Determinants of the Quality of Accounting Information: The Case of Saudi Listed Companies

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Abstract

The aim of this research paper is to identify the main determinants that influence the quality of accounting information for the listed Saudi companies, using different technique and approach employed by previous literature. However, we adopt the clustering method in determining the degree of importance of the different items and the "Bayesian Modelling Average" (BMA) approach to estimate the most important determinants of the quality of accounting information divided into financial and governance factors. According to the BMA results, four variables are qualified as the most important determinants of the quality of accounting information which are Profitability, Leverage, Ownership and Manufactory followed by other variables, Audit, Petroleum, Board Size, Institutional Investor and Auditors from BIG 4, which are less important in explaining the quality of accounting information. The importance of the variables is qualified based on the post probabilities in the five best models.

Key words: Accounting information, quality, Saudi Listed Companies, Bayesian Modelling Average.

Introduction

In recent years, a considerable number of studies have investigated the usefulness of accounting information. These studies can be divided into three categories: (1) the normative definition of accounting information and the characteristics of usable information such as Ball et al. (2000), Ball and Shivakumar (2006), Lang et al. (2006). Leuz and Wysocki (2008) and Soderstrom and Sun (2007); (2) the need of accounting information such as Barrett (1977), Wallace (1987), and Cooke (1989).; and (3) the behaviour of executives toward accounting information and how they use it such as Njah, M., & Jarboui, A. (2013), Arcay, M. R. B., Vazquez, M. F. M. (2005), and Kent, P & Stewart, J. (2008)

The quality of accounting information has long been a major concern for accounting standards bodies. As early as the 1960s, understanding and identifying users' needs in the United States have been the main drivers that have guided accounting thinking. The study of the quality of accounting information can be also an important factor for the decision-making. This concern has been accentuated in recent years, following the series of financial scandals in the United States such as Enron, WorldCom, Tyco, Maxwell and in Europe such as Alcatel, Alsthom, Parmalat, Ahold, Vivendi Universal, Gene, Elf and the Suez Financial Company. These scandals have been considered as premise to study the importance of the quality of the accounting information in different context and economies.

The financial information that a company provides can help users to make resource allocation decisions. As Enron and Vivendi cases have created at the level of the economy, Abbadi (2014) asserts the probability of an emergence of a crisis of confidence among users of financial information. Those users would no longer trust the information provided by the companies. Therefore, this crisis of confidence has led the regulators, in terms of exchange on the market, to make more stringent provisions. Accounting information is produced in an increasingly regulated environment, from one financial area to another.

The measurement of the quality of accounting information doesn't depend only on accounting standards but also on the institutional framework of countries and the reporting system. Several studies have examined the link between accounting quality and institutional framework such as Soderstrom and Sun (2007), Bushman and Piotroski (2006) using Panel data. In our study we focus only on the case of Saudi listed companies. Our choice is motivated by the inexistence of similar research in the case of KSA and to participate in the explanation of the quality of accounting information in the Saudi context.

The importance of the current research emerges from the importance of the phenomena of accounting information both in the current internal context (i.e. countries in transition to market economy, privatization, foreign investment, financial market) and in the external context (i.e. financial scandals, increased market volatility). The main objective of this research is to identify the determinants of quality of accounting information disseminated in the annual reports of listed Saudi companies from two main economic sectors (manufactory and petroleum). We exclude the financial and banking institutions because of their specificities.

The research question is the following: What are the main determinants of the quality of accounting information disclosed by Saudi listed companies in their annual reports and which variables influence it?

Literature Review

In order to better study the determinants of the quality accounting of accounting information we have to focus firstly on theories that are attached to the concept of accounting information, however we can distinguish five main theories: contract theory, information and decision theories, agency theory, normative theory and Behavioural theory

The study of the main determinants of the quality of accounting information has been investigated in different context: countries such as American, French, and Arabian and financial markets but not in the Saudi context as a single case.

In the American context the conceptual framework of the FASB (1976) was the first to propose a definition of the quality of accounting information. This definition offers a set of characteristics, prioritized, to help the investor make an investment decision in a business. Four characteristics are required from the information: relevance, reliability, intelligibility and comparability (SFAC N ° 2). To this is added the principle of relative importance which is elevated to the rank of quality criterion. These four quality criteria are however difficult to achieve perfectly.

In application of the 4th European directive, accounting information is produced according to standards that seek to reflect economic reality as closely as possible.

Raffournier (2007) argues appropriately that the quality of accounting information is therefore inseparable from these standards. This is how mandatory international standards in Europe or listed companies, come from a conceptual framework that defines the quality of accounting information. This conceptual framework designed in 1989, takes up the four qualitative characteristics stated by the FASB standard, but rather assimilates the principle of the importance relating to a criterion for selecting the information to be disseminated.

