniques of Exploratory Factor Analysis (EFA) and Frequency of Mode and Paired Analysis, as suggested by Stevenson (1981), and Morettin and Bussab (2003), Hair, Anderson, Tathan and Black (1998) and Aaker (2001). All analysis was processed with SPSS - Statistical Package for Social Sciences Software, version 19.

Following Hair et al. (1998), for a factor to be considered, the requirements were: 1) a degree of explanation of the Kaiser-Meyer-Olkin (KMO) test, also known as the Measure of Sampling Adequacy (MSA), greater than 0.50; 2) the value of Sig. (significance) obtained by means of Bartlett's test of sphericity does not exceed 0.05; 3) the values obtained in individual MSA Array anti-imaging (Anti-image Correlation) were always above 0.50; 4) the communalities (Communalities) of the variables were also always above 0.50; and 5) the total variance explained, would be of, at least, 60% of the original variance.

In summary, data analysis was performed as follows:

- a) choice of variables according to the blocks of the questionnaire;
- b) application of factor analysis;
- c) analysis of KMO, assessing the significance obtained through Bartlett's sphericity test, assessment of values obtained in individual MSA Array anti-imaging, assessment of the communalities of the variables and assessment of the total variance explained;
- d) elimination of variables with low communality and low individual MSA and
- e) repeating item 'b' and continuing, until all variables reach the conditions specified for commonality and MSA. In sequence, the results were rotated in order to achieve an easier interpretation of factors. The method of orthogonal rotation VARIMAX with Kaiser Normalization was used.

IV. RESULTS

a) *Sample characterization*

The final sample included 5,087 questionnaires. The sample consisted of 3,740 accountants (73,52%) and 1,347 accounting technicians (26,48%), with a predominance of male professionals (63,4%). In terms of geographical concentration, 46,39% of professionals were in the Southeast Region, 22,86% in the South; 16,36% in the Northeast, 7,45% were in the Northern Region and 6,94% were in Midwest Region. The range of ages of the respondents are almost evenly distributed (in 5 intervals of 5 years from 20 to over 60 years old) with a slight predominance of professionals aged between 31 and 35 years (15,8%). Regarding the length of professional activities, there was a predominance of professionals working in the profession for a long time (over 21 years), 27% of the respondents and the ones who worked less time in the profession (up to 5 years) 28% of them.

b) Data Analysis

i. Descriptive statistics

Initially, the descriptive analysis of the data sample (consisted of 5,087 answered questionnaires) was carried out and the results are listed in Table 2. The variables G1 to G25 identify the beliefs of the professionals and the variables P1 to P25 identify the accounting professionals' practices in relation to truth-telling activity.

The analysis of the data in Table 2 makes it possible to verify that all assertions, both those that refer to the beliefs as well as those that refer to the practice, have shown a mode of 7 (strongly agree), with the

exception of the assertive G_21_TRUTH. This means that most of the Brazilian professional accountants believe and practice Parrhesia.

Regarding the assertion G_21_TRUTH (I know what my opinion is and I also know that my opinion is always the truth), the mode of the sample was 5 while its corresponding P_21_TRUTH was related to the practice (I believe in my ability and accounting knowledge), presented a mode of 7. This suggests that although the respondents are not secure, regarding the certainty of the truth of their own opinions, in general, they are certain when this opinion is related to the practice of accounting.

Table 2 : Descriptive statistics of data sample

		G_01_TRUTH	G_02_FRANK	G_03_DANGER	G_04_DUTY	G_05_FRANK	G_06_TRUTH	G_07_DANGER	G_08_CRITIC	
N	Valid	5087	5087	5087	5087	5087	5087	5087	5087	
	Missing	0	0	0	0	0	0	0	0	
Mean		6,25	5,28	5,07	6,42	6,19	6,55	4,79	6,33	
Std. Error of Mean		,018	,023	,027	,014	,019	,013	,027	,016	
Median		7,00	6,00	6,00	7,00	7,00	7,00	5,00	7,00	
Mode		7	7	7	7	7	7	7	7	
Std. Deviation		1,276	1,671	1,944	1,022	1,372	,946	1,913	1,150	
Variance		1,628	2,793	3,778	1,045	1,883	,895	3,661	1,323	
Skewness		-2,169	-,934	-,839	-2,230	-2,176	-2,796	-,643	-2,177	
Std. Error of		,034	,034	,034	,034	,034	,034	,034	,034	
Kurtosis		5,050	,272	-,392	6,006	4,700	9,599	-,565	5,308	
Std. Error of Kurtosis		,069	,069	,069	,069	,069	,069	,069	,069	
Range		6	6	6	6	6	6	6	6	
Minimum		1	1	1	1	1	1	1	1	
Maximum		7	7	7	7	7	7	7	7	
		G_09_DANGER	G_10_FRANK	G_11_TRUTH	G_12_DANGER	G_13_CRITIC	G_14_DUTY	G_15_DUTY	G_16_TRUTH	
N	Valid	5087	5087	5087	5087	5087	5087	5087	5087	
	Missing	0	0	0	0	0	0	0	0	
Mean		5,91	5,99	6,56	5,10	5,06	6,49	6,38	5,84	
Std. Error of Mean		,019	,018	,012	,026	,027	,014	,014	,020	
Median		6,00	6,00	7,00	5,00	6,00	7,00	7,00	6,00	
Mode		7	7	7	7	7	7	7	7	
Std. Deviation		1,389	1,271	,878	1,875	1,908	,968	,995	1,440	
Variance		1,929	1,614	,771	3,517	3,639	,936	,991	2,074	
Skewness		-1,537	-1,537	-2,958	-,881	-,823	-2,582	-2,137	-1,598	
Std. Error of		,034	,034	,034	,034	,034	,034	,034	,034	
Kurtosis		2,329	2,634	11,760	-,181	-,367	8,247	5,877	2,531	
Std. Error of Kurtosis		,069	,069	,069	,069	,069	,069	,069	,069	
Range		6	6	6	6	6	6	6	6	
Minimum		1	1	1	1	1	1	1	1	
Maximum		7	7	7	7	7	7	7	7	
		G_17_DUTY	G_18_CRITIC	G_19_DANGER	G_20_FRANK	G_21_TRUTH	G_22_CRITIC	G_23_DUTY	G_24_FRANK	G_25_CRITIC
N	Valid	5087	5087	5087	5087	5087	5087	5087	5087	5087
	Missing	0	0	0	0	0	0	0	0	0
Mean		5,27	5,59	5,42	5,27	4,64	5,54	6,18	5,10	5,84
Std. Error of Mean		,025	,023	,023	,022	,027	,022	,019	,026	,021
Median		6,00	6,00	6,00	6,00	5,00	6,00	7,00	5,00	6,00
Mode		7	7	7	7	5	7	7	7	7
Std. Deviation		1,806	1,649	1,605	1,604	1,906	1,563	1,361	1,843	1,495
Variance		3,263	2,720	2,576	2,574	3,633	2,442	1,851	3,396	2,234
Skewness		-1,053	-1,252	-1,033	-,982	-,564	-1,200	-2,124	-,912	-1,563
Std. Error of		,034	,034	,034	,034	,034	,034	,034	,034	,034
Kurtosis		,232	,913	,571	,555	-,645	1,064	4,572	-,074	2,193
Std. Error of Kurtosis		,069	,069	,069	,069	,069	,069	,069	,069	,069
Range		6	6	6	6	6	6	6	6	6
Minimum		1	1	1	1	1	1	1	1	1
Maximum		7	7	7	7	7	7	7	7	7

	P_01_TRUTH	P_02_FRANK	P_03_DANGER	P_04_DUTY	P_05_FRANK	P_06_TRUTH	P_07_DANGER	P_08_CRITIC
N Valid	5087	5087	5087	5087	5087	5087	5087	5087
Missing	0	0	0	0	0	0	0	0
Mean	6,28	6,30	5,49	6,42	6,05	6,34	6,20	6,62
Std. Error of Mean	,016	,018	,025	,015	,018	,019	,020	,013
Median	7,00	7,00	6,00	7,00	7,00	7,00	7,00	7,00
Mode	7	7	7	7	7	7	7	7
Std. Deviation	1,124	1,282	1,785	1,049	1,291	1,384	1,394	,907
Variance	1,264	1,642	3,187	1,099	1,666	1,916	1,943	,822
Skewness	-2,116	-2,422	-1,224	-2,439	-1,789	-2,680	-2,149	-3,378
Std. Error of Kurtosis	,034	,034	,034	,034	,034	,034	,034	,034
Kurtosis	5,483	6,135	,599	7,219	3,558	6,885	4,408	13,977
Std. Error of Kurtosis	,069	,069	,069	,069	,069	,069	,069	,069
Range	6	6	6	6	6	6	6	6
Minimum	1	1	1	1	1	1	1	1
Maximum	7	7	7	7	7	7	7	7

	P_09_DANGER	P_10_FRANK	P_11_TRUTH	P_12_DANGER	P_13_CRITIC	P_14_DUTY	P_15_DUTY	P_16_TRUTH
N Valid	5087	5087	5087	5087	5087	5087	5087	5087
Missing	0	0	0	0	0	0	0	0
Mean	6,41	6,64	6,66	6,48	6,32	6,40	6,21	6,44
Std. Error of Mean	,016	,012	,011	,014	,015	,014	,019	,014
Median	7,00	7,00	7,00	7,00	7,00	7,00	7,00	7,00
Mode	7	7	7	7	7	7	7	7
Std. Deviation	1,169	,825	,808	,992	1,086	,996	1,356	1,006
Variance	1,367	,680	,652	,984	1,179	,993	1,840	1,011
Skewness	-2,678	-3,343	-3,506	-2,802	-2,239	-2,267	-2,212	-2,548
Std. Error of Kurtosis	,034	,034	,034	,034	,034	,034	,034	,034
Kurtosis	7,914	14,666	16,303	9,912	6,264	6,626	4,893	8,224
Std. Error of Kurtosis	,069	,069	,069	,069	,069	,069	,069	,069
Range	6	6	6	6	6	6	6	6
Minimum	1	1	1	1	1	1	1	1
Maximum	7	7	7	7	7	7	7	7

	P_17_DUTY	P_18_CRITIC	P_19_DANGER	P_20_FRANK	P_21_TRUTH	P_22_CRITIC	P_23_DUTY	P_24_FRANK	P_25_CRITIC
N Valid	5087	5087	5087	5087	5087	5087	5087	5087	5087
Missing	0	0	0	0	0	0	0	0	0
Mean	5,24	5,37	5,89	6,42	5,78	6,18	6,34	6,13	6,36
Std. Error of Mean	,027	,026	,020	,014	,021	,017	,015	,018	,016
Median	6,00	6,00	6,00	7,00	6,00	7,00	7,00	7,00	7,00
Mode	7	7	7	7	7	7	7	7	7
Std. Deviation	1,959	1,840	1,417	1,033	1,466	1,185	1,054	1,270	1,115
Variance	3,839	3,384	2,008	1,067	2,149	1,404	1,110	1,612	1,243
Skewness	-.940	-1,106	-1,552	-2,523	-1,502	-1,880	-2,117	-1,941	-2,421
Std. Error of Kurtosis	,034	,034	,034	,034	,034	,034	,034	,034	,034
Kurtosis	-.263	,254	2,329	8,017	2,153	4,080	5,505	4,292	7,078
Std. Error of Kurtosis	,069	,069	,069	,069	,069	,069	,069	,069	,069
Range	6	6	6	6	6	6	6	6	6
Minimum	1	1	1	1	1	1	1	1	1
Maximum	7	7	7	7	7	7	7	7	7

c) Exploratory Factor Analysis (EFA)

- Characteristics of truth-telling activity related to the accountants beliefs

The exploratory factor analysis (EFA) was estimated with SPSS Statistics 19.0. In EFA, whenever a variable (a question) shows no statistically significant load factor or significant load factor on more than one factor simultaneously it should be dropped from the analysis.

Thus, questions (variables) G3 to G11; G16; G17; G20 and G22 to G25 were dropped as a result of the EFA approach. After exclusions of variables that did not comply with statistical standards required, Factor Analysis revealed that the data had the expected requisites to continue with the application of the technique.

Table 3 shows the results of tests Kaiser-Meyer-Olkin (KMO), Bartlett's test of sphericity, Anti-image

Matrices, Communalities and Total Variance Explained that were conducted as initial tests to verify whether the correlation matrix is an identity matrix, which would indicate that the factor model is inappropriate.

The results shown in Table 3 indicate an adequacy of the sample with EFA, i.e.: Kaiser-Meyer-Olkin (KMO) greater than 0,50; sphericity (Bartlett's Test) less than 0,05 and Communalities greater than 0,50. Anti-image Matrices test also shows that all variables have individuals MAS greater than 0, 50.

Table 3 also shows that the reduction of variables is acceptable since the text of the total variance shows that the remaining variables explain 62, 22% of the original variance.

Table 3 : Results Kaiser-Meyer-Olkin (KMO), Bartlett's test of sphericity, Anti-image Matrices, Communalities Total Variance Explained

KMO and Bartlett's Test									
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0,812							
Approx. Chi-Square		10481,872							
Bartlett's Test of Sphericity		df		36					
		Sig.		0,000					
TEST	Variables								
	G_01_TRUTH	G_02_FRANK	G_12_DANGER	G_13_CRITIC	G_14_DUTY	G_15_DUTY	G_18_CRITIC	G_19_DANGER	G_21_TRUTH
Anti-image Matrices	0,780	0,833	0,849	0,791	0,777	0,756	0,816	0,854	0,849
Communalities	0,627	0,558	0,587	0,658	0,723	0,754	0,631	0,538	0,523
Total Variance Explained									
		Factor	% of Variance						
		1	25,41						
		2	18,60						
		3	18,21						
		Cumulative %	62,22						

Table 4 shows the Rotated Component Matrix. As we can see, the SPSS grouped the variables into 3 factors. The first factor accounts for 25.41% of the explained variance, the second for 18.60% and the third for 18.21 (Table 3).

Table X4 : EFA results – Rotated Factor Matrix

	Component		
	1	2	3
G_01_TRUTH	-,048	,240	(,753)
G_02_FRANK	,171	,110	(,719)
G_12_DANGER	(,721)	,097	,240
G_13_CRITIC	(,808)	,042	,064
G_14_DUTY	,207	(,814)	,132
G_15_DUTY	,143	(,849)	,111
G_18_CRITIC	(,755)	,234	,077
G_19_DANGER	(,595)	,390	,179
G_21_TRUTH	,309	-,039	(,653)

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.
 a. Rotation converged in 5 iterations.

According to Table 4, we can see that the variables (questionnaire responses) are condensed in the three constructs, as stated. In Table 5 we can see the variables grouped by factor and also the respective denomination (Label) given by us to each factor.

Table 5 : Parrhesia according to Brazilians' accountants - Beliefs

Factor	Assertions	Label
Factor 1	G_12_DANGER: I don't care whether my opinions may cause a political scandal. G_13_CRITIC: I criticize more powerful people than me. G_18_CRITIC: I don't care about the status of the people I criticize. G_19_DANGER: I have courage to speak the truth in spite of some danger.	COURAGE
Factor 2	G_14_DUTY: No one forces me to tell the truth; but i feel that it is my duty to do so. G_15_DUTY: I use moral duty instead of self-interest and moral apathy.	DUTY
Factor 3	G_01_TRUTH: I say what is true because I know that it is really true. G_02_FRANK: I do not hide anything, but open my heart and mind completely to other people through my discourse. G_21_TRUTH: I say what my opinion is and also know that may pinion is always the truth.	SINCERITY

Factor 1 was named COURAGE, because the assertions that compose this factor are directly linked to the concept of courage that, according to the Webster Dictionary (1993, pg.266), means: “mental and moral strength to resist oppositions, danger or hardship; implies firmness of mind and will in face of danger or extreme difficulty”.

Factor 2 was named DUTY which according to the Webster Dictionary (1993, pg.360), means: “a moral or legal obligation” and in Emmanuel Kant’s philosophy means obligation to act according to a moral law (Kant, 1976).

The 3rd and last factor was named SINCERITY, since the assertions that compose this factor are directly linked to the concept of sincerity that, according to the Webster Dictionary (1993, pg.1095), means: “honesty of mind; freedom from hypocrisy”.

Thus, the model that represents Brazilian Accountants truth-telling activity, according to their beliefs, is composed of the three constructs described above. This model reveals, in accordance with their personal values, they do not fear that their opinions can cause scandals; are not afraid to criticize people more powerful than them, regardless of their status; affirm to tell the truth despite any danger; They consider it a personal duty to tell the truth and they are led by this duty instead of being led by self-interest, and also have a personal commitment to speak the truth.

- Characteristics of truth-telling activity related to the accountants’ practices

EFA analysis relating to the accountants’ practices was carried on in the same way as was done previously for their beliefs. Thus, questions (variables) P2 to P4; P6 to P9; P15 to P17; P20; 24 and 25 were dropped. After these exclusions, Factor Analysis revealed that the data had the expected requisites to continue with the application of the technique.

Table 6 shows the results of tests Kaiser-Meyer-Olkin (KMO), Bartlett’s test of sphericity, Anti-image Matrices, Communalities and Total Variance Explained that were conducted as initial tests to verify whether the correlation matrix is an identity matrix, which would indicate that the factor model is inappropriate.

The results shown in Table 6 indicate an adequacy of the sample according to the EFA, i.e.: Kaiser-Meyer-Olkin (KMO) greater than 0,50; sphericity (Bartlett’s Test) less than 0,05 and Communalities greater than 0,50. Anti-image Matrices test also shows that all variables have individual MAS greater than 0,50. Table 6 also shows that the reduction of variables is acceptable since the test of the total variance shows that the remaining variables explain 62,59% of the original variance.

Table 6 : Results of Kaiser-Meyer-Olkin (KMO), Bartlett’s test of sphericity, Anti-image Matrices, Communalities and Total Variance Explained

KMO and Bartlett’s Test												
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0,905										
Approx. Chi-Square		22846,303										
Bartlett’s Test of Sphericity		df										
		66										
		Sig.										
		0,000										
TEST	Variables											
	P_01_TRUTH	P_05_FRANK	P_10_FRANK	P_11_TRUTH	P_12_DANGER	P_13_CRITIC	P_14_DUTY	P_18_CRITIC	P_19_DANGER	P_21_TRUTH	P_22_CRITIC	P_23_DUTY
Anti-image Matrices	0,917	0,904	0,901	0,912	0,923	0,918	0,917	0,827	0,870	0,885	0,913	0,932
Communalities	0,622	0,630	0,650	0,619	0,626	0,585	0,637	0,691	0,692	0,665	0,586	0,507
Total Variance Explained												
	Factor	% of Variance										
	1	25,77										
	2	19,68										
	3	17,14										
	Cumulative %	62,59										

Table 7 shows the Rotated Component Matrix. As we can see, the SPSS grouped the variables into 3 factors, as well. The first factor accounts for 25.77% of the explained variance the second for 19,68% and the third for 17,14 (Table 6).

Table 7 : EFA results – Rotated Factor Matrix

Rotated Component Matrix^a

	Component		
	1	2	3
P_01_TRUTH	,299	,112	(,721)
P_05_FRANK	,198	,163	(,751)
P_10_FRANK	(,786)	,052	,173
P_11_TRUTH	(,743)	,019	,259
P_12_DANGER	(,757)	,185	,133
P_13_CRITIC	(,577)	,489	,116
P_14_DUTY	(,653)	,428	,168
P_18_CRITIC	-,014	(,817)	,153
P_19_DANGER	,202	(,791)	,158
P_21_TRUTH	,095	,227	(,777)
P_22_CRITIC	,437	(,568)	,268
P_23_DUTY	(,470)	,441	,303

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

According to Table 7, we can see that the variables (questionnaire responses) are condensed into the three constructs, as stated before. In Table 8 we can see the variables are grouped by factor and also the respective denomination given by us to each factor.

Table 8 : *Parrhesia* according to Brazilians' accountants - Practices .

Factor	Assertions	Labels
Factor 1	P_10_FRANK: I give my technical guidance in the most direct and clear way. P_11_TRUTH: I only tell my clients what I know is true. P_12_DANGER: I issue my technical advice in a true way regardless of the impacts they might cause. P_13_CRITIC: When I experience technical failures or ethical disagreement, I criticize even when related to my superiors. P_14_DUTY: I tell the truth, regardless of any action or reaction, showing the mistakes or discrepancies that I can find in the rules or in the professional activity. P_23_DUTY: I always tell the truth to my superiors to help them improve themselves and thus contribute to the enhancement of the profession.	TRANSPARENCY
Factor 2	P_18_CRITIC: I criticize my colleagues regardless of their status or professional position. P_19_DANGER: I have the courage to tell the truth regardless of the consequences that may arise from this attitude. P_22_CRITIC: I speak the truth to my superior, or to the Regional Council, even against the majority and running the risk of losing privileges.	CRITICISM
Factor 3	P_01_TRUTH: When I give my opinion about accounting issues I know that my opinion is the truth. P_05_FRANK: I evaluate all the circumstances before giving my opinion about a work and I make clear that my conclusion is the truth. P_21_TRUTH: I believe in my ability and knowledge about accounting issues. That way, I know that my technical opinion is always true.	COMPETENCY

Factor 1, denominated by us TRANSPARENCY, since the variables that comprise this factor are closely linked to the practice of speaking clearly, with frankness and without any feeling of fear when they take the risk of contradicting higher interest, or their clients. We named the Factor 2 CRITIC. Variables comprising this factor are related to the criticism of those who do not speak the truth, without fear of the consequences that may result from this attitude. This critical activity is always performed aiming to improve the criticized in favor of a greater good. According to Parry (1996), competency is a set of knowledge, skills and attitudes (Parry, 1996). So, we named Factor 3 by COMPETENCY, since the variables encompassed by this factor denotes that the professional is sure of his knowledge and this certainty is revealed through their attitudes.

