CHAPTER 1: INTRODUCTION

1.1 Preface

The end of the 1990s and the beginning of 21st century have witnessed a series of corporate accounting scandals across the United States and Europe. Examples include Enron, HealthSouth, Parmalat, Tyco, WorldCom and Xerox. At the core of these scandals was usually the phenomenon of earnings management (Goncharov, 2005). Some large companies collapsed recently due to some accounting manipulation activities and this has raised serious questions about the effectiveness of different monitoring devices presumed to protect investors’ interests and control managerial opportunistic behavior (Ibrahim, 2007). The process of financial reporting is of great importance and value to the users of financial statements as their decisions are based on them.

This chapter will provide an overview for the research and the sections included in this chapter will be tackling the following: the research background followed by the research focus, problem, aim and objectives as well as including sections for the research value, question and hypothesis.

1.2 Research Background

The main motivation for this research is to examine the relationship between the firm characteristics (Firm Size, Firm Age, Firm Financial leverage and Firm Audit quality) and earnings management in one of the developing countries which is Egypt. The results of this study cannot be applied on the developed countries as developing and developed countries have different markets in political and economic terms as well as technological, cultural and social differences.
Individual and collective greed has led Enron to the dramatic fall in 2001, which in turn kicked out Arthur Anderson from the big five list of the Certified Public Accountant (CPA) firms, raised the attention to the opportunistic earnings management practice and the importance of corporate governance, specifically the audit committee effectiveness. Enron accounting fraud based on some unusual transaction going on, starting from diverting the company’s fund to the personal accounts and various Offshore Accounts passing by spending money in clubs and employees personal spending which was charged to Enron’s account and ending with shifting the company's liability and losses to Non-consolidated Special Purpose Entities (SPEs). Investigations found that there was a diversion in the company’s fund to personal accounts, and due to Arthur Anderson’s involvement in Enron’s scandal, the company paid a huge fine and was banned from auditing public companies.

Firms manage reported earnings for three major purposes, namely, to avoid losses, to avoid earnings decreases, and to meet analysts' earnings expectations (Faouzi H. & Mohamed A. Z. 2012). Real earnings management may diminish firm and shareholder value, but it is not illegal. Further, it is not a violation of financial reporting rules, and even if discovered would not result in charges of financial fraud or create cause for an earnings restatement.

Managers always aim to secure all the funds needed to keep the business running so that no external party can interfere, and at the same time managers aim to gain whatever kind of benefit they can from the business (Kim and Yoon 2009).

The code of corporate governance is used to describe the rules, regulations, and procedures that achieve the best protection and balance between the interests of corporate managers, shareholders, and other stakeholders that in turn help reduce the
agency problem which reflects the agency theory and the need to monitor managers (agents) to reduce their ability to extract rents from the firm (Beasley 1996, Fama and Jensen, 1983). Therefore, it is suggested by prior research like that of (Beekes and Brown 2006 and Karamanou and Vafeas 2005) that corporate governance contributes in having a high quality of financial reporting to control for the practice of earnings management.

Egypt has a combined structure of the auditing firms. Some international auditing firms have a presence in Egypt (Deloitte, KPMG, Crowe Horwath), in addition to well-established local auditing firms like (Mazars by Mostafa Shawky). The practice of corporate governance must be disclosed in annual reports of listed companies (Metawee, 2013).

Financial reporting quality is determined based on how precise the financial reports reflects a firm's information regarding its operations and specially information regarding the firm's expected cash flows, this is explained by (Verdi 2006). The quality of the accounting information is how informative the reported numbers are and the level of their disclosure as well as the compliance with the Generally Accepted Auditing Standards (GAAS), this definition for the quality of accounting information is provided by (Cascino et al. 2010).

Practitioners, analysts and researchers debate on the available solutions for the corporate failures this is because in developing countries malpractices still exist despite the fact of the existence of the corporate governance code and this is the Case in Nigeria as its proved that financial reports are not reliable and do not reflect true information (Uwuigbe et al. 2015). And so, due to the different legal, economic and political background between the countries, it is normally stated that the national accounting
standards vary among the countries and the financial statements are prepared based on those standards.

A brief discussion for the development of the Egyptian stock market and the accountings practices in Egypt starts back at 1888 when Cairo stock exchange was one of the most active stock exchange markets. In the 1970s the Egyptian Capital Market Authority (CMA) was established in order to govern the stock market. However rules were not perfectly applied therefore, the market slept until the beginnings of the 1990s, and in 1992 a new law was introduced to the capital market that created some development and these developments had an impact on the accounting practices in Egypt.

In 1996 the minister of economy calls for the formation of committee that is responsible for issuing accounting and auditing standards. Moving to the following year, 1997, the minister of economy imposed the international accounting standards on all the firms that are listed in the Egyptian stock exchange market. (Ragab and Omran2006).

1.3 Research Focus

This research focuses on studying the impact of firm characteristics on earnings management in certain companies in Egypt listed in the Egyptian stock exchange. The focus of this research is to test for different possible relationships between the independent variables (Firm Characteristics) and dependent variable (Earnings management) in the some firms listed in the Egyptian market.

This research focuses on mainly four types of firm characteristics that are commonly used and identified in prior researches as firm characteristics and those characteristics are the firm size, firm age, firm financial leverage and firm audit quality. This study
uses the 50 most active firms listed in the Egyptian stock exchange as a sample for the period 2007 – 2011, using the disclosure book for gathering the required data.

1.4 Research Problem

Based on the many problems and acts by the managers to try practicing earnings management, stakeholders doubt the credibility and reliability of the financial reports. The accounting earnings are of great importance to the stakeholders given the fact that it’s the end product of the accounting process. (Uwuigbe et al 2015). In the previous researches, the factors that constituted the firm’s characteristics were different and the effect of them on earnings management was not agreed upon. Very few previous researches were done in Egypt regarding the effect of firm characteristics on earnings management.

1.5 Research Aim and Objectives

The general aim of this research is to test the effect of several factors of firm’s characteristics on earnings management and this is through:

- Analyzing the type of relationship between each independent variable (Firm characteristics) and the dependent variable (earnings management)
- Examining the reasons behind the type of relationship, between each independent variable (Firm characteristics) and the dependent variable (earnings management)

1.6 Research Value

In the previous researches, the factors that constituted the firm’s characteristics were different and the effect of them on earnings management was not agreed upon. Other than that, very few previous researches were done regarding the effect of firm characteristics on earnings management like the research that is done on Kenyan listed
firms by (Waweru and Riro 2013), other by (Kim and Yoon 2009) which is a study conducted using Korean listed firms, in addition (Uwuigbe et al 2015) have a research discussing the effect of firm characteristics on earnings management on the firms in Nigeria.

And regarding Egypt specially, the firm characteristics are always acting as control variables in the research while the main independent variable is the corporate governance, this is like the research that is done by (Soliman 2013) on Egyptian firms. In more depth, the corporate governance is grabbing all the attention in the studies and firm characteristics are just serving as control variables and this is shown in studies in different countries like that of (Shah and Butt 2009) that is done on Pakistani listed firms as well as the research of (Ahmad et al 2014) that gathered evidence from Pakistani listed firms as well. Taiwan is another region that witnessed this type of study (Chen et al 2005) as well as (Habbash 2010) who has a research that gathered evidence on the UK listed firm. So based on the previous reasons, almost no research is done that tests the impact of firm characteristics on earnings management in Egypt which gives value for this study to test for this relationship for firms listed in the Egyptian stock exchange.

The practical implication of this research is to support practitioners’ with methods and techniques to measure earnings management and others to measure firm characteristics variables, in addition, providing different methodologies and analytical techniques for investigating the relationship between the independent variables and the dependent variable. While the academic implication is to provide the basic concepts for the variables, explaining theories supporting the connection between the variables and to show how the factors of firm characteristics can affect earnings management.
1.7 Research Question

The purpose of this study is to test whether the firm characteristics have a significant effect on earnings management or not and if the relationship is significant, what is the type of it whether it’s a negative relationship or a positive relationship. As well as exploring the reasons behind the relationship between the independent variables and the dependent variable. Therefore, by the end of this study, the main research question that should be answered is:

"Do firm characteristics (Firm Size, Firm Age, Firm Financial leverage and Firm Audit quality) have an impact on earnings management in Egypt?"

1.8 Research Hypotheses

Testing the hypotheses helps in examining the research problem and therefore the hypotheses of this study are as follows:

- H1: There is a significant relationship between Firm size and earnings management
- H2: There is a significant relationship between Firm Financial Leverage and earnings management
- H3: There is a significant relationship between Firm Age and earnings management
- H4: There is a significant relationship between firms’ audit quality and earnings management

1.9 Research Outline

The different chapters in this study are aiming to explain the basic concepts of the variables with the theories governing them as well as investigate the different types of relationships between the independent variables (firm characteristics) and the dependent variable (earnings management) afterwards the variables are measured and tested for
analysis. So all of this is discussed and presented through five chapters that are described in the following section.

Chapter 1: Introduction

This chapter introduces the idea behind the study and explains the background of the study as well as the hypothesis to be tested. It also clarifies the main focus of the research along with the research question. Other very important points are mentioned in this chapter which are the research aim and objective and why this research does have a value. Finally this chapter clarifies the research outline and shows the organization of this research.

Chapter 2: Literature Review

The next chapter is the literature review chapter which provides all the prior literature that is in the same area of study and this is through mentioning the theories that support the study and the relation between the independent variables which are the firm characteristics and the dependent variable which is earnings management. The literature also aims at explaining the different types of relationships between the variables and the reasons behind these types of relation.

Chapter 3: Research Methodology

Moving to the third chapter which is the research methodology chapter, this chapter is responsible for providing the methodologies, techniques and types of tests and analysis to be used in the study to test for the research hypotheses. It also explains the measuring tools that will be used for the independent variables and the dependent variable based on prior research using the same variables. Information regarding the sample size and the source from which the data will be gathered as well as the research model to be
regressed and tested are all essential sections that are explained in the research methodology chapter.

**Chapter 4: Findings and Analysis**

After laying the ground for the hypothesis to be tested through identifying the research model, comes the chapter of the findings and analysis. This chapter applies the techniques mentioned in the third research methodology chapter and conducts tests and analysis so that eventually there will be results regarding the significance of the relationship between each firm characteristic and earnings management as well as the direction of the relationship. Afterwards the chapter analyses the findings and compares them to prior research.

**Chapter 5: Conclusion and Recommendation**

This chapter provides a conclusion regarding the findings of the tests performed to study the impact of firm characteristics on earnings management on the most active firms listed in the Egyptian stock market. In addition, the findings are related to the findings of prior research in the same area. Finally the limitations that constrained this study are mentioned in this chapter as well as recommendations on how to improve this study in the future.
CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

As mentioned in a prior research by (Ahmad et al 2014), earnings are the life blood of a company and everyone wants to boost it. So before understanding what earnings management is, it's important to have a good understanding of earnings, one of the ways to boost the company's blood is through earnings management.

In addition, Managers tend to violate the timing and matching principles and this result in the misstatement of the financial statements and eventually cause agency problem. This manipulation might negatively affect the company's wealth and takes advantage of the innocent financial statement users (stakeholders).

The previous chapter introduced an overview of the aim of the study, this chapter will discuss the prior literature regarding that discuss the different relationships between firms characteristics and earnings management as well as the reasons behind these relations, also theories supporting the relation between the variables are discussed in this chapter. The hypotheses of the research are mentioned after each section explaining the relation between an independent variable and the dependent variable.

2.2 Theoretical Framework

Several theories exist to reflect the relation between firm characteristics and earnings management so the following sub sections explain each theory in order to have a sufficient understanding of them.
2.2.1 Stakeholders Theory

Stakeholder theory is considered an extension for the agency theory. The agency theory states that there is an agency relationship between the principal (shareholders) and the agent (management) and that the agent should work on behalf of the principal for their best interest to avoid any conflict that might cause an agency problem (Jensen and Meckling 1976).

However, that is a narrow focus that has now developed so managers are now expected to take into account the interests of many different stakeholder groups, like interest groups linked to social, environmental and ethical considerations (Freeman, 1984; Freeman et.al, 2004). So a broader view is created expecting the management to care for the interests of different stakeholders group not only the shareholders in specific (Donaldson and Preston 1995).

The stakeholder theory is defined by (Freeman 1984, quoted in Schilling 2000) as “Any group or individual who can influence or is influenced by the achievement of the organization's objectives”. So (Carroll 1993, quoted in Schilling 2000) adds that "the term stakeholder may, therefore, include a large group of participants, in fact anyone who has a direct or indirect stake in the business". Examples for direct stakeholders are the shareholders, employees, investors, customers and suppliers, all whose interests are aligned with the interests of the firm, on the other side, the indirect stakeholders are those who are indirectly affected by the functions of the firm and an example for the is the government (Kiel and Nicholson 2003).

Another definition for the stakeholder theory is that "the Stakeholder theory defines organizations as multilateral agreements between the enterprise and its multiple stakeholders". The stakeholders can be divided into two groups, the internal group
consists of the employees, managers and the owners while the external group includes customers, suppliers and the community, the relation between the firm and those stakeholders group is controlled by different types of rules (Clarke 2004)

In addition, (Mitchell et al. 1997) argue that stakeholders can be identified by three different attributes, the first is their power to influence the firm, the second is the legitimacy of relationship with the firm, and the third attribute is the importance of the stakeholders claim on the firm. Stakeholders are defined as the groups or individuals whose goals are recognized by a firm or those who influence the firm's goal attainment. These groups include employees, clients, suppliers, banks, local government and agencies, political parties and community organizations.

Back in the 1970s and 1980s large national firms were becoming too powerful and their power went beyond the stakeholders' including the government so this raised the awareness of the stakeholder theory that helped raise the social awareness.

The theory faces a major criticism, which is that there are different types of stakeholders each with different needs and goals which are difficult to all be aligned with the goal of the firm so this causes the inability to equally solve the conflict of interests between the different groups of stakeholders (Habbash 2010, cited in Hoque 2006 and Etzioni 1998). Furthermore, when managers' incentives are not aligned with the interests of the Shareholders, they use the stakeholders as a cover by claiming that this conflict is due to providing consideration to the stakeholders' goals and objectives leading to the inability to satisfy the shareholders (Healy 2003).