The French accounting standard having not explicitly defined the concept of quality of accounting information, its requirements are to be sought in accounting principles fundamentals. Analysis of this standard, which maintains that accounting information must be produced in compliance with the rules, we deduce that with regard to accounting principles generally recognized, two namely the principles of regularity and sincerity can be viewed as the quality criteria used by the French accounting standard setter

Quality is defined as the ability of a product or service to satisfy the customer at the cost and timeliness of his needs. Accounting information is a product with the main purpose is to provide useful information to satisfy the needs of the company as quickly as possible and at the lowest cost. This information serves to make the right economic decisions, to show the rational and optimal use of resources in the past and to enhance and improve the performance and economic prospects for the future. The financial statements provide information that is useful for users to make investment decisions, credit and other similar resource allocation decisions.

According to Bruns and McKinnon (1993), accounting information is defined as an economic figure phenomenon, past, present or future of an entity, with respect of established rules.

Cerf (1961) chose a list of 31 items in studying American companies with a weight varying from 1 to 4, and found that the size of the firm, the structure of the property, profitability and stock market status are the main explanatory factors of the quality of accounting information. He also argued a positive correlation with index score for all variables except for the stock market which was not significant.

Singhvi and Desai (1971) chose a list of 34 items determining the quality of the disclosure in a sample of 155 American Companies. Using the multi-regression, they identified certain characteristics of US companies in relation with investment decision. As explanatory variables, they introduced total assets, the number of shareholders, the listing status, the audit firm, the rate of profit and margin. All tests were positively and statistically significant.

Using 79 items for a sample of 80 US companies, Stanga (1976) argues that the type of industry is positively correlated with the quality of accounting information.

Using 17 items and according to Cerf (1961) method in weighting the values of the items to knowing the difference about the degree of disclosure of financial information in the annual reports, Barrett (1976) made a comparison between American companies and seven industrialized countries. He concluded that French companies have the less degree of dissemination of accounting information and is higher on average in groups than Japan, Sweden, the Netherlands, West Germany and France.

Using a random sample of 200 non-annual financial reports in Canada and a questionnaire for 200 accountants and 200 financial analysts, Belkaoui and Kahl (1978) compiled a list of 30 items. They found that the quality of accounting information is positively correlated with the size of assets, sales and liquidity. In the same vein, they found a negative association between this variable and profitability, capitalization ratio and the dissemination of information.

Using a sample of 80 companies having the same size and belong to the same sector (50% are listed and the others not listed), Firth (1979) found that the state of the stock market and the presence of audit firm and auditors were significant in explaining the quality of the accounting information.

With the development of international financial markets, companies adopt the internationalization in order to attract more funds. Mergers and Acquisitions border crossings have also become common. Institutional investors play a key role and require more transparency in the dissemination of information from listed companies.

In studying the relationship between the costs of capital and accounting information, Easley and O'Hara (2003) found that the provided information to investors both public and private can affect the cost of capital by monitoring the quantity of the information provided. According to Soderstrom and Sun (2007), the quality of accounting information is closely related to the legal and accounting system used in each country and the determinants of accounting information depend on the specificity of each country. In the same vein, Hail et al. (2009) argued that the adoption of international standards differs from country to country and from company to company, and this constitute one of the essential determinants of the quality of accounting information in a given legal and political context. Other authors such as Ball et al. (2000), Ball and Shivakumar (2006), Lang et al. (2006). Leuz and Wysocki (2008) also analysed the impact of the implementation of the International Financial Reporting Standards (IFRS) on the quality of accounting information and they found that the specific characteristics of the company are pertinent to explain discrepancies in financial reports.

Chen et al. (2010) found a positive correlation between the quality of accounting information and capital adequacy. In their study of the relationship between the quality of accounting information and the size of investment and the free cash flow, Saghafi et al. (2011) found that firms with higher accounting information quality showed less investment with high rate of free cash flow. Gilaninia et al. (2012) found that there is no relationship between the quality of accounting information and investment efficiency for a sample of listed companies in Tehran Stock Exchange. Osta's and Qytasy (2012) showed that the company life cycle affects the use of the rate of discretionary accruals. Mosley et al (2012) found a positive correlation between discretionary accruals quality and the quality of disclosure. Firms with higher disclosure quality have less preference for earning management but they have higher quality discretionary accruals. In their popular theory (Agency theory), Jensen and Meckling (1976) argue that a higher debt ratio should disclosure more accounting information which in turn reduce agency costs and provides creditors more confidence. According to Botosan and Plumlee (2002) the size of the disclosed information gives more confidence to the creditors about their funds.