In summary, the model that represents the Brazilians' Accountants truth-telling activity, according to their practices, is composed of TRANSPARENCY, CRITICISM and COMPETENCY. This model reveals that in their daily practice the professionals use a clear and direct speech to tell their clients only what they consider to be the truth, regardless of the impact that this might cause; they do not avoid criticizing their colleagues, superiors and the Regional Council, even against the majority and assuming the risk of losing privileges, since

they are aware of the truth of their speeches; and they believe in their own knowledge. They are self-confidence.

It is important to note that the model that represents Brazilian Accountants truth-telling activity, according to their practices differs from that one that represents their beliefs.

These differences suggest that the accountant's behavior in the exercise of their professional practices is not fully aligned with their beliefs. This lack of alignment between beliefs and practices will be analyzed in the next section.

- Differences between beliefs and practice

As already noted in Table 2, all assertions both those that refer to the beliefs as well as those that refer to the practices, have shown a mode of 7 (strongly agree), with the exception of the assertive G_21_TRUTH. This means that most of the Brazilian accountants believe and practices *Parrhesia*.

However, a deeper analysis of the frequencies of modes reveals some important aspects that will be discussed in sequence.

Figure 1 shows us the frequency of mode and the paired results.

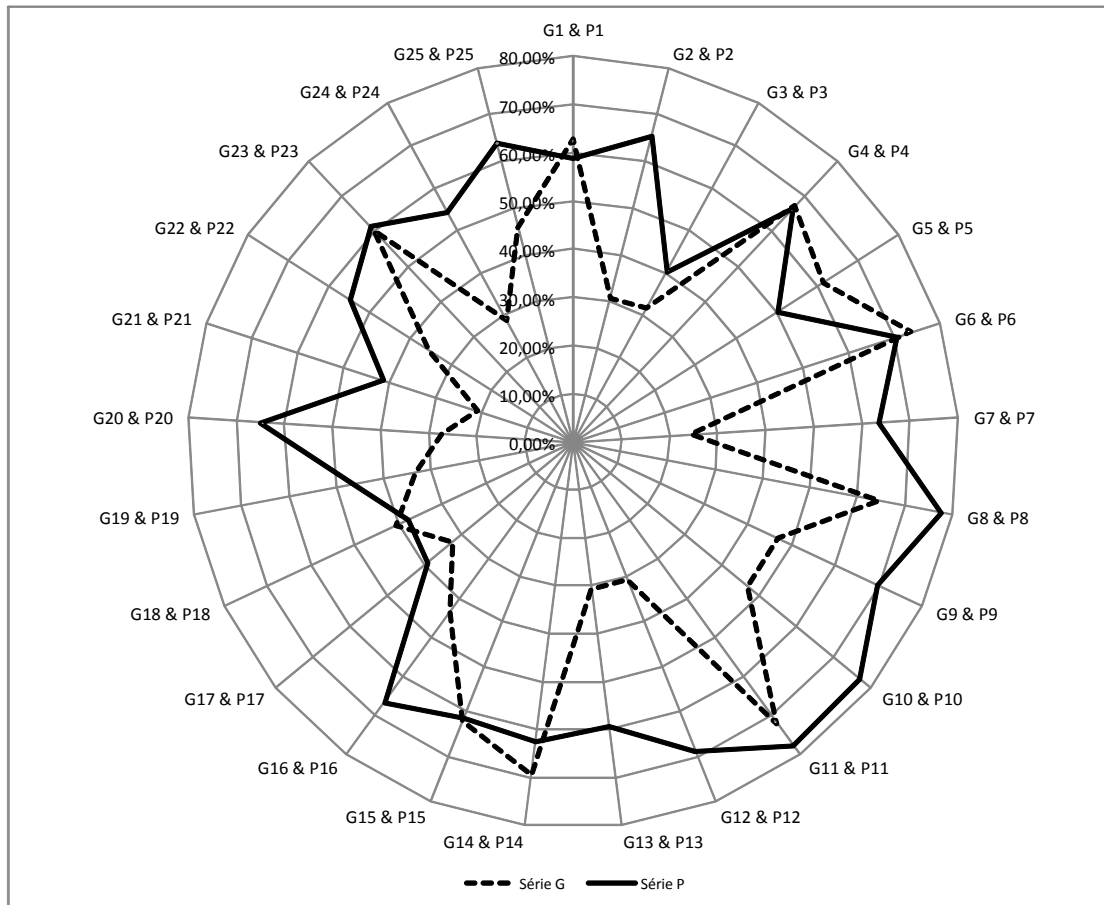


Figure 1: Frequency of mode and the paired results

As shown in Figure 1, the frequencies of the variables' modes related to the practices are, mostly, higher than those related to beliefs. This may suggest, first, that accounting professionals have more security in issuing opinions, criticize etc. when the topic is about their competence, but on the other hand, it may also suggest that the existence of an ethical code that enables the application of punishments is effective as a guide for conduct. It is worth mentioning that, the interpretations presented here are merely indications to be confirmed in future researches.

The only relevant exception shown in Figure 1, refers to the assertion G_14_DUTY (No one forces me to tell the truth; but I feel that it is my duty to do so.) which presents a higher frequency of mode than its equivalent related to practices P_14_DUTY (I tell the truth, regardless of any action or reaction, showing the mistakes or discrepancies that I can find in the rules or in the professional activity). In this case, the professionals' beliefs are more intense than their practices.

Another important aspect that emerges from the results contained in Figure 1 are the low frequencies of some assertions related to the beliefs of Brazilian accountants.

We can see that assertion G_21_TRUTH (I say what my opinion is and also know that my opinion is always the truth.), shows a frequency of mode of only 20%; that assertion G_07_DANGER (I prefer to tell the truth and risk death instead of life and security.) presents frequency of mode of 25% and that assertions G_02_FRANK (I do not hide anything, but open my heart and mind completely to other people through my discourse.); G_03_DANGER (If I see a friend doing something wrong, I can risk incurring his anger by telling him he is wrong.); G_12_DANGER (I don't care whether my opinions may cause a political scandal.), G_13_CRITIC (I criticize more powerful people than me.) and G_24_FRANK (My "speech activity" takes the form: "I am the one who thinks this and that") shows a frequency of mode of 30%. Given that the frequencies of modes of its correspondent assertions related to the practice are much higher, the suggestion of the ethical code effectiveness is strengthened.

Although these results suggest the effectiveness of the code of ethics, we understand that the moral education according to the Foucault approach must be improved, especially at the current phase of the implementation of IFRS in Brazil, since this new legislation extends the use of subjective judgments and, consequently, the possibility of misconduct. In this case, a solid moral education will be more effective than the code avoiding such misconduct.

V. CONCLUSION

This study addressed the topic of professional ethics, focusing on the individual ethical behavior of

Brazilian accountants. It is based on Michel Foucault ideas about the ways in which a human being reflects on what he is and what he does (archeology of problematizations) and in the manner in which men set rules of conduct for themselves and transform themselves (genealogy of practices).

Therefore, we applied the concept of *Parrhesia* to the accounting professionals in order to find out the characteristics of *Parrhesia* (truth-telling activity) according to the beliefs and practices of these professionals. This is the same concept analyzed by Foucault in the ancient Greek texts.

The application of the statistical technique of factor analysis resulted in two different models for truth-telling activity (*Parrhesia*). The first one was related to Brazilian accountant's beliefs and the second one was related to their practices of truth-telling activities.

The existence of these two different models suggests, *a priori*, that these professionals have a practice that differs from their beliefs. This suggestion was reinforced by the analysis of frequencies of modes of the paired statements.

The model related to the beliefs consists of three factors: COURAGE, DUTY and SINCERITY revealing that, according to their personal values, professionals do not fear that their opinions can cause scandals; are not afraid to criticize people more powerful than them, regardless of their status; affirm to tell the truth despite any danger; they consider it a personal duty to tell the truth and they lead themselves by this duty instead of conducting themselves by self-interest, and also have a personal commitment to speak the truth.

The model related to the practices also consists of three factors: TRANSPARENCY, CRITICISM and COMPETENCY. This model reveals that in their daily practice the professionals use a clear and direct speech to tell their customers only what they consider to be the truth, regardless of the impact that this might cause; they do not avoid criticizing their colleagues, superiors and the Regional Council, even against the majority and assuming the risk of losing privileges, since they are aware of the truth of their speeches; and they believe in their own knowledge.

The analysis of frequency of modes i.e., the comparison between beliefs and practices, revealed higher frequencies for the assertions related to the practices, which suggests that Brazilian accountants are more effective in truth-telling activity when practicing the profession. This may indicate, on one hand, that they have more security, courage and sense of duty in their practices. But on other hand, it may also suggest some effectiveness of the professional ethical code in restraining any misconduct. Clearly, this is our preliminary interpretation and must be confirmed by future studies.

It is important to mention that these results contradict the findings of others studies conducted by us that also handle *Parrhesia* but focusing on beliefs and practices of accounting researchers (Antunes et al., 2011; Antunes et al. 2012). In these studies, the relative frequencies of beliefs are always larger than those related to practices.

The prevalence of the practices over the beliefs, as regards the activity of speaking the truth, in our view, should not be viewed with optimism because it reveals the need for an improvement of ethics regarding the relationship of the individual with himself.

This ethical improvement becomes more imperative given the current period of Brazilian accounting, in which the alignment with the international standards through the implementation of IFRS, provides the profession with a more intensive use of subjective judgments. If according with sociology, this fact implies greater benefits for those who practice the profession, it may also facilitate misconduct, such as, earns management and even fraud.

Therefore, if on one hand, the results reveal that Brazilian accountants perceive themselves as *parrhesiastes*, on other hand, one cannot ignore the recurring occurrence of dysfunctional practices that, besides causing significant financial damage to society in general, undermine the credibility of the profession. Thus, a deeper reflection on this topic by the professional entities and academic community is necessary and urgent, focusing on the improvement of the practice of the self.

In the educational context the improvement of the individual ethical behavior should be incorporated into the curriculum. For this, it is necessary to abandon the traditional way of teaching professional ethics which, in most cases, is limited to the reproduction of duties and prohibitions of the professional ethical codes. We understand that ethical classes must transcend the establishment of rights and obligations (Deontological Code) and must include reflections on the relationship of the individual to himself (practices of the self), because we believe that this is the most appropriate way to enhance ethical behavior and build confidence in the profession.

The professional entities, by themselves, must go beyond the application of penalties, which are important and therefore, should not be abandoned; but more important than this is to not evade speaking publicly and with vehemence, upon the occurrence of scandals and the dysfunctional behaviors of its members and making clear, towards society, that the accounting profession, as a class, do not practice the *esprit de corps*.

Finally, it is worth mentioning that this study does not intend to exhaust the complex relationship between values, norms and conduct, but rather signal a

path that can be better exploited in the ethical exercise of the profession. We understand that our main contribution is a lot more about provoking reflection and criticism than presenting solutions.

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APPENDIX A: ASSERTIONS

Generalized Assertions	Code
1. I say what is true because I know that it is really true.	G 01 TRUTH
2. I do not hide anything, but open my heart and mind completely to other people through my discourse.	G 02 FRANK
3. If I see a friend doing something wrong, I can risk incurring his anger by telling him/he is wrong.	G 03 DANGER
4. I regard truth-telling as a duty to improve and help other people.	G 04 DUTY
5. I make it manifestly clear and obvious that what I say is my own opinion.	G 05 FRANK
6. I prefer truth instead of falsehood or silence.	G 06 TRUTH
7. I prefer to tell the truth and risk death instead of life and security.	G 07 DANGER
8. I prefer criticism instead of flattery.	G 08 CRITIC
9. I can risk losing my status by telling my truth which is contrary to the majorities opinion.	G 09 DANGER
10. I use the most direct words I can find.	G 10 FRANK
11. I convey to others what i know to be true.	G 11 TRUTH
12. I don't care whether my opinions may cause a political scandal.	G 12 DANGER
13. I criticize more powerful people than me.	G 13 CRITIC
14. No one forces me to tell the truth; but i feel that it is my duty to do so.	G 14 DUTY
15. I use moral duty instead of self-interest and moral apathy.	G 15 DUTY
16. There is always an exact coincidence between my belief and my truth.	G 16 TRUTH
17. I voluntarily confess my crime to someone else out of a sense of moral obligation.	G 17 DUTY
18. I don't care about the status of the people I criticize.	G 18 CRITIC
19. I have courage to speak the truth in spite of some danger.	G 19 DANGER
20. The audience is able to comprehend exactly what I say.	G 20 FRANK
21. I say what my opinion is and also know that may pinion is always the truth.	G 21 TRUTH
22. I can risk my privilege when I disclose a truth which threatens the majority.	G 22 CRITIC
23. Truth-telling is my duty as a citizen to help the king to better himself as a sovereign.	G 23 DUTY

24. My "speech activity" takes the form: "I am the one who thinks this and that".	G_24_FRANK
25. I give honest and helpful advice when I criticize people.	G_25_CRITIC
Professional Assertions	Code
26. When I give my opinion about accounting issues I know that my opinion is truth.	P_01_TRUTH
27. I don't hide anything and I also declare my impediment to exercise my profession regardless of financial loss.	P_02_FRANK
28. When I see a fellow professional doing a job in the wrong way, I risk incurring his wrath by telling him/he's wrong	P_03_DANGER
29. I consider it a duty telling the truth to professional colleagues to improve and help them.	P_04_DUTY
30. I evaluate all the circumstances before giving my opinion about a job and I make clear that my conclusion is truthful.	P_05_FRANK
31. I don't try to mislead the good faith of any accounting user, changing technical information to favor others, even if it is to safeguard business continuity.	P_06_TRUTH
32. I prefer professional freedom rather than assure myself of management positions or economic benefits that the profession can offer me.	P_07_DANGER
33. I prefer having my work criticized, when this is the case, instead of receiving false praise or be flattered by my professional colleagues (subordinates and superiors).	P_08_CRITIC
34. I declare myself unable to perform a technical work even if it costs my function or my status.	P_09_DANGER
35. I give my technical guidance in the most direct and clear way.	P_10_FRANK
36. I only tell my clients what I know is true.	P_11_TRUTH
37. I issue my technical advice in a true way regardless of the impacts they might cause.	P_12_DANGER
38. When I experience technical failures or ethical disagreement, I criticize even when related to my superiors.	P_13_CRITIC
39. I tell the truth, regardless of any action or reaction, showing the mistakes or discrepancies that I can find in the rules or in the professional activity.	P_14_DUTY
40. My professional activities are not guided by self-interest.	P_15_DUTY
41. I always make it clear to my client / employer the way in which I will lead my professional work.	P_16_TRUTH
42. I denounce myself to Regional Council when I do something against the profession, regardless of it being a legal or moral obligation.	P_17_DUTY
43. I criticize my colleagues regardless of their status or professional position.	P_18_CRITIC
44. I have the courage to tell the truth regardless of the consequences that may arise from this attitude.	P_19_DANGER
45. I issue my advices and technical works so that everyone understands exactly what I think about the subject.	P_20_FRANK
46. I believe in my ability and knowledge about accounting issues. That way, I know that my technical opinion is always true.	P_21_TRUTH
47. I speak the truth to my superior, or to the Regional Council, even against the majority and running the risk of losing privileges.	P_22_CRITIC
48. I always tell the truth to my superiors to help them improve themselves and thus contribute to the enhancement of the profession.	P_23_DUTY
49. I always say what I think in front of business situations.	P_24_FRANK
50. When I criticize my colleagues and superiors I do it in order to help them improves their moral development and their professionalism.	P_25_CRITIC



GLOBAL JOURNAL OF MANAGEMENT AND BUSINESS RESEARCH: D
ACCOUNTING AND AUDITING
Volume 14 Issue 1 Version 1.0 Year 2014
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

Free Cash Flow and Earnings Management in Brazil: The Negative Side of Financial Slack

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Abstract- The article investigates whether Brazilian firms with excess free cash flow (FCF) and low growth perspectives (Jensen, 1986), when there is excess FCF, accompanied by limited growth perspectives, managers have incentives to camouflage the impact of investments in projects with negative net present value (NPV) by presenting inflated profits. The study includes firms listed on the BMF&Bovespa in the period from 2008 to 2012. Discretionary accruals (DA) were estimated by the modified Jones model and then the relationship between FCF and DA was ascertained by multiple regression. The results indicate that firms with low growth perspectives and excess FCF are more likely to manage earnings to increase profits. Shareholding concentration and adoption of IFRS moderate this relationship (FCF x DA), i.e., in practical terms they restrict the propensity to engage in this type of earnings management. This study is relevant by identifying a tendency to manage earnings. Regulators and investors should pay particular attention to the accounting results disclosed in the presence of excess free cash flow and low growth perspectives.

Keywords: *free cash flow, discretionary accruals, earnings management.*

GJMBR-D Classification : *JEL Code: O16, M19*



Strictly as per the compliance and regulations of:



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Free Cash Flow and Earnings Management in Brazil: The Negative Side of Financial Slack

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Abstract- The article investigates whether Brazilian firms with excess free cash flow (FCF) and low growth perspectives engage in earnings management by means of income-increasing accruals. According to the agency cost hypothesis (Jensen, 1986), when there is excess FCF, accompanied by limited growth perspectives, managers have incentives to camouflage the impact of investments in projects with negative net present value (NPV) by presenting inflated profits. The study includes firms listed on the BMF&Bovespa in the period from 2008 to 2012. Discretionary accruals (DA) were estimated by the modified Jones model and then the relationship between FCF and DA was ascertained by multiple regression. The results indicate that firms with low growth perspectives and excess FCF are more likely to manage earnings to increase profits. Shareholding concentration and adoption of IFRS moderate this relationship (FCF x DA), i.e., in practical terms they restrict the propensity to engage in this type of earnings management. This study is relevant by identifying a tendency to manage earnings. Regulators and investors should pay particular attention to the accounting results disclosed in the presence of excess free cash flow and low growth perspectives.

Keywords: free cash flow, discretionary accruals, earnings management.

1. INTRODUCTION

The objective of this study is to verify whether a relationship exists between free cash flow (FCF) and the propensity to manage earnings by manipulating discretionary accruals (DA) by firms with low growth perspectives, a propensity that arises due to agency conflicts. According to Jensen (1986), the interests and incentives of managers and stockholders are in conflict regarding the optimal size of the firm and payment of dividends, especially in firms with excess free cash flow and low growth perspectives, i.e., firms with more resources than investment opportunities. In this case, managers can either increase dividends or invest in projects with low return, wasting these resources.

For Chung, Firth & Kim (2005), in the absence of efficient control by shareholders, managers can choose to invest in projects that present negative net present value (NPV) or that do not satisfy the profit expectation of investors. The preference for using the firm's own resources is to avoid the attention of creditors interested in guaranteeing the return of the amounts

invested. Identifying the agency cost associated with free cash flow (investments made in projects with negative NPV) is difficult. Managers normally do not disclose the free cash flow projections of investments and the premises behind them. To avoid this disclosure, managers invoke the need for business secrecy.

According to Jensen (1986), the payment of dividends reduces the power of managers by diminishing the amount of resources available to them. To prevent resources from leaving the firm, managers look to invest these funds in projects to maintain responsibility over them, and as a consequence, maintain their power in the company. However, to retain these resources, it is necessary to promise higher future returns to the shareholders, since they will only be willing to forgo dividends now when there is an outlook for increased gains in the future. This promise of higher returns is not always easy to keep, so earnings management serves as an instrument to mollify the shareholders and preserve the positions of the managers involved. These circumstances cause companies to grow beyond their optimal size.

However, according to Chung, Firth & Kim (2005), bad investments are eventually revealed by the firm's future results. Investments that do not maximize shareholder wealth can reduce the stock price and trigger efforts by shareholders to dislodge managers. Therefore, to camouflage the impact of investments with negative NPV, managers use accounting procedures to increase earnings. This "increase" soothes investors and boosts the firm's stock price in the short run.

Therefore, verifying whether the earnings information disclosed corresponds to the firm's real performance is fundamental. The importance of earnings as a parameter for judging the performance of firms and managers has been stated by various authors. According to Martinez (2008, p. 2), "one of the most important products of accounting for various users of financial information is earnings." For Dechow, Ge & Schrand (2010), high-quality earnings supplies more relevant information on the financial performance of firms, to serve as a base for investment decisions. Many authors have tried to identify factors that contribute to the quality of earnings.

The results of studies such as Dechow & Dichev (2002) and Dechow, Richardson & Tuna (2003) indicate that earnings quality is influenced by accruals. In this

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respect, Houge & Loughran (2000) state that accruals and cash flows make an incremental contribution to stock returns and the results obtained is the sum of these two contributions. Therefore, understanding the relationship between accruals and cash flow will enable better determining the performance of firms and their managers, especially from the standpoint of the return on investment realized by the shareholders.