In addition to that, it is argued that due to the large number of stakeholders with many different needs, a huge burden on the managers is created this was documented by (Sundaram and Inkpen 2004) who also add that managers should only care about
creating value for the shareholders as it is proposed that this will affect the decision
making process and eventually enhances the outcomes for the stakeholders.

Most of the management theories tend to link the firm's profits and responsibilities to
the shareholders like the agency theory as stated by (Schilling 2000) while the
stakeholders' theory emphasizes that the managerial activities should by constantly
growing and maintaining the stakeholders relationship not just the shareholders' (Jensen,
2001). Freeman et al. (2004) suggest that in order for the managers to maintain a strong
relationship with the stakeholders, they should try to produce as much value as possible
for stakeholders.

2.2.2 Agency theory

Agency theory is defined by (Jensen and Meckling 1976) as the theory that addresses
the relationship where in a contract the principal engages another person called the
agent to perform some service on their behalf which involves delegating some decision
making authority to the agent.

As explained by (Eisenhardt 1989) Agency problem occurs when the objectives of the
principal and agent contradict and it is difficult and costly for the principal to detect
what the agent is actually doing. Also, due to this separation of ownership, managers
usually focus on their own personal gains and interests and forget about the
shareholder’s interest which ultimately leads to the agency problem as well as incurring
costs that the owners bare at the end, and this is referred to the agency cost. It is added
by (Jensen &Meckling 1976) that these contradictions are because of the inability of the
shareholders to monitor the actions and the performance of the management.
Moreover, (Leuz et al 2003) state that the pursuit of self-interest by the managers, increases costs to the firm, like the costs of forming a contract, loss due to decisions being taken by the agents and the costs of observing and controlling the actions of the agents. Therefore the effects of such behavior are ultimately reflected in the company’s earnings.

Earnings management practice might be an indicator of the existence of an agency problem. Ownership and management are normally separated in modern corporations as shareholders are not always involved in the management of their firms. And this sets the basis for the agency problem. (Habbash 2010).

2.2.3 Signaling theory

Signals are considered as observable characteristics of an object that can be manipulated by a signaler to alter and control the perceptions of a receiver (Spence 1973). The Signaling theory is a framework for understanding how two parties deal with the asymmetric information in pre-contractual contexts based on (Wells et al. 2011). The theory is further explained as one party; (the signaler) must choose the quantity and method of communicating information, while the second party (the receiver) must interpret the signal (Connelly 2011).

The roots of the Signaling theory goes back to the writings of (Veblen 1899) in his book titled “The Theory of the Leisure Class” suggesting that conspicuous consumption and wasteful spending of the wealthy served as a signal of their status as elite. Moreover, in the 1970s, signaling theory was used in evolutionary biology to explain certain behaviors of animals. In addition, (Spence 1973) used signaling theory in the field of economics to explain the role of education as a signal in employer employee relationships.
Signaling is based on signals, that serve as indicators of hidden qualities or any kind of information that are either deliberately communicative or have evolved with the intention of communicating the signaler’s qualities. The purpose of the Signals is to alter the receiver’s beliefs and behavior in ways that benefit the signaler (Donath 2007).

2.2.4 Information Asymmetry Theory

The effects of information asymmetries have important implications for the decision makers. The main concept of the information asymmetry theory goes back to 1970 that was introduced by (Akerlof) in a paper with a title: “The Market for "Lemons": Quality Uncertainty and the Market Mechanism “that develops asymmetric information with the example case of automobile market the basic argument is that in many markets the buyer uses certain statistics to measure the value of the goods.

Thus the buyer sees the average of the whole market while the seller has more intimate knowledge and information. Akerlof argues that this information asymmetry gives the seller an incentive to sell goods of less than the average market quality and so this creates the information asymmetry problem.

Based on this example, Information asymmetry theory can be referred to as the disproportionate amount of information that two different parties have during the transaction, and the theory is based on the fact that the party that has more information might behave opportunistically and choose what kind information to provide to a second party and what information to hide (Kirmani and Rao 2000).

Confirming this, (Auronen 2003) mentions that management has an incentive to manage the company’s reported earnings in order to meet a certain earnings targets and, thus, to receive any bonuses that may be tied to the company’s earnings and this is called
performance-related pay and many other reasons exist for the incentive of the management to have a certain earnings level. This creates an information asymmetry in that managers can exercise the discretion they have on accruals, which in turn reduces the credibility and reliability of reported earnings, and the whole financial statements.

Information asymmetry among investors has been a long-standing concern to securities regulators (Loss, 1983; Loss and Seligman, 2001). And for that, the Securities and Exchange Commission (SEC) announced certain rules and regulations that prevent companies from hiding critical information and from making disclosures to selected groups of investors and analysts. (Auronen 2003).

2.3 Financial Reporting

Large companies collapse due to some accounting manipulation activities and this has raised serious questions about the effectiveness of different monitoring devices presumed to protect investors’ interests and control managerial opportunistic behavior (Ibrahim 2007). The process of financial reporting is of great importance and value to the users of financial statements as their decisions are based on them. (Al-khabash and Al-Thuneibat 2009). The financial reporting standards obligates the directors/management to present audited financial information and statements (Shah et al 2009).

Accounting methods help managers to determine the net income to be used in the contract between the managers and the shareholders therefore managers are expected to manipulate income level intentionally to benefit their own selves (Watts and Zimmerman 1986).

The aim of financial reporting is to provide information to help the users of the financial information assess the amounts, timings and uncertainty of net cash inflows of a certain
firm (Wawero and Riro (2013). Based on the International Accounting Standards Board (IASB) for the year 2010, information about firm earnings is a better indication for the firm's performance than information about cash inflows and out flows. In order to make information available for many users to be able to make decisions the demand for financial reporting increases to minimize the information asymmetry problem and the agency conflict between managers and investors (Healy and Palepu 2001).

The investor will be confident with the information provided by the firm and the market will be efficient when financial information is reported accurately and on time (Standards and poor's 2003). In confirmation with this, high quality financial information reported provides users with more reliable information to take decisions and better reflection for the company (Wawero and Riro 2013).

Companies that seek acquiring a position in the capital market find that accounting information is of great importance (Waweru and Riro 2013). High quality financial reporting is highly appreciated by investors and other stakeholders for several reasons. The first is that it reduces the information asymmetry problem as (Jensen and Meckling 1976) state in their research. The second reason is added by (Watts and Zimmerman 1978) which states that high quality financial reporting boosts the level of transparency and helps in executing better contracts.

In addition to that, the International Chamber of Commerce (ICC) in year 2005, clarifies that the market efficiency and the confidence of the investors are enhanced when the reporting information is reliable and of high quality in the sense of consistency, comparability and understandability.

Earnings management does take place in both developed and developing countries and this is based on prior research, hence (Al Fayoumi et al 2010) find that firms in Jordan
practice their earnings management upwards, while (Iqbal and Strong 2010) find that firms in US manage their earnings when seasoned equity are offered.

In Egypt, several mechanisms was adopted in the last decade, which aims to increase levels of transparency and confidence in the content of financial reporting, these mechanisms include Egyptian Accounting Standards (EAS), and the code of corporate governance (2005, 2011), and the creation of the Egyptian Financial Supervisory Authority (EFSA). In spite of all this mechanisms, the ability of companies to manipulate financial reports through the earnings management still exists, especially since these management practices are legally and within the flexibility allowed by the accounting standards which differ from illegal practices and that are classified as cases of fraud (Metawee, 2013).

Great care is directed towards the developed nations regarding the descriptive analysis while little care id directed toward the developing countries Even when research focus on developing countries, it is difficult to discern the reporting practices in certain countries as the research by (Dahawy et al. 2002; Chamisa 2000; Saudagarpan and Meek 1997) explain, this is especially true because of three main reasons, the first one is that the applied discipline accounting is strongly influenced by the surrounding environment, the second is that national environments differ dramatically between different countries, and the last reason is that developing nations are not homogenous which makes it misleading to generalize facts (Chamisa 2000).

Egypt's decision to adopt the International Accounting Standards(IAS) is parallel with a program towards companies' privatization to promote economic democracy and widespread stock ownership. This change requires a country to change its legal,
political, economic, and social environment to accommodate private enterprise (Tesche and Tohamy 1994).

One of the important agencies is the Capital Market Authority (CMA) which regulates the market and ensures the market transparency in Egypt. The CMA monitors the market activity and facilitates capital growth as well as creating an environment that boosts public confidence to promote investment in Egyptian companies (Dahawy and Conover 2007). They added in their research that the CMA has several essential tasks to help develop the Egyptian capital market which are: (1) skills improvement of the capital market officials; (2) achieving market diversity through introducing new financial instruments; (3) encouraging institutions to enter the market; (4) facilitating introduction of modern technologies; (5) requiring disclosure and market transparency to gain the public trust; and (6) enriches investor knowledge and awareness.

One of the most important goals in the preparation of financial statements in order to have value is to provide sufficient and timely information to external users. It was found that; overall, disclosure practices of actively traded Egyptian companies are low, however, in light of similar research on companies worldwide (Street and Gray, 2001).

2.4 Earnings management

Since financial information is the first and most important source of independent communication about the managers' performance inside a firm (Sloan 2001), financial reporting attracts management influence and so earnings management masks the firm's true financial position and block out some facts the stakeholders should know (loomis 1999).
Earnings management is explained as a purposeful intervention by the management in the process of financial reporting in order to gain personal benefit or for the organization (Blom 2009).

The literature does not offer a single accepted definition of the term earnings management however one of the most used definitions is that it’s the action that occurs when managers alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers as an example avoiding breaking rules of a loan contract, another reason for earnings management practice is to increase compensation and job security, this is explained in a research by (Healy and Wahlen 1999) and based on this explanation earnings management is not informative for shareholders, and therefore its opportunistic.

Firm investigations show that the reason behind financial scandals is practicing earnings management to manipulate the financial reports (Matoussi and Kolsi 2006) so earnings management is considered an attempt by the management to manipulate the reported information. (Akers et al 2007).

Earnings management practice is explained by several theories, according to the signaling theory earnings is considered the indicator to the capital market to test whether the firm engaged in value adding activities during a certain period or not (Waweru and Riro2013). While the stakeholder's theory is linked to the concept of earnings management as it is explained by (Prior et al 2008) that managers might manipulate earnings in order to enhance their private interests and benefits on the expense of shareholders and additionally the rest of stakeholders.
A third theory is the famous agency theory that is defined as the framework for forming a contract between two parties, the principal who hires the agent so that the agent works on behalf and for the benefit of the principal (Jensen and Meckling 1976, Baiman 1982, and Eisenhardt 1989). Agency theory explains the agency problem which is due to the agent (management) acting in their own benefit and in an opportunistic manner on the expense of the principal (owners/shareholders) (Jensen and Meckling 1976).

This theory includes benefits and costs. Benefits are explained by (Healy and Palepu 1995) as the improvement in the communication of the private information of the management to the stakeholders so in the presence of information asymmetries managers will tend to take decisions that will be useful and beneficial to them (Waweru and Riro 2013). While the costs which are called agency costs are faced by the owners if managers are able to make private gains like increase in their compensation or reduced dismissal if the management performance is low (Weisbach 1988).

The incentives behind practicing earnings management vary, however based on (Healy and Wahlen 1999) there are four main incentives which are external contract incentives, management compensation incentive, regulatory motivations and capital market motivations.

Several techniques exist for the practice of earnings management like manipulations of research and development and sale and lease back (Matoussi and Kolsi 2006), other techniques are the use of revenue recognition method, operating expense timing , unrealistic assumptions to estimate liabilities and operating actions (Ortega and Grant 2003).

As it is discussed by (Dechow and Skinner 2000) , there is only a fine line between the concept of earnings management and the concept of fraud, therefore, there is wide
variety of earnings management activities, and they cannot always be classified easily. (Soliman 2013), (cited in Abdelghany 2005) classified the types and variety of activities of earnings management that could take place in a company which are; (1) Big Bath, means cost is admitted using one-time restructuring charge. This option will cause the company to suffer big expense on cost for this year but it will earn big profit on the next year; (2) Abuse of Materiality, means by manipulating earnings through materiality principal, where there is no specific range about how material a transaction is; (3) Cookie Jar, also known as rainy jar or contingency reserves, means in a good financial condition period, the company can reduce earnings by making more reserves, bigger cost and one write off, vice versa.

Moreover, (4) Round Tripping, back to back and Swap, done by selling an asset/unit to other company with an agreement to buy it back on a fixed price level, and this will help increasing company’s revenue; (5) Voluntary accounting changes, done by changing accounting policy used by the company; (6) Conservative Accounting, done by choosing the most conservative accounting method, such as LIFO and adding cost to R&D rather than capitalize it.

Previous researches tried to figure out various approaches to detect earnings management. The first is the choice of the accounting policy based on a research by (Skinner 1993).

This approach is based on the fact that managers have the ability and freedom to choose the accounting policy used and their action can change the accounting income through increasing or decreasing it. The second approach is the income smoothing which has a main objective that is reducing the earnings short term volatility and so a steady stream of profit is reported, but this approach is not easily used as a detector of earnings
management as it's hard to differentiate between normally smoothed earnings and intentionally smoothed earnings, this approach is explained by (Imhoff, 1997).

The third and fourth approaches for detecting earnings management are considered the most important classification for the practice of earnings management, these are the real transactions or real earnings management (Roychowdhury 2006) and accrual based methods/earnings management (Jones 1991 and Dechow et al 1995). Ways of manipulating earnings through real transactions are through offering discounts to increase the sales or by offering good credit terms however this approach is difficult to be a tool for detecting earnings management as there is no criteria or benchmark to determine the best action to be taken by the management this is explained by (Sun and Rath 2010). Another example is added by (Al Khabash and Al thuneibat 2009) (cited in Beneish 2001) for practicing real earnings management is through selling some used assets to get gains and this shows that real earnings management influences and affects the cash flow of the firm.