Recently, Moura et al. (2017) conducted a study to identify the most crucial factors that influence the accounting information quality of the largest companies listed on BM & Bovespa. They found that "being audited by the big four; having an Audit Committee; including institutional investors among the stockholders and being traded on the American stock market reflect in higher quality of information disclosure" (p. 322).

Moura et al. (2017) suggest that higher is the quality of accounting information, less is information asymmetry between creditors, external suppliers of capital and managers.

Methodology

The methodology of this research is based in two stages, the first one consists on determining the different items having influence on accounting information quality by using the clustering method, the second step consist on using the BMA method to test the importance of such variables in determining the quality of accounting information

The assessment of the quality of the disclosed accounting information can enable us to empirically identify the determinants of accounting information quality. We recall that our objective is to study the determinants of quality of accounting information and explain the variations in quality will be obtained from the evaluation of the annual report by a few determinants (or independent variables). To do this, we need a numerical measure of quality accounting information that can be used as an explanatory variable. We establish an index including 83 items.

This index represents a list of assessment of the quality of information disclosed in an annual report. The contents of the list of items reflect the needs of a wide range of users of accounting information disseminated in the annual report.

To have a numerical measure of the quality of accounting information provided by yearly reports, we have attached a weighting system to the items on the list. This weighting is established based on scoring given by different users' namely financial analysts and financials presented in the form of a questionnaire.

The quality index obtained for each annual report of the companies under consideration will help us to explore the potential determinants of the quality of accounting information disseminated in the annual report. However, the choice of the explanatory variables is justified by the results obtained in the determination of the quality index and a systematic literature review analysis. The statistical study will allow us to knowledge the determinants of dissemination practices in Saudi listed companies. To do this, we use mainly the Bayesian Modeling Average (BMA) method (Appendix 2).

The use of BMA method allows us to prevent the negative impact of the lack of data or the size of the sample. We notify that it is the first time that this approach is used in our research field.

Hypothesis development:

Based on the framework that has been stated above and according to the literature review the hypothesis proposed in this study are:

H_1: The quality of accounting information system affects the quality of accounting information
H_2: disclosure quality is positively related to the financial performance
H_3: disclosure quality is positively related to the firm control
H_4: disclosure quality is positively related to the firm sectors

Building the list of items

To make a judgment and identify the determinants of the quality of accounting information presented in the report of Saudi listed companies, we have developed a list of items and confirming or denying their presence in the annual reports, (we give a score equal to 1 if the information is disseminated and 0 in the case of not disseminated).Accounting is important for different users: shareholders, creditors (The supervisory authorities) and all the partners of the company (employees, customers, social agencies, suppliers, banks).A single category of users was often targeted to evaluate items with a few exception. Some authors (e.g. Cerf, 1961, Singhvi and Desai, 1971, Buzby, 1974, Stanga, 1976, Barrett, 1976, Firth, 1979, Cooke, 1989, Michaelsco, 1998) suggested that financial analysts do not represent all the users of financial information. In this sense, Cooke (1989) argues that the importance of items differs from one group to another group.

Based on this suggestion, we targeted two groups of users of accounting information in Saudi listed companies which are financial analysts and financials to evaluate the list of items developed in this research. Choosing these two groups is motivated by the fact that they are easily accessible. In addition, they are capable to judge the current information of companies. Those financial analysts are working in financial intermediaries in the Saudi stock exchange. They are serving market customers, for purchases or sales of shares. The work of intermediaries is to collect information from all available sources, to inform and provide advice or recommendations to clients (investors) regarding the purchase, sale or retention of securities. On the other hand, accountants come from audit firms and have the necessary knowledge to express their judgment with respect to items.

The major task is the selection of items of information that could be expected and reported in a company's annual report. In the construction of the list of items, we try to achieve certain objectives: the list has to be representative and objective and represent the opinion of all users and limited to a certain group of users; In addition, an increase in the number of items can meet the needs of all users. This approach has been adopted by (Barrett (1977), Wallace (1987), and Cooke (1989).

The items are selected from:

- A review of accounting and financial publications and previous studies
- The content of recent financial reports known for their excellent quality
- The content of the financial reports of a sample of companies in the same sector (Malone, Fries and Jones (1993) which consists in drawing up the list items from all the information contained in the annual reports of the companies in the studied sample
- Expectations of specific user groups in the annual reports
- Recommendations from the International Accounting Standards (IASB), Accounting Standards Board (ASC), Financial Accounting Standards Board (FASB).
- Items used and disseminated by a minimum number of companies in the sample.