This return can fall short of what is desired and one of the factors that can contribute to this is the conflict of interest between firms' managers and owners. For Bhundia (2012) and Jensen (1986), this conflict encourages managers to manipulate the results to maximize their own wealth, or to remain in their positions. For authors such as Schipper (1989) and Dechow, Sloan & Sweeney (1995), this manipulation can be achieved by means of accruals.

Various models have been developed to study this manipulation of earnings, such as those of Jones (1991) and Dechow, Sloan & Sweeney, (1995), among others mentioned in the work of Dechow Ge & Schrand (2010). According to Martinez (2008, p. 2), "these models assume that the accounting choices resulting from attempts to manage earnings can be measured by examining the discretionary accruals." These models indicate factors that affect earnings management. According to Bhundia (2012), Chung, Firth & Kim (2005) and Lehn & Poulsen (1989), one of these factors is the amount of FCF available to the company.

The studies of Bhundia (2012) and Chung, Firth & Kim (2005) show the existence of a positive relationship between the amount of FCF and the existence of earnings management in the international context. This relationship results from the use of this management to meet investors' profit expectations, by masking the fact that the excess FCF was not distributed but rather was invested in projects with low profit outlook (Jensen, 1986).

Brazil has different characteristics than the markets analyzed by Bhundia (2012) and Chung, Firth & Kim (2005). In Brazil, the debt structure of firms is more strongly influenced by financial institutions and the shareholding concentration is relatively greater than in countries with more developed markets. Therefore, these differences motivate the following research question: What is the relationship between the excess free cash flow (or financial slack) and earnings management of Brazilian firms with low growth perspectives?

The main contribution of this study is to expand knowledge about earnings management and its relationship with free cash flow, to allow investors to make more informed decisions. Additionally, there may be other factors that can interfere in this relationship that have not been noted in previous studies. Finally, the

findings here can serve as the basis for new studies on the theme in Brazil.

II. THEORETICAL FRAMEWORK

a) *Agency Theory*

It is natural to expect human beings to try to maximize their wealth. According to Bhundia (2012), most people are not able to manage their assets in the most effective way, making it wise to contract others with more expertise to perform this service. For this same author, according to agency theory the first group is composed of owners (proprietors of the means of production) and the second is formed by agents or managers. In reality, the agents are the representatives of the owners of companies (the principals), engaged to maximize the wealth of the owners.

For Jensen & Meckling (1976), if both sides of this relationship seek to maximize their own wealth, there is good reason to believe the agent will not always act in the best interests of the principal. These authors define the agency relationship as a contract by which one or more owners engage a manager to perform a service that involves delegation of authority to make decisions. However, managers do not have *carte blanche*. The owners will naturally try to limit the divergences of interests by establishing appropriate incentives for the managers, and will also establish mechanisms to oversee the managers' behavior and punish misbehavior. This oversight by the owners of course comes at a cost.

Jensen & Meckling (1976) state that the magnitude of the agency costs depends on the personality of the managers, the leeway they have to exercise their own preferences in opposition to maximizing the owners' wealth, the monitoring costs and the bonding activities between the parties of the firm. These agency costs are more evident in the remuneration of the shareholders.

According to Jensen (1986), paying dividends creates one of the main conflicts, since it reduces the amount of resources under the control of the managers, diminishing their power. This reduction of resources makes it more likely that managers will incur monitoring of the capital market due to the firm's need to obtain new capital. Financing projects internally avoids this monitoring and the possibility the funds will be available or unavailable only at high explicit prices. Another factor raised by Jensen (1986) is that managers have incentives to cause the firm to grow beyond its ideal size. Such growth increases the power of managers, since it raises the resources under their control, with a consequent increase in their remuneration, due to the positive correlation between growth of sales and executive compensation. As can be seen, agency conflicts are inherent in business management,

particularly involving the availability and management of cash flows. These conflicts are costly to the company and create the need for control mechanisms so that the interests of the shareholders will be respected.

b) *Free Cash Flow*

Jensen (1986) introduced the theory of free cash flow and defined it as the cash flow from operating activities in excess of that needed for investment in projects with positive net present value (NPV) when discounted at the relevant cost of capital. Other authors have also defined free cash flow. According to Lehn & Poulsen (1989), FCF is the operational profit before depreciation but after taxes and dividend payments. For Dechow & Ge (2006), in turn, FCF is the cash flow from operational activities plus the cash flow from financial investments. In other words, FCF is the resources available for managers to invest, but that otherwise could be distributed to the shareholders.

For Bhundia (2012) and Jensen (1986), one of the greatest agency problems is the allocation of the free cash flow. According to Jensen (1986), the conflicts of interest between shareholders and managers over the dividend payout policy is especially severe when the organization generates large free cash flows. This is reflected in the problem of how to motivate managers to increase dividends instead of making investments with returns below the cost of capital or wasting cash through inefficiencies. Bhundia (2012) states that the operating cash flow disclosed indicates the firm's capacity to generate resources. He further comments that the operational cash flow should not be used only for acquisition of new assets to allow the company to maintain its current level of activity; part of it should also be distributed as dividends. This situation of opposing uses generates an agency conflict between shareholders and managers.

According to Jensen (1986), conflicts of interest are greater when there is excess FCF available. Managers can promise that future cash flows will be used to increase dividends. But such promises are weak because there is nothing to prevent reducing dividends in the future. On the other hand, such cuts in dividends are punished by the capital market with large stock price reductions, one of the agency costs of free cash flow. This situation is particularly serious in firms with low dividend perspectives (low growth outlook), since the capacity to generate future dividends is less. In this respect, Chung, Firth & Kim (2005) state that the combination of FCF with restricted investment opportunities has been indicated as one of the most frequent agency problems, since managers can incur expenses that reduce the wealth of the shareholders. Jensen (1986) defined this spending of FCF on projects with negative NPV as the agency costs of FCF. Also according to him, firms with poor growth perspectives are more likely to invest their FCF in unprofitable

projects. In the absence of effective monitoring or disciplinary measures by shareholders, some managers can decide to invest in projects with negative NPV.

Chung, Firth & Kim (2005) suggest that to camouflage the effects of investment that do not maximize profits, managers use the discretion under accounting rules to increase the results reported. This opportunistic behavior will be limited by effective monitoring by the stockholders. To test the extent of this management discretion, the authors evaluated whether firms with low growth perspectives and high FCF have incentives to "improve" earnings by manipulating discretionary accruals. There have been many similar studies using discretionary accruals as a proxy for earnings management.

According to Dechow, Ge & Schrand (2010), nondiscretionary accruals result from adjustments necessary to reflect the firm's performance, while abnormal (discretionary) accruals are those that capture distortions induced by the accounting system or that result from earnings management. There is a general view that if the normal component of accruals is properly modeled, then the abnormal component of accruals has worse quality, so it impairs the overall quality of the information provided by earnings. Corroborating this view, Subramanyam (1996) affirms that discretionary accruals do not occur because of inefficiency of the market, but instead due to the fact that managers use accruals to smooth revenues and improve the persistence and prediction of earnings. He also suggests that to study earnings it is necessary to examine its components, namely accruals and cash flows.

Chung, Firth & Kim (2005) found that firms with excess FCF tend to use discretionary accruals to increase the announced earnings. This fact is consistent with the hypothesis that managers use DAs to camouflage the impact of investment projects with negative NPV. Bhundia (2012) also found this result. However, Opler & Titmen (1993) stressed that firms with high growth tend to have lower FCF, since the money is used on projects with positive NPV. It can thus be inferred that a relationship exists between the amount of FCF and the propensity of firms to manage their earnings by means of discretionary accruals.

c) *Earnings Management*

According to Dechow, Ge & Schrand (2010), the better the quality of earnings information, the greater will be the support for investors to make decisions. This information can come from various sources, but the most used is the financial statements, which are subject to standards imposed by regulators. For Healy & Wahlen (1999), standard setters should consider the conflicts between the relevance and reliability of accounting information under any of the alternative disclosure standards.

Dechow, Ge & Schrand (2010) state that an advantage of accounting standards is the removal of alternative treatments of transactions in favor of a single principle that reflects performance, so that the numbers reported are more informative about earnings, by reducing the opportunities for manipulation. According to Richardson (2000), accounting standards still permit a degree of management discretion in applying the accounting methods used to report results. Earnings management happens when this discretionarity is used to manipulate the accounting numbers.

According to Schipper (1989), earnings management can also be called disclosure management when there is intentional intervention in the external financial report aimed to obtain some private gain. Poor quality financial information thus affects the financial market. Martinez (2008) states that the poor quality of accounting information can come from earnings management, a situation that can create serious allocation inefficiencies between firms as well as provoke unjustifiable distributions of wealth.

According to Bhundia (2012), the accrual accounting regime, used in financial statements to diminish information asymmetry, gives managers leeway to determine the timing of revenue recognition. Likewise, managers have significant control over when to incur and/or recognize spending on research and development, advertising and so on. Hence, they have the means to manage earnings through the timing of recognition of revenues and expenses. Earnings management is one of the most studied themes in accounting because investors attribute great weight to earnings in making their decisions. Some of these studies suggest that little variation in earnings and their persistence are attributes of the quality of earnings (Dechow, Ge & Schrand, 2010).

The quality of earnings can be impaired by conflicts of interest (Jensen & Meckling, 1976). According the authors, this agency problem occurs because of the divergence between managers and owners, since each group tends to take actions to maximize their own wealth. For Bhundia (2012), managers have incentives to manipulate earnings to maximize their benefits, so there is a positive correlation between earnings management and conflict of interest. In turn, DeAngelo, DeAngelo & Skinner (1994) state that the likelihood of manipulating earnings will be greater when the firm is experiencing poor earnings and is reducing dividends.

Jensen (2005) warns that one of the possible causes of dodgy accounting choices is the excessive appreciation of shares and the effort to meet analysts' earnings forecasts, one of the factors affecting managers' continuing tenure. He stresses that the capital market punishes firms that do not meet analysts' expectations, through lower stock prices, and punishes the managers of these companies as well, through lower

bonuses and less job security. Healy & Wahlen (1999) list other possible causes of earnings management, besides the desire to influence market perceptions and boost management compensation, such as reducing the probability of violating loan covenants and avoiding intervention by regulators. Additionally, according to Dechow, Sloan & Sweeney (1996) another motive is the desire to obtain external capital at lower cost.

Irrespective of the reasons firms manage earnings, it is possible to conclude that the use of discretionary accruals is one of the means to do this. Empirical evidence found by Chung, Firth & Kim (2005) and Bhundia (2012) demonstrates that the level of FCF can influence the operationalization of earnings management. Both studies found evidence of a positive correlation between earnings management and free cash flow, especially in firms with low growth perspectives. Nevertheless, other factors can also be involved in this relation.

d) *Other Factors Of Earnings Management*

According to Dechow & Ge (2006), FCF has been the subject of various studies because it is considered a better measure of cash flow in earnings than operational cash flow, since earnings includes capital charges such as depreciation and amortization that are ignored in operational cash flow. Many studies of FCF have investigated its relation with earnings management, from different perspectives. Tsui, Jaggi & Gul (2001) investigated audit fees of firms with high FCF and low growth. Their results indicated that for these companies the audit fees are higher due to the relationship between agency problems and FCF. Besides this, they found that firms with stronger growth possibilities also pay higher audit fees because they have greater risk. On the other hand, the presence of an independent board of directors tends to reduce uncertainties and inhibit opportunistic practices associated with firms having high growth potential.

According to Jensen (1986), the debt policy interferes in the relationship between earnings management and free cash flow in low-growth companies. The greater the leverage, the less managers will invest in projects with negative NPV, reducing earnings management and consequently audit costs. Richardson (2006) found that in firms with high FCF levels, the level of investments tends to be higher than optimal. Bukit & Iskandar (2009) found that the existence of independent audit committees helps companies with excess FCF by reducing manipulation of profits through earnings management. Chung, Firth & Kim (2005) found evidence that the presence of high-quality auditors and institutional shareholders moderates the relation between surplus free cash flow and discretionary accruals, thus reducing earnings management.

This decrease in earnings management, according to Watts & Zimmerman (1983), results from

the role of the independent auditor in attesting to the reliability of the financial statements. This provides assurance to the shareholders, potential investors and creditors that the income statement and balance sheet closely follow generally accepted accounting principles and reflect the status of the audited company. Hence, auditing reduces the agency costs created by information asymmetry and the problems of control caused by the separation of ownership and management.

Lehn & Poulsen (1989), studying companies that recently went private, identified that the greatest gain for the shareholders was the reduction of costs caused by agency problems related to undistributed FCF. Additionally, they found that the premiums paid to the shareholders are significantly related to undistributed cash flow. Jiraporn et al. (2008) found evidence that earnings management tends to be less prevalent when agency costs are lower. This result was more consistent when factors such as size, profitability, leverage, growth perspectives and information asymmetry were controlled. Their empirical results for the sample studied identified a negative relation between earnings management and agency costs.

Based on the above studies and others, it can be stated that factors such as board makeup, separation of board chairperson and CEO, presence of an audit committee, existence of institutional shareholders and the quality of auditing (being audited by one of the big independent auditors) can influence the relationship between free cash flow and earnings management by manipulation of discretionary accruals.

III. RESEARCH METHODOLOGY

The aim of this article is to verify whether the amount of free cash flow influences the practice of earnings management through discretionary accruals by Brazilian firms with low growth perspectives, and to identify the nature of this relationship and possible factors that can explain it. Hence, the research question is as follows: What is the relation between excess free cash flow (or financial slack) and earnings management by discretionary accruals of Brazilian firms with low growth perspectives? The resulting hypothesis is:

H1 – There is a positive relation between the amount of free cash flow and earnings management by means of discretionary accruals.

a) Sample

The sample was obtained from the Economática database, consisting of 111 observations of companies between 2008 and 2012. We chose this period because in 2008, with convergence of Brazilian GAAP to IFRS according to Law 11,638/2007, listed companies had to start publishing a cash flow statement, without which it is not possible to calculate accruals.

We considered nonfinancial firms with the greatest stock movement on the BM&FBovespa in the years from 2008 to 2012, filtered by excluding companies with total assets equal to zero in any year (since assets is the denominator in the accrual measurement model), as well as those without information on gross profit and net profit and with zero revenue (to eliminate companies not in operation). Additionally, to keep the result of the regressions from being affected by outliers, all observations when the quotient of a value divided by total assets in the previous year was greater than 2 (in absolute value) were excluded from the sample.

The information on the majority holder of the common stock, due to a limitation of the Economática system, was restricted to the most recent one, so that the information on the majority shareholder was uniform for all years, a fact that is a limitation of this study. Although our study period is from 2008 to 2012, we collected data from 2007 for comparison and to obtain differences (variation of revenues used in the model based on Jones). When information on the previous year was not available (in the case of a new company or one that went public in the referred year), we discarded the observation in the regression. This procedure was used both for previous year parameters and for differences where data for the previous year were not available.

b) Variables Used And Earnings Management Model

As in Bhundia (2012), we used the model of Lehn & Poulsen (1989) to measure the amount of FCF. However, we modified this model in line with the particular features of the Brazilian market. In the TAX variable (taxes), besides corporate income tax we included social contribution on profit⁴. We also included the variable JCP (*juros sobre capital próprio* – “interest on own capital”, or better put, interest on stockholders’ equity) because this is an alternative way of distributing profits (in lieu of dividends) in Brazil. In this model, FCF is calculated according to equation (1) below. All the values of the variables are divided by total asset from the previous year:

$$FCF_{i,t} = (OP_{i,t} - TAX_{i,t} - FINEXP_{i,t} - DIV_{i,t} - JCP_{i,t}) / TA_{i,t-1} \quad (1)$$

Where:

FCF_{i,t} = free cash flow of firm i in year t;

OP_{i,t} = operating profit before depreciation of firm i in year t;

TAX_{i,t} = total taxes on income (corporate income tax and social contribution on net profit) of firm i in year t;

FINEXP_{i,t} = net financial expense (or revenue) of firm i in year t;

⁴ Contributions (*contribuições*) are taxes, charged only by the federal government, whose revenue is reserved for specific uses instead of going into the general fund.

$DIV_{i,t}$ = dividends paid by firm i in year t ;
 $JCP_{i,t}$ = interest on stockholders' equity paid by firm i in year t ; and
 $TA_{i,t-1}$ = total assets of firm i in year $t-1$.

We define free cash flow as the financial slack that is available to the firm for possible investments after satisfying the main operational, financial and fiscal commitments. To measure earnings management we

$$NDA_{i,t} = \alpha_1 (1/TA_{i,t-1}) + \alpha_2 \{(\Delta REV_{i,t} - \Delta ACCREC_{i,t}) / TA_{i,t-1}\} + \alpha_3 (PPE_{i,t} / TA_{i,t-1}) \quad (2)$$

Where:

$NDA_{i,t}$ = nondiscretionary accruals of firm i in year t ;

$TA_{i,t-1}$ = total assets of firm i in year $t-1$;

$\Delta REV_{i,t}$ = difference in revenue of firm i between year t and year $t-1$;

used a model based on the modified Jones model (Dechow, Sloan & Sweeney, 1995), since this model was used in the works of Bhundia (2012), Chung, Firth & Kim (2005) and Bukit & Iskandar (2009), as a way to maintain comparability of the results. In this model, it is possible to calculate nondiscretionary accruals. The equations are as follows:

$\Delta ACCREC_{i,t}$ = difference in accounts receivable of firm i between year t and year $t-1$; and

$PPE_{i,t}$ = property, plant and equipment of firm i in year t .

The parameters α_1 , α_2 and α_3 are calculated by the following equation:

$$TACC_{i,t} / TA_{i,t-1} = \alpha_1 (1/TA_{i,t-1}) + \alpha_2 \{(\Delta REV_{i,t}) / TA_{i,t-1}\} + \alpha_3 (PPE_{i,t} / TA_{i,t-1}) + \varepsilon_i \quad (3)$$

The parameter $TACC_{i,t}$ is the proxy for total accruals in year t and is given by the equation below:

$$TACC_{i,t} = NP_{i,t} - OFC_{i,t} \quad (4)$$

Where:

$NP_{i,t}$ = net profit in year t .

$OFC_{i,t}$ = operating cash flow in year t .

Equation (4) was used in the article of Bhundia (2012) and we used this equation to calculate the total accruals

in the regression of equation (3). This linear regression produced the coefficients α_1 , α_2 and α_3 used in equation (2), which were, respectively, (-3208.154; 0.0000), (-0.046224; 0.0124) and (-0.112232; 0.0000). With these parameters it is possible to calculate the discretionary accruals ($DA_{i,t}$) by equation (5). In this case, it is necessary to assume that $TACC_{i,t}$ represents the sum of the discretionary and nondiscretionary accruals (Bukit & Iskandar, 2009).

$$DA_{i,t} = (TACC_{i,t} / AT_{i,t-1}) - NDA_{i,t} \quad (5)$$

From equations (1) to (5) it is possible to establish a model to measure the relation between FCF and DA (equation (6)). This model uses the variables identified in the literature, limited by the possibility of obtaining data for analysis and observing the peculiarities of the Brazilian market regarding the measurement and disclosure of financial information.

c) EFCF Variable

In the proposed model, the variable responsible for measuring whether there is a relation between FCF in firms with low growth perspectives and earnings management by discretionary accruals is the variable excess free cash flow, or EFCF. This is a dummy variable composed of two other dummy variables. The first of these compares whether the value of FCF calculated by equation (1) for a firm is greater than the median FCF value for all firms in a specific year. If the FCF value is greater than the median, the dummy variable assumes the value one, and zero otherwise. The second of these dummy variables is the price-to-

book ratio. The intuition behind the use of this ratio is that the market recognizes firms with greater growth perspectives, by bidding up the stock price above the book value. Therefore, to capture the firms with low growth perspectives in a determined year, we calculated the price-to-book ratio for all the firms, and assigned a value of one to the dummy variable for those below the median, and zero otherwise.

The variable EFCF was obtained by multiplying the dummy variable FCF by the dummy variable price-to-book, thus obtaining another binary variable (EFCF), with value of one when there is excess FCF in a firm with low growth perspectives and zero in all other cases.

d) Model For Analysis

The proposed model is derived from those used by Chung, Firth & Kim (2005) and Bukit & Iskandar (2009). Except for the dummy variables and the SIZE variable, the others are scaled by total assets the previous year. The model is presented below:

$$DA_{i,t} = \beta_0 + \beta_1 EFCF_{i,t} + \beta_2 E_SC_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 LEV_{i,t} + \beta_5 CF_{i,t} + \beta_6 AB_TACC_{i,t} + \beta_7 NM_{i,t} + \beta_8 IFRS_{i,t} + \beta_9 IFRS * EFCF_{i,t} + \varepsilon_i \quad (6)$$

Where:

$DA_{i,t}$ = discretionary accruals, obtained by equation 5 with nominal values (positive or negative according to the case);

$EFCF_{i,t}$ = dummy variable, which assumes the value of 1 when the firm's free cash flow (equation 1) is above the annual median of the sample and the price-to-book ratio (proxy to measure growth perspectives) is below the median for the sample, and 0 otherwise;

$E_SC_{i,t}$ = dummy variable for shareholding concentration, with value 1 when the percentage of common shares held by the largest shareholder is above the annual median of the sample and 0 otherwise;

$SIZE_{i,t}$ = natural logarithm of total assets in year t ;

$LEV_{i,t}$ = total debt divided by total assets the previous year;

$CF_{i,t}$ = difference between the firm's cash flow and the annual median of the sample divided by total assets in the previous year;

$AB_TACC_{i,t}$ = absolute value of total accruals (equation 4) divided by total assets the previous year;

$NM_{i,t}$ = dummy variable that has value 1 when the firm's shares are listed for trading in the Novo Mercado segment of the BM&FBovespa (premium corporate governance segment), and 0 otherwise;

$IFRS_{i,t}$ = dummy variable that assumes 1 for observations in 2010, 2011 and 2012, due to the requirement to use IFRS in those years according to the Instruction 457 from the Brazilian Securities Commission, and 0 otherwise;

$IFRS*EFCF_{i,t}$ = dummy variable that seeks to capture the interaction of the influence of adopting IFRS and the excess free cash flow.