On the other hand, the accrual approach takes advantage of the accounting alternatives and estimations available to determine income and this doesn't have a direct effect on income (Al Khabash and Al thuneibat 2009) (cited in Beneish 2001). This approach is used due to the ease of shifting revenues between accounting periods or carrying over expenditures (Jones 1991 and Dechow et al 1995). It is argued that managers practice discretion through accruals rather than cash flow as accruals are less observable so the rise of earnings management comes from the application of the accrual base that makes it easy for the management to manipulate in the financial information for their own opportunistic interests and needs (Chen et al 2014).
Accrual-based accounting leads to the division of total accruals into non-discretionary and discretionary components. The discretionary accruals are the proportion of accruals that management chooses to report, taking advantage of the diversity of accounting policies available and the freedom to exercise professional judgment (Jones, 1991 and Gul et al., 2003).

Management may decide to manipulate accruals for two purposes. The first is to deliver value-related information to the market and investors and this is based on (Healy and Palepu, 1993). While the second purpose is to maximize management compensation or meet regulatory requirements, and this process is referred to as opportunistic discretionary accruals (Christie and Zimmerman, 1994). Either type of discretionary accruals increases the uncertainty of earnings, but opportunistic discretionary accruals are generated solely by earnings management.

Finally as stated by (Soliman and Ragab2014), (cited in Schipper 1989), Earnings management is an intention by the management to obtain private gain through intervening in the process of financial reporting on purpose. And it is added in a research by (Abdulrahman and Ali 2006) that earnings management practice adheres with the Generally Accepted Accounting Principles (GAAP), so the practice falls within the bounds of accepted manipulations of accounting procedures and this differentiates earnings management from fraud as no violation for the rules took place, however this practice leads to inaccurate information about the company.

According to the Financial Accounting Standards Board (FASB) for the year 1985, Accrual accounting attempts to record the financial effects on an entity of transactions that have cash consequences in the periods in which the transactions took place rather than only in the period in which cash is received or paid. This explains that by using
accrual accounting managers can control the timing of revenue and expense recognition and thus can manipulate the firm's earnings for a given period (Shah et al. 2009).

2.5 Firm characteristics and earnings management

Over the last decades, many prior literature study the determinants of earnings management (Dechow et al. 2010, Uwuigbe 2013 and Uwuigbe et al. 2014). However very limited research is done to investigate the impact of firm characteristics on earnings management.

There are different types of firm’s characteristics that could affect earnings management. Based on (Uwuigbe et al. 2015) firm size, corporate strategy and firm’s financial leverage are characteristics that affect the existence of earnings management. While (Hendricks and Singhal 2001) mentioned that there are three components for firm characteristics, firm size, diversification and firm’s capital intensity. Other firm characteristics include firm size, leverage and performance and those were mentioned by (Wawero and Riro 2013). Moreover, (Kiganane et al. 2012) added that there are mainly two characteristics which are the nature of the firm and the characteristics of the entrepreneur, but this is for firms managed only by entrepreneurs.

Previous research has shown that firms engaging in earnings management activity are often small sized firms, less profitable, characterized by lower growth rate, and have higher level of leverage than their industry average as stated by (Defond and Jiambalvo 1991).

In addition to that, (Peyman et al. 2013) added in their research seven factors that constitute firm characteristics which are, firm age, size, international experience, education, market knowledge and research, innovation and finally commitment.
Adding to this, audit quality importance can’t be ignored. External auditing is an important corporate governance tool and plays a significant role in reducing agency costs as well as information asymmetry as mentioned by (Jensen and Meckling 1976), Audit firms of different sizes usually demonstrate different levels of prudence and independence, (Hsieh and Tsai 2004).

This research will focus on four main types of firm characteristics which are the commonly used and those are the Firm Size, Firm Age, Firm financial leverage and finally the firm's audit quality another independent variable that will be affecting this study would be the survival variable which is a dummy variable to be only used in the regression model to solve for the problem of firms that enter and exit the stock market each year during the five years of the study. And as stated some literature exists on the effect of firm characteristics on earnings management in developed countries like US, France and Russia but this is not the fact regarding the developing countries as very few literature exist, so this study attempts to study the relation between firm characteristics and earnings management in a developing country, Egypt.

2.5.1 Firm size and earnings management

The size of a firm varies in many ways and it’s essential to consider how the size affects the quality of reported information. So the firm size might affect the level of earnings management (Becker et al 1998).

A theory that suits the relation between firm size and earnings management is the information asymmetry which explains the information asymmetry problem as the lack of information available for the stakeholders (Schipper 1989, Warfield and Wild 1995). It is argued by (Meek et al 2007) that large firms have lower information asymmetry as they have strong governance and control so this leads to the reduction of the earnings
management practice. Based on (Prior et al 2008) managers may perform discretionary actions to convey favorable or unfavorable information about the firm to the public. Chae (2005) found that small firms have higher information asymmetry than large firms. Demsetz (1986) notes that small firms have high amounts of internal information. Firm size is a widely used proxy for the amount of public information available regarding a company (Harris et al 1994).

Large sized firms witness greater agency costs and this means great opportunistic practices (Jensen and Meckling 1976) this shows that the agency theory has an impact on the relation between firm size and earnings management. According to (Habbash 2010) agency theory is the most popular and has received great attention from researchers; the theory is based on the idea of separation of ownership and management (principal and agent). The origin of the agency theory goes back to (Smith 1776) as the theory in the book discusses the problem of the separation of ownership and control and it is suggested that managers of other people’s money cannot be expected to watch over it with the same concerned watchfulness that one would expect from owners. (Habbash 2010, Cited in Smith 1776).

Jensen and Meckling (1976) defined agency relationship as a contract under which the principal hires another person or the agent to perform some service on their behalf which involves delegating some decision making authority. Moreover, it is concerned with ensuring that the agent acts in the best interest of the principal.

Moving to the empirical evidence, the relationship between firm size and earnings management is debatable. (Kim et al 2003) discuss in their research the two different types of relationship between firm size and earnings management. Starting with an inverse relation that, the larger the firm the less the practice of earnings management.
They find that this might be caused by several reasons as follows; firstly, the firm size is related to its internal control system. Large-sized firms may have stronger internal control system and may have more competent internal auditors as compared to small-sized firms. An effective internal control system helps in publishing reliable financial information to the public, so this will likely reduce the ability of the management to manipulate earnings. This is similar to what (Ball and foster, 1982) state in their research as they add that large firms are less likely to engage in earnings management due to the fixed costs associated with maintaining a strong internal control system over financial reporting.

Secondly, large firms are usually audited by one of the big four auditing firms and this helps prevent earnings management due to the efficient and effective audit performed, moreover based on the results of (Albrecht and Richardson 1990; Lee and Choi 2002), larger firms are also sensitive to critical monitoring and, thus, are less likely to manage earning. Third reason is the reputation cost, in large firms it’s higher than that in the small firms as large firms have better appreciation of market environment, better control over their operations and better understanding of their businesses relative to small-sized firms also large firms established their credibility of financial information by generating reliable information therefore this might prevent large firms from engaging in earnings management practices and this is similar to what is mentioned by (Ahmad et al 2014).

Finally, large-sized firms may be less likely to manage earnings relative to smaller counterparts because they are followed by more financial analysts, and this confirms to the findings of (Kim et al 2003).

On the other hand, the direct relationship states that large-sized firms are more likely to manage earnings than small-sized firms and the reasons are as follows as a start, large-sized firms face more pressures to meet or beat the analysts' expectations (cited in
Barton and Simko, 2002). In addition, large-sized firms have greater bargaining power with auditors so the larger the firm size, the more bargaining power they have in negotiations with auditors this is the same as what's mentioned by (Mark et al 2002). Auditors are more likely to waive earnings management attempts by large clients (cited in Nelson et al., 2002). Moreover, large-sized firms have more room to maneuver given wide range of accounting treatments available. They may have greater current assets, i.e. better ability, to do earnings management than small-sized firms. Last but not least, large-sized firms have stronger management power. Even though strong internal control systems do exist, the management may override the internal control system to manipulate earnings to outrun the thresholds.

Finally, large-sized firms may manage earnings to decrease political costs, which is similar to what (Bujaki and Richardson 1997; Watts and Zimmerman, 1978) mention that large firms are more likely to engage in earnings management due to their higher exposure to political costs. Political costs refer to costs arising from direct or indirect regulation causing a heavy scrutiny by stock market. Consequently, large firms may have a greater incentive to manage earnings downward to escape from such constraints. Based on that, managers of large firms might select accounting policies that cause a delay in income reporting and thus reduce political costs (Missonier 2004).

Other researchers who agree on the existence of a negative relation between firm size and earnings management are (Albrecht and Richardson 1990, Persons 1995, Lee and Choi 2002 and Sanchez-Ballesta and Garcia-Meca 2007). Others who find a positive relation are (Rangan 1998 and Degeorge et al 1999) who mention in their research that large firms have the tendency to manipulate their accruals to overstate their earnings and avoid any negative earnings report.
Others confirm that large firms have greater tendency to manipulate earnings as the operations are complex and users cannot identify overstatements like (Lobo and Zhou 2006, Fernandes and Ferreira 2007 and Naz et al 2011). Consistent with prior study's findings such as (Dimitropoulos and Asteriou2010) and with expectations of agency theory, size is found to have a significant positive relationship with earnings management (Olatunji and Fakile 2012, Waweru and Riro 2013 and Uwuigbe et al 2015). However, to some researchers' like (Burgstahler and Dichev1997) the relation of firm size to earnings management remains unexplored and unknown.

Based on previous studies and results, it can be seen that large sized firms can have significant effect on management opportunistic behavior such as earnings management. Consequently, this study proposes the following hypothesis:

H1: There is a significant relationship between Firm size and earnings management

2.5.2 Firm Financial Leverage and earnings management

Prior literature link between the debt level and the choice of accounting policy and that’s because debt covenants are based on the accounting numbers reported and any violation in the debt covenants imposes costs on the company (Waweru and Riro 2013).

Some managers who seek to reduce the debt covenants level tend to use accounting policies and methods that help them report financial statements that attract external users and that are credit worthy (Bowen and shores 1995). Also managers might work on improving the firm's financial flexibility to prevent the reporting of an image of financial distress (Easton 1993).

One of the famous theories that explain the relation between firm financial leverage and earnings management is the financial distress theory by (Jaggi and Lee, 2002 and Fung
and Goodwin, 2013) which examines earnings management incentives among managers in financial distress firms. They argue that when managers manipulate the firm’s earnings, they are doing that to convince their creditors that the financial distress is temporary nature and will be able to recover soon.

Another theory would be the information asymmetry, According to (Jones et al. 2005), information asymmetries tend to be less severe for large loans, since any fixed costs associated with obtaining information about a borrower are less of an obstacle for large loans. It is also suggest that small borrowers have greater information asymmetries, and a loan’s size is typically positively correlated with its borrower’s size.

Moving to the empirical evidence, Most of the researches agree that the relation between firm leverage and earnings management is positive like (Press and Weintrop 1990 and Sweeney 1994, as well as Mohrman1996) who supports this relation by stating that firms with higher leverage are expected to adopt accounting techniques that increase the current income of the firm. In addition, (Klein 2002, Jiang et al. 2008, Bekiris and Duokakis 2011 and Waweru and Riro2013) they all found that highly leveraged firms are more likely to engage in earnings management as financial leverage is positively related to absolute abnormal accruals.

Uwuigbe et al (2015), states a positive relation between both variables and supporting this relation is the research of (Dechow et al 1996 and Klein 2002). When a company relies on debt, the managers tend to choose accounting policies that increase the income so that they abide by the debt covenants imposed by banks and bondholders and this allows them to avoid any renegotiation costs (Inoue and Thomas 1996, Beatty and Weber 2003).
Beatty and Weber (2003) suggests that leveraged firms engage in Earnings Management to avoid debt covenant default, similar to what (Weber, 2006) mention in their research, firms with financing needs and firms approaching debt covenant default triggers have higher levels of abnormal accruals, a higher incidence of Generally Accepted Accounting Principles (GAAP) violation and a higher likelihood of committing accounting fraud. Furthermore, it is suggested that when a firm is close to a debt covenant default, managers tend to make misstatements in the financial information (Efendi et al 2007).

Despite all these findings, (Jensen 1986 and Ke 2001) argued that debt creation reduces manager’s optimistic behavior which means firm leverage and earnings management are negatively related. Similarly, (Pourheidari and Hemmati 2005), based on their research results, firm managers have no motivation to manage profits by making use of financial providing through liability. Leverage represents the debt structure of a company and is used in numerous studies as a measure for debt covenant violations (Elayan et al 2008).

In the study of (Habbash, 2010) it states that highly leveraged companies are found to be less involved in fraudulent practices, such as earnings management. This result is consistent with (Becker et al. 1998) who find that leverage is negatively associated with the absolute value of discretionary accruals in conformity with the inverse relation, lower financial leverage is associated with income increasing policies (Astami and Tower 2006).

Jelinek (2007) studies the effect of leverage increase on accrual earnings management and concludes that increased leverage is associated with reduced accrual Earnings Management which means the increase in most liabilities (financial leverage) leads to the decrease of opportunity taking behaviors as well as a reduction in profit.
management and this is mainly for two reasons, first, leverage requires debt repayment, thus reduces cash available to management for non-optimal spending. Second, when a firm employs debt financing, it undergoes the scrutiny of lenders and is often subject to lender-induced spending restriction (Jensen, 1986).

Based on previous studies and results, it can be seen that the firm financial leverage level can have significant effect on management opportunistic behavior such as earnings management. Consequently, this study proposes the following hypothesis:

H2: There is a significant relationship between Firm Financial Leverage and earnings management

2.5.3 Firm Age and earnings management

Aging is the process of a general decline in the physical functioning of the human body, such as the ability to remember, react, move, and hear. Similarly, firms should weaken over time and lose their ability to compete; however, Age could actually help firms become more efficient, this is defined by (Loderer et al 2009). As time passes, firms discover what they are good at and learn how to do things better (Arrow 1962 and Ericson & Pakes, 1995). They specialize and new techniques are found to standardize, coordinate, and speed up their production processes, as well as to minimize costs and improve quality.

Based on prior research, Firms that have been in the market for long time tend to have low level of earnings management than beginners as they are well known companies, that have a great value in the market and they have a reputation to protect, also they are aware of the rules and codes that govern their practices.
Old firms might have improved their financial reporting practices over time (Alsaeed, 2006) and secondly they try to enhance their reputation and image in the market (Akhtaruddin, 2005) so the older the firm the less tendency to perform earnings management practices.