The review of the lists of items used in previous studies and researches, information recommended by International Accounting Standards (IASB), Accounting bodies, several annual reports, several books accounting and financial analysis, are the sources used to build the ideal annual report that presents all items, for all users. According to the BMA basis hypothesis, we consider the items to be of equal importance. Our list of items has six sections as shown in Appendix 1. After establishing our list of items; we chose to follow Cooke's system and structured our items into six sections. In Table (1), we summarize the distribution of the items in six sections.

Table (1). The distribution of items

Section	Number	percentage
Company Presentation	*12*	*15*
Elements on the economic situation of the company	*23*	*28*
Components of the Company's financial position	*34*	*41*
Elements on development prospects and forecasts	*6*	*7*
Accounting standards, principles and methods adopted	*6*	*7*
Information segmented (revenues, products……)	*2*	*2*
Total	*83*	*100*

Sample and Information gathering process

The questionnaire is the tool for collecting, recording and storing information and is often used to collect the data necessary for the establishment of the weighting. It allows the list to be submitted to the accountants and analysts to evaluate the contribution of each item to the quality of information in the annual report. A total of 150 questionnaires were distributed to financials and financial analysts in Saudi Listed Companies to assess the importance of items. We obtain 98 responses from financial analysts and financials which represent 65% and they are distributed as follows:

Table (2): The distribution of items

User	Number of distributed Questionnaire	Number of Responses	Percentage
Financial Analyst	*50*	*34*	*68%*
Financials	*100*	*64*	*64%*
Total	*150*	*98*	*65%*

The purpose of the questionnaire is to allow us to evaluate each item and giving it a rating based on the attitude of accounting and financial analysts. The attitude is measured by the score assigned to an item by those two groups. The second stage is the collection of the annual reports of Saudi listed companies from the Tadawul website. These Companies operate in Saudi Arabia and are listed in Saudi Stock Exchange (40 companies). Our sample is limited to the non-financial sector, due to the specific nature of their accounting system in presenting their financial reports, so we eliminate banks, insurance companies and securities companies and focus on petroleum and industrial companies. Our choice is justified by the size of companies and the availability of respondents. Our sample can be divided into two main sectors of activity:

Table (3): The distribution of companies

	Number	Percentage
Petroleum and Energy	*4*	*10%*
Industry *	*36*	*90%*

*The sample on which we conduct our study is focused on three categories for the industry branch: Basic materials (cement companies and petrochemicals) , Capital goods (chemicals and transportation), We note that there is a multitude of companies which are public and family private units.

First step: The methodology of valuation of the list of items

The quality index used in the current research measures the content of the information provided by companies in their annual reports. To assess the quality of accounting information we use the weighting approach which is based on the importance of each item for financial analysts (34) and chief accountants (64). The list of items is made in the form of a questionnaire distributed to selected participants. We use the scale of McNally et al. (1982) and Buzby (1974) who have measured the perception of users of annual reports based on five Likert scale (1 to 5), 1 very important, 2 important, 3 moderately important, 4 not important and 5 not at all important. The total and theoretical scores are calculated as follows:

$$STj = \sum_{i=1}^{n} STi \qquad (1)$$

With, ST_j: the total score of the firm j,

      n: the number of items in the index

      ST_i: If the score of the item i is published, 0 otherwise

However, there are items which do not appear in the annual report, since they are not applicable to all cases, given the nature of their activities or particularity of the company. In this case, a theoretical score for each company is calculated as follows:

$$\textbf{\textit{Theoretical Score }}_j = \sum_{t=1}^{m} Si \;(2)$$

With:

STh_j: Theoretical score of the firm j

m: The number of items that company j can publish with m <= n.m<= n

$$\textbf{\textit{Index of disclosure j}} = ST_j / STh_i \;(3)$$

The quality index is obtained by dividing the total score (the sum of the points that the report should have obtained) by the theoretical score (the sum of the averages attributed to the items by the users) to obtain an index that will be called. The total score and the theoretical score allow a comparison of supply and demand, while the quality index allows comparing the quality of a company's annual reports (Cooke 1989).

Second step: BMA Model

Before choosing the right method to adopt we make some tests using multiple regression models, VAR method, the staggered delay model but the results are not significant that's why we use the "Bayesian Modelling Average," (BMA) to explain the determinants of the quality of accounting information.

Theoretically, the BMA allows considering all the possible models by assigning them the same priori probability and based on the "Bayesian Information Citeria" (BIC) a posterior probability for each model is calculated. In practice, the number of possible models can be very high so only the best five models are presented.