IV. ANALYSIS OF THE RESULTS

Table 1 below shows the relations between the variables obtained by the regression of the proposed model (Equation (6)).

Table 1 : Regression of the model variables

Dependent Variable: DA				
Observations: 1111				
Independent Variables	Coefficient	Standard Error	T-Statistic	Probability
C	-0.044783	0.037291	-1.200897	0.2300
EFCF	0.071314	0.016751	4.257337	0.0000
AB_TACC	-0.373772	0.035128	-1.064018	0.0000
E_SC	-0.025179	0.009541	-2.638986	0.0084
LEV	0.012314	0.017849	0.689939	0.4904
CF	-0.035321	0.042159	-0.837821	0.4023
IFRS	-0.017540	0.009971	-1.759041	0.0788
IFRS*EFCF	-0.047296	0.022141	-2.136063	0.0329
SIZE	0.006254	0.002532	2.470102	0.0137
NM	0.028794	0.009928	2.900168	0.0038
R ²	0.147751			
Adjusted R ²	0.140785			
F-statistic	21.20849			
Prob. (F-stat.)	0.000000			

From Table 1 it can be seen that the coefficient of EFCF was positive and significant at 1%, indicating a relationship between the value of FCF and greater occurrence of discretionary accruals in firms with excess free cash flow and low growth perspectives. The same situation was observed by Bhundia (2012) and Chung, Firth & Kim (2005). According to these authors, the occurrence of excess FCF and earnings management through discretionary accruals is more common in companies with low growth perspectives, since those with better growth prospects tend to use their free cash

flow for investments to boost production or to enter new markets, with the objective of maintaining profitability (Jensen, 1986). This result is consistent with the hypothesis raised, indicating that firms with excess FCF and low growth perspectives can resort to earnings management to improve their profit picture.

The coefficient of E_SC was negative and significant at 1%, unlike observed by Chung, Firth & Kim (2005). Therefore, in our sample, greater ownership concentration tends to reduce earnings management, as predicted by the theory. The LEV variable was not

significant, unlike predicted by Jensen (1986) and observed by Chung, Firth & Kim (2005). CF also was not significant, in contrast to the findings of Chung, Firth & Kim (2005) and Bukit & Iskandar (2009). According to these authors, the expected relationship is negative, since firms with high cash flow should tend to use DA to smooth income so as to meet analysts' earnings projections and increase market value (Dechow, Ge & Schrand, 2010).

Size (SIZE) was positive and significant at 5%. This was also observed by Chung, Firth & Kim (2005) and Becker et al. (1998), who used this variable as a control to keep it from interfering in the error term in function of unidentified variables not included in the model. Hence, size is a factor that should be controlled in measuring earnings management. According to Becker et al. (1998), the coefficient of AB_TACC tends to be negative because nondiscretionary accruals tend to be negative due to depreciation. Since positive DA reduces the absolute value of total accruals (AB_TACC), these two should be negatively related. This can be observed in Table 1, where the coefficient of AB_TACC is (-0.373772; 0.035128).

We used the NM variable as a proxy for the influence of corporate governance on earnings management. It presented a positive coefficient

significant at 1%. This means that in our sample, belonging to the Novo Mercado trading segment did not inhibit earnings management by means of discretionary accruals. This runs counter to the expectation that better corporate governance should have a negative relationship with DA, as found by Martinez (2009).

The variables IFRS and IFRS*EFCF try to measure the relationship of the variables of equation (6) in annualized form. Barth, Landsman & Wayne (1998) stated that the implementation of IFRS should improve the quality of accounting information. They identified that the level of earnings management of firms in 21 countries declined after adoption of IFRS. Therefore, we expected to find a negative relation between IFRS and DA.

a) Other Analyses

With respect to EFCF, to strengthen the result we conducted other analyses. We divided the sample of observations into two subsamples, one with EFCF = 1 and the other with EFCF = 0. Table 2 below shows that the average of DA is greater for the subsample with EFCF = 1 and that the average DA values in the two subsamples are statistically different. This reinforces the positive relationship between discretionary accruals and excess free cash flow.

Table 2 : Difference of means test of the dependent variable DA in the subsamples with EFCF = 1 and EFCF = 0

	<i>EFCF = 1</i>	<i>EFCF = 0</i>
Mean DA	0.041313593	0.002259552
Variance of DA	0.024195093	0.023646446
Observations	218	893
Hypothesis of difference of means	0	
Df	328	
T-statistic	3.330946271	
P(T <= t) single tail	0.000482095	
Single-tail critical t-value	1.649512493	
P(T <= t) two tail	0.000964191	
Two-tail critical t-value	1.967222827	

Additionally, because we initially analyzed all the observations for 2008 to 2012 together due to the small number of observations, we also carried out regressions in each year individually to determine the year-on-year behavior. The results are reported in Table 3.

The table shows the EFCF coefficient was positive and significant in 2008 and 2010. This fact corroborates the results indicated in Tables 1 and 2. Therefore, these results provide further evidence that in the period studied the variable EFCF was positive, contributing to the non-rejection of hypothesis H1. As stated before, there was a gradual decline in the coefficient of EFCF over the years, especially starting in 2010. Because of this finding, we sought to identify some phenomenon that could have affected the DA x

EFCF relation. The likeliest possibility was the existence of CVM Normative Instruction 457/2007, which made it mandatory for listed corporations to present financial statements according to IFRS (International Financial Reporting Standards) starting in 2010.

Table 3: Regressions of the model by year

Dependent Variable: DA	2008	2009	2010	2011	2012
Independent Variable	Coefficient P-Value	Coefficient P-Value	Coefficient P-Value	Coefficient P-Value	Coefficient P-Value
C	-0.102403 0.2557	-0.293541 0.0027	-0.007346 0.9145	0.107178 0.0575	0.068631 0.2077
EFCF	0.084486 0.0018	0.022323 0.4285	0.046632 0.0285	0.004746 0.7674	-0.009336 0.5587
AB_TACC	-0.341144 0.0001	0.249032 0.0027	-0.530525 0.0000	-0.873685 0.0000	-0.757328 0.0000
E_SC	-0.042414 0.0783	0.004995 0.8515	-0.032637 0.0578	-0.029847 0.0300	-0.010332 0.4310
LEV	-0.045857 0.2593	-0.074578 0.1602	0.170864 0.0000	-0.011097 0.6758	0.073419 0.0030
FC	-0.204782 0.0292	0.040591 0.7199	-0.047671 0.5057	0.158659 0.0163	-0.202663 0.0376
SIZE	0.011385 0.0658	0.020095 0.0029	0.000594 0.8983	-0.001470 0.6983	-0.002554 0.4778
NM	0.045321 0.0849	0.046661 0.0936	0.035765 0.0484	0.008121 0.5691	0.006511 0.6332
R ²	0.223290	0.080262	0.310619	0.608132	0.370325
Adjusted R ²	0.196897	0.051261	0.289360	0.596843	0.344847
F-statistic	8.460198	2.767589	1.461155	5.387236	1.453498
Prob. (F-stat.)	0.000000	0.008902	0.000000	0.000000	0.000000
Observations	214	230	235	251	181

Therefore, we included the variables IFRS and IFRS*EFCF in the proposed model (equation (6)) to verify whether the adoption of IFRS had an effect on the relations of the dependent variable DA and the other variables. In Table 1 it can be seen that IFRS was negative and significant at 10%, indicating this adoption acted to reduce discretionary accruals, as suggested by Barth, Landsman & Wayne (1998). The interaction variable IFRS*EFCF was negative and significant at 5%, indicating that the adoption of IFRS acted to limit the EFCF x DA relation. Hence, the reduction of the coefficient of EFCF over the years can have been a consequence of the convergence to IFRS in Brazil. Considering the additional yearly analyses performed along with the analysis of the sample as a whole, we can state there is a positive relation between excess free cash flow of low-growth companies and earnings management by means of discretionary accruals.

Another point to consider is the result of the NM variable, indicative of better corporate governance. To assess the consistency of the results, we again generated two subsamples, the first formed of firms listed in the Novo Mercado trading segment of the BM&FBovespa (NM = 1) and the second of firms listed in any of the other segments (NM = 0). We then ran a regression of the model for each subsample.

As can be seen in Table 4, the coefficient of EFCF was positive and significant at 1% for the NM = 1 subsample and not significant for the NM=0 subsample. A possible explanation for the fact that companies listed in the Novo Mercado had higher occurrence of positive discretionary accruals is the dispersed shareholder base, due to the requirement for a minimum free float. Despite the higher governance standards, this greater ownership dispersion might act to raise information asymmetry, generating a greater possibility or opportunity for using discretionary accruals to manage earnings.

Table 4 : Regression of the subsamples NM =1 and NM=0

Variable	NM=1		NM=0	
	Coefficient	P-Value	Coefficient	P-Value
C	-0.118303	0.0908	0.027490	0.5361
EFCF	0.072453	0.0012	0.028796	0.1978
AB_TACC	0.287037	0.0000	-0.551532	0.0000
E_SC	-0.029443	0.0254	-0.013428	0.2746
LEV	0.011241	0.6584	-0.008344	0.7185
FC	-0.064210	0.1182	0.063176	0.4274
SIZE	0.008916	0.0722	0.002641	0.3677
IFRS	-0.007661	0.5605	-0.019735	0.1357
IFRS*EFCF	-0.066528	0.0289	-0.005769	0.8410
R ²	0.128067		0.243707	
Adjusted R ²	0.111808		0.234595	
F-statistic	7.876318		2.674584	
Prob. (F-stat)	0.000000		0.000000	
Observations	438		673	

V. CONCLUSIONS

Our aim was to verify whether in the Brazilian context companies with excess free cash flow (FCF) and low growth perspectives have a greater tendency to manage earnings to increase profits. Bhundia (2012) and Chung, Firth & Kim (2005) have already studied this phenomenon in other countries. The result reported here indicates that just as in developed financial markets, in Brazil there is a positive relation between the amount of FCF and discretionary accruals. This result corroborates the agency theory of Jensen & Meckling (1976), according to which managers tend to take actions to maintain the highest level of resources possible under their control, creating a conflict of interest with the shareholders, who would prefer to receive those resources as dividends.

As found by Chung, Firth & Kim (2005), size in this study had a positive relation, indicating that the larger the firm, the more likely it is that managers will manipulate accruals, since these firms tend to have greater capacity to generate accruals. Shareholding concentration had a negative and significant relation with DA, indicating that shareholding concentration is a factor that deters earnings management in the Brazilian market. The likely explanation is that in firms with a single majority shareholder or controlling block, managers' interests tend to be more aligned with the interests of the owners, who have little interest in managing earnings to increase profits, since maintaining the resources in the firm maximizes their personal wealth anyway. Cash flow was not significant, in contrast to the observation of Chung, Firth & Kim (2005), and leverage was not significant, unlike predicted by Jensen (1986) and found by Chung, Firth & Kim (2005).

A surprising finding is that companies listed in the Novo Mercado segment tend to manage earnings upward, unlike found by Martinez (2009), studying a period before the 2008 crisis and also a period when the Novo Mercado was not as popular a trading venue as it has become in recent years. This study covers the crisis year and the next four years, so the financial crisis and its aftermath could have influenced the result. In turn, the full adoption of IFRS in 2010 contributed to reduce the use of positive discretionary accruals. This influence was also found between EFCF and IFRS, indicating that in the presence of excess free cash flow in the period after implementation of IFRS, this acted to weaken the influence of FCF on the use of discretionary accruals to manage earnings.

There are other important implications of the results. In the Brazilian context, FCF is a relevant variable affecting the practice of earnings management, mainly in firms with low growth perspectives, because these firms' executives tend to manage earnings to avoid reporting lower profits and maintain resources in the company instead of distributing them to the shareholders. Another important aspect is the indication that the adoption of IFRS improved the information quality of earnings, by reducing information asymmetry between managers and investors.

In closing, this study sheds new light on earnings management by means of discretionary accruals and the relation with free cash flow. It also casts a new eye on the effect of adopting IFRS, indicating relevant results on the quality accounting information and suggesting that other factors can contribute to/restrict the occurrence of earnings management in Brazil. These can be the targets of new studies, such as the effect of the quality of auditing and

other corporate governance practices that restrict earnings management. Besides this, an analysis over a longer horizon can better reveal the influence of listing in the Novo Mercado segment on earnings management by accruals in Brazil.

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GLOBAL JOURNAL OF MANAGEMENT AND BUSINESS RESEARCH: D
ACCOUNTING AND AUDITING
Volume 14 Issue 1 Version 1.0 Year 2014
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

Environmental Disclosure Practices in Annual Report of the Listed Textile Industries in Bangladesh

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Abstract- The present study is a critical examination of the environmental disclosure practices and extent of disclosure of listed textile industries in Bangladesh. The study reveals that more than two-third (69%) of the sample companies addressed no environmental issues in their annual reports and on an average textile industries disclosed very poor information regarding environmental aspects where variation of disclosure among the industries is considerably high. The study recommends Government and other regulatory authorities taking necessary steps in compelling and motivating all textile companies in Bangladesh in addressing environmental issues in their annual report. Finally, the study expects playing important role in creating consciousness among the users and preparers in disclosing more environmental information in annual reports.

Keywords: *environmental disclosure, textile industries, annual report and Bangladesh.*

GJMBR-D Classification : *JEL Code: N50, M49*



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Environmental Disclosure Practices in Annual Report of the Listed Textile Industries in Bangladesh

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Abstract- The present study is a critical examination of the environmental disclosure practices and extent of disclosure of listed textile industries in Bangladesh. The study reveals that more than two-third (69%) of the sample companies addressed no environmental issues in their annual reports and on an average textile industries disclosed very poor information regarding environmental aspects where variation of disclosure among the industries is considerably high. The study recommends Government and other regulatory authorities taking necessary steps in compelling and motivating all textile companies in Bangladesh in addressing environmental issues in their annual report. Finally, the study expects playing important role in creating consciousness among the users and preparers in disclosing more environmental information in annual reports.

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I. INTRODUCTION

Environment is inseparable part of all aspects of human life, there is no scope to go overlooking environment. People, organization and other things of the world are directly or indirectly related with the environment. In the modern world with the advent of modern technology, environment of the world is highly affected and polluted. It is required to take proper initiatives to protect environment from such devastating pollution to make a congenial atmosphere in the world. Considering the situation of the last two decades, Environmental Accounting more specifically, Environmental Management Accounting has emerged. Environmental Accounting is considered as abroad term which is used in the different situations. Environmental Accounting mainly deal to provide better information to the stakeholders of the organization related to the actual environmental costs that have already been incurred (Shil & Iqbal, 2005).

According to Sahay (2004), it has been witnessed a growing consciousness of not only the acuteness but also the diversity of environmental

effects. Moreover, the concern about environmental effects of production processes and other performances of business have been resulted by the expansion of knowledge about ecological systems (Sahay, 2004). In 1987, the Brundtland Commission published a report entitled 'Our Common Future' and in 1992, world leaders started raising their voice regarding the environment at the top of their agenda in the Earth Summit of Rio de Janeiro. After the holding of the Earth Summit in Rio de Janeiro in 1992, different organization started to increase their concern for the environmental effects of their operational activities and people started recognizing the need for sound environmental information for improved decision-making. For this reason, a good number of companies are now disclosing environmental issues (Belal, 2000). It has defined corporate environmental reporting as a process through which 'companies often disclose environmental information to their stakeholders to provide evidence that they are accountable for their activities and the resultant impact on the environment' (Lodhia, 2006).

In 1970s disclosure of various environmental related information has begun in the annual reports of different organizations and it continued in the 1990s (Kukobo et al, 2002). There was not found any specific evidence that any listed company in Dhaka Stock Exchange (DSE) has disclosed environmental information in their annual reports (Shil & Iqbal, 2005). Disclosure of environmental related information in the annual reports of textile companies of Bangladesh will be analyzed by this research. To find out scenario of environmental related information of textile sector of Bangladesh, a number of listed companies of textile have been selected for analysis. Textile sector is more related with environment that is textile companies are polluting environment in difference ways, hence it is required to identify their concern regarding environment and how much environmental related information is disclosing in their annual reports for creating consciousness among different stakeholders. The more environmental related information disclosed in annual reports of the companies supposed to create more concern regarding environmental aspects. Therefore, it is required to encourage them to disclose more environmental related information in their annual reports

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to make them aware to environment. This is an empirical investigation of the listed textile companies of Bangladesh so as to find out the companies concern regarding environmental aspects. It is tried to find out the how much textile companies are disclosing environmental information and the extent of its volume.

II. LITERATURE REVIEW

a) *Environmental Reporting in Bangladesh*

Bangladesh is one of the most environment vulnerable countries. The present environmental condition of Bangladesh is not at all equilibrium. Severe air, water and noise pollution are threatening human health, ecosystems and economic growth of Bangladesh. Air pollution caused due to increasing population, burning fossil fuels, industrialization and associated motorization. The water pollution caused due to industrialization. The underground water of Bangladesh has been polluted due to arsenic. The inhabitants of major cities of Bangladesh are also exposed to high level of noise pollution. Environmental degradation of Bangladesh is also caused due to poverty, over-population and lack of awareness on the subject. It is manifested by deforestation, destruction of wetlands, soil erosion and natural calamities (Alam G. M. J, 2009).

Bangladesh Government started taking different initiatives regarding environmental management of Bangladesh since the 1990s in order to develop the environmental condition of Bangladesh, 'The Bangladesh Environmental Protection Act, 1995' was passed. In present, corporate environmental reporting is not compulsory in Bangladesh. But under the Bangladesh Environmental Protection Act, 1995, companies may be asked to disclose environmental information as and when required (Belal, 2000). The only mandatory environmental disclosure requirement in Bangladesh is the disclosure of expenditures on energy use. Under Schedule-XI, Part-II of the Companies Act 1994 and under Schedule, Part-II of the Securities and Exchange Rules, 1987, the total amount spent on the use of energy is to be shown in notes to the financial statements under a separate head of expenditure (Dutta P, and Bose S., 2008).

b) *Environmental Reporting in International Perspective*

Environmental reporting practices has been an important phenomenon of developed countries and most environmental reporting studies were confined to the developed countries (Belal, 2000). Numerous studies have conducted on the newly industrialized countries such as Malaysia, Hong Kong, Korea and Singapore and African countries such as South Nigeria, Africa, and Uganda (Belal, 2000). Furthermore, most of the corporate environmental reporting has been primarily focused on conventional print media, especially corporate annual reports (Lodhia, 2005).

There was no study on environmental reporting practices in the corporate annual reports before 1970s, although there were copious studies on environmental accounting practices in different corporations. In the 1970s, the first environmental accounting were introduced by Norway which solely adopted by other countries (Shil & Iqbal, 2005). Many countries such as UK, Canada, Japan, and USA etc countries actively conducted study on environmental accounting information and various significant measures related to environmental protection have been taken (Zhang et al, 2009). From 1970 to 1975, Firms' environmental performances in four industries were analyzed by Shane and Spicer (1983). They identified that comparatively larger companies disclose more environmental related information in their annual reports. In the period of 1982 to 1991 (Neu et al, 1998) investigated the environmental related information disclosures in the annual reports of Canadian public companies operating in the mineral extraction, oil and gas, forestry, and chemical industries. They mainly focused their analyses on following: the influence of external pressures regarding environmental disclosures in annual reports; the association between actual performance and environmental disclosure; and the features of environmental disclosure vis-à-vis other 'social' disclosure.

In the early 1990's, a review of Environmental Accounting was conducted by World Bank providing a list of those countries had complied Environmental Accounting, the technique that had been used to construct Environmental Accounting, and the extent of coverage (Peskin and Lutz, 1990). During 1992-1994, Moneva and Liena (2000) found that the environmental information disclose in the annual reports published by companies is sensitive for the environment in Spain, and determine the evolution of these practices. Moneva and Liena (2000), on the basis of stakeholder theory, also found out that although there has been an increase in both quantitative and financial reporting, as well as in the number of companies that are reporting, the environmental reporting of these sample companies has a fundamentally narrative character. In period of 1992 and 1993, the environmental reporting practices made by 51 United States manufacturing firms were focused by Hughes et al (2001). They used content analysis to analyze the annual reports and found that disclosure performance varies between firms that they rated as good, mixed or poor. Companies can improve their business reporting by voluntarily disclosing more available proper and appropriate information in which the investment community and shareholders have a keen interest that reported by The American Financial and Accounting Standards Board (2001). They stated that these matters include identifying factors important to the financial success of the company, delineating management's plans and strategies for managing those factors in the past and future, and specifying

measurements used by management to assess its effectiveness in implementing those plans and strategies for corporate governance and corporate social responsibility. While Dye (2001) argued that the theory of voluntary disclosure in the annual reports is a special case of game theory with the following central premise: any entity contemplating making a disclosure will disclose information related to the environment that is favourable to the entity, and will not disclose information related to the environment unfavourable to the entity. Now a day's the use of Environmental Accounting is increasing significantly in the developed and developing countries and enormous companies are putting their concern regarding Environmental Accounting and they are disclosing more and more environmental information in their annual reports for creating consciousness regarding environment stated by Shil & Iqbal (2005).