Based on previous studies and results, it can be seen that firm’s age can have significant effect on management opportunistic behavior such as earnings management. Consequently, this study proposes the following hypothesis:

H3: There is a significant relationship between Firm Age and earnings management

2.5.4 Firm's Audit quality and earnings management

The role of auditing in ensuring the quality of reported earnings has come under considerable scrutiny due to recent corporate accounting scandals. ‘Audit quality differences result in variation in credibility offered by the auditors, and in the earnings quality of their audit clients.

The agency problems associated with the separation of ownership and control, accompanied with information asymmetry between management and owners, create the demand for an external audit committee with high quality and efficiency. This external audit committee is responsible in analyzing and verifying that the financial statements are fairly stated in conformity with the Generally Accepted Accounting Principles (GAAP) and that these statements reflect the ‘true’ economic condition and operating results of the entity management (Lin and Hwang, 2010). The external auditors are required, by the Framework for Audit Quality developed by the International Auditing and Assurance Standards Board’s (IAASB), to discuss and communicate with the audit committee about the quality, not just the acceptability, of accounting principles applied by the client company.
DeAngelo (1981) defines a quality audit as the joint probability of detecting and reporting financial statement errors. A high quality audit is more likely to detect and report errors and irregularities. Thus, it is an effective barrier to earnings manipulations. Many theories exist to support the relation between audit quality and earnings management.

The first one is the Signaling theory which will definitely affect the audit quality, as it is a term used to describe the behavior of two parties (principal / agent) that have different information. It states that the principal's behavior sends signals that a qualified agent must react to this signal to achieve high audit quality. Many definitions to signal have found the one we will use is a signal is a perceivable action or structure that is intended to or has evolved to indicate an otherwise not perceivable quality about the signaler or the signaler’s environment, hence the purpose of a signal is to indicate a certain quality (Richard D. Morris, 1987). A high qualified auditor must react and understand the signal of a certain company when it decided to retain a large proportion of its stocks by analyzing this signal that the firm will be very profitable on the long run and expects to have a good future performance as for bad firms they won't be able to make such signal because it is too costly to retain the junk stock.

A second very famous theory as mentioned previously is the agency theory which provides a framework for organizing relationships through the contracting mechanism in which one party, the principal, hires another party, the agent, for purposes of delegating responsibility to the latter, that was a definition for the theory agreed upon by (Jensen and Meckling 1976, Baiman 1982, Eisenhardt1989 and Baiman1990).

Jensen and Meckling (1976) mentioned that the agency theory alters the idea of issues arising due to the separation of ownership will lead managers (Agents) to act in an
opportunistic manner by increasing their personal wealth on the expense of the owners (principal). According to (Fama and Jensen 1983), monitoring the Board Of Directors (BOD) decisions is very important as to assure the protection of the shareholder’s interest and that the financial reports are efficient and can be relied upon as earnings management practice can be misleading to the users of financial statements.

When financial reporting includes management’s judgment, this leads to the existence of benefits and costs. Benefits are explained by (Healy and Palepu1995) as the potential improvements in the communication of management’s private information to stakeholders, which in turn improves the resource allocation decision, on the other hand the costs which are referred to the agency costs will be faced by owners if the managers managed to acquire abnormal private gains.

A third theory is the information asymmetry. Auditing reduces asymmetries between managers and shareholders by allowing outsiders to verify the validity of financial statements as it is a valuable method of monitoring used by firms to reduce agency costs (Watts and Zimmerman 1983). When a firm is not audited by one of the big four this means no strong control exists which leads to the information asymmetry problem as no information is available for the shareholders and this leads to greater probability of earnings management practice to occur. (Schipper 1989, Warfield and Wild 1995).

Moving to the empirical evidence, A firm’s internal governance structure is one of the forms that constrain the management from practicing earnings management (Dechow,sloan and sweeney,1996). A quality audit is expected to constrain opportunistic earnings management (Lin and Hwang, 2010) as well as to reduce information risk that the financial reports contain material misstatements (Davidson et al., 2005).
This results in an inverse relation between audit quality and earnings management. In support for this relation, (DeAngelo, 1981) suggests that large audit firms have more ability to detect and reveal management misreporting. Lenard and Yu (2012) and Becker et al. (1998) found that firms audited with auditors other than the big four report significantly greater discretionary accruals. Bartov et al, (2000) suggest that higher quality auditors tend to report any error and have no willingness to accept any manipulations. Similar results are proven by (becker et al 1998).

Several reasons existed behind the importance of having a high quality audit firm auditing a certain firm the firsts is proposed by (Francis and Krishnan 1999) who argue that firms with high accruals have greater tendency for opportunistic earnings management and thus have higher incentive to hire one of the big four audit firms to assure that earnings are credible. The big four auditing firms have a very huge incentive to maintain a high audit quality due to the following reasons, the first one is that they have large number of clients, in addition, better resources employed like the technology, training programs and the experience (Rusmin, 2010), finally the last reason is having a reputation that might be lost if they didn’t report a misstatement or a manipulation (Canegham, 2004 and Chung et al, 2005).

The majority of the prior literature proves the existence of a negative relation between firms audit quality and earnings management and very few find a direct relation between both variables in the sense that when there is a high audit quality, firms tend to practice higher level of earnings management. In the study of (Burilovich1997), she explained that auditing firms with the greatest market share tend to allow greater discretion to the client in determining accruals. Also (Memis and Cetenak 2012) find that audit quality doesn’t constrain the earnings management practice in emerging countries.
The study by (Yasar 2013) finds that the audit quality doesn't have an impact on discretionary accruals so there is no difference in audit quality between Big Four and non-Big four audit firms in constraining the practice of earnings management, (Piot and Janin2007) agreed to this finding.

Based on previous studies and results, it can be seen that audit quality and being audited by one of the big 4 audit firms can have significant effect on management opportunistic behavior such as earnings management. Consequently, this study proposes the following hypothesis:

H4: There is a significant relationship between firms' audit quality and earnings management

2.6 Summary

Managers have the ability to attract investors through practicing earnings management and playing with the financial ratios of the firm. Prior research focus mainly on the effect of corporate governance on earnings management while very few studies the effect of firm characteristics on earnings management specially in developing countries (Ahmad et al 2014).

The prior research show significant relationship between the variables however the type of relation has not been agreed upon. Different theories like the agency theory, signaling theory and the information asymmetry theory played a great role in supporting the relationship between the different variables of the firm characteristics (independent variables) and the earnings management (dependent variable).
Hypotheses resulting from prior research regarding the relation between firm characteristics and earnings management must be tested and analyzed therefore the next chapter will introduce the methodologies that will be used to be able to test for the hypotheses and the tools and techniques to be used in measuring the variables.
CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

Previous chapters showed the theoretical and empirical relation between the independent variables (firm characteristics) and the dependent variable (earnings management). This chapter aims to prepare for the testing of this relationship as it shows the measuring tools for the dependent variable (earnings management) and the independent variables (firm characteristics) and it shows how the sample is selected and the methodology for collecting the data.

Therefore this chapter will include the following sections: the research strategy and philosophy, the research methods, sample selection and the method for collecting the data as well as a section for showing the measuring tools for the independent and the dependent variable and finally a section that explains the research model that presents the regression equation of the study.

3.2 Research Strategy

This research is an applied research as theories and methods are used and applied to test whether firm characteristics have an impact on earnings management in the 50 most active firms in Egypt or not.

3.3 Research Philosophy

For a positivist, the world operates by laws of cause and effect that we can discern if we use a scientific approach to research, this was defined by (Sekaran and Bougie 2013), the positivism philosophy is reflected in this research as the aim is to measure the relation between firm characteristics and earnings management and this is done through certain
scientific procedures followed. This leads this study to adhere the deductive concept as the research depends on literature and theories and it tests the effect of firm characteristics on earnings management. (Wilson 2010) explained a deductive approach as developing a hypothesis based on existing theory, and then designing a research strategy to test the hypothesis. Obviously, the best choice for this study is for it to be a correlation study, as it tests the relation between two variables, the independent variables (firm characteristics Variables) and the dependent variable (Earnings Management) and how the independent variable affects the dependent variable.

The Tool used to measure the earnings management is an equation to find discretionary accruals, while firm characteristics variables are measured through ratios and other techniques, so this leads to the use of a quantitative approach, which was explained by (Sekaran and Bougie 2010) as a predetermined, that involves a large number of respondents and it’s about numbers and objective hard data. Moreover, (Saunders et al 2009) defined Construct Validity that refers to the extent to which the research measurement questions actually measure the presence of those constructs the research intended them to measure. In order to ensure research construct validity it is essential to identify research unit of analysis, tools and instruments that will be discussed in the next 2 sections.

3.4 Research Methods

This section will show the sample used in the study, how the data is collected as well as discussing the type of data and the regression model used along with the statistical tools that are used to conduct the analysis.
3.4.1 Data Collection and Sample Selection

The unit of analysis in this research will constitute of a sample with a population of firms that are listed in the Egyptian stock exchange (EGX) as the data will be easily accessible and specifically, the study is using a sample of the 50 most active firms listed in the (EGX) from the year 2007-2011.

However, financial institutions like banks, insurance companies and leasing companies will be eliminated from our sample due to their specific and different corporate governance and disclosure requirements, however the sample at the end is constituted of 60 firms as firms enter and exit the market each year and a survival dummy variable is used to control for this change which is equal to 1 if the firm is one of the most active firms in each given year from 2007 to 2011; otherwise it is equal to 0. This leaves us with a sample of 300 observations.

The second point is the tool that will be used, which will be secondary data as the data to be gathered to measure the dependent variable (Earnings management) are from the financial statements which are historical published data, while for the independent variables (factors of firm’s characteristics), will be measured through ratios and the financial statements will be used as well to gather the data. Data is mainly from the disclosure book for the years 2007-2011 and some data will be purchased from the Egyptian Company for Information Dissemination (EGID).

Moving to another point, the methods used to do the tests are statistical ones like the descriptive statistics, correlation and regression analysis after that some diagnostic analysis are done to check for normality, linearity, autocorrelation and multi-co linearity. This is done using the Statistical Package for Social Science (SPSS).In
addition to that, this study is considering a panel data type and this will require using the Stata program to conduct the random effect Generalized Least Square (GLS) regression.

To ensure the research’s construct validity, the instruments that will be used which are: the Descriptive analyses, this type of statistics do exactly what they say: they describe and present data, for example, in terms of summary frequencies (like the mode, mean and the median, etc) Such statistics make no inferences or predictions, they simply report what has been found, in a variety of ways, (Cohen et al 2007), based on that the descriptive analysis will be used as the independent variables and the dependent variable are known and measurable and just needs to describe the relationship between them in a statistical manner.

The second analysis is Pearson’s correlation analysis which aims to analyze the relationship between firm characteristics and earnings management so it shows the direction of the relation and its strength between the variables and each other. Moreover, in order to find a causal relation a regression analysis is needed which is to use data from one variable to predict an outcome on another variable and by that it is a way of modeling the relationship between variables, (Cohen et al 2007), Using the multiple regression model will be suitable in this research as it helps to calculate the effect of two or more independent variables on a dependent variable which is the case, as the research tends to calculate and predict the relationship between different firm characteristics variables (independent) and Earnings management (dependent variable).

3.4.2 Panel Data

This section proposes the use of panel data instead of the cross sectional assumption and this means that the observations contain both time series and cross sectional units. As defined by (Brooks 2008), "Panel data will embody information across both time and
Panel analysis begins with determining the type of regression needed for the study and the panel data models are either fixed effects or random effects models. In models with fixed effects, as explained by (Pintea et al 2014), the error component can be correlated with regressors; research hypothesis states no correlation between regressors and random error component. The random effects model assume that the error component is a totally random error, and the assumption is that the error does not correlate with regressors (Baum, 2001 and Baltagi, 2008)

The panel data methodology has an important advantage which is the assumption that firms are heterogeneous, and this is an advantage over studies that use time series or cross sectional data as these studies usually have no control for the heterogeneity level, and this might cause the results to be biased and unreliable. Therefore using panel data is better for having unbiased and more reliable results this is proposed in a book by (Baltagi 2011) and other advantages for panel data are added like being very informative and having more variability and less collinearity among the variables.

3.4.3 Fixed effect Vs. Random effect

Park (2009) differentiates between the fixed effect and the random effect by stating that the fixed effect model examines group differences in intercepts, assuming the same slopes and constant variance across entities or subjects. It is added by (Kohler and Kreuter 2012) that the fixed-effects model controls for all time-invariant differences between the individuals, so the estimated coefficients of the fixed-effects models cannot be biased because of omitted time-invariant characteristics.
While on the other hand, a random effect estimates variance components for groups (or times) and error. In a random effect model the difference among groups (or time periods) lies in their variance of the error term, not in their intercepts (Park 2009). The rationale behind random effects model is that, unlike the fixed effects model, the variation across entities is assumed to be random and uncorrelated with the predictor or independent variables included in the model, so the entity's error term is not correlated with the predictors which allows for time-invariant variables to play a role as explanatory variables. (Kohler and Kreuter 2012, Greene 2008)

This study uses the Ordinary Least Square (OLS) method of regression according to (Ehikioya 2009) as well as the random effect Generalized Least Square (GLS) regression (Park 2009). The GLS was first explained by (Aitken 1934) as the technique for estimating the unknown parameters in a linear regression model. GLS is used when there is a certain degree of correlation between the explanatory variables (independent variables) of the regression. In this case, ordinary least squares and weighted least squares can be statistically inefficient, or even give misleading results.