In the BMA package of R software, we assume to use a prior probability equal to 50% for all explanatory variables.

The BMA method allows us to overcome the problem of lack and the size of the data as well as the correlation problem that may exist between the variables. It also allows us to include in the model the largest number of possible explanatory variables.

The research model

We use the quality of accounting informationas a dependent variable in our model for the period 2016-2019. The use of the BMA method in estimating the determinants of the quality of accounting information is justified by the size of our sample which makes its estimation impossible with the classic methods and by the fact that most of the factors studied can have a delayed effect in time and not immediate. The Bayesian Model Averaging (BMA) method also avoids the problem of data deficiency and eliminates the problem of autocorrelation that may exist between variables.

To do so, we will first introduce the general Bayesian model (Appendix 2). Then we expose the general principles of the BMA and explain the details of its implementation and finally we proceed to the interpretation of the results of estimation of the determinants of the quality of accounting information in Saudi listed companies. Equation (1) highlights the relationship between the perceived level of quality of accounting information and the financial and non-financial (Governance) determinants according to the literature review.

$$\textit{DACC}_{i,t}= \beta0+ \beta1 \; LEV_{i,t}+ \beta2 \; PRO_{i,t}+\beta3 \; NB_{i,t}+ \beta4 \; INST_{i,t}+\beta5 \; OWN_{i,t}+\beta6AC_{i,t}+\beta7BIG4_{i,t}+\beta8MAN_{i,t}+\beta9PET_{i,t}+\mu$$
(1)

Table (4): List of variables

	Variable Name	The Proxy		Predicted Sign
1	Discretionary accruals	DACC	$DACCi, t = \dfrac{TAi,t}{ASSETSi, t-1} - NAi, t$	
2	Leverage	LEV	Total debt / Total assets	Positive
3	Profitability	PRO	Tobin's Q[1]	Positive
4	Board Size	NB	Number of directors on the board	Negative
5	Institutional Investors	INST	0-1 Binary	Positive
6	Majority shareholder	OWN	Proportion owned by the major shareholder	Positive
7	Audit	AC	0-1 Binary	Negative
8	Auditors from BIG 4	BIG 4	0-1 Binary	Negative
9	Manufactory sector	MAN	0-1 Binary	Positive
10	Petroleum Sector	PET	0-1 Binary	Positive

Description of data and variables

The aim of this part of the study is to test the relationship between governance indicators, financial indicators and the quality of accounting information. The data concerning the mechanisms of governance are obtained from annual reports.

Presentation of variables

Dependent Variable: Quality of Accounting Information

The quality of financial information disclosed is considered as the dependent variable in this empirical study. We approximate it by the discretionary accruals. The score is an indicator of quality. The selected items should have and present the mainly characteristics of accounting information disclosed: relevance, reliability and understand ability. The 83 items are grouped into six categories as described above. We adopt the model of Jones (1995) and modified by Shahrur and Raman (2008) adding Book to Market variable, to calculate the Discretionary Accruals. First, we estimate the Total Accruals (2) and the Normal Accruals (3) and make the difference between them (4).

$$\frac{TAi,t}{ASSETSi,t-1} = \alpha1\left(\frac{1}{ASSETSi,t-1}\right) + \alpha2\frac{\Delta SALESi,t}{ASSETSi,t-1} + \alpha3\frac{PPEi,t}{ASSETSi,t-1} + \alpha4 ROA\,i,t + \alpha5 BTMi, t + ui, t \ (2)$$

$$NAi, t = \hat{\alpha}1\left(\frac{1}{ASSETSi,t-1}\right) + \hat{\alpha}2\frac{\Delta SALESit}{ASSETSi,t-1} + \hat{\alpha}3\frac{PPEit}{ASSETSi,t-1} + \hat{\alpha}4 ROA\,i,t + \hat{\alpha}5\ BTMi, t \ (3)$$

$$DACCi, t = \frac{TAi,t}{ASSETSi,t-1} - NAi, t\,(4)$$

$TA_{i,t}$: Total Accruals of the firm i in year t
$NA_{i,t}$: Normal Accruals of the firm i in year t
$DACC_{i,t}$: Discretionary Accruals of the firm i in year t
$ASSETS_{i,t-1}$:Total Assets of the firm i in year t-1
$\Delta SALESi,t$: Change in sales of firm i in year t
$PPE_{i,t}$: Property Plant and Equipment of the firm i in year t
$ROA_{i,t}$: Return On Assets of the firm i in year t
$BTM_{i,t}$: Book to Market of the firm i in year t
$u_{i,t:}$ error term

Explanatory variables

The choice of the explanatory variables is based on our study of the previous literature through which we try to explain the quality of the accounting information. We choose to include the maximum number of variables related to the proprieties of the company, financial indicators and the internal mechanisms of governance.