III. OBJECTIVES OF THE STUDY

a) Main Objective

The main objective of the study is to evaluate the environmental disclosure practices of the listed textile companies in Bangladesh.

b) Specific Objectives

The specific objectives of the study are as follows:

- a. To know about environmental reporting practices of selected listed textile companies in Bangladesh.
- b. To know the volume of environmental information reported in annual reports of the selected listed textile companies in Bangladesh.

IV. METHODOLOGY OF THE STUDY

This section contains the research methodology of the study. This section describes sample selection procedures, selection of period, sources of data, calculation of environmental reporting index and technique used for content analysis.

a) Sample Selection

The main objective of the study is to evaluate the environmental disclosure practices of the listed textile companies in Bangladesh. So, textile sector has been selected purposively as a sample from the available sectors which are listed in both Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE) to conform to the objective of the study. There are 31 listed textile companies in both DSE and CSE, 29 out of 31 listed textile companies have been selected because unavailable information of 2 companies (Paramount Textile Ltd, and Saiham Cotton Mills Ltd). List of the 29 selected sample companies provided in Appendix-1:

b) Selection of period

The study was conducted in 2013. To make study a contemporary and up to date, the data should

be of latest and current year. Therefore, 29 annual reports of the 29 sample companies were collected because the annual report of 2012 was the latest data in 2013.

c) Data Sources

The present study was conducted on the basis of secondary data. The secondary data were collected from annual reports of the selected sample companies, research papers, etc. Maximum annual reports were collected from the websites of the respective companies and remaining annual reports, which were not possible to collect from the websites, were collected from both DSE and CSE. Research papers were also collected from websites.

d) Content Analysis

A manual content analysis approach was followed in analyzing the annual reports to measure the volume of environmental information disclosure. A data set consisting of 50 items of environmental information (Appendix-2) was developed through literature review. These 50 items were classified into five classes as environmental policy items (5), environmental pollution items (20), environmental energy items (10), environmental financial items (7) and environmental other items (8). The data set of 50 items were collected from the study of Shirley, et al, (2009), Lodhia (1999), Dutta and Bose (2008), Islam and Deegan (2010), Islam, and Andrew (2006) and others.

e) Calculation of Reporting Index

For determining disclosure volume both weighted disclosure index and un-weighted disclosure index can be used. Researchers such as Wallace et al. (1994), Hossain et al (1994), Ahmed and Nicholls (1994), Cook (1991 and 1992), Karim (1995), Hossain (2000 and 2001), and Ullah (2013) adopted a dichotomous procedure in which an item scores '1', if disclosed and '0' if not disclosed. Past experience shows that the use of weighted and un-weighted scores for the items disclosed in the corporate annual reports and calculation can make little or no difference to the findings (Coomba and Tayib, 1998). Thus, the study used this un-weighted disclosure index methodology. So, the un-weighted disclosure method measures the total disclosure (TD) score of a selected company (suggested by Cooke, 1992) as follows:

$$TD = \sum_{i=1}^n di$$

Where,

- d = 1 if item di is disclosed
- 0 = if the item is not disclosed
- n = number of items

However, the main theme of the un-weighted disclosure index is that all items of the disclosed information in the index are considered equally crucial to the average users.

f) *Techniques used for data analysis*

There techniques used for analyzing data include average, standard deviation, co-efficient of variation, and percentage etc. SPSS software version 19 was used to analyze the data.

V. ANALYSIS OF THE FINDINGS

a) *Patterns of Environmental Disclosure*

Textile companies in Bangladesh disclosed environmental information in annual report in textual form and they did not use any picture, graph or chart in this regard. As the volume of disclosure is considered to be poor, therefore, the use of word and sentence is also limited. The table below shows that on an average 53.3 words and 2.59 sentences were used by the sample textile companies during the study period for environmental disclosure where standard deviation were 111.65 and 4.66 respectively. Maximum words used 398 and maximum sentences used 16 and minimum words and sentences were 0.

Table 1 : showing the descriptive statistics of the word and sentence used in environmental disclosure in textile sector in Bangladesh

	Word	Sentence
N	29	29
Mean	53.34	2.59
Std. Deviation	111.65	4.66
Minimum	0.00	0.00
Maximum	398.00	16.00

Source: Analyzed by the Authors

As maximum 20 sample companies out of 29 companies disclosed no information regarding environmental issues, the mean, standard deviation and minimum words and sentences differ if we consider the companies which disclosed environment related aspects in their annual report. Following table shows that mean disclosure increased significantly means that overall disclosure of the textile sector is poor but the textile companies which disclosed environmental information in their annual reports disclosed considerable information.

Table 2 : showing the descriptive statistics of the word and sentence used in environmental disclosure in textile sector in Bangladesh (9 textile companies)

	Word	Sentence
N	9	9
Mean	171.89	8.33
Std. Deviation	143.90	4.69
Minimum	32.00	3.00
Maximum	398.00	16.00

Source: Analyzed by the Authors

Table No. 3 & 4 show that maximum more than two-third (69%) of the sample companies used no words or sentences in disclosing environmental aspects in the annual report. On the other hand, 13.8% of the sample companies used less than 100 words and 1-5 sentences whereas 6.8% of the companies used 101-200 and 301-400 words and only 10.3% of the companies used 11-15 sentences in this regard.

Table 3 : showing the number of words used in environmental in textile sector in Bangladesh

Range of Words	Frequency	Percent	Cumulative Percent
0	20	69.0	69.0
1-100	4	13.8	82.8
101-200	2	6.8	89.6
201-300	1	3.4	93.0
301-400	2	6.8	100.0
Total	29	100.0	

Source: Analyzed by the Authors

Table 4 : showing the number of sentences used in environmental in textile sector in Bangladesh

Range of Sentences	Frequency	Percent	Cumulative Percent
0	20	69.0	69.0
1-5	4	13.8	82.8
6-10	1	3.4	86.2
11-15	3	10.3	96.5
16-20	1	3.4	100.0
Total	29	100.0	

Source: Analyzed by the Authors

Environmental information was classified into five different classes. The following table shows that on an average textile companies disclosed 2.59 items where maximum 0.97 items under environment-product & process and minimum 0.24 items under environment-finance. Standard deviation in total disclosure is 4.66 indicates a higher variation in environmental disclosure;

maximum and minimum standard deviation is observed 1.61 and 0.74 under environment-product & process and environment-finance respectively. Minimum disclosure is 0 under all the class and maximum of the maximum disclosure is 5.00 found under environment-product & process and minimum of the maximum disclosure is 3.00 found in three classes.

b) Class-wise Environmental Disclosure

Table 5 : showing class-wise environmental disclosure of textile sector in Bangladesh

	Envt_Policy	Envt_Product	Envt_Finance	Envt_Energy	Envt_Other	Total_Disclo
N	29	29	29	29	29	29
Mean	0.48	0.97	0.24	0.38	0.52	2.59
Std. Deviator	0.87	1.61	0.74	0.82	1.06	4.66
Minimum	.00	.00	.00	.00	.00	.00
Maximum	3.00	5.00	3.00	3.00	4.00	16.00

Source: Analyzed by the Authors

But if we consider only the 9 sample textile companies that disclosed environmental information their annual report, the disclosure performance indicated comparatively better picture as stated in the following table no. 6. These textile companies on an average disclosed 8.33 items where maximum 3.11

items disclosed under environment-product & process and minimum 1.67 under environment-other items. The highest standard deviation 1.32 is observed in case of environment-other items and lowest standard deviation 0.88 in case of environment-policy items.

Table 6 : showing class-wise environmental disclosure of textile sector in Bangladesh (9 textile companies)

	Envt_Policy	Envt_Product	Envt_Finance	Envt_Energy	Envt_Other	Total_Disclo
N	9	9	9	9	9	9
Mean	1.56	3.11	0.78	1.22	1.67	8.33
Std. Deviation	0.88	1.27	1.20	1.09	1.32	4.69
Minimum	.00	2.00	.00	.00	.00	3.00
Maximum	3.00	5.00	3.00	3.00	4.00	16.00

Source: Analyzed by the Authors

Table No.7: shows that among the sample companies only Apex Spinning & Knitting Mills Limited disclosed maximum 60% of the environmental policy related information whereas Alltex Industries Ltd. disclosed no information in this area. Square Textile and Apex Spinning & Knitting Mills Limited disclosed maximum 25% of the environmental-product & process

related issues and maximum 42.86% of environmental finance related matters were reported by Square Textile. Moreover, maximum 30% of the environmental energy related issues addressed by The Dacca Dyeing & Manufacturing Co. Ltd. and Square Textile reported maximum 50% of the environmental other items.

Table 7 : showing environmental disclosure of textile sector in percentage

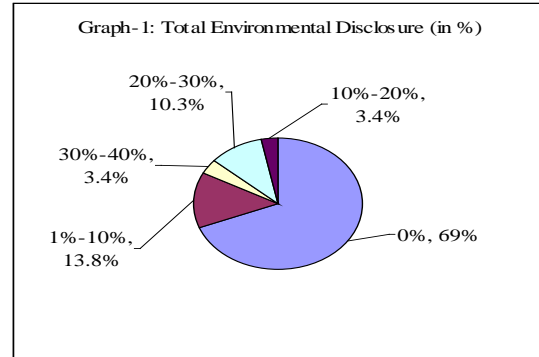
S/N	Company Name	Envt: Policy	Envt: Product - process	Envt: Finance	Envt: Energy	Envt: other	Total Disclosure
1	Anlima yarn Deying Ltd.	40%	15%	28.57%	20%	37.50%	24%
2	Square Textile	40%	25%	42.86%	20%	50.00%	32%
3	Alltex Industries Ltd.	.00%	10%	0.00%	0%	12.50%	6%
4	The Dacca Dyeing & Manufacturing Co. Ltd.	40%	20%	0.00%	30%	25.00%	22%

5	Malek Spinning Mills Ltd.	20%	10%	0.00%	10%	25.00%	12%
6	Metro Spinning	20%	10%	0.00%	0.0%	25.00%	10%
7	Prime Textile	40%	15%	0.00%	0.0%	0.00%	10%
8	Saiham Textile	20%	10%	0.00%	10%	0.00%	8%
9	Apex Spinning & Knitting Mills Limited	60%	25%	28.57%	20%	12.50%	26%

Source: Analyzed by the Authors

c) Total Environmental Disclosure Level

Level of total environmental disclosure of the textile companies in Bangladesh shows a very poor level of disclosure as none of the sample companies disclosed more than 32% of the expected items. The following table and graph depict that the highest 69% of the sample firm disclosed no information in environmental areas and only 13.8% of the textile companies report only 1%-10% information and 20%-30% environmental issues were addressed by only 10.3% of the sample companies.



Source: Developed by Authors

Table 8 : showing total disclosure of the textile sector in Bangladesh

Range of Total Disclosure	Frequency	Percent	Cumulative Percent
0%	20	69.0	69.0
1%-10%	4	13.8	82.8
10%-20%	1	3.4	86.2
20%-30%	3	10.3	96.5
30%-40%	1	3.4	100.0
Total	29	100.0	

Source: Analyzed by the Authors

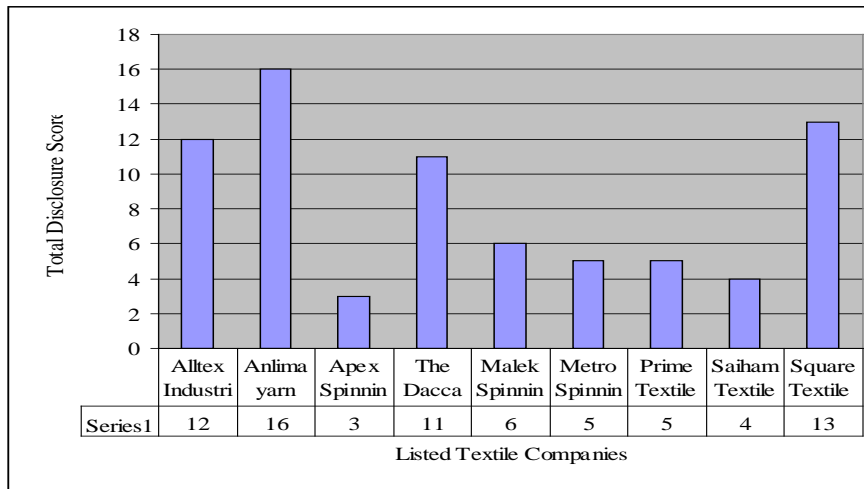
d) Raking of the Textile Companies

Among the sample textile companies, Anlima yarn Deying Ltd. secured rank 1 as it disclosed maximum 32% (16 items) in their annual report in 2012. Square Textile, Alltex Industries Ltd. and The Dacca Dyeing & Manufacturing Co. Ltd. achieved 2nd, 3rd and 4th rank respectively. Among the 9 textile companies that disclosed environmental information in their annual report, Apex Spinning & Knitting Mills Limited secured the last and 9th position as it report the lowest information and the remaining 20 companies disclosed no information regarding environmental issues.

Table 9 : showing ranking of the textile Companies as per total disclosure score

Rank	Company Name	Env: Policy	Env: Product - process	Env: Finance	Env: Energy	Env: other	Total Disclosure
1	Anlima yarn Deying Ltd.	2	5	3	2	4	16
2	Square Textile	3	5	2	2	1	13
3	Alltex Industries Ltd.	2	3	2	2	3	12
4	The Dacca Dyeing & Manufacturing Co. Ltd.	2	4	0	3	2	11
5	Malek Spinning Mills Ltd.	1	2	0	1	2	6
6	Metro Spinning	1	2	0	0	2	5
6	Prime Textile	2	3	0	0	0	5
7	Saiham Textile	1	2	0	1	0	4
8	Apex Spinning & Knitting Mills Limited	0	2	0	0	1	3

Source: Developed by the Authors



Graph 2 : showing the total disclosure score of the listed textile companies in Bangladesh

Source: Developed by the Authors

VI. SUMMERY OF FINDINGS OF THE STUDY

Following points identifies the important findings of the present study:

- Maximum 69% textile companies disclosed nothing relating to environmental issues though textile companies are highly prone to different types of environmental pollutions.
- Overall disclosure of the textile sector is poor but the textile companies which disclosed environmental information in their annual reports disclosed considerable information.
- The high standard deviation in total environmental disclosure indicates high variation among the textile companies in addressing environmental issues in their annual reports.
- Textile companies in Bangladesh disclosed minimum environmental information relating to environmental finance, environmental energy and environmental policy items which is not generally expected from the competitively sustaining organizations at this age of environmental awareness.

VII. RECOMMENDATIONS OF THE STUDY

The following points are recommended to the relevant authorities regarding disclosure of environmental issues of the textile industries in Bangladesh:

- Government and other regulatory authorities should take necessary steps in compelling and motivating all textile companies in Bangladesh in addressing environmental issues in their annual report.
- Relevant authorities may provide rewards to the organizations which disclose environmental

issues in their annual report for encouraging other organizations in this regard.

- Textile companies in Bangladesh should have specific policy regarding environmental issues, financing in environmentally friendly plants and generating energy from solar systems to make them more sustaining at this competitive age.

VIII. POLICY IMPLICATIONS

The major practical policy implications of this study may be stated as below:

- The owners, directors, management and accountants of the textile companies in Bangladesh are expected to have directives and inspirations from this paper to disclose environmental aspects in annual report.
- The researchers in environmental disclosure may conveniently exploit the matters addressed in this study for more comprehensive studies in environmental disclosure in most environmentally vulnerable country like Bangladesh.
- The Government, regulatory bodies and organizations established for environmental protections are expected to realize the real position of pollutions and protections initiated by the textile companies and to formulate guidelines and laws regarding pollution, protection and disclosure of environmental issues.

IX. DIRECTION TO FURTHER STUDY

Present study addressed only environmental disclosure in the annual reports of the textile companies in Bangladesh. There are huge scopes of conducting more studies in the same direction in the following

areas: Relationship between environmental disclosure and financial performance of the listed companies in Bangladesh; Importance of environmental disclosure in an environmentally vulnerable country like Bangladesh; Role of environmental disclosure in creating environmental awareness among the corporate stakeholders in Bangladesh; Environmental disclosure practices in Bangladesh: Prospects and Challenges and Green Accounting: An analysis from Islamic perspective.

X. LIMITATIONS AND CONCLUSION

Present study is a noble effort in addressing the environmental disclosure practices in textile industries in Bangladesh and observed that only a few textile companies disclosed a considerable amount of information regarding environmental aspects but maximum textile companies did not disclose any or disclosing very negligible information regarding environmental issues. In using and interpreting the results of the study, the limitations are also to be considered. The major limitations of the study include: the study used secondary data only; it is based on purposively listed textile companies in Bangladesh, and annual reports of one year were used for the study. The study expects that the textile companies would motivate in disclosing more environmental information and would conscious the people regarding environmental protection in environmentally most vulnerable countries like Bangladesh.

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APPENDIX

Appendix 1

List of Companies under study and their Environmental Disclosures

S/N	Company Name	Env: Policy	Env: Product - process	Env: Financial	Env: Energy	Env: other	Total Factors
1	Al-Haj Textile	0	0	0	0	0	0
2	Alltex Industries Ltd.	2	3	2	2	3	12
3	Anlima yarn Deying Ltd.	2	5	3	2	4	16
4	Apex Spinning & Knitting Mills Limited	0	2	0	0	1	3
5	Argon Denims Ltd.	0	0	0	0	0	0
6	CMC Kamal	0	0	0	0	0	0
7	The Dacca Dyeing & Manufacturing Co. Ltd.	2	4	0	3	2	11
8	Delta Spinners Ltd.	0	0	0	0	0	0
9	Desh Garmants	0	0	0	0	0	0
10	Dulamia Cotton	0	0	0	0	0	0
11	Envoy Textiles Limited	0	0	0	0	0	0
12	Familytex (BD) Limited	0	0	0	0	0	0
13	Generation Next Fashions Limited	0	0	0	0	0	0
14	H.R.Textile	0	0	0	0	0	0
15	Maksons Spinning Mills Limited	0	0	0	0	0	0
16	Malek Spinning Mills Ltd.	1	2	0	1	2	6
17	Metro Spinning	1	2	0	0	2	5
18	Mithun Knitting	0	0	0	0	0	0
19	Modern Dyeing & Screen Printing Ltd.	0	0	0	0	0	0
20	Prime Textile	2	3	0	0	0	5
21	Rahim Textile	0	0	0	0	0	0
22	R.N. Spinning Mills Ltd.	0	0	0	0	0	0
23	Safko Spinnings	0	0	0	0	0	0

24	Saiham Textile	1	2	0	1	0	4
25	Sonargaon Textiles	0	0	0	0	0	0
26	Square Textile	3	5	2	2	1	13
27	Stylecraft Limited	0	0	0	0	0	0
28	Tallu Spinning	0	0	0	0	0	0
29	Zahintex Industries Ltd.	0	0	0	0	0	0

Appendix 2

Environmental Items Considered for Development of Disclosure Index

Serial No.	Environmental
1	Actual statement of policy
2	General statements of "the company will, the company does" nature
3	Investment appraisal to include consideration of the environment
4	Statements indicating that pollution from operations has been or will be reduced
5	Disclosing the company's energy polices

- A. Environmental policy
- B. Environmental product-process:

Serial No.	Elements
1	Waste(s) management
2	Eco-efficiency
3	Pollution and emissions- noise, spills, visual quality, including any attempts to identify, improve, control, treat or prevent
4	Carbon sequestration, climate change
5	Products and product development, improvements in products (including products that care for and help protect the environment)
6	Air emission information
7	Water discharge information
8	Research on new methods of production to reduce environmental pollution
9	Pollution –prevention technologies
10	Pollution control of industrial process
11	Pollution reductions in the conduct of business operations
12	Solid waste disposal information
13	Conservation of natural resources
14	Recycling plant of waste products
15	Installation of effluent treatment plant
16	Land reclamation and forestation programs
17	Raw materials conservation
18	Designing facilities harmonious with the environment
19	Undertaking wildlife conservation
20	Noise

- C. Environmental Energy:

Serial No.	Elements
1	Energy saving and conservation
2	Use/development/exploration of new sources, efficiency, insulation etc.
3	Utilization of waste materials for energy conservation
4	Discussion of the company's efforts to reduce energy consumption
5	Voicing the company's concern about the energy shortage
6	Direct energy use
7	Indirect Energy use
8	Disclosing energy savings resulting from product recycling

9	Disclosing increased energy efficiency of products
10	Receiving an award for an energy conservation programme

D. Environmental financial:

Serial No.	Elements
1	Discussion of areas with financial/economic impact
2	Discussion of environmental-economic interaction
3	Contingencies, provisions
4	Environmentally-related loans, grants; costs of purchasing and installing environmental friendly machines and equipment; maintenance and consultancy costs
5	Past and current expenditure for pollution control
6	Future estimates of expenditures for pollution control equipment and facilities
7	A record of the allocation of specific fund

E. Environmental other:

Serial No.	Elements
1	Environmental education (note: care should be exercised noting the overlap with community)
2	Environmental awards; employee environmental training and awareness; partnerships between environmental research institutions and business
3	The enhancement of a moral responsibility influenced by Islamic principles
4	Maintenance the balance of environment
5	To protect and enhance the well-being of future generations
6	Designing facilities that are harmonious with the environment
7	Contributions in terms of cash or art/sculptures to beautify the environment
8	Undertaking environmental impact studies to monitor the company's impact on the environment

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GLOBAL JOURNAL OF MANAGEMENT AND BUSINESS RESEARCH: D
ACCOUNTING AND AUDITING
Volume 14 Issue 1 Version 1.0 Year 2014
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

The Group Potency in Audit Teams and Its Impact on the Accounting Related Task Performance

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Abstract- The present study tests the impact of group potency on the auditors' accounting related task performance, by determining the impacts of the drivers affecting the development of group potency in audit teams, for the purpose of making up the deficiency in question. In consequence of the analysis of audit groups constituted of 160 independent auditors from 39 audit firms, through a longitudinal experiment, it was determined that, as a result of the development of the team's group potency, the audit performance is positively affected. Besides, collaboration between team members, previous experiences of group members, group identification of individuals and goal clarity were determined as factors contributing to the development of group potency within the audit team. On the other hand, no relationship could be established between group autonomy and group potency. As for accountability and group side variables, these were determined as factors having an impact in the structural model.