Table 3.1 shows the sample sector classification which shows the classification of 60 firms over 13 sectors with different weights.
Table 3.1
Sample sector classification

<table>
<thead>
<tr>
<th>No</th>
<th>Sector</th>
<th>Number of Firms in a sector</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Basic Resources</td>
<td>4</td>
<td>6.6%</td>
</tr>
<tr>
<td>2.</td>
<td>Chemicals</td>
<td>4</td>
<td>6.6%</td>
</tr>
<tr>
<td>3.</td>
<td>Constructions and Materials</td>
<td>8</td>
<td>13.3%</td>
</tr>
<tr>
<td>4.</td>
<td>Food and Beverage</td>
<td>9</td>
<td>15%</td>
</tr>
<tr>
<td>5.</td>
<td>Industrial goods, services and automobiles</td>
<td>8</td>
<td>13.3%</td>
</tr>
<tr>
<td>6.</td>
<td>Media</td>
<td>1</td>
<td>1.6%</td>
</tr>
<tr>
<td>7.</td>
<td>Oil and Gas</td>
<td>1</td>
<td>1.6%</td>
</tr>
<tr>
<td>8.</td>
<td>Personal and household products</td>
<td>8</td>
<td>13.3%</td>
</tr>
<tr>
<td>9.</td>
<td>Real estate</td>
<td>10</td>
<td>16.6%</td>
</tr>
<tr>
<td>10.</td>
<td>Technology</td>
<td>1</td>
<td>1.6%</td>
</tr>
<tr>
<td>11.</td>
<td>Telecommunication</td>
<td>3</td>
<td>5%</td>
</tr>
<tr>
<td>12.</td>
<td>Travel and leisure</td>
<td>2</td>
<td>3.3%</td>
</tr>
<tr>
<td>13.</td>
<td>Utilities</td>
<td>1</td>
<td>1.6%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
3.5 Variables Measurement

This study has the firm characteristics as the independent variables and earnings management as the dependent variable and how they are measured is shown and explained in the following sub sections.

3.5.1 The proxy for earnings management (Dependent Variable)

Chen *et al* (2005) in their research with the aim of investigating the relationship between audit quality and earnings management for Initial Public Offering (IPO) firms that was done through investigating the Taiwan economic journal data base of 367 new issues between the years 1999 and 2002, Said that unexpected accruals, also called discretionary accruals, are used to measure earnings management.

Also, (Abdul Rahman and Ali 2006), had a research that aimed to investigate the effect of some monitoring functions on reducing earnings management among 97 firms over the period 2002-2003 for the Malaysian stock market, used the modified version of Jones model to calculate the earnings management. Rusmin (2010) in a research with the aim of investigating the association between earnings management and auditor quality that was held in Singapore through investigating secondary data for 301 public firms listed in Singapore Stock Exchange (SGX), Said that modified Jones model is used to measure discretionary accruals which is a proxy for earnings management.

In addition to that, a research uses discretionary accruals to measure earnings management was done by (Siagian and Tresnaningsih2011) that aims to investigate whether independent directors and audit committees that are chaired by an independent director as required by the Jakarta Stock Exchange (JSX) affect the quality of reported earnings, which was done in Indonesia through taking a sample of 80 firms listed in
JSX and collecting secondary data from the pusatreferensipasar modal bursa efek Jakarta, Indonesian capital market directory and JSX Corner Brawijaya university.

Another research that agreed on using Jones model in calculating earnings management, was provided by (Choy 2012) with a research to propose a new measure of earnings management, studying the quarterly financial data for compustat for the years 1990-2009, gathered from the institutional brokers estimate system, Gross Domestic Product (GDP) data from the bureau of economic analysis web site and Consumer Price Index (CPI) data from the bureau of labor statistics web site.

As it is mentioned in the literature review chapter, managers prefer to practice earnings management through managing accruals as this technique is less visible and financial statements users can't detect any misstatement easily (Habbash 2010). The majority of recent earnings management literature relies primarily on discretionary accruals as a proxy for earnings management and so this study will use the discretionary accruals as a proxy for earnings management.

### 3.5.1.1 Calculating the Total Accruals (TA)

Based on prior research and literature, total accruals can be measured through two different approaches; (1) The Balance Sheet approach; and (2) The Cash Flow Statement approach.

The Balance Sheet approach calculates the total accruals through a certain equation based on (Healey 1985 and Jones 1991) which is:

\[
TA_t = \Delta C_a_t - \Delta Cash_t - \Delta CL_t + \Delta DCL_t - \Delta DEP_t
\]
Where:

TA\(_t\): total accruals in year \(t\)

\(\Delta Ca\(_t\): \) change in current assets in year \(t\)

\(\Delta Cash\(_t\): \) change in cash and cash equivalents in year \(t\)

\(\Delta CL\(_t\): \) change in current liabilities in year \(t\)

\(\Delta DCL\(_t\): \) change in debt included in the current liabilities in year \(t\)

DEP\(_t\): depreciation and amortization expense in year \(t\)

The balance sheet approach is used in a research by (Bartov et al. 2000) and it is clarified that this method is used due to the unavailability of the data for the estimated period that allows the research to use the cash flow statement approach, so other than that, most researchers prefer to use the cash flow statement approach as it is more useful than the balance sheet approach (Collins and Hriber 2002, Shah et al., 2009 and Soliman and Ragab 2014):

This study will use the cash flow statement approach to calculate the total accruals, so based on that approach the total accruals can be calculated as follows:

\[
TA\(_t\) = NI\(_t\) - CFO\(_t\)
\]

Where:

TA\(_t\): total accruals in year \(t\)

NI\(_t\): net income in year \(t\)

CFO\(_t\): cash flows from operating activities in year \(t\)
3.5.1.2 Calculating the discretionary accruals (DA)

Total accruals are not the proxy for earnings management; on the contrary, earnings management is the part of the accruals that managers can have control on and are able to practice manipulations. According to this, the total accruals are divided into two parts which are the discretionary accruals and the non-discretionary accruals. So to calculate the discretionary accruals, non-discretionary accruals are subtracted from total accruals (Shah and Butt 2009)

\[ TA = DA + NDA \]

Where:

TA: total accruals
DA: discretionary accruals
NDA: non-discretionary accruals

Many models and methods exist to calculate the discretionary accruals, the Healy 1985 model, the DeAngelo 1986 model, Jones 1991 model and finally the modified cross sectional Jones 1995 model.

As a start, (Healy 1985) argues that the amount of non-discretionary accruals is basically the mean of total accruals over an estimation period prior to the event period and this leads to the following equation:

\[ NDA_{it} = \Sigma_j TA_{it}/T \]
Where:

NDA: Non-discretionary accruals,

J: year of the event period.

TA: Total accruals scaled by lagged total assets,

T: years included in the estimation period.

Therefore, the discretionary accrual in the event period is the difference between total accruals in that period and non-discretionary accruals. The second model is introduced by (DeAngelo 1986), this model measures the non-discretionary accruals by using the last period’s total accruals scaled by lagged total assets as follows:

\[ \text{NDA}_{it} = \text{TA}_{it-1} \]

The amount of discretionary accruals in the event period is the difference between total accruals in that period scaled by lagged total assets and that estimation of the non-discretionary accruals is. This model assumes that this first difference in total accruals has an expected value of zero under the null hypothesis of no earnings management.

Both models of Healy and DeAngelo use event studies where earnings management is assumed to take place only in the event period (Habbash 2010).

Those two previous models assume that nondiscretionary accruals are consistent over time while moving to the third model; Jones 1991, this model assumes that these accruals are affected by changes in the firm's economic conditions and this change in economic conditions is represented by the change in revenues (\( \Delta \text{REV} \)) to adjust for the expected changes in working capital accounts and by the gross property, plant and equipment (PPE) to adjust for the expected depreciation expense. Therefore, non-discretionary accruals in the Jones model are estimated as follows:
NDA \text{it} = \alpha \left(\frac{1}{\text{TA it-1}}\right) + \beta_1 \left(\frac{\Delta \text{REV it}}{\text{TA it-1}}\right) + \beta_2 \left(\frac{\text{PPE it}}{\text{TA it-1}}\right)

Where:

\text{TA it-1}: the book value of total assets of firm i at the end of year t -1,

\Delta \text{REV it}/\text{TA it-1}: sales revenues of firm i in year t less revenues in year t – 1 scaled by \text{TA it-1},

\text{PPE it}/\text{TA it-1}: gross property, plant and equipment of firm i at end of year t scaled by \text{TA it-1},

\alpha, \beta_1, \beta_2 are estimated parameters.

In this model, the parameters are estimated using a time-series model as follows:

\text{TAC it} = \alpha \left(\frac{1}{\text{TA it-1}}\right) + \beta_1 \left(\frac{\Delta \text{REV it}}{\text{TA it-1}}\right) + \beta_2 \left(\frac{\text{PPE it}}{\text{TA it-1}}\right) + \varepsilon \text{it}

The final Model to be discussed and used in this study is Modified Cross sectional Jones Model. Many previous research like (DeFond and Jiambalvo 1994, Klein, 2002, Xie et al. 2003, Abdul Rahman and Ali 2006 and Bartov et al. 2001) confirm that using the cross sectional model is much more superior than using the time series model in detecting earnings management as The use of \Delta \text{CREV} as a proxy for current accruals may not be as good as it was intended since there are a variety of other elements constituting current accruals.

Therefore modifications were made by (Dechow et al 1995) to modify Jones model by adding the change in receivables to the model as managers can manipulate earnings through revenues as they can control the timing of the recognition of those revenues such as recording them at year end when the cash has not yet been received. So the adjustment to the Jones model would be to subtract the change in receivables from the change in revenues when calculating the non-discretionary accruals to be able to detect
misstatements in the revenue based earnings. It is added that Changes in net receivables represent changes in accounts receivable less changes in accounts payable while changes in sales represents changes in operating activities.

Consequently, based on the modified Jones model 1995, that this study uses, the equation to be used in calculating the NDA is as follows: (Johari et al. 2008, Uwuigbe et al. 2015 and Shah et al., 2009)

\[
NDA_{it} = \beta_1 j [1/A_{it-1}] + \beta_2 j [\Delta REV_{it} - \Delta AR_{it}/A_{it-1}] + \beta_3 j [PPE_{it}/A_{it-1}]
\]

Where:

$NDA_{it}$ : Non-discretionary accruals for firm $i$ in year $t$

$A_{it-1}$ : Total assets for firm $i$ in year $t-1$

$\Delta REV_{it}$ : Change in the revenues (sales) for firm $i$ in year $t$ less revenue in year $t-1$

$\Delta AR_{it}$ : Change in accounts receivables for firm $i$ in year $t$ less receivable in year $t-1$

$PPE_{it}$ : Gross properties, plants and equipments for firm $i$ in year $t$

$\beta_1 j, \beta_2 j, \beta_3 j$ are firm specific parameters

In order to find the firm specific parameters to be used in the Non-Discretionary Accruals (NDA) equation, a regression equation is used to find those parameters and this equation is as follows: (Dechow et al. 1995, Ahmad et al. 2014, Salleh and Haat 2014, and Uwuigbe et al. 2015)

\[
TAC_{it}/A_{it-1} = \beta_1 j [1/A_{it-1}] + \beta_2 j [(\Delta REV_{it} - \Delta AR_{it})/A_{it-1}] + \beta_3 j [PPE_{it}/A_{it-1}] + \varepsilon_{it}
\]

After calculating the total accruals using the cash flow statement approach and calculating the non-discretionary accruals through the equation of the modified Jones model 1995, the discretionary accruals can then be calculated using the following equation: (Salleh and Haat 2014 and Uwuigbe et al. 2015)

\[
DA_{it} = TAC_{it}/A_{it-1} - NDA_{it}
\]

53
3.5.2 Independent variables

The following section provides detailed information about the measurement of each independent variable.

3.5.2.1 Firm Size

Firm size is measured as the natural logarithm of total assets (Al shubiri et al. 2012, Rusmin 2010) and this measurement was also used in several other researches like that of (Klien 2002 and Piot and Janin 2007) in addition to (Meek et al. 2007, Johari et al. 2008 and Soliman 2013) and also (Waweru and Riro 2013, Uwuigbe et al. 2015) use the natural logarithm of end of year total assets as a proxy for firm size and many others confirm this measurement like (Habbash 2010, Machuga and Teital 2009 and Dimitropoulos and Asteriou 2010) However, (Hillman et al., 2007) measure the firm size as the natural logarithm of its total sales. This study uses the natural logarithm of total assets as a proxy for firm size.

3.5.2.2 Firm's financial leverage

Mainly three measurements exist for measuring firm's financial leverage one of them is the debt to equity ratio which is total debt divided by total equity and this is used by (Watts and Zimmerman 1986). The second measurement is dividing the long term portion of the debt by the equity and this ratio is used by (Al shubiri et al. 2012, Waweru and Riro 2013 and Habbash 2010).

Finally the third ratio that can be used to measure financial leverage is the total debt ratio which is calculated by dividing total debt by total assets of the firm as used in the researches done by (Warrad et al. 2012, Weber 2006, Soliman 2013, Uwuigbe et al. 2015, Rusmin 2010 and Peasnell et al. 2005) and this ratio / measurement is the one to be used in this study.
3.5.2.3 Firm Age

The year of foundation is used for measuring the firm's age and this is calculated through subtracting the year of foundation from the year of analysis. This is measured by Log of the age of firm (Soliman 2013 and Mueller 1972) other measurement would be by not taking the log like the one used by (Cochran and Wood, 1984) as the firm age is measured by the number of years since it’s foundation. This study will use the log of the age of the firm as a proxy for the firm's age.

3.5.2.4 Firm's audit quality

A dummy variable is the most common measure for the firm's audit quality as a value of 1 is given to the firm if its audited by one of the big 4 firms while it's given 0 if otherwise. (Chen et al 2005, Soliman and Ragab 2014, Soliman 2013, Klein, 2002, Piot & Janin, 2007, Peasnell et al., 2005 and Metawee, 2013)

3.5.2.5 Firm Survival

Since the 50 most active firms change from a year to another, the effect of non-surviving firms on the results is important to be considered, therefore a dummy variable called firm survival (FSUR) is created where it is equal to 1 if the firm is active in a year and it is equal to 0 if it is inactive (Clementi and Hopenhayn 2006 and Soliman and Abdelsalam 2012)

Table 3.2 summarizes the research variables with their measuring tools used in this research.
### Table 3.2  
Research Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measuring tool</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variable</strong></td>
<td></td>
</tr>
<tr>
<td>Discretionary accruals (DAC)</td>
<td>Modified Jones Model 1995</td>
</tr>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
</tr>
<tr>
<td>Firm Size (FSIZE)</td>
<td>Natural log of total assets</td>
</tr>
<tr>
<td>Firm Financial leverage (FLEV)</td>
<td>Total debt ratio (Total debt/Total Assets)</td>
</tr>
<tr>
<td>Firm Age (FAGE)</td>
<td>Log of the number of years since the firm’s foundation</td>
</tr>
<tr>
<td>Audit Quality (AUQUL)</td>
<td>Dummy variable, 1 if the auditor is a big 4 firm and 0 otherwise</td>
</tr>
<tr>
<td>Survival (FSUR)</td>
<td>Dummy variable, 1 if a firm is active in a year and 0 otherwise</td>
</tr>
</tbody>
</table>
3.6 Model specification

To test for the hypotheses, this research utilizes a multiple regression model to examine and test for the impact of multiple independent variables which are the firm characteristics on the dependent variable which is the earnings management in the 50 most active firms in the Egyptian stock exchange.

\[ DAC = \beta_0 + \beta_1 FSIZE + \beta_2 FLEV + \beta_3 FAGE + \beta_4 AUQUL + \beta_5 FSUR + \varepsilon \]

Where:

DAC: is the discretionary accrual, FSIZE: is the firm size, FLEV: is the firm's financial leverage, FAGE: is the firm age, AUQUL: is the audit quality, FSUR: is the survival variable and the \( \varepsilon \) is the error term.