- Leverage is approached by the ratio (total debt / total assets)
- Profitability is approximated by the market Tobin's Q[2]
- The size of the board is approximated by the number of managers on the board, retrieved from the annual reports of each company

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[1] (Market capitalization+ market value of debts) / Replacement cost of Assets
[2] Tobin's Q = (market capitalization + market value of debt) /Replacement cost of assets

- Audit quality is approximated by the existence of the audit committee. It is measured by a binary variable, equal to 1 when firm have an audit committee and 0 if not.
- A binary variable is used to approximate the presence of one of the Big 4 firms (we assign the number 1 if the firm is audited by one of the big 4 and 0 if not)
- The presence of major shareholders approximates the Ownership structure and calculated by the proportion owned by them.
- We use a binary variable for the company sector (we have two sectors)
- The presence of institutional investors owning more than 5% of capital (we assign 1) and 0 otherwise.

Results and interpretation

The posterior probability that the coefficient of a variable in the regression model is non-zero is obtained by summing all the posterior probabilities of all the models in which the variable appears. The posterior probability is therefore a measure of the importance of the variable. Kass and Raftery (1995) summarize the different possible cases when interpreting the probabilities in posterior.

Table 5: Decision Criteria

< 50%	50%-75%	75%-95%	95%-99%	>99%
No Evidence	Weak Evidence	Positive Evidence	Strong Evidence	Very Strong Evidence

Source: Kass and Raftery (1995)

The interpretation of the value of p is different from the interpretation of the posterior probability. However, the use of the BMA technique makes it possible to answer very interesting questions about the probability that the model is perfect, and the probability that the coefficient is different from zero. We use the *R* software which provides us the five best models show in the table below.

Table 6: Best five models using BMA

	p! =0	Model 1	Model 2	Model3	Model 4	Model 5
Intercept	100	$7.56 *10^{-12}$	$7.12 *10^{-12}$	$6.67*10^{-12}$	$8.11*10^{-12}$	$6.22 *10^{-12}$
LEV	83.8	$4.06 *10^{-2}$	.	.	$4.26*10^{-1}$	.
PRO	94.3	$2.45*10^{-1}$	$2.56*10^{-1}$	$2.44*10^{-1}$	$2.42*10^{-1}$	$2.15*10^{-1}$
NB	10.8	.	.	.	.	.
INST	10.5	.	.	.	.	.
OWN	74.7	.	$3.51*10^{-2}$	$4.1 *10^{-2}$	.	.
AC	11.3	.	.	.	$- 2.38 *10^{-1}$	$- 2.38 *10^{-1}$
BIG 4	10.8	.	.	.	.	.
MAN	73.3	$4.45*10^{-1}$	$4.56*10^{-1}$	$4.44*10^{-1}$	$4.42*10^{-1}$	$4.15*10^{-1}$
PET	7.9				$4.97*10^{-1}$	$4.11*10^{-1}$
nVar		**4**	**4**	**4**	**6**	**5**
BIC		-37,6	-34.2	-33.1	-33.05	-31.5
Post prob		**0.093**	**0.038**	**0.026**	**0.024**	**0.023**

Based on the results in the table 10, Model 1 is qualified as the best model because its posterior probability is highest and equal to 9.3% followed by Model 2 and then 3, 4 and 5 which are almost equally important. Regarding the variables, the variable profitability is present in the five best models and is considered the best determinant of the quality of accounting information in the case of listed Saudi companies for the period 2014-2016.However, its posterior probability is 94.3% with positive coefficient which is in conformity with our expectations and the studies of Raffournier (1995). This result illustrates that the quality of accounting information is better in cases of companies with higher performance. This performance goes in the same way with the shareholders objectives and managers to maximize the company value and shareholders benefits. But some studies illustrate that the relation is not clear in many cases e.g Inchausti (1997) and Zhou (1997).

The second variable considered to be as important is the leverage (LEV) since its posterior probability is 83.8% and can be described as having little evidence and present in two models out of the best five with a positive coefficient. This positive sign illustrates the importance of the external debts in explaining the quality of accounting information both for bankers and present shareholders and potential shareholders. The previous studies such as example Raffournier (1995), Inchausti (1997), and Zhou (1997) found a negative relationship; the manufacture (MAN) is also important with posterior probability of 73.3% and present in all models which can be explained by the high number of companies of this sector in our sample.