Keywords: *group potency, task performance, group identification, collaboration, goal clarity.*

GJMBR-D Classification : *JEL Code: M40*



Strictly as per the compliance and regulations of:



The Group Potency in Audit Teams and Its Impact on the Accounting Related Task Performance

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Keywords: group potency, task performance, group identification, collaboration, goal clarity.

I. INTRODUCTION

The present study deals with the relation between the group potency of the audit team and the audit performance. Audit is a complement of activities, reducing the self-seeking approaches of managements, helping the stakeholders to be protected in a holistic manner and preventing errors and frauds. The activity of audit, typically consists of whole process of transactions, which are challenging, complex, interdependent and demanding. Fulfillment of the performance expected from audit, does not only depend on the individual knowledge and skills of auditors, but also in correlation with the cooperative work of the audit team consisting of external auditors. Therefore, the effectiveness of the audit group directly affects the success of the audit activities. Performance is typically viewed as a function of ability, knowledge, environment and motivation (Libby and Luft, 1993). The Audit tasks are particularities; they require specific knowledge and teamwork. Meanwhile the goal of a structured, facilitated

group process is to follow Standard procedures, maximize efficiency and effectiveness, and reduce the effects of nonproductive interactions among team members (Chang et al., 2003). Audit teams are formed to include the independent auditors, who know about, and use the audit process targeted for audit quality. The standard audit process, including data collection and review, are intended to avoid inefficiencies of work process. Audit teams are more effective when members get to know each other quickly, in particular, when they share information about their expertise, give each other feedback that verifies each auditor's self-concept, and develop interpersonal congruence. At this point, the group potency concept is an important factor affecting the group performance. Group potency is a social-psychological factor that is motivational in nature and important antecedents of group outcomes. Existing explanations of group performance, however, are incomplete and tend to neglect mechanisms inherent in the groups themselves as important determinants of group effectiveness (Cohen et al., 1996; Gully, 2000; Kozlowski and Ilgen, 2006). While group potency is considered as being a developing phenomenon in the field of group behavior, it hasn't been sufficiently accentuated in audit studies. Some researches state that successful audit activities will be possible through the collective efforts of individuals. Business enterprises being subjected to audit by internal or external auditors, is a fairly complex problem solving and decision making process. Effective decision making procedures, in short, may result in decisions that are more likely to achieve intended outcomes. Haphazard procedures, in contrast, could be more likely to lead to outcomes that will be regarded as unsuccessful. Accounting enables the information generated by the information system to be analyzed, evaluated; the auditors to reveal the risk factors accurately, and the business enterprise to act on healthier grounds. Auditors encounter some challenges, arising from the nature of the audit task, during the decision making process. As for overcoming of these challenges and establishment of a solid foundation, these are related with the audit becoming more efficient and effective. In Rupley et al. (2011), it is specified that, concerned persons started to pay more attention to the activities of audit groups and audit teams, and to monitor these activities in a more intense manner during

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the post-SOX period. Specially, the current climate of intense competition and litigation in the auditing profession has resulted in auditors paying more attention to conducting efficient and effective audits (Knechel, 2007). As stated in Reheul et al. (2013), the audit performance being at the desired level has also some effects, such as client satisfaction and client loyalty. On this sense, the effectiveness of the audit is directly related with the service quality (Ismail et al., 2006). It is also obvious that, effective audit groups will enable many benefits for the society and stakeholders, such as better financial reporting, reduced accounting fraud, better management of the time allocated for the audit period, and increased trust towards the company (Abbott et al., 2000; Beasley et al., 2000; Kobbeltvedt et al., 2005; Walczyk and Griffith-Ross, 2006; Cohen et al., 2007; Zhang et al., 2007; DeZort et al., 2008; Cohen et al., 2010).

In Constance and Wright (2011), the most basic characteristic features of auditors displaying a high level of performance, are expressed as predisposition to group works, the ability to share past experiences with team members, the ability to take responsibility, the ability to safeguard the stakeholders' interests and display of efforts in order to keep the group's motivation at a sustainable level. Within this context, team members supporting each other in terms of motivation has a positive impact on the performance. In order for the audit performance to be at the desired level, the auditor should be supported with internal and external motivation factors. Internal motivation is mostly related to the individual himself. As for the external motivation, it is shaped under the influence of environmental factors and group dynamics. From this aspect, group potency is a combination of external motivation factors and internal motivation factors. Recently, in some theoretical models, it is pointed out that group-based works have positive effects on performance in terms of structure, process and output. (Hackman, 1987; Tannebaum et al., 1992; Myers et al., 2004). Jex and Bliese (1999) have determined that group potency contributes to the increase in the satisfaction between members and to the rise in performance. Understanding the importance of group potency and assigning value to the relevant subject in audit works, will lead to benefits in organizational and individual basis. Achievement of budget effectiveness and protection of stakeholders while also fulfillment of client needs' satisfaction, are some of the potential benefits of group potency in audit works. One way of increasing audit effectiveness is to develop the teamwork, cohesiveness, team learning and communication between the auditors. As pointed out in Kelly and Barsade (2001), individuals constituting a team, bring with themselves not only their knowledge and skills, but also their feelings and thoughts. Within this context, group potency has an audit effectiveness-increasing structure. Similarly, in De Dreu and Van

Vianen (2001), the presence of another benefit of group potency is mentioned: reducing the organizational workload. The concept of group potency developed as a key determinant in understanding the effectiveness and performance of the group, and in decision-making (Shea and Guzzo, 1987). Group potency is the collective belief of a team that it can be effective: shared belief of team members as a whole. For, audit works are complex socioeconomic activities, and insufficient works of audit members and their refrainment from collaboration increase the corporate risk. Furthermore, the audit process covers the fulfillment of interdependent tasks, which affect each other directly and/or indirectly, rendering the concernedness of group members an obligation.

In the present study, I tried to reveal the relation between group potency and audit performance. While predominantly a focus on individual features of the auditors is witnessed in other studies addressed towards understanding and explaining audit performance, the present study is rather focused on the impact of group properties on the audit performance, instead of the individual features. There were no past studies I could determine, which were addressed on the relation between group potency and audit performance, and if there are any, limited number of empirical evidences was produced. For this reason, the purpose of the study consists of the impact of group potency on audit performance, and revealing the relation between these two concepts.

The main contributions of this research can be summarized as follows. Firstly, I add the scarce empirical evidence on the drivers of group potency and its impact on audit performance. Secondly, this is the first study to examine relations between group potency and audit performance. Thirdly, I developed a fully new and original scenario in order for the audit performance to be measured. Also, I produced a new scale for goal clarity, which is group potency's antecedent. I created a new dummy variable for the experience variable, which is also an antecedent of group potency. I also developed a new scale for the accountability variable, which is among the control variables of the research, and I provided support to studies and examinations in this field. In the conceptual framework section of the study, analysis of factors affecting group potency from an interdisciplinary point of view was also made, and the relation between group potency and audit performance was hypothesized a few times. In the subsequent third section, scales prepared for the implementation of the research is explained, along with the experiment study. Analyses and findings were presented in the fourth section. Lastly, discussions and conclusions were tackled and suggestions were developed for managers and researchers.

II. CONCEPTUAL FRAMEWORK AND HYPOTHESES

It must be mentioned that audit works are chaotic, risky and unpredictable processes, which are exposed to external factors. The complex structure of the audit would also make it feel on the audit effectiveness. Sharing between the auditors and the collaborations of auditors will be influential in reducing the risks, which would occur. Group potency will also constitute a basis for the auditors to be motivated, and will increase the audit success. Van Zomeren et al. (2010), pointing out these two main elements, state that the performances of group elements start to increase after they start to define themselves as parts of the group. Young auditors would particularly be more affected of these motivational factors. It is necessary to specify that, hesitation or disbelief to be experienced by group members on the fulfillment of the task would render the audit ineffective and increase the risk for stakeholders. For this reason, it is a must for the motivational factors to appear in the audit process. Also, individuals being in interaction and sharing knowledge and source with each other, will be helpful in increasing the talent and skills of the group, in ensuring the group to learn faster, in decreasing the budget pressure and in ensuring the audit to bring the expected benefits.

Due to the reasons specified above, group potency will be of great importance for the success of the audit activity. Nevertheless, there aren't many detailed information concerning the external implicit variables and results of group potency. To emphasize these, the external hidden variables (antecedents) of group potency and their impacts on audit performance were tackled in my theoretical model, and the model design of the research was produced.

a) Drivers of Group Potency

The primary objective of this section is to explain the theoretical basis of group potency and examine its antecedents. In certain studies, it is stated that past experiences are an effective variable in the development of group potency. Past experiences involving knowledge and skill facilitate achievement of goals through increasing group potency (Jung and Sosik, 2003; Watson et al., 2001; Gibson et al., 2000; Vancouver and Kendall, 2006; Gibson and Earley, 2007; Tasa et al., 2007). For past works, performances and experiences strengthen the group's belief towards their capability to perform successfully. Collaborations made in past experience works also make themselves feel in current audit activities and light the way for the works to progress smoothly and for the audit to become effective. In Archambeault and DeZort (2001), it is emphasized that, auditors, who have gone through more audit experience together, would be more successful in the subject of fraud detection. An

experienced team display a more organized, more coordinated behavior, which is more predisposed to teamwork. Besides, it also leads to a development increasing intra-team relations and communication. Past experiences of the audit team, enable during the current audit tax, efficient use of technology, performance of the task, team communication, information exchange of members, and carrying out of more analytic discussions on problems and problematic documents. Within this context, members' sharing of technical knowledge (know-how) with each other prevents the audit failure. For this reason, the evaluations above may be hypothesized as specified below.

H1: Past experiences of the members of the audit team have a positive impact on the development of group potency.

As for another factor influential in the development of group potency, it is goal clarity. The goal clarity is an important issue for auditors' roles and responsibilities as well as their task related abilities and work styles (Mathieu and Rapp, 2009). Shafer et al. (2013) express in their research carried out on the audit activities of Asian auditors, that audit tasks have a process-based structure, and the relevant structure consists of goals interdependent on each other (goal interdependence). Goals being each other's successor or antecedent throughout the task, requires each goal to be revealed in an express and clear manner. In an audit team where targets are fully defined, and goals are known and understood by all auditors, group potency would be more developed. Within this context, goal clarity may be defined as the group being fully and in a detailed manner aware of the identity of the goal and of the work for the fulfillment of which efforts are displayed. Therefore, it is possible to explain goal clarity in audit teams as the clear emergence of the benefit expected from the audit in consequence of the efforts. There are many studies indicating the positive impacts of the goal clarity on group performance. Besides, goal clarity has benefits such as regulation of individual roles, the ability to discuss the targets, the opportunity to think it offers on whether the goals are rational. A goal, consisting of determining whether the actual inventory of stocks correspond to their recorded inventory, is a clear goal. Clarity would help the group members to be better coordinated, and also increase the audit effectiveness. The possibility of mutual support and solution of intra-group conflicts would increase with goal clarity. To put it in another way, the goal clarity will facilitate the members to understand why the group exists, and will improve group potency. Goal clarity is in addition important, since it offers the opportunity to think thoroughly on each detail, through tackling the audit activities in a holistic manner. Within this context Hypothesis no. 2, is specified as follows.

H2: Goal clarity level of audit team members has a positive correlation with the development of group potency.

As for another factor having an impact on the development of group potency, it is the collaboration between the group members. Collaborating among group members creates a common appreciation of the opinions and ideas which were apparent and untapped. For example, during audit activities, members are likely to seek out the views, ideas and feelings of others to better understand the problem and then interactively apply them for effective solutions. In the present study, it is hypothesized that interpersonal collaboration would develop group potency by affecting the team spirit. For audit teams and committees consist of people, and collaboration between humans would positively affect the effectiveness. Collaboration can reduce people's fear and increase their openness in sharing their ideas with others, and eliminate the stereotypes and thus synergistically combine their feelings (Garcia-Prieto et al., 2007). Also, collaboration among audit members regulates communication flow, making the team opinions and ideas transparent to enhance group potency. Collaboration would also help the construction of the collaboration and settlement of conflicts. Mutual collaboration and cooperation must be taken into account as a factor, which would facilitate the co-operation of individuals, prevent the efforts displayed from being ignored and strengthen the attachment between individuals. In the light of the explanations, hypothesis no. 3 may be expressed as follows:

H3: Collaboration between audit team members has a positive impact on the development of group potency in audit teams.

An important factor in the development of group potency is the group autonomy. As group members become more autonomous and feel greater control over the processes and procedures. Further group autonomy increases the development of new ideas and opinions and problem solving techniques. Empowerment of persons or support provided to people is an important factor affecting the increase in organizational performance. Particularly, the audit team having an authority and enjoying the power to directly manage and orient itself, are the signs of the autonomy's presence (Kelly and Barsade, 2001; Manz and Sims, 1991). It is observed in studies addressed towards human behavior that, the concept of group potency is built on autonomy. Autonomy becomes cleared in groups displaying the competence of acting independently and self-managing. Autonomy also enables the establishment of intra-group democracy and the ideas to be expressed freely. With its motivational aspect, autonomy contributes to the development of group potency, by reducing the negative feelings and thoughts of auditors and increasing the individuals' control sense, their self-

definition and their feelings of independence. The following hypothesis is offered in the light of these evaluations and determinations.

H4: Group autonomy has a positive impact on the development of group potency in audit teams.

In certain studies, it is expressed that group identification has a significant reflection on group potency. Team identification is the process by which individual members perceive themselves in terms of the values, goals, attitudes, and behavior they share with other team members (Janssen and Huang, 2008). Group identification is the emotional significance that members of a given group attach to their membership in that group (Van de Vegt and Bunderson, 2005). To identify with a group, individual needs to perceive him- or herself as psychologically intertwined with the fate of the group and to see him- or herself as personally experiencing the successes and failures of the group. Further, the individual should have the desire to appease, emulate, or vicariously gain the qualities of the others and, thus, define the self in terms of the people in the group. Since collective beliefs emerge from members confronting collective concerns or task-related issues, collective identification develops from the extent to which these common concerns of team goals and norms are acknowledged and enacted. Audit context that provides structure, norms, and guidance conducive to congruent expectancies regarding appropriate behaviors for group success. Ashforth and Mael (1989); Mael and Ashforth (1992)'de asserted, developing group norms is one way the reinforce group identification since social identification theory suggests that shared goals, interpersonal interaction, or common history may affect the extent to which individuals identify with a group. Researches by Tjosvold and associates (1998, 2004), Kark et al. (2003) and Shamir et al. (2000) have shown that cooperative teams perform better than uncooperative teams. The sense of group identification or oneness motivates individual team members to believe in each other's capability to perform multiple tasks. Thus, audit members should have greater confidence in their team's ability to accomplish the group goals well. In the light of these valuations, hypothesis no. 5 was composed as follows.

H5: Group identifications of audit team members have a positive impact on group potency.

b) Group Potency and Accounting Related Performance

Auditors' ability to cope with different environments and make quality judgments is dependent on their own efforts to improve performance (Bonner, 1994). In the auditing process, independent auditors represent diverse functions and the task requires members to work interdependently. Group members' feelings of psychological closeness to group affect their

readiness to learn in groups. Group potency is a social-psychological factor that is motivational in nature and important antecedents of group outcomes (Gully et al., 2002; Lester et al., 2002; Gibson, 1999; Gibson et al., 2000; Campion et al., 1993; Goddard, 2001; Iskandar et al. 2012; Pearce et al., 2002). Potency includes auditors feeling they can bring up problems and difficult issue and make a mistake without it being held against them. Potency is the collective belief that the group can be effective. A strong belief in group efficacy may contribute to creating a positive interpersonal climate and greater cooperation among group members. These phenomena may buffer the potential negative effects of task complexity by providing audit members with the necessary strategies to adequately manage their divergences. Compared to groups with low group potency, those with high levels would be likely to cultivate an environment that is more open and tolerant about divergent opinions and interpretations. Researchers have expressed that the performance will improve, when the collaboration, coordination, cohesiveness and communication relevant to the team's works are increased. In Choo (1986), it was determined that job stress has a negative impact on the performance of auditors. In a group involving a high level of collaboration and communication, it must be expected for the average stress per individual to fall. Therefore, an increase to occur in the potency level of the group would increase the performance, through reducing the job stress of auditors. However, the group potency-performance relation specified above was mostly performed in managerial fields however empirical tests were not sufficiently carried out concerning audit activities. The present study aims to reduce the mentioned gap and contribute to the literature from this aspect. Accordingly, in the present study, I am of the opinion that, audit performances of audit teams having higher group potency levels, will be more successful, better and more effective than teams having lower group potency levels or lacking any group potency at all. For, in teams having a high level of group potency, it must be expected for the synthesizing and analyzing of audit findings and documents, sharing of the information, feedback and drawing of conclusions to be faster and more effective. The high potency level will enable the expectations to be fulfilled by contributing to more accurate decision making processes relevant to audit, to audit reports' involving more accurate determinations and orienting the stakeholders in a more accurate manner. Also, development in the ability to deal with time pressure of management or client origin will be observed in teams enjoying a high level of group potency. In an examination made by Tasa and Whyte (2005) on the decision-making processes of the groups, it was determined that group potency increases the analytic thinking and decision-making skills and has a positive impact on the performance. In the examination

carried out by Lee et al. (2011) on 71 groups, the presence of positive impact of group potency on performance was proven. In the study, I also envisage that teams with higher levels of group potency would perform more cost-efficient activities. In a team, consisting of individuals having rational confidence in themselves and their team, and where a high-level of communication and collaboration is enjoyed, the problem solving skill would be at a higher level, and the sources allocated to such a team will be used in a more efficient and appropriate manner. As for the reduction in the audit errors, it would decrease the risk of works' recurrence and enable the efficient usage of the time. In the light of all these evaluations, Hypothesis no. 6 is shaped as follows.

H6: Group potency level of audit teams has a positive impact on the audit performance of audit teams.

When the hypothesis produced above are taken into account, it would be observed that factors building the group potency, and outputs obtained in consequence of a high-level of group potency, are subjected to test. Within this context, it is necessary to design the collaboration factor, past experiences factor, goal clarity factor, group identification and group autonomy factor as antecedent factors having an impact on group potency. As for the audit performance, it is a factor produced in consequence of a high level of group potency, and is included in the model as a result of group potency. Within this context, the model produced in the hypotheses of the research is provided in figure 1. While it does not constitute the focus point of the research, accountability and group size variables were defined as control variables and included to the model, in order to improve and expand the findings and results produced by the research. The model displays a fully unique structure, aiming to reveal the relation between group potency and audit performance.