Figure 3.1 shows the conceptual framework of the study

**Figure 3.1**

<table>
<thead>
<tr>
<th>Firm Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Firm Size</td>
</tr>
<tr>
<td>• Firm Financial Leverage</td>
</tr>
<tr>
<td>• Firm Age</td>
</tr>
<tr>
<td>• Audit Quality</td>
</tr>
</tbody>
</table>

Independent Variables | Earnings Management | Dependent variable
3.7 Summary

Discretionary accruals are used in this study as consistent with prior research in order to measure or detect financial misstatements or in other words, detect earnings management practice. Any manipulation is measured using the modified Jones model 1995 as based on (Dechow and Skinner, 2000) this model is the most powerful to detect earnings management. The chapter identifies the sample and the data source as well as clarifying the measurements for the independent variables as summarized in table 3.2. Tools and instruments used in the study were introduced in this chapter and the next chapter will show the results after applying those tools, instruments and methods so that the data could be analyzed.

The next chapter is the findings and analysis chapter which will apply the tests needed to answer the research question which is whether firm characteristics have a significant impact on earnings management or not.
CHAPTER 4: FINDINGS AND ANALYSIS

4.1 Introduction

The aim of this chapter is to show the results of the data analysis based on the measurements mentioned in the methodology chapter. The main aim for the tests conducted is to solve the main question of this research which is "Do firm characteristics (Firm Size, Firm Age, Firm Financial leverage and Firm Audit quality) have an impact on earnings management in Egypt?"

The research hypotheses are tested in this chapter using the model adopted for this research. The analysis will start by the descriptive statistics, followed by the correlation analysis and then the results of the regression analysis are shown and discussed to see whether the hypotheses are validated or not. The analysis was done using the Statistical Package for Social Sciences (SPSS).

4.2 Regression results for Earnings Management (Discretionary Accruals)

As it is explained in chapter 3, the methodology chapter, this study uses discretionary accruals as a measure of earnings management. Discretionary accruals (DAC) are the difference between total accruals and non-discretionary accruals (Salleh and Haat 2014)

Consequently, based on the modified Jones model 1995, the NDA is measured in this study using an equation as follows: (Johari et al., 2008 and Shah et al., 2009)
\[ \text{NDA}_{it} = \beta_1 j \left[ \frac{1}{A_{it-1}} \right] + \beta_2 j \left[ \Delta \text{REV}_{it} - \Delta \text{AR}_{it}/A_{it-1} \right] + \beta_3 j \left[ \text{PPE}_{it}/A_{it-1} \right] \]

Where:

\( \text{NDA}_{it} \): Non discretionary accruals for firm \( j \) in year \( t \),

\( A_{it-1} \): Total assets for firm \( j \) in year \( t-1 \),

\( \Delta \text{REV}_{it} \): Change in the revenues (sales) for firm \( j \) in year \( t \) less revenue in year \( t-1 \)

\( \Delta \text{AR}_{it} \): Change in accounts receivables for firm \( j \) in year \( t \) less receivable in year \( t-1 \)

\( \text{PPE}_{it} \): Gross properties, plants and equipment for firm \( j \) in year \( t \)

\( \beta_1 j, \beta_2 j, \beta_3 j \) are firm specific parameters

In order to estimate the firm specific parameters (Coefficients) to be used in the NDA equation, an Ordinary Least Squares (OLS) regression equation is used to find those parameters and this equation is as follows: (Dechow et al 1995, Ahmad et al 2014, Salleh and Haat 2014)

\[ \frac{T\text{AC}_{it}}{A_{it-1}} = \beta_1 j \left[ \frac{1}{A_{it-1}} \right] + \beta_2 j \left[ (\Delta \text{REV}_{it} - \Delta \text{AR}_{it})/A_{it-1} \right] + \beta_3 j \left[ \text{PPE}_{it}/A_{it-1} \right] + \epsilon_{it} \]

The results of the regression analysis as shown in table 4.1, this table shows the ANOVA Analysis presenting a significance level of 0.212 while table 4.2 showing the model summary represents the adjusted R square which is equal to 0.005 which means that the explanatory power of this model is 0.5%.
Table 4.1
ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>2.065</td>
<td>3</td>
<td>.688</td>
<td>1.510</td>
<td>.212b</td>
</tr>
<tr>
<td>Residual</td>
<td>133.037</td>
<td>292</td>
<td>.456</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>135.102</td>
<td>295</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: TA/At-1
b. Predictors: (Constant), X3, X2, X1

Table 4.2
Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.124a</td>
<td>.015</td>
<td>.005</td>
<td>.67498683</td>
<td>1.978</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), X3, X2, X1
b. Dependent Variable: TA/At-1

4.3 Descriptive statistics

The descriptive statistics shows the mean, median, minimum and maximum values and the standard deviation of the dependent and independent variables. The variables used in this research are the independent variables (firm size, firm age, firm financial leverage and firm audit quality) and the dependent variable which is earnings management.
The Arithmetic mean is used to calculate the average of any numerical data, and the Median is defined as the middle item of all the observations arranged in order. The Mode is the value occurring most frequently. So in other words, the mean can be interpreted as the center of gravity of the distribution, Median divides the area of the distribution into two equal parts and the mode is the highest point of the distribution. In addition to that, the variance and the standard deviation are two very popular measures to measure the variability of the data (Triola, 2012).

The descriptive statistics aims to summarize and describe the features of the data. It has two methodologies one of them is the numerical method which measures and represents the mode, median, minimum, maximum and the standard deviation. While the other method is the visual method and this includes the use of dot plot, box plot, pie chart and histogram. (Triola, 2012).

Focusing on the numerical method, table 4.3 summarizes the mean, minimum, maximum and standard deviation for the variables of the study, the independent variables (firm age, firm size, leverage, audit quality and the survival) and the dependent variable (discretionary accruals), for the sample of 50 most active firms in the Egyptian stock market.
Table 4.3

Descriptive statistics for Discretionary accruals, firm age, firm size, leverage, audit quality and the survival variable.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAC</td>
<td>297</td>
<td>-.52189</td>
<td>11.01468</td>
<td>-.0043589</td>
<td>.67078676</td>
</tr>
<tr>
<td>Firm Size</td>
<td>300</td>
<td>16.44553</td>
<td>25.27664</td>
<td>20.9852619</td>
<td>1.77756021</td>
</tr>
<tr>
<td>Leverage</td>
<td>300</td>
<td>.00000</td>
<td>3.97758</td>
<td>.4354460</td>
<td>.35916367</td>
</tr>
<tr>
<td>Age</td>
<td>300</td>
<td>1.14613</td>
<td>1.61278</td>
<td>1.4147977</td>
<td>.12235858</td>
</tr>
<tr>
<td>Audit Quality</td>
<td>300</td>
<td>0</td>
<td>1</td>
<td>.25</td>
<td>.436</td>
</tr>
<tr>
<td>Survival</td>
<td>300</td>
<td>0</td>
<td>1</td>
<td>.61</td>
<td>.489</td>
</tr>
</tbody>
</table>

As it's shown in table 4.3, the results state that the mean value of the dependent variable which is the discretionary accruals (DAC) for the selected sample of firms is equal to (-0.0043589) with a standard deviation of about (67%). This average implies that about (0.4%) on average of the earnings management practices practiced by the sampled firms, are having a downward direction which means manipulating the earnings level by reducing it, this could be a type of activity of practicing earnings management named the cookie jar reserves which is as mentioned in chapter 2 which is making more reserves so that the earnings would be lower.

On the other side, other results show higher value average for the discretionary accruals like a study by (Uwuigbe et al 2015) that uses a sample of 20 firms listed in the Nigerian stock exchange resulted in an average discretionary accruals level of 10% downward earnings as well.
So there is a huge difference between the 0.4% and the 10% however this might be due to the small sample used in the Nigerian study as only 20 firms constituted the sample.

Moving to the independent variables, the results show that the average firm size for the sample is about 20.9% with a minimum of 16.4% and a maximum of 25.2% and a standard deviation of 1.77, the second independent variable which is the firms' financial leverage averaged to 43.5% of the total assets which means that the average of the firms depend a little bit more on equity rather than debt. The average age for the sampled firms is 1.414 which is equivalent to 26.97 years as an average, while the minimum firm age for the sample is 1.14 (equivalent to 14 years) and the maximum firm age is 1.61 (equivalent to 41 years). The fourth independent variable is the firms' audit quality which is measured by a dummy variable so the minimum value is 0 and the maximum value is 1 and it has an average of 25% which means that 25% of the sample firms is audited by one of the big four auditing firms.

4.4 Correlation and Multicollinearity analysis

This analysis aims to check the relationship between dependent and independent variables as well as the independent variables among each other and helps to check for the multicollinearity problem. It is stated by (Ho 2006) that the correlation must be two tailed if the hypotheses are not stating a particular direction for the relation between the independent variables and the dependent variable. So the correlation in this study is two tailed as the hypotheses are not specifying a certain specific direction.

The Pearson's correlation matrix is used and it shows the degree of correlation between the independent variables and based on (Soliman 2013, cited in Bryman and Cramer 1997), the Pearson's correlation between independent variables should not exceed 0.8 to prove that there is no multicollinearity problem among the variables.
As shown in table 4.4, the highest correlation is between audit quality variable and the firm size variable with the amount of 0.416 and this shows that there is no multicollinearity problem between the independent variables used in this research model, as it does not exceed the 0.8. This table also shows direction of the relationship among the variables as well as the strength of the relation.

For more understanding of the multicollinearity (Brooks 2008) in his book explained it as follows: "There is an implicit assumption that is made when using the OLS estimation method which is that the explanatory variables are not correlated with one another. If there is no relationship between the explanatory variables, they would be said to be orthogonal to one another. If the explanatory variables were orthogonal to one another, this means that adding or removing a variable from a regression equation would not cause the values of the coefficients on the other variables to change. However, a problem occurs when the explanatory variables are very highly correlated with each other, and this problem is known as the multicollinearity problem.

Another method suggested by (Hossain and Hammami 2009 and Al Shammari 2008) to test for the multicollinearity problem is through checking the tolerance or the Variance Inflation Factor (VIF). Prior studies like those by (Studenmund 2001 and Ho 2006) state that in order to prove that there is no multicollinearity problem the tolerance level should not be less than 0.10 and the variance inflation factor should not exceed the value of 10. Therefore, as it is shown in table 4.5, the results confirm that this study faces no multicollinearity problem as the lowest tolerance level is 0.650 which is greater than 0.10 and the highest VIF is 1.538 which didn’t exceed the value of 10, so there is no multicollinearity problem in this model.
A statistical tolerance analysis is when you take the variation of a set of inputs to calculate the expected variation of an output of interest. (Bruyere et al 2007) for further explanation, small tolerance value indicates that the variable under consideration is almost a perfect linear combination of the independent variables already in the equation and that it should not be added to the regression equation. All variables involved in the linear relationship will have a small tolerance. Some suggest that a tolerance value less than 0.1 should be investigated further. If a low tolerance value is accompanied by large standard errors and no significance, multicollinearity may be an issue.

Regarding the VIF, which is the Variance Inflation Factor, it measures the impact of collinearity among the variables in a regression model. The Variance Inflation Factor (VIF) is the inverse of tolerance, it is always greater than or equal to 1. There is no formal VIF value for determining presence of multicollinearity. However, its agreed that Values of VIF that exceed 10 are often regarded as indicating multicollinearity, but in weaker models values above 2.5 may be a cause for concern and further investigation is needed to check for the multicollinearity and fix it (Muller and Fetterman 2003).
Table 4.4
Correlation analysis for Discretionary accruals, firm age, firm size, leverage, audit quality and the survival variable.

<table>
<thead>
<tr>
<th></th>
<th>DAC</th>
<th>Firm Size</th>
<th>Leverage</th>
<th>Age</th>
<th>Audit Quality</th>
<th>Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAC</td>
<td>Correlation 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm Size</td>
<td>Correlation -.053</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig.</td>
<td>.364</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leverage</td>
<td>Correlation .388**</td>
<td>.031</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig.</td>
<td>.000</td>
<td>.596</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>Correlation -.061</td>
<td>-.355**</td>
<td>-.153**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig.</td>
<td>.294</td>
<td>.000</td>
<td>.008</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Audit Quality</td>
<td>Correlation -.031</td>
<td>.416**</td>
<td>.054</td>
<td>.048</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig.</td>
<td>.597</td>
<td>.000</td>
<td>.355</td>
<td>.405</td>
<td></td>
</tr>
<tr>
<td>Survival</td>
<td>Correlation .054</td>
<td>.236**</td>
<td>-.044</td>
<td>-.023</td>
<td>.453**</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sig.</td>
<td>.357</td>
<td>.000</td>
<td>.446</td>
<td>.694</td>
<td>.000</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).
Referring back to table 4.4, the correlations table, it shows that a negative correlation exist between the firm size and discretionary accruals which resulted in (-0.053) indicating that when the firm is larger in size the earnings management practice tends to decrease. Another negative correlation exist between the firm's age and earnings management with a correlation coefficient of (-0.061) showing that firms that have been founded for many years tend to practice less earnings management and this might be due to many reasons mentioned in chapter 2, one of those reasons is that large firms care too much for their reputation so these firms try to avoid manipulating earnings as to keep and protect their relation and trust with the users of the financial information.