The majority ownership (OWN) is also an important variable with a posterior probability of 74.4% and influence positively the quality of accounting information. Our results are similar to Malone et al (1993) and Hussain et al (1994). The other variables NB, INST and BIG 4 are absent in all models with respectively posterior probability of 10.8%, 10.5% and 10.8% and may be present in other possible models with low posterior probabilities. Audit and Petroleum are present twice in two models with posterior probability of 11.3% and 7.9%.

Conclusion

This study aims to identify the major important determinants of disclosed accounting information in the case of Saudi listed companies. To do this, we adopt the clustering method to group the items having the same importance in the same for accountants and financial analysis. The results show that items can be classified in three diverse groups according to their degree of importance, what we note here is that the financial situation present the immense importance for the accountants and financial analysts. The second approach (BMA) provide us a deeply analysis via the classification of essential determinants of the quality of accounting information (DACC) and we retain the five best models explaining this variable. The use of BMA is dedicated to the considerable number of possible explanatory variables and the size of our sample. According to the BMA results four variables are qualified as the most important determinants of the quality of accounting information which are Profitability, Leverage, Ownership and manufactory with respective posterior probabilities of 94.3%, 83.8%, 74.7% and 73.3. Followed by the other variables, AC, PET, NB, INST and BIG 4 dispose less importance in explaining the quality of accounting information. Our study can be completed or have a horizon by introducing not listed SAUDI companies to make comparison or by making a comparison through different regions and countries such as MENA or BRICS countries and regions.

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Appendix 1: List of Items

	Item Title
	Presentation of the company or group Name and address and location where the business is registered Address of head office or principal place of business Legal form of the company Closing date of the financial year or publication of the company's financial statements General description of activities offered by the company Currency of presentation of financial statements Main Business Sites Presentation of subsidiary information Table of changes in capital and voting rights since inception Presentation of the main shareholders of the company (percentage of capital or voting rights held) Presentation of stock market performance (share price trend (average, extreme prices) or Market capitalization Figures on company history
	Elements on the economic situation of the group

Presentation of elements of the commercial domain

13. Explanation of the competitive position of the company in the market.

14 Identification of the main competitors.

15 Presentation of turnover

16 Information about an abandoned activity

17 Presentation of information on marketing policy.

Presentation of the elements of the industrial field:

18 Presentation of the know-how and costs of research and development of the company

19 Description of the research and development axes of the company

20 Result (success or failure) on the R & D projects implemented.

21 Research and development expenses incurred.

22 Presentation of information on R & D workforce

Presentation of the elements of the economic, social and political domain:

23 Information on economic, social or political factors influencing performance.

Presentation of the elements of the financial field:

24 Description of the company's financial policy in recent years

25 Discussion on preferred financing routes in the future

Presentation of the elements of the social domain:

26 Information on numbers and trends during the year

28 Information on social relations.

29 Breakdown of the workforce by qualification or age group or by branch or geographical area

30 Involvement of the enterprise in the integration and employment of young people, women and the disabled where Implements its activities

31 Information on employee benefits

32 Tables of social and societal objectives

33 Information relating to the Combined General Meeting

Presentation of the elements of the societal domain (environment):

34 Presentation of actions to protect the environment and their impacts, control of energy

35 Tables of environmental objectives

3. Factors affecting the financial position of the company:

36 Detailed presentation of the composition and movements of fixed assets

37 Information on financial investments in equity investments realized during the year

38 Information on investments in property, plant and equipment and intangible assets realized during the year

39 Information on Changes in Equity

40Discussion of future shares to be created by rights of subscription or conversion of bonds or by Change in the number of shares.

41Discussions relating to authorized shares or shares issued or fully paid or unpaid or

Par value, shares held by the company or its subsidiaries or associates.

42 Details of Amounts Payable and Receivable.

43 Information on financial debts

44 Account information Accounts Receivable

45 Information on financial commitments and financial instruments

46 Financial statement for the year

47 Cash Flow Statement

48Presentation of the EBITDA (gross operating surplus) or the VA (value added) and the result Or the data necessary to calculate them.

49 Detailed information on operating expenses

50 Cash flow from operations or cash flow from operations during the year or data Necessary to calculate them.

51 Disclosure of dividend information

52 Comparison of revenue and balance sheet for the year

53 Highlights of the year (exceptional items)

54 Fees payable in foreign currencies.

55 Information on taxes

56 Information on the effects of fundamental error corrections

57 Information on solvency and liquidity or information to calculate them.

58 Discussions on the effects of price changes on the operating result or financial position

59Information on public grants and public aid presented in the balance sheet orresult.