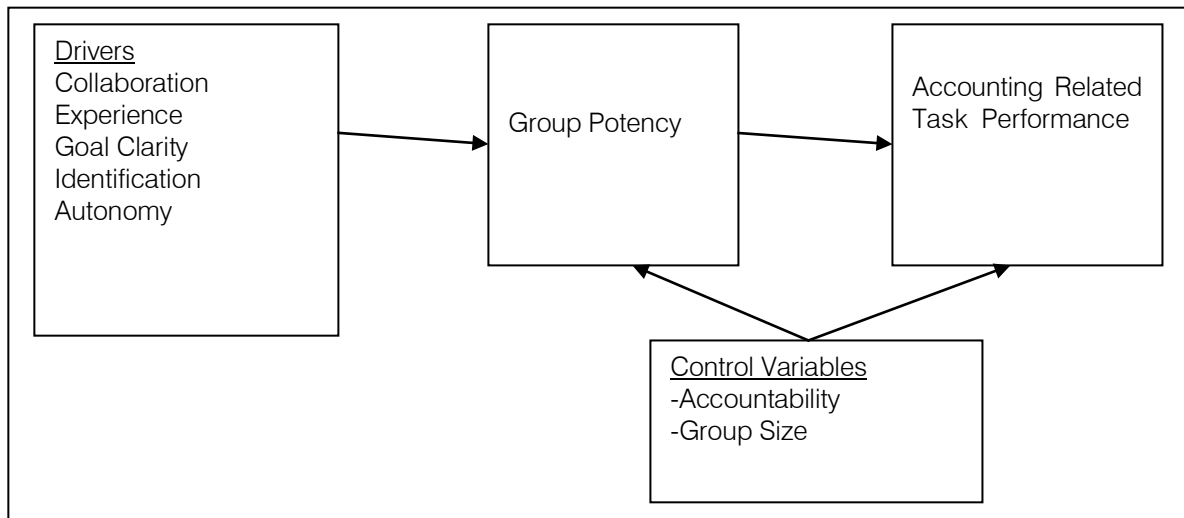


Figure 1 : Proposed Research Model Above

III. DESIGN AND METHOD

a) Phase 1- Measures

Two-staged and a fairly extensive design and experiment was carried out to test the hypotheses pointed out above and to determine the presence of the structural model. The method to measure the audit performance and to determine the audit success is a fairly controversial grey subject. In literature examinations, it is known that different researchers used different techniques and measurement instruments. At the same time, I developed a fully new, original and unique measurement instrument in the light of past studies, in order to contribute to studies addressed towards measurement of audit performance. In the scenario, I also have taken into consideration the changes occurring in internet technologies and social media (social network). For this purpose, I prepared a scenario containing approximately 50 accounting and finance data pertaining to a hypothetical firm. I included real events and data, which may be encountered by audit teams during their ordinary audits, in the scenario. I also received opinions and suggestions from professionals of the sector and academicians in the preparation of the scenario. Of the 50 accounting and finance data pertaining to the firm, 20 consist of suspicious, fraudulent or erroneous accounting and finance transactions and records. The number of suspicious, fraudulent or erroneous transaction / event, which could be determined by the participants, constituted each participant's individual performance score, and the average of the individuals constituting the group, constituted the audit task performance score. The scores obtained were converted to scientific findings, through being subjected to statistical analysis during the subsequent stages.

In addition to the scenario prepared concerning the measurement of the audit performance, measurement instruments whose reliability and validity are proven were also involved in order to carry out the determination and measurement of the group potency factor, and of other factors, which are the drivers of group potency. The group potency scale consists of seven items and it is taken from Guzzo et al. (1993). Group identification scale was computed using items from Allen and Meyer's affective commitment scale (1990). Goal clarity scale consists of four items and was developed by myself. The group experience scale was produced by myself as dummy variable, and was expressed with 1 if the group members previously have worked together in any audit activity, and with 0 if they didn't. The collaboration scale between the group members consists of six items, and was adapted by myself to audit activities, upon being taken from Kahn (1996). The group autonomy variable, consisting of two items, was adapted by me to the audit subject, upon being taken from Sethi (2000).

Although not the focus of the study, some variables need to be controlled for because they were shown to affect key variables in the model. Previous research suggests that group size and accountability can have significant influence on the group potency and audit performance. Group size, measured as number of persons in the team, affects group potency development and audit performance. For instance, the group potency level may be more intense in smaller groups than larger groups due to less hierarchical approval and bureaucracy. These studies found that the size of audit group is significant factor in the fraud detection (Moyes and Hasan, 1996; Moyes, 1996; Owusu-Ansah et al., 2002). In Tan et al., (2002), it is stated that accountability has impacts on the audit

performance. Similarly, in Leung and Trotman (2005) and Bowrin and King (2010), it is proven that accountability pressure has a positive correlation with the audit performance. Schlenker (1997) and Mohd-Sanusi and Iskandar (2007) also support these findings. Accountability pressure on individuals makes them answerable to others for performing up to prescribed standards in fulfilling obligations, duties, expectations and other charges (Schlenker, 1997). Several studies on audit performance have examined the effect of accountability on audit performance (Chang et al., 1997; Peecher, 1996; Tan and Kao, 1999; DeZort et al., 2006). In order to measure the accountability variable, a scale was developed for the present study, determined through 4 questions produced by myself. The multi-item scales in question were modified in the light and under the guidance of previous studies, addressed towards audit studies, and were added certain items by myself to introduce novelty to science. Seven-level Likert scale was used to be able to measure the factors, and the end-points of the range were (1) strongly disagree and (7) strongly agree. The measurement instrument was produced in consequence of all these preparations. In the first section of the measurement instrument, participants were informed through short definitions and explanations concerning group potency and other variables. In the second section, multi-item questions concerning group potency and its antecedents were asked, along with the questions addressed towards determining personal demographic information pertaining to participants. As for the third section, scenarios measuring the audit performance of auditors and audit report composition page were included. After the preparation of the measurement instruments, the second phase, the experiment phase, was initiated. In the relevant phase, the produced measurement instruments were directed towards participants and the study was carried out.

b) Phase 2 – Experiment

In order for the experiment to be carried out, audit firms displaying activity in Turkey were selected as sample, and the firms were first reached through e-mail. 48 of the 287 firms reached, stated they may participate to the study through the face-to-face interview method. In the first section of measurement instruments, the purpose of the research and the relevant concepts were briefly mentioned. As for the second section, it included multi-item questions concerning group potency and other factors. As for the third section, it consisted of scenario concerning the audit performance of the audit report. Experiment pertaining to the scenario was carried out in a period of approximately 3 months, as longitudinal study. The experiment was distributed into a two-staged timeframe. Each firm, to which a survey was distributed, was asked to form groups of various member numbers, determined in a random manner,

which was fulfilled. Individuals constituting these groups evaluated and answered the scenarios fully independent from each other during the first stage (at the T1 time point). An approximate period of 3 months was afterwards given to these individuals, and they were asked to think jointly on the firm included in the scenario, and to make collective analysis, to discuss the firm, to exchange ideas and to cooperate, throughout the relevant period of time. Eventually, they were asked to prepare an audit report was once again at the T2 time point (end of the three months). Besides, multi-item scales included in the survey in form of questions, were answered by the members at the T2 point, as a member of an audit team. At the end of the experiment in question, two different audit performances pertaining to two different timeframe were obtained from the participants. At the first timeframe (T1), the group members evaluated the forms completely independent from each other and prepared the audit report. At the second timeframe (T2), the members prepared the audit report at the end of an examination and analysis period of three months, through cooperating, discussing and exchanging ideas. While audit reports prepared completely individually at the starting point (T1) were displaying individual audit task performance, the audit reports prepared at (T2) time point revealed the audit performance of each group. The purpose in the experiment is to reveal the impact of group potency on audit performance. The experiment required quite a lot of effort, and unwilling participants and forms partially unfilled forms were eliminated. Eventually, full and adequate data were obtained from 160 auditors employed at 39 firms. Scales and scenario used in the research, and the list of fraudulent, erroneous and suspicious transactions in the scenario are enclosed. Information concerning the participants may be found in

Table 1 : Characteristics of The Sample

Characteristic	Mean	Standard Deviation	Range
Age	31.70	2.7	24-61
Position tenure (years)	5.8	0.9	0-26
Firm tenure (years)	5.2	0.7	1-13
Audit Experience	9.7	1.2	1-29
Group Size	4.1	0.2	3-7
Percent of Total Sample			
Gender:			
Male	86.3		
Female	13.7		
Education:			
Graduate	77.2		
Post-graduate	18.5		
Ph.D.	4.5		
Position:			
Manager	9.4		
Chief Auditor	18.3		
Auditor	72.3		

c) Analyses and Findings

I first conducted confirmatory factor analysis (CFA) at the group member level to examine the factorial structure of the subscales for measuring group potency, group autonomy, identification, collaboration, goal clarity, accountability. An a priori factor structure fits the data reasonably well, $\chi^2 = 167.39$, $p < 0.01$; RMSEA=0.08; GFI=0.92; NNFI=0.93; CFI=0.94. All items loaded significantly on their designated latent variables. Before performing the analysis, I calculated the mean of the scenario score for each experiment group and the group score of each question item were aggregated. In this respect, the interrater agreement (rwg) on group level measures needed to be demonstrated. All rwg values ranged .73 to .88 well above the 0.60 benchmark indicating an acceptable level of interrater agreement for each aggregate measure in an audit group.

The reliabilities of items are assessed by examining their loadings on their respective latent constructs; higher loading of 0.70 or greater indicate that more variance is shared between the measures and its latent variable (Hair et al., 2006). Also, composite

reliability and Cronbach's alpha were used to evaluate the reliability of scales; the findings showed that the scales were highly adequate. In assessing the convergent validity of latent variables, Fornell and Larcker's average variance extracted (AVE) criterion was chosen. AVE exceeded the 0.50 cutoff value. An AVE value of 0.50 is logically a satisfactory point as it indicates that latent construct is able to explain more than half of the variance of its indicators on average. According to Fornell and Larcker (1981), discriminant validity is assured when the following two conditions are met: (1) the value of the AVE is above the threshold value 0.50, (2) the square root of AVE of all latents should be larger than all other cross-correlations. Information on composite reliability, Cronbach's alpha, the interrater agreement (rwg), AVE and the square root of AVE are presented in Table 2. Consequently, the measurement items used for this research demonstrate good reliability, convergent and discriminant validities. As audit performance, group size and group experience were assessed with one each score, these scores were excluded from the factor analysis.

Table 2 : Reliability and Validity Scores

Variables	Composite Reliability (CR)	Cronbach's Alpha (α)	Interrater Agreement(rwg)	AVE	\sqrt{AVE}
Group Potency	0.83	0.84	0.88	0.66	0.81
Collaboration	0.81	0.78	0.83	0.72	0.84
Experience	0.77	0.75	0.73	0.64	0.80
Identification	0.73	0.71	0.76	0.61	0.78
Goal Clarity	0.80	0.75	0.81	0.74	0.86
Autonomy	0.78	0.76	0.77	0.68	0.82
Accountability	0.75	0.78	0.74	0.59	0.77

Table 3 shows descriptive statistics and correlation matrix. According to the table, there is a strong positive correlation between group potency and audit performance ($r=0.72$). Besides group potency's relations are determined being as the follow values: experience ($r=0.53$), identification ($r=0.37$), collaboration ($r=0.57$) and goal clarity ($r=0.39$). However no relation could be determined between group autonomy and group potency. Another interesting point is the presence of a significant and negative correlation between group autonomy and accountability variables ($r= -0.26$). Relations between group potency and its antecedents have the characteristics to verify the ideas stated in the research hypotheses. As for the strong relation between group potency and audit performance, it strengthens the basic hypothesis of the research. Some relations were also determined between control variables included in the correlation matrix and other variables. For example, there is a relation of medium strength between group size and audit performance ($r=0.23$). However, no correlation was determined between group size and group potency, in

the light of data included in the correlation matrix. As for another point necessary to specify concerning the matrix, it is the individual audit performance variable, which appears in the last line. The mean and standard deviation concerning the relevant variable were determined respectively as 12.25 and 0.82.

The mean value of 12.25 in question is the value obtained from the participants in the survey distributed during the beginning of the study, at T1 time point. Audit performance scores of the participants were measured individually at the T1 point, and was determined as 12.25 per auditor. As for the group audit performance variable appearing in the second line of the matrix, it indicates the mean value ($M=18,61$) and standard deviation pertaining to the audit performance score obtained at the T2 time point from the audit reports prepared by group members together upon jointly evaluating the audit scenarios. In the evaluation made between two timeframes, a significant increase was experienced in terms of audit performance scores. Individuals acting as a group in the study carried out at T2 point has an impact on the increase in question. In

performing the hypothesis tests of the research, only the audit performance (group) variable, obtained from the T2 point and, which displays the performance of the

audit group as a whole, was used. As for the value determined at the T1 point, it is only given in order for a comparison to be made through providing information.

Table 3 : Means, standard deviations and correlations of the measured variables

Variables	M	SD	1	2	3	4	5	6	7	8
1. Group potency	5.17	0.39	-							
2. Audit performance (group)	18.61	1.12	0.72***	-						
3. Experience	0.67	0.04	0.53***	0.64***	-					
4. Autonomy	2.91	0.51	0.13	0.14	0.23*	-				
5. Identification	4.28	0.21	0.37**	0.20*	0.21*	0.22*	-			
6. Collaboration	5.22	0.72	0.57***	0.39**	0.38**	0.09	0.43**	-		
7. Goal Clarity	4.45	0.38	0.39**	0.34**	0.25*	0.12	0.22*	0.33**	-	
8. Group Size	4.10	0.20	0.15	0.23*	0.10	0.32**	0.12	0.17	0.27*	-
9. Accountability	5.22	0.86	0.44**	0.37**	0.28*	-0.26*	0.13	0.21*	0.36**	0.14
10. Audit Performance (Individual)	12.25	0.82								

* $p < .1$, ** $p < .05$, *** $p < 0.01$

To test the hypotheses The Partial Least Squares (PLS) technique was used as it is suitable for validating predictive models. Compared to the covariance-based structural equation modeling, the PLS is less restrictive on sample sizes (Gefen and Straub, 2005; Chin, 1998). PLS allow for explicit estimation of latent variable scores. PLS with bootstrap estimates of Standard errors was used due to the characteristics of sample size. The models with 1000 bootstrapping runs demonstrate good explanatory power.

d) Test of Hypotheses

The structural model presents information on the path coefficients (β) and the R2. The strength of the relationship is indicated by β and R2 highlights the percentage of variance in the model to give an indication of its predictive power. Also, T-statistics were calculated for all coefficients, based on their stability across the subsamples, indicating which links were statistically significant. Data necessary to take the measure of hypothesis tests and results of the hypotheses are provided in Table 4.

Table 4 : The PLS results

Hypothesis	Path	β	T-Values	Results
H1	Experience → Group Potency	0.27**	2.234	Supported
H2	Goal Clarity → Group Potency	0.31**	2.548	Supported
H3	Collaboration → Group Potency	0.34***	3.092	Supported
H4	Autonomy → Group Potency	0.09	0.703	Not supported
H5	Identification → Group Potency	0.22*	1.844	Supported
H6	Group Potency → Audit Performance	0.43***	4.781	Supported
Control Variables	Accountability → Group Potency	0.19*	1.295	
	Accountability → Audit Performance	0.23**	2.087	
	Group Size → Group Potency	0.11	0.866	
	Group Size → Audit Performance	0.20*	1.843	

* $p < .1$, ** $p < .05$, *** $p < 0.01$

In Hypothesis 1, the impact of group experience on group potency is tested. Accordingly, it was determined that the past experiences of individuals constituting the audit group, and them having conducted works together during the previous periods, have a positive effect on the development of group potency, with the values of ($\beta=0.27$; T= 2.234; $p < 0.05$). Hypothesis 1 was supported in line with these findings

obtained. Team experience is a significant driver, antecedent, having impact on the development of group potency in audit works. Hypotheses 2, which tries to determine the correlation between goal clarity and group potency, was found as being supported by parameters ($\beta=0.31$; T= 2.548; $p < 0.05$). Accordingly, as the knowledge levels and awareness of auditors participating to audit activities on the purpose of the

work and relevant expectations increase, the intra-group sensitivity also increases, and this progress contributes to the development of group potency. Hypothesis 3 emphasizes the correlation between the collaboration amongst group members and group potency. The suggested path ($\beta=0.34$; $T= 3.092$; $p<0.01$) was found significant by statistical data. Hypothesis 3 was supported. As the collaboration, cooperation and behaviors of goodwill between the members constituting the team increase, the commitment of individuals to each other also increases, leading to the group potency being impacted in a positive manner. The obtained ($\beta=0.34$; $T= 3.092$; $p<0.01$) values, express the collaboration variable being positioned as the most important factor among the antecedent of group potency. Among the group potency drivers involved in the research, the most effective variable is collaboration. In other words, building group potency in the audit team is strongly impacted from the collaboration between the members, in a positive manner. Hypothesis 4, which tests the thesis "group potency develops as autonomy is gained", was found insignificant according to the obtained ($\beta=0.09$; $T=0.703$) data and was rejected. Contrary to the works conducted in other disciplines, no significant relation between group autonomy and group potency could be established in the present work. To put it differently group autonomy does not have an important impact on group potency. Hypothesis 5, which seeks the answer to the question "Is there a correlation between members seeing themselves as parts of the audit group in a holistic manner and group potency?", was supported by the findings ($\beta=0.22$; $T= 1.844$; $p<0.05$) and accepted. As the group identification of the auditors increased, the group potency was positively affected, and displayed a development. The acceptance of Hypothesis 5 is relevant with the acceptance of Hypothesis 3. Auditors, defining themselves as belonging to a group, displaying more devoted behavior in order for the development and success of the relevant group, and developing cooperating and collaborating behaviors between the group members, would have an impact leading to the development of group potency. Therefore, the opinion, whose presence between group identification and group potency is expressed, was found significant and important in consequence of the findings. Hypothesis 6, which builds the main structure of the research, the Group Potency \rightarrow Audit Performance relation, was scientifically accepted according to the values ($\beta=0.43$; $T= 4.781$; $p<0.01$). As group potency develops in an audit team, a significant development was also determined, first in the performance of the auditors, and in consequence of it, in the performance of the audit team, as a reflection of the former development. To put it simply, group potency has a positive impact on audit performance. This obtained finding is also in parallel

and consistent with results produced in the correlation matrix. The mediating role of group potency displays itself in a significant manner ($\beta=0.43$) and it raises the audit performance significantly to a more successful level.

While it doesn't constitute the focal point of the research, the impacts of control variables, the research of whose presence is required, on group potency and audit performance are also notable. Accordingly, the accountability control variable has a positive impact on group potency ($\beta=0.19$; $T=1.295$, $p<0.1$). As the accountability and responsibility center concept develops between the group members, it positively affects the development of group potency. The relevant determination may be a reflection of the negative relation between accountability and group autonomy. As for the impact of accountability on audit performance, these were observed as being significant and positive, according to the values ($\beta=0.23$, $T=2.087$, $p<0.05$). As the accountability tendency of the group increases, the performance pressure makes itself feel and audit performance displays development. The impact of group size, another control variable, on the group potency, was determined as the values ($\beta=0.11$, $T=0.866$). According to these values, group size doesn't have a direct impact on group potency. However, the presence of indirect impacts may be researched in other works.

As for the impact of group size on audit performance, it was determined by the values ($\beta=0.20$, $T=1.843$, $p<0.1$). Accordingly, audit performance is positively impacted by the size of the audit group. There is a point to be emphasized here Group size does not affect group potency significantly, however it has a significantly positive impact on audit performance. While a direct relation of group size with group potency, which is perceptual and motivational, was not determined, its relation with audit performance, which can be determined in a more concrete manner, can be observed as significant. In order to understand the rates of the impact of factors involved in the work with mediator group potency variable, on the dependent audit performance, the variance results are needed. Table 5, prepared for this purpose, indicates the variance explained by variables.

Table 5 : R2 Results

Path	β	Contribution to R2 (%)
Experience → Group Potency	0.27**	0.14
Goal Clarity → Group Potency	0.31**	0.17
Collaboration → Group Potency	0.34***	0.22
Autonomy → Group Potency	0.09	0.04
Identification → Group Potency	0.22*	0.13
Group Potency → Audit Performance	0.43***	0.39
Accountability → Group Potency	0.19*	0.08
Accountability → Audit Performance	0.23**	0.10
Group Size → Group Potency	0.11	0.05
Group Size → Audit Performance	0.20*	0.09

According to Table 5, the most important change caused by the antecedents providing the development of group potency, is caused by the group collaboration variable with 22%. It is followed by goal clarity with a modification power of 17% and experience and identification factors, each with a modification power of 14%. As for the total variance of five factors, which are the drivers of group potency, it is determined as $R^2=0.68$. The value $R^2=0.68$ reached, points the height of the of dissection power of the model as a whole. In addition, the fit indices obtained concerning the model, $\chi^2 = 178.59$, $p < 0.01$; $RMSEA = 0.08$; $GFI = 0.91$; $NNFI = 0.94$; $CFI = 0.92$, verifies that the model has a significantly high dissection power and structure as a whole. The group potency variable explains 39% of the change occurring in the audit performance. It is a fairly high value. The total impact of control variables on group potency is 13% and their total impact on audit performance is 19%. As for the remaining variance values, these are explained through factors non-included to the present work.

IV. CONCLUSION

The present study aimed to bring a new and original model to the audit-accounting literature for applicators, managers and researchers, from an interdisciplinary point of view, by testing it within group dynamics and audit performance. A few of the contributions made by the study should be expressed as follows. First of all, the present study verified the presence of a strong and positive correlation between group potency and audit performance. Secondly, it determined in an empirical manner that some factors (identification, experience, collaboration, goal clarity) have important impacts on the development of group potency. Thirdly, it is potential for the developed scales and audit scenario to have a positive impact on the point of view of future researches. Fourthly, the new model produced designed in detail the group potency and audit performance in the field of audit. The activity of audit consists of a whole process of transactions, which are challenging, complex and demanding.