The third negative correlation amounting (-0.031) is that between the firm's audit quality and discretionary accruals, which means that as long as the firm is audited by one of the big 4 auditing firms, the firm tends to reduce the earnings management practice. The only variable that had a positive correlation with the discretionary accruals is the firm's financial leverage as the correlation is equal to (0.388), this indicates that when the firm has a high level of leverage it tends to increase the earnings management practice.
4.5 Regression analysis

Regression analysis is concerned with describing and evaluating the relationship between a given variable and one or more other variables, in other words, the regression analysis explains the movements in a variable by reference to movements in one or more other variables (Brooks 2008).

Multiple regression analysis is used as this research studies the effect of multi variables on earnings management. Since the model of this research contains dummy and continuous variables so based on (Hutchinson and Gul 2004, Uwuigbe et al 2015, Habbash 2010 and Ahmad et al 2014), the Ordinary Least Square regression (OLS) is the best to be used. Since it is tested in previous sections for the multicollinearity problem and it is proved that it does not exist the VIF results confirmed that, so that’s why the multivariate hypothesis test is used.

In the previous section of the correlation analysis, table 4.4 showed the Pearson correlation which explains the relation between the dependent variable (earnings management) and the independent variables (Firm Size, Firm's financial leverage, firm's age and firm's audit quality), however, the regression analysis is done in this section as it is more powerful than the correlation as it explains the relation between the variables as well as showing the causal effect of this relationship.

After conducting the regression analysis, the adjusted R square of the model as shown in table 4.6 amounts to (15.3%) which means that 15.3% variation in the dependent variable (earnings management) is explained by the independent variables (firm characteristics). This value is somehow low but this is due to the existence of many other factors that might affect earnings management rather than the firm characteristics.
and those factors might be like those of the corporate governance and there are a lot of researches tackling the effect of corporate governance on earnings management.

However, this result is similar to the results of other studies like that of (Kim and Yoon 2009) conducted on Korean listed firms that had an adjusted R square of 0.11%, and another study by (Uwuigbe et al 2015) conducted on 20 listed firms in Nigeria that had an adjusted R square of 15.77%.

The analysis of this study show that the independent variables are important and effective in relation to the ŷ as the adjusted R square (15.3%) is close to the coefficient of determination (R square) which is equal to (16.8%). These values are shown in table 4.6. The R square shows that 16.8% of the change in the dependent variable is a result of change in the independent variables presented in the model, while 83.2% are affected by other independent variables that are not presented in the model of this study.

The value of the multiple correlation coefficient (R) of this model is (0.409) as shown in table 4.6, this value indicates a positive high relation between the actual values (Y) and the predicted values (ŷ) as it is so close to the value of 0.5, and the higher this value the better, therefore the sample of this study highly represents the population.

Moreover, in table 4.7, the significance level of the model is shown which is equal to (0.000) and that’s an indication that this model is highly significant as the criteria for the significance level is 0.05, if it's 0.05 or below the model is significant and if its above 0.05, the model will be considered insignificant.
### Table 4.6

**Model Summary**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.409a</td>
<td>.168</td>
<td>.153</td>
<td>.61721486</td>
<td>2.538</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Survival, Age, Leverage, Firm Size, Audit Quality
b. Dependent Variable: DAC

### Table 4.7

**ANOVA**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>22.329</td>
<td>5</td>
<td>4.466</td>
<td>11.723</td>
<td>.000b</td>
</tr>
<tr>
<td>1 Residual</td>
<td>110.858</td>
<td>291</td>
<td>.381</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>133.187</td>
<td>296</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: DAC
b. Predictors: (Constant), Survival, Age, Leverage, Firm Size, Audit Quality
The following table which is table 4.8, the regression results table, shows the impact of each independent variable (firm characteristics) on the dependent variable (earnings management). And the following section explains the relation between each independent variable with the dependent variable.

### Table 4.8

**Regression Results**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>(Constant)</td>
<td>.248</td>
<td>.821</td>
<td>.302</td>
<td>.763</td>
</tr>
<tr>
<td>Firm Size</td>
<td>-.025</td>
<td>.025</td>
<td>-.996</td>
<td>.320</td>
</tr>
<tr>
<td>Leverage</td>
<td>.741</td>
<td>.102</td>
<td>7.285</td>
<td>.000</td>
</tr>
<tr>
<td>Age</td>
<td>-.093</td>
<td>.326</td>
<td>-.286</td>
<td>.775</td>
</tr>
<tr>
<td>Audit Quality</td>
<td>-.121</td>
<td>.102</td>
<td>-1.193</td>
<td>.234</td>
</tr>
<tr>
<td>Survival</td>
<td>.169</td>
<td>.083</td>
<td>.123</td>
<td>2.035</td>
</tr>
</tbody>
</table>

Based on the results in table 4.8, the only independent variable that is highly significant to the dependent variable is the firms' financial leverage as the significance level is 0.000 which is far below the 0.05 which is the benchmark for the significance level. The rest of the independent variables (Firm size, firm age and firm's audit quality) are having an insignificant relationship with the dependent variable (earnings management) as the significance levels are higher than 0.05.
4.5.1 Firm size and earnings management

Firm size is always important for the external users before making a decision in regard of whether they want to deal with a large firm or a small one as each has advantages and disadvantage, so before a decision is taken, the size of the firm is considered and cost-benefit analysis is conducted based on the needs of the users of the financial information (Kim and Yoon 2009).

The results in table 4.8 indicate that the relationship between firm size and earnings management is insignificant as the significance level is (0.320) which is way higher than 0.05. This means that the first hypothesis of this research ($H_1$: There is a significant relationship between Firm size and earnings management) is rejected. The results also indicate that there is a negative relationship between firm size and earnings management and this is indicated by (-0.025).

This result is in conformity with prior studies like that by (Ahmad et al 2014) with a title of "Investigating the impact of corporate governance on earnings management in the presence of firm size: evidence from Pakistan" this study takes a sample of 50 listed firms in Pakistan stock market for the period 2009 to 2013 and the results confirms the existence of a negative relation between firm size and earnings management. Also, a study by (Ball and Foster in 1982) with a title of "Corporate Financial Reporting: A Methodological Review of Empirical Research" proved a negative relation between the firm size and earnings management. Moreover, the study by (Kim et al 2003) with a title of "The effect of firm size on earnings management" that is conducted on listed firms for the period 1983-2000, finds a negative relation between firm size and earnings management.

73
Moreover, the research titled "Corporate governance, firm characteristics and earnings management in an emerging economy" by (Waweru and Riro 2013) using a sample of 37 Korean listed firms implies a negative correlation between those two variables.

On the other hand, the result of this study regarding the relation between firm size and earnings management is opposite to several prior findings, one of which is the finding by (Soliman and Ragab 2014) with a research titled "Audit Committee Effectiveness, Audit Quality and Earnings Management: An Empirical Study of the Listed Companies in Egypt", the study used a sample of 50 most active firms listed in the Egyptian stock exchange for the period 2007-2010 and resulted in a significant positive relation between firm size and earnings management.

In addition, the study by (Habbash 2010) firm size is found to have a significant positive relationship with earnings management in a study using the top 350 companies listed in the London stock exchange for the period 2003-2006 titled" the effectiveness of corporate governance and external audit on constraining earnings management practice in the UK". Last but not least, a third study resulting in a significant positive relation between firm size and earnings management is that of (Uwuigbe et al 2015) with the title "Assessment of the effects of firms' characteristics on earnings management of listed firms in Nigeria" taking a sample of 20 firms listed in Nigerian stock exchange for the period 2006-2010.

4.5.2 Firm leverage and earnings management

Of course external users of financial information are concerned with the bankruptcy risk so leverage is an important variable to consider (Kim and Yoon 2009). Leverage represents the debt structure of a company and is used in numerous studies as a measure for debt covenant violations (Elayan et al., 2008).
The results in table 4.8 indicate that the relationship between firm financial leverage and earnings management is highly significant as the value of the significance level is equal to (0.000) which is way lower than 0.05. This means that the second hypothesis of this research (H2: There is a significant relationship between Firm Financial Leverage and earnings management) is accepted.

Results also indicate that there is a positive relationship between firm financial leverage and earnings management and this is indicated by (0.741). Several studies agree with this type of relation between firm financial leverage and earnings management which is a positive relationship, like the one by (Sweeney 1994) with the title of "Debt-covenant violations and managers’ accounting responses" that uses a sample of 130 US firms, this study states a positive significant relation between firm financial leverage and earnings management and this is similar to what (Soliman and Ragab 2014) finds with a research titled "Audit Committee Effectiveness, Audit Quality and Earnings Management: An Empirical Study of the Listed Companies in Egypt", the study uses a sample of 50 most active firms listed in the Egyptian stock exchange for the period 2007-2010.

In addition, the research by (Uwuigbe et al 2015) with the title "Assessment of the effects of firms' characteristics on earnings management of listed firms in Nigeria" taking a sample of 20 firms listed in Nigerian stock exchange for the period 2006-2010, states a positive relationship between firm financial leverage and earnings management as well as (Waweru and Riro 2013) using a sample of 37 Korean listed firms with a research titled "Corporate governance, firm characteristics and earnings management in an emerging economy". Confirming to this positive relation is the research of (Klein 2002) titled "Audit Committee, Board of Director Characteristics, and Earnings Management" Using a sample of 687 large publicly traded US firms.
However many other studies disagreed with the result of this study and stated a negative relationship between financial leverage and earnings management instead of a positive one. Examples for a negative result is the study by (Habbash 2010) using the top 350 companies listed in the London stock exchange for the period 2003-2006 titled "the effectiveness of corporate governance and external audit on constraining earnings management practice in the UK". In addition, (Ke 2001) states an inverse relation between firm financial leverage and earnings management in the research titled "Why Do CEOs of Publicly Traded Firms Prefer Reporting Small Increases in Earnings and Long Strings of Consecutive Earnings Increases?" that uses a sample of publicly traded firms from the EXCENMP database during the period of 1992 to 1998.

Moreover, a research titled "the Effect of Leverage Increases on Earnings Management" across a five years sample period by (Jelinek 2007) shows a result of a negative relationship between firm financial leverage and earnings management.

4.5.3 Firm Age and earnings management

Firms that have been in the market for a long time tend to have low level of earnings management than beginners as they are well known companies, that have a great value in the market and they have a reputation to protect, also they are aware of the rules and codes that govern their practices. Old firms might have improved their financial reporting practices over time (Alsaeed, 2006) and secondly they try to enhance their reputation and image in the market (Akhtaruddin, 2005) so the older the firm the less tendency to perform earnings management practices.

The results in table 4.8 indicate that the relationship between firm age and earnings management is insignificant as the value of the significance level is equal to (0.775) which is way greater than 0.05. This means that the third hypothesis of this research
There is a significant relationship between Firm Age and earnings management is rejected. Results also indicate that there is a negative relationship between firm age and earnings management and this is indicated by (-0.093).

In support of the inverse relation between firm age and earnings management, the study conducted by (Loderer and Waelchli 2009) in their study under the title of" Firm age and performance" with a sample consisting of all listed firms with data on CRSP, COMPUSTAT, and COMPUSTAT Industry Segment between 1978 and 2004.

As an extra confirmation for the inverse relation, a study titled" Markov-Perfect Industry Dynamics: A Framework for Empirical Work" by (Ericson and Pakes 1995), as well as the study by (Arrow 1962) titled "The Economic Implications of Learning by Doing". These studies state that there is a negative relation between firm age and earnings management so when a firm is old it tends to practice less earnings management.

There are no many prior literatures tackling the relation between firm age and earnings management and the majority who studied the relation found a negative relation between the two variables which is in consistency with the finding of this study.

4.5.4 Firm Audit quality and earnings management

A quality audit is expected to limit the practice of earnings management as it is mentioned by (Lin and Hwang 2010) and this shows a negative relationship between firm's audit quality and earnings management.

The results in table 4.8 indicate that the relationship between firms' audit quality and earnings management is insignificant as the value of the significance level is equal to (0.234) which is greater than 0.05. This means that the fourth hypothesis of this research
There is a significant relationship between firms' audit quality and earnings management is rejected. Results also indicate that there is a negative relationship between firms' audit quality and earnings management and this is indicated by (-0.121).

Several studies are supporting this negative relation between the firms' audit quality and earnings management, like the research of (DeAngelo 1981), with the title "Auditor size and audit quality" finds that the firm's audit quality and earnings management are inversely related as large audit firms are more able to detect any misreported information so no manipulation is accepted and this is agreed upon by (Becker et al 1998) with a research titled "The effect of audit quality on earnings management" testing the hypothesis in a multivariate setting using a sample of over 10,000 firm year observations. And (Bartov et al 2000), with a total number of 173 distinct firms, in a research titled "Discretionary-accruals models and audit qualifications" finds a negative relation between firms audit quality and earnings management.

Last but not least the finding by (Soliman and Ragab 2014) with a research titled "Audit Committee Effectiveness, Audit Quality and Earnings Management: An Empirical Study of the Listed Companies in Egypt", the study used a sample of 50 most active firms listed in the Egyptian stock exchange for the period 2007-2010 and resulted in a negative relation between firms' audit quality and earnings management as high quality audit constrains the practice of earnings management and this is similar to what (Chen et al 2005) find in their study on the Taiwan IPO firms with a research titled "Audit quality and earnings management for Taiwan IPO firms".

Despite the negative results, very few researches disagree and state that there is a positive relation between firms audit quality and earnings management as when the firm is audited by one of the big auditing firms, it tends to practice a higher level of earnings
management and manipulates the financial information reported to the users and the first example is (Burilovich 1997), she explained that auditing firms with the greatest market share tend to allow greater discretion to the client in determining accruals and took a sample of 72 regulated life insurance firms during the period 1984-1989. Also (Memis and Cetenak 2012) find that audit quality doesn’t constrain the earnings management practice in emerging countries, this study uses 1507 firms’ observations from listed companies in private firms across different 8 emerging countries, with the title "Earnings Management, Audit Quality and Legal Environment: An International Comparison".

The studies by (Yasar 2013 and Piot and Janin 2007) find that the audit quality doesn't have an impact on discretionary accruals so there is no difference in audit quality between Big Four and non-Big four audit firms in constraining the practice of earnings management.

Table 4.9 summarizes the above discussion regarding the findings of the research testing the impact of different firm characteristics variables (Firm size, Firms' financial leverage, Firm age and firms' audit quality) on the dependent variable which is earnings management using the discretionary accruals as a proxy.