60 Discussions on the effects of changes in foreign exchange rates.

	61 Information on borrowing costs (accounting method used or total amount
	62 information relating to the parties related to a business (nature of the relationship between the related parties or nature of the transaction) 63 Information on financial assets and liabilities at fair value 64 Discussion of the main risks likely to affect the financial performance of the company. 65 Presentation of Comparative Financial Information to Previous Financial Statements 66 Information on the methods used to calculate the appreciation data (dividend and earnings per share, Rate of return on equity, financial ratios, net aggregates) 67 Opinion of the Statutory Auditors (audit) on the report of the Chairman of the Board of Directors, the accounts. 68 Information on associated companies 69 Information on investments in joint ventures
	4. Elements on the development prospects and forecasts of the company: 70 Discussion on prospects and strategic directions. 71 Actions taken to achieve the objectives and to commit in future years 72 Forecasts of changes in profitability or market share, growth, potential competitors, Evolution of the workforce. 73 Presentation of research and development forecasts. 74 Explanations of variations between previous forecasts and achievements 75 Presentation of provisions for retirement benefit obligations and other employee benefits
	5. Accounting framework, accounting principles and methods adopted: 76 Indication of national or international standards (IASB, FASB, ASB) 77 Information relating to the accounting principles and methods used in preparing the financial statements 78 Information on stock treatment 79 Information on impairment of assets and liabilities **Changes in accounting policies:** 80 Explanation and valuation of the consequences of the possible method changes 81 Three-year pro forma figures for changes in accounting policies
	6. Segmented information 82 Segmented information by business segment (sales or products ...) 83 Information segmented by geographical area (turnover or operating income ...)

Appendix 2: The general Bayesian model

Suppose a linear model structure, with Y being the dependent variable, α_γ a constant, β_γ the coefficients, and ε a normal IID error term with a variance σ^2

$$Y = \alpha_\gamma + X_\gamma\,\beta_\gamma + \varepsilon \qquad\qquad \text{with } \varepsilon \sim N\,(0,\,\sigma^2\,I)$$

The problem arises when there are several potential explanatory variables in an X matrix:

Which variables $X_\gamma \in \{X\}$ should then be included in the model? And what is their importance? The direct approach to inference on a single linear model that includes all variables is inefficient, if not impossible with a limited number of observations.

Given the small size of the sample, the use of traditional econometric models has become inappropriate. To remedy this shortcoming, we choose to use the Bayesian method.

Smets and Woster (2003) and Wieland et al. (2012) used this technique in their macroeconomic research, which consists in combining the information delivered by the data with prior probabilitieson the parameters of the model. They also synthesized some information from previous works or deduced them from the economic theory.

The BMA has been successfully applied to many categories of statistical models, including linear regression, generalized linear models, Cox regression models, and discrete graphical models. In all cases, there was an improvement in predictive performance.

The Bayesian approach has gained momentum in recent years in economic research and has proved its worth for two reasons: The first reason is a conceptual one, because it takes into account the information a priori concerning the structural parameters of the model.

The second reason is its purely numerical and closely related to technological progress, because of the availability of software and applications that allow empirical analysis.

Assuming that there are q predictors, then there are up to $K = 2$ possible models (assuming no interactions between risk factors) and each of the variables X_1 ...... X_k could be inside or outside the model.
We note these models by M_1 .... M_k. and we do not know in advance which one is the best. The Bayesian Model (BMA) is therefore a Bayesian solution for the problem of inference in the presence of several competing models.
Let Q be a quantity of interest that has the same interpretation in each of the possible models.
The posterior distribution of Q considering the risk and uncertainty in model selection is given by:
P (Q / D) = Σ P (Q / D, M_k) * P (M_k / D) (1)
With:
D: the data
P (Q / D, M_k): the posterior distribution of Q for the M_k model
The posterior distribution of Q is a weighted average of the model-specific posterior distribution and the weights are determined by the posterior probabilities of each one.

The posterior probabilities of the models are calculated by choosing 0for the following relation:
P (M_k / D) = P (D / M_k) * P (M_k) (2)
With:
P (M_k): the prior probability of the M_k model
It should be noted that the proportionality constant is chosen so that the sum of the posterior probabilities of the models is equal to 1.
These probabilities of the Mk models are chosen so that they are equal to each other.
P (D / M_k) = ∫ P (D / $Θ_k$, Mk) * P ($Θ_k$ / M_k) d$Θ_k$ (3)
With:
$Θ_k$: the vector of the parameters of the model M_k
P (D / $Θ_k$, M_k): the likelihood of $Θ_k$
P ($Θ_k$ / M_k): the distribution a priori of the model M_k
The BMA technique provides a better prediction and the inference is well calibrated because the confidence intervals have on average a good coverage rate.