Important findings were obtained between group behavior and audit performance in consequence of extensive examinations and tests carried out. The obtaining findings indicate that, an audit team with a developed group potency succeeds in rendering the challenging, complex and demanding structure of audit more simple and performing more effective audit works. Measuring instruments and scenarios developed specific to the research have an impact in the production of the findings in question. In the research, the drivers of group potency were tackled first and a relevant elaboration was made, in order for the group behavior to be better understood. Accordingly shaping of the group behavior of independent auditors in audit activities, and the process of these behaviors becoming effective, display development with group potency. In audit teams, it is positively affected from group potency, group experience, group collaboration, group identification and goal clarity factors. The relevant data obtained is in parallel with the results of studies carried out by (Bartel and Saveedra, 2000; Mathieu and Kohler, 1990) on different non-audit fields. However, no significant correlation could be established between group autonomy and group potency. Issues pointed out by the findings should be elaborated a little bit. First of all, it was determined that the collaboration and cooperation between group members develop group potency. Cooperation and collaboration facilitate the knowledge exchange between the auditors, the ability of co-thinking, team intelligence, co-learning and time management. The possibility of auditors who cooperate with each other and who collaborate relevant to their tasks, to make the energy to be spent on problems and details effective, would show increase. In fact, performance of audit activity carried out at the beginning of the research and the performance of the audit activity carried out at the end of the research are quite different in terms of scores and averages, and a significant improvement is in question. From this aspect, collaboration is an important factor in increasing the effectiveness of audit mechanism and in the development of group potency. Individuals constituting

the audit team having worked together during previous works, is another factor developing group potency. Sharing of past knowledge, having spent time in the past, mutual sharing of experiences reduce the difficulty and complexity degree of the task and contribute positively to the development of group potency. Experience being open to share, increases the possibility of auditors determining accounting frauds, fraudulence elements and errors during their tasks. Having worked together in the past also develops group potency through increasing the auditors' ability to better know each other's characteristics and personalities, and their ability to act in a flexible manner. As for another element developing group potency, it is goal clarity. Auditors having adequate information on their tasks, makes the task strategy clearer. By this way, auditors are able to create the strategy suitable for each audit task in an easier manner. Audit goals being clear and distinct develops group potency of the audit team, by strengthening the goal congruence and coordination between the auditors. Goals being understood by and known to by all members of the audit team, also makes a facilitating impact to a more accurate time planning by reducing the wasted time and unnecessary efforts. As another driver having an impact on group potency, identification takes on important tasks. Auditors seeing themselves as a part of work groups, feeling that they belong to the group, increase the motivation and develop group potency. However, the relevant determination may also have some disputed consequences. The possibility to experience a performance decrease, of an auditor defining himself as belonging to a group and who develops a commitment, increases, in case of a rotation or an institution change. The impact of identification revealed in Van Zomeren et al. (2010) following the study carried out university students, corresponds to the findings of the present study. For this reason, the professional aspect of identification must be more distinct than its emotional aspect. In an audit team consisting of individuals with a high level of identification, individuals displaying more wholehearted efforts, in order to prevent the group from getting harmed, would carry with it development of group potency. Contrary to Manz and Sims (1991) and some previous studies, no relation could be found in the present study between group autonomy and group potency. This may have a few reasons. First of all, it is possible for the results obtained from different studies made on different fields concerning group potency, to arise from the characteristics of the fields in question. As for audit, it is a field having distinct rules within itself and where it is mandatory to strictly comply with these rules. Due to this reason, audit's nature may have rejected the presence of such a relation. Secondly, the concept of accountability is more dominant in audit teams, when compared with the autonomy. This may be the reason why no correlation could be established. A fairly strong

and positive relation was determined between group potency and audit performance. This obtained result displays similarity with (Tasa and Whyte, 2005; Gully et al. 2002). Therefore, acting collectively increases the performance. Group potency produced by its antecedents, has a positive impact on the task performances of auditors. Within this context, group potency is an important factor, positively affecting the audit performance. The research has clearly shown that there is very big difference between the individual audit performance at the T1 time point and the group audit performance at the T2 time point. The difference in question proves the positive impact of group potency on performance. Among the control variables, accountability has a positive impact on both mediator variable group potency and dependent variable audit performance. As for group size, it had a positive impact on audit performance. Behind the rise in the audit performance, lies the auditors approaching the audit task with a group consciousness instead of individually and obtaining the opportunity to examine the events in a more analytic and profound manner. These evaluations and the judgments obtained have a characteristic to support the argument of "Collective behavior, while increasing intra-group unity, decreases intra-group conflict", emphasized in Goncalo et al. (2010). Group behavior creates a psychological environment decreasing the possibility of individuals making intentional mistakes. An auditor, which is prone to make intentional or unintentional mistakes when by himself, starts to act under the supervision and control of his other friends when in a group, and the audit risk decreases. Therefore, audits performed by a group give a more effective result, when compared with audits performed by an individual.

APPENDIX

A. Measures

Standardized factor loadings are in parentheses

Accountability Scale (I developed for this study)

Q1: Informing my superiors concerning the audit efforts I did has an impact on my task performance (0.71)

Q2: I feel responsibility against the stakeholders concerning the results of the audit activities I carried out (0.78)

Q3: Knowing that my audit works will be reviewed by others, has an impact on my task behaviors. (0.69)

Q4: Criticisms of manager and clients concerning my audit works ensure me to be more careful in my task behaviors. (0.73)

Auditing Specific Goal Clarity Scale (I developed for this study)

Q5: All of the group member auditors have an adequate level of knowledge concerning the goal of the audit task (0.77)

Q6: The audit group has adequate awareness concerning the needs and wants of the client and stakeholders, and goals of the audit. (0.70)

Q7: Audit group members have adequate information on the targets of the task undertaken and special purpose of each transaction. (0.73)

Q8: Audit goals are clear and are adopted by the members (0.65)

Q9: Audit goal(s) is/are clearly explained by managers to superiors. (0.74)

Group Experience item (I produced for this study)

Q10: I had worked with the members of my current audit group before, together, as part of the same team 1 (yes), 0 (no).

Auditing Specific Group potency Scale (adapted from Guzzo et al.1993)

Q11: Our audit group has confidence in itself (0.77)

Q12: Our audit group believes it can become unusually good by producing high quality audit report (0.69)

Q13: Our audit group expects to be known as a high-performing group (0.71)

Q14: Our group feels it can solve any problem it encounters (0.82)

Q15: Our audit team believes it can be very effective (0.70)

Q16: Our team can get a lot done when it Works hard (0.66)

Q17: No task is too tough for our group (0.79)

Auditing Specific Group Identification Scale (Adapted from Allen and Meyer, 1990)

Q18: I have a sense of belonging towards the audit task and work group. (0.73)

Q19: I am proud of being part of this audit group. (0.77)

Q20: I feel responsibility concerning my group sustaining its works (0.64)

Q21: I would feel guilt, in case I leave the audit group. (0.70)

Auditing Specific Group Collaboration Scale (Adapted from Kahn, 1996)

Q22: There was an emphasis in our audit group to achieve goals collectively (0.78)

Q23: There was an emphasis in our audit group to have a mutual understanding (0.60)

Q24: There was an emphasis in our audit group to informally work together (0.72)

Q25: There was an emphasis in our audit group to share ideas, information, documents and problem solving techniques in audit task. (0.78)

Q26: There was an emphasis in our audit group to share the same vision for the group (0.62)

Q27: There was an emphasis in our audit group to work as an audit group. (0.73)

Auditing Specific Group Autonomy Scale (Adapted from Sethi, 2000)

Q28: The audit group had a major role in making critical decisions about audit task. (0.74)

Q29: The audit group was allowed to do the audit task as it deemed fit. (0.76)

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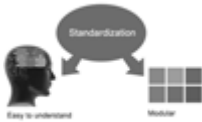




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1. Choosing the topic: In most cases, the topic is searched by the interest of author but it can be also suggested by the guides. You can have several topics and then you can judge that in which topic or subject you are finding yourself most comfortable. This can be done by asking several questions to yourself, like Will I be able to carry our search in this area? Will I find all necessary recourses to accomplish the search? Will I be able to find all information in this field area? If the answer of these types of questions will be "Yes" then you can choose that topic. In most of the cases, you may have to conduct the surveys and have to visit several places because this field is related to Computer Science and Information Technology. Also, you may have to do a lot of work to find all rise and falls regarding the various data of that subject. Sometimes, detailed information plays a vital role, instead of short information.

2. Evaluators are human: First thing to remember that evaluators are also human being. They are not only meant for rejecting a paper. They are here to evaluate your paper. So, present your Best.

3. Think Like Evaluators: If you are in a confusion or getting demotivated that your paper will be accepted by evaluators or not, then think and try to evaluate your paper like an Evaluator. Try to understand that what an evaluator wants in your research paper and automatically you will have your answer.

4. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

5. Ask your Guides: If you are having any difficulty in your research, then do not hesitate to share your difficulty to your guide (if you have any). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work then ask the supervisor to help you with the alternative. He might also provide you the list of essential readings.

6. Use of computer is recommended: As you are doing research in the field of Computer Science, then this point is quite obvious.

7. Use right software: Always use good quality software packages. If you are not capable to judge good software then you can lose quality of your paper unknowingly. There are various software programs available to help you, which you can get through Internet.

8. Use the Internet for help: An excellent start for your paper can be by using the Google. It is an excellent search engine, where you can have your doubts resolved. You may also read some answers for the frequent question how to write my research paper or find model research paper. From the internet library you can download books. If you have all required books make important reading selecting and analyzing the specified information. Then put together research paper sketch out.

9. Use and get big pictures: Always use encyclopedias, Wikipedia to get pictures so that you can go into the depth.

10. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right! It is a good habit, which helps to not to lose your continuity. You should always use bookmarks while searching on Internet also, which will make your search easier.

11. Revise what you wrote: When you write anything, always read it, summarize it and then finalize it.



12. Make all efforts: Make all efforts to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in introduction, that what is the need of a particular research paper. Polish your work by good skill of writing and always give an evaluator, what he wants.

13. Have backups: When you are going to do any important thing like making research paper, you should always have backup copies of it either in your computer or in paper. This will help you to not to lose any of your important.

14. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several and unnecessary diagrams will degrade the quality of your paper by creating "hotchpotch." So always, try to make and include those diagrams, which are made by your own to improve readability and understandability of your paper.

15. Use of direct quotes: When you do research relevant to literature, history or current affairs then use of quotes become essential but if study is relevant to science then use of quotes is not preferable.

16. Use proper verb tense: Use proper verb tenses in your paper. Use past tense, to present those events that happened. Use present tense to indicate events that are going on. Use future tense to indicate future happening events. Use of improper and wrong tenses will confuse the evaluator. Avoid the sentences that are incomplete.

17. Never use online paper: If you are getting any paper on Internet, then never use it as your research paper because it might be possible that evaluator has already seen it or maybe it is outdated version.

18. Pick a good study spot: To do your research studies always try to pick a spot, which is quiet. Every spot is not for studies. Spot that suits you choose it and proceed further.

19. Know what you know: Always try to know, what you know by making objectives. Else, you will be confused and cannot achieve your target.

20. Use good quality grammar: Always use a good quality grammar and use words that will throw positive impact on evaluator. Use of good quality grammar does not mean to use tough words, that for each word the evaluator has to go through dictionary. Do not start sentence with a conjunction. Do not fragment sentences. Eliminate one-word sentences. Ignore passive voice. Do not ever use a big word when a diminutive one would suffice. Verbs have to be in agreement with their subjects. Prepositions are not expressions to finish sentences with. It is incorrect to ever divide an infinitive. Avoid clichés like the disease. Also, always shun irritating alliteration. Use language that is simple and straight forward. put together a neat summary.

21. Arrangement of information: Each section of the main body should start with an opening sentence and there should be a changeover at the end of the section. Give only valid and powerful arguments to your topic. You may also maintain your arguments with records.

22. Never start in last minute: Always start at right time and give enough time to research work. Leaving everything to the last minute will degrade your paper and spoil your work.

23. Multitasking in research is not good: Doing several things at the same time proves bad habit in case of research activity. Research is an area, where everything has a particular time slot. Divide your research work in parts and do particular part in particular time slot.

24. Never copy others' work: Never copy others' work and give it your name because if evaluator has seen it anywhere you will be in trouble.

25. Take proper rest and food: No matter how many hours you spend for your research activity, if you are not taking care of your health then all your efforts will be in vain. For a quality research, study is must, and this can be done by taking proper rest and food.

26. Go for seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.



27. Refresh your mind after intervals: Try to give rest to your mind by listening to soft music or by sleeping in intervals. This will also improve your memory.

28. Make colleagues: Always try to make colleagues. No matter how sharper or intelligent you are, if you make colleagues you can have several ideas, which will be helpful for your research.

29. Think technically: Always think technically. If anything happens, then search its reasons, its benefits, and demerits.

30. Think and then print: When you will go to print your paper, notice that tables are not be split, headings are not detached from their descriptions, and page sequence is maintained.

31. Adding unnecessary information: Do not add unnecessary information, like, I have used MS Excel to draw graph. Do not add irrelevant and inappropriate material. These all will create superfluous. Foreign terminology and phrases are not apropos. One should NEVER take a broad view. Analogy in script is like feathers on a snake. Not at all use a large word when a very small one would be sufficient. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Amplification is a billion times of inferior quality than sarcasm.

32. Never oversimplify everything: To add material in your research paper, never go for oversimplification. This will definitely irritate the evaluator. Be more or less specific. Also too, by no means, ever use rhythmic redundancies. Contractions aren't essential and shouldn't be there used. Comparisons are as terrible as clichés. Give up ampersands and abbreviations, and so on. Remove commas, that are, not necessary. Parenthetical words however should be together with this in commas. Understatement is all the time the complete best way to put onward earth-shaking thoughts. Give a detailed literary review.

33. Report concluded results: Use concluded results. From raw data, filter the results and then conclude your studies based on measurements and observations taken. Significant figures and appropriate number of decimal places should be used. Parenthetical remarks are prohibitive. Proofread carefully at final stage. In the end give outline to your arguments. Spot out perspectives of further study of this subject. Justify your conclusion by at the bottom of them with sufficient justifications and examples.

34. After conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium through which your research is going to be in print to the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects in your research.

INFORMAL GUIDELINES OF RESEARCH PAPER WRITING

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form, which is presented in the guidelines using the template.
- Please note the criterion for grading the final paper by peer-reviewers.

Final Points:

A purpose of organizing a research paper is to let people to interpret your effort selectively. The journal requires the following sections, submitted in the order listed, each section to start on a new page.

The introduction will be compiled from reference matter and will reflect the design processes or outline of basis that direct you to make study. As you will carry out the process of study, the method and process section will be constructed as like that. The result segment will show related statistics in nearly sequential order and will direct the reviewers next to the similar intellectual paths throughout the data that you took to carry out your study. The discussion section will provide understanding of the data and projections as to the implication of the results. The use of good quality references all through the paper will give the effort trustworthiness by representing an alertness of prior workings.



Writing a research paper is not an easy job no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record keeping are the only means to make straightforward the progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear

- Adhere to recommended page limits

Mistakes to evade

- Insertion a title at the foot of a page with the subsequent text on the next page
- Separating a table/chart or figure - impound each figure/table to a single page
- Submitting a manuscript with pages out of sequence

In every sections of your document

- Use standard writing style including articles ("a", "the," etc.)
- Keep on paying attention on the research topic of the paper
- Use paragraphs to split each significant point (excluding for the abstract)
- Align the primary line of each section
- Present your points in sound order
- Use present tense to report well accepted
- Use past tense to describe specific results
- Shun familiar wording, don't address the reviewer directly, and don't use slang, slang language, or superlatives
- Shun use of extra pictures - include only those figures essential to presenting results

Title Page:

Choose a revealing title. It should be short. It should not have non-standard acronyms or abbreviations. It should not exceed two printed lines. It should include the name(s) and address (es) of all authors.



Abstract:

The summary should be two hundred words or less. It should briefly and clearly explain the key findings reported in the manuscript-- must have precise statistics. It should not have abnormal acronyms or abbreviations. It should be logical in itself. Shun citing references at this point.

An abstract is a brief distinct paragraph summary of finished work or work in development. In a minute or less a reviewer can be taught the foundation behind the study, common approach to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Yet, use comprehensive sentences and do not let go readability for brevity. You can maintain it succinct by phrasing sentences so that they provide more than lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study, with the subsequent elements in any summary. Try to maintain the initial two items to no more than one ruling each.

- Reason of the study - theory, overall issue, purpose
- Fundamental goal
- To the point depiction of the research
- Consequences, including definite statistics - if the consequences are quantitative in nature, account quantitative data; results of any numerical analysis should be reported
- Significant conclusions or questions that track from the research(es)

Approach:

- Single section, and succinct
- As a outline of job done, it is always written in past tense
- A conceptual should situate on its own, and not submit to any other part of the paper such as a form or table
- Center on shortening results - bound background information to a verdict or two, if completely necessary
- What you account in an conceptual must be regular with what you reported in the manuscript
- Exact spelling, clearness of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else

Introduction:

The **Introduction** should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable to comprehend and calculate the purpose of your study without having to submit to other works. The basis for the study should be offered. Give most important references but shun difficult to make a comprehensive appraisal of the topic. In the introduction, describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will have no attention in your result. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here. Following approach can create a valuable beginning:

- Explain the value (significance) of the study
- Shield the model - why did you employ this particular system or method? What is its compensation? You strength remark on its appropriateness from a abstract point of vision as well as point out sensible reasons for using it.
- Present a justification. Status your particular theory (es) or aim(s), and describe the logic that led you to choose them.
- Very for a short time explain the tentative propose and how it skilled the declared objectives.

Approach:

- Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done.
- Sort out your thoughts; manufacture one key point with every section. If you make the four points listed above, you will need a least of four paragraphs.



- Present surroundings information only as desirable in order hold up a situation. The reviewer does not desire to read the whole thing you know about a topic.
- Shape the theory/purpose specifically - do not take a broad view.
- As always, give awareness to spelling, simplicity and correctness of sentences and phrases.

Procedures (Methods and Materials):

This part is supposed to be the easiest to carve if you have good skills. A sound written Procedures segment allows a capable scientist to replacement your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt for the least amount of information that would permit another capable scientist to spare your outcome but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section. When a technique is used that has been well described in another object, mention the specific item describing a way but draw the basic principle while stating the situation. The purpose is to text all particular resources and broad procedures, so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step by step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

- Explain materials individually only if the study is so complex that it saves liberty this way.
- Embrace particular materials, and any tools or provisions that are not frequently found in laboratories.
- Do not take in frequently found.
- If use of a definite type of tools.
- Materials may be reported in a part section or else they may be recognized along with your measures.

Methods:

- Report the method (not particulars of each process that engaged the same methodology)
- Describe the method entirely
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures
- Simplify - details how procedures were completed not how they were exclusively performed on a particular day.
- If well known procedures were used, account the procedure by name, possibly with reference, and that's all.

Approach:

- It is embarrassed or not possible to use vigorous voice when documenting methods with no using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result when script up the methods most authors use third person passive voice.
- Use standard style in this and in every other part of the paper - avoid familiar lists, and use full sentences.

What to keep away from

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings - save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part a entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently. You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.



Content

- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
- In manuscript, explain each of your consequences, point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation an exacting study.
- Explain results of control experiments and comprise remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or in manuscript form.

What to stay away from

- Do not discuss or infer your outcome, report surroundings information, or try to explain anything.
- Not at all, take in raw data or intermediate calculations in a research manuscript.
- Do not present the similar data more than once.
- Manuscript should complement any figures or tables, not duplicate the identical information.
- Never confuse figures with tables - there is a difference.

Approach

- As forever, use past tense when you submit to your results, and put the whole thing in a reasonable order.
- Put figures and tables, appropriately numbered, in order at the end of the report
- If you desire, you may place your figures and tables properly within the text of your results part.

Figures and tables

- If you put figures and tables at the end of the details, make certain that they are visibly distinguished from any attach appendix materials, such as raw facts
- Despite of position, each figure must be numbered one after the other and complete with subtitle
- In spite of position, each table must be titled, numbered one after the other and complete with heading
- All figure and table must be adequately complete that it could situate on its own, divide from text

Discussion:

The Discussion is expected the trickiest segment to write and describe. A lot of papers submitted for journal are discarded based on problems with the Discussion. There is no head of state for how long a argument should be. Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implication of the study. The purpose here is to offer an understanding of your results and hold up for all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of result should be visibly described. Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved with prospect, and let it drop at that.

- Make a decision if each premise is supported, discarded, or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."
- Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work
- You may propose future guidelines, such as how the experiment might be personalized to accomplish a new idea.
- Give details all of your remarks as much as possible, focus on mechanisms.
- Make a decision if the tentative design sufficiently addressed the theory, and whether or not it was correctly restricted.
- Try to present substitute explanations if sensible alternatives be present.
- One research will not counter an overall question, so maintain the large picture in mind, where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

- When you refer to information, differentiate data generated by your own studies from available information
- Submit to work done by specific persons (including you) in past tense.
- Submit to generally acknowledged facts and main beliefs in present tense.



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- To guard yourself and others from possible illegal use please do not permit anyone right to use to your paper and files.



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<i>Introduction</i>	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
<i>Methods and Procedures</i>	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
<i>Result</i>	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
<i>Discussion</i>	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
<i>References</i>	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring



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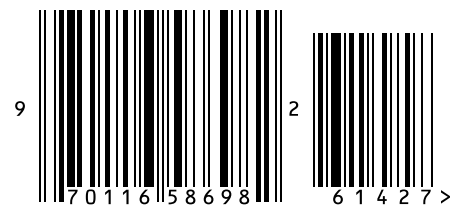
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