The table lists all the independent variables along with the findings that state the relation between each independent variable with the dependent variable and based on the results in the table, the only accepted hypothesis is the second hypothesis which states the existence of a significant relation between the firm's financial leverage and earnings management and it resulted in a high significance level as mentioned in previous sections (0.000) and the relation is found to be strongly positive.
While on the other hand, the rest of the hypotheses are rejected as no significant relation existed between the rest of the independent variables constituting the firms' characteristics (firm size, firm age and firms' audit quality) and the dependent variable (earnings management).

**Table 4.9**

**Hypotheses Test Results**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Hypotheses</th>
<th>Results</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm Size</td>
<td>H&lt;sub&gt;1&lt;/sub&gt;</td>
<td>Rejected</td>
<td>Insignificant</td>
</tr>
<tr>
<td>Firm Leverage</td>
<td>H&lt;sub&gt;2&lt;/sub&gt;</td>
<td>Accepted</td>
<td>Significant Positive</td>
</tr>
<tr>
<td>Firm Age</td>
<td>H&lt;sub&gt;3&lt;/sub&gt;</td>
<td>Rejected</td>
<td>Insignificant</td>
</tr>
<tr>
<td>Firm Audit Quality</td>
<td>H&lt;sub&gt;4&lt;/sub&gt;</td>
<td>Rejected</td>
<td>Insignificant</td>
</tr>
</tbody>
</table>

**4.6 Regression Diagnostics**

The OLS linear regression has certain assumptions that might create problems that lead to inefficient and misleading results. Therefore there are assumptions and tests that must be conducted to check that no problems exist and to make sure that the findings of the OLS linear regression are reliable. So based on that, this study will check for the linearity and the normality as well as checking the multicollinearity problem, the existence of autocorrelation and the homoscedasticity of the data. These kinds of tests are proposed by (Cooke 1989)

The following sub sections will explain each type of test and will check whether there is a problem or not that might affect the results of the study conducted by the OLS linear regression.
4.6.1 Checking Linearity

In order not to have a linearity problem, each independent variable must be linear to the dependent variable. So to check for the linearity, the scatter plot is used as it plots each independent variable versus the dependent variable and it checks whether the independent and dependent variables are associated or not (Brooks 2008).

Figures 4.1, 4.2, 4.3 and 4.4 show the scatter plot for each independent variable versus the dependent variable to check for linearity and it is found that there is no linearity problem as data are gathered around a straight line, except for the audit quality variable because it’s a dummy variable so it's either equal to zero or one.
Figure 4.1
Scatter Plot
(Firm size vs. Discretionary accruals)

Figure 4.2
Scatter Plot
(Firm financial leverage vs. Discretionary accruals)
Figure 4.3
Scatter Plot
(Firm age vs. Discretionary accruals)

Figure 4.4
Scatter Plot
(Firms' audit quality vs. Discretionary accruals)
4.6.2 Checking Normality of the errors

To have reliable results the errors must be normally distributed around the mean of a zero value. The method that is used to check for the normality of errors is the histogram.

This graphical method is applied in this study to check for the normality for the regression model of this research which is:

\[
DAC = \beta_0 + \beta_1 \text{FSIZE} + \beta_2 \text{AUQL} + \beta_3 \text{FLEV} + \beta_4 \text{FAGE} + \beta_5 \text{FSUR} + \varepsilon
\]

Figure 4.5 is the histogram graph that shows that the data are normally distributed around the mean as the graph shows a bell shaped curve. Therefore, based on the result, there is no normality problem in this study.

Figure 4.5

[Histogram showing normal distribution]

\[
\text{Mean} = 7.94515 \\
\text{StDev} = 0.662 \\
N = 239
\]
4.6.3 Checking for Homoscedasticity of residuals

For the results to be reliable the graph must indicate homoscedasticity that is the variance of errors is constant, also the plots in the graph should not follow a pattern rather it should be randomly distributed. If the plots are following a certain pattern, this will indicates a heteroscedasticity which will indicate a problem.

This study indicates a heteroscedasticity as the graph in figure 4.6 shows, the data is not scattered and there is an obvious pattern.

Figure 4.6
Checking for Homoscedasticity
Solving the heteroscedasticity problem

Using the Statistical Package for Social Science (SPSS), the Heteroscedasticity problem could be solved using one of the transformation methods in order to transform the dependent variable which is the discretionary accruals in this study used as a proxy for earnings management. The methods vary and one of them is the (Reciprocal), so DAC (discretionary accruals) will be transformed into (1/DAC), this is considered a very strong transformation method with a major effect on the distribution shape and it’s the method that will be used in this study to transform the dependent variable and try to solve the heteroscedasticity problem. It is considered the most proper method to be used as it transforms both positive and negative values, however, it can't be applied to zero values. (Brooks 2008)

Other transformation methods are: the logarithm / Ln, this is a very strong method as well and has the same characteristics of the reciprocal method, except that it can't be applied to negative values, that’s why it can't be used in this study. The second method is the square root method, it has a moderate effect on the distribution shape and its weaker than the logarithm method, last but not least is the first difference method, this method takes the difference between the new and the old values of the dependent variable in order to transform it. (Brooks 2008).

Conducting the regression analysis after the transformation

After the dependent variable is transformed using the reciprocal method which is calculating the inverse of DAC to be used as the dependent variable instead of DAC, the regression analysis is repeated to check for homoscedasticity.
Figure 4.7 shows the scatter plot graph that checks for homoscedasticity, it could be considered that the hetroscedasticity problem is solved as the data started to scatter a little bit and to be distributed by coming out of the pattern.

Figure 4.7

Checking for Homoscedasticity after transformation

4.6.4 Checking for Multicollinearity

The existence of a multicollinearity problem means that there is a linear relation between the independent variables and this will result in biased results by the OLS, large variances will exist and it will be difficult to differentiate the individual impact of the explanatory variables, this was explained by (Murray 2006).

This test is already done in this study in section 4.4, as the pearson correlation was used as well as the tolerance (should not be less than 0.10) and the Variance Inflation Factor (VIF) (should not exceed the value of 10).
All these tests and statistics find that there is no existence of a multicollinearity problem among the variables in the research model, therefore all independent variables are not correlated to each other and the results of the OLS regarding this area are efficient and reliable.

4.6.5 Checking for Autocorrelation

The results of the study indicate the existence of an autocorrelation problem as the value of Durbin-Watson is (2.538) as shown in table 4.6, which is higher than the normal value which is approximately (2.000). It is explained by (Gujarati 1995) that Durbin-Watson statistic helps in determining the right combination of the explanatory variables existing in the research model. The Durbin-Watson statistics ranges from 0 to 4 as the 0 indicates a positive autocorrelation while the 4 indicates a negative autocorrelation, and both imply the existence of an autocorrelation problem. And as implied before, a Durbin Watson with a value of 2 means that there is no autocorrelation problem (Montgomery et al 2001).

Based on the result of Durbin Watson of this study, there is a negative autocorrelation as the value is (2.538) which is between the value of 2 and the value of 4. In order to fix this problem, transformation of the dependent variable is done using the SPSS.

Solving the auto correlation problem

This problem could be solved using the OLS regression model on the SPSS through transforming the dependent variable as explained earlier in section 4.6.3.1, which is using the reciprocal of the dependent variable (discretionary accruals), and conduct the regression analysis to find out the effect of this transformation on the value of Durbin Watson.
Table 4.10 shows the model summary for the regression analysis after the transformation. And the Durbin Watson value is shown to be (2.075) which is very close to the normal value of Durbin Watson which is (2.000). So based on that the autocorrelation problem is solved after the transformation.

**Table 4.10**

**Model Summary after the transformation**

<table>
<thead>
<tr>
<th>Mode</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.185(^a)</td>
<td>.034</td>
<td>.018</td>
<td>524.42583</td>
<td>2.075</td>
</tr>
</tbody>
</table>

\(^a\) Predictors: (Constant), Survival, Age, Leverage, Firm Size, Audit Quality

b. Dependent Variable: DAC_INV

### 4.7 Results of the regression analysis after the transformation

When the dependent variable is substituted by its reciprocal, the regression analysis solved an existing two problems which are the heteroscedasticity problem and the autocorrelation problem and the results are shown in above sections.

Using a transformation method had an impact on the results of the model that are different than the original results before the transformation. As shown in table 4.10 the Durbin Watson value is improved which is a good thing however the adjusted R square value has fallen to 1.8% after it was 15.3%. This means that only 1.8% of the variability in the reciprocal of the dependent variable is explained by the independent variables which are the four firm characteristics used in the study.
To check for the model significance, table 4.11 shows the result of a significance level (0.069) which is slightly higher than the 0.05, however it is still considered a significant model at a significance level of 0.1 (confidence level 90%).

Table 4.11

ANOVA after the transformation

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>2849643.541</td>
<td>5</td>
<td>569928.708</td>
<td>2.072</td>
<td>.069b</td>
</tr>
<tr>
<td>Residual</td>
<td>80031534.426</td>
<td>291</td>
<td>275022.455</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>82881177.966</td>
<td>296</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: DAC_INV  
b. Predictors: (Constant), Survival, Age, Leverage, Firm Size, Audit Quality

Table 4.12 shows the tolerance (should not be less than 0.10) and the Variance Inflation Factor (VIF) (should not exceed the value of 10), and their values prove that the transformation didn't create a multicollinearity problem, as the lowest tolerance value is 0.650 which is far from the 0.1, and the highest VIF is equal to 1.538 which is far away from the value of 10.
Table 4.12

Collinearity Statistics after the transformation

<table>
<thead>
<tr>
<th>Model</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tolerance</td>
</tr>
<tr>
<td>(Constant)</td>
<td></td>
</tr>
<tr>
<td>Firm Size</td>
<td>.681</td>
</tr>
<tr>
<td>Leverage</td>
<td>.962</td>
</tr>
<tr>
<td>Age</td>
<td>.807</td>
</tr>
<tr>
<td>Audit Quality</td>
<td>.650</td>
</tr>
<tr>
<td>Survival</td>
<td>.787</td>
</tr>
</tbody>
</table>

a. Dependent Variable: DAC_INV

It is important to mention that after the transformation to solve the hetroscedasticity problem and the autocorrelation problem, other diagnostics are rechecked and no problems regarding the linearity, Normality or multicollinearity were caused.

Finally table 4.13 summarizes the regression results to show the relationship between each independent variable with the dependent variable.
The results show the following: Firm size and firm age have an insignificant relationship with earnings management which is similar to the results before the transformation. The firm financial leverage shows a significant positive relationship with earnings management also same as the results before transformation, however the significance level before transformation was (0.000) and after transformation it became (0.047) which is significant but at a significance level of 0.05 which means that the confidence level is 95%.

The difference is shown in the firm's audit quality variable as the results before transformation shows insignificant relationship between firms audit quality and earnings management while after transformation, the results show a significant positive relationship between firms audit quality and earnings management with a significance level of (0.064) which is significant but at a significance level of 0.1(confidence level 90%).
Table 4.14 summarizes the above discussion regarding the findings of the research testing the impact of different firm characteristics variables (Firm size, Firms' financial leverage, Firm age and firms' audit quality) on the dependent variable which is earnings management using the discretionary accruals as a proxy after it has been transformed by taking its reciprocal.

The table lists all the independent variables along with the findings that state the relation between each independent variable with the dependent variable and based on the results in the table, there are two accepted hypothesis which are: the second hypothesis that states the existence of a significant relation between the firm's financial leverage and earnings management and it resulted in a significance level of (0.047) and the relation is found to be positive.

The other accepted hypothesis is the fourth hypothesis that states the existence of a significant relation between the firm's audit quality and earnings management and it resulted in a significance level of (0.064) and the relation is found to be positive.

On the other hand, the rest of the hypotheses are rejected as no significant relation existed between the rest of the independent variables constituting the firms' characteristics (firm size and firm age) and the dependent variable (earnings management).
### Table 4.14

Hypotheses Test Results after transformation

<table>
<thead>
<tr>
<th>Variables</th>
<th>Hypotheses</th>
<th>Results</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm Size</td>
<td>$H_1$</td>
<td>Rejected</td>
<td>Insignificant</td>
</tr>
<tr>
<td>Firm Leverage</td>
<td>$H_2$</td>
<td>Accepted</td>
<td>Significant Positive</td>
</tr>
<tr>
<td>Firm Age</td>
<td>$H_3$</td>
<td>Rejected</td>
<td>Insignificant</td>
</tr>
<tr>
<td>Firm Audit Quality</td>
<td>$H_4$</td>
<td>Accepted</td>
<td>Significant Positive</td>
</tr>
</tbody>
</table>

#### 4.8 Testing for Fixed effect Vs Random effect

In order to decide between a random effects and fixed effect model, researchers like (Greene 2008) often rely on the Hausman, 1978 specification test. The Hausman test is designed to detect violation of the random effects modeling assumption that the explanatory variables are orthogonal to the unit effects.

Using the STATA Program, Hausman Specification test is applied to determine whether to use a fixed or random effect model. If test results are significant; then the null hypothesis is rejected and the alternate hypothesis is accepted, hence showing a fixed effect model must be used. However, if the test results are insignificant and the null hypothesis is accepted then a random effect model is preferred.(Park 2009, Clark and Linzer 2012 and Greene 2008).

#### 4.8.1 Results of the regression analysis using Stata Program

The regression model used for the panel data analysis is the following:

$$ DAC = \beta_0 + \beta_1 \text{FSIZE} + \beta_2 \text{FLEV} + \beta_3 \text{FAGE} + \beta_4 \text{AUQL} + \beta_5 \text{FSUR} + \varepsilon $$
Where:

\textbf{DAC}: is the discretionary accrual, \textbf{FSIZE}: is the firm size, \textbf{FLEV}: is the firm's financial leverage, \textbf{FAGE}: is the firm age, \textbf{AUQUL}: is the audit quality, \textbf{FSUR}: is the survival variable and the $\varepsilon$ is the error term.

**Results of the Hausman test**

Table 4.15 shows the hausman test result, to determine whether to use the fixed effect regression or the random effect regression. The test is carried out for the sample of 60 firms for the period from 2007 to 2011, using the discretionary accruals as a dependent variable.

The result indicates an insignificant level equals to (0.1316) compared to (0.05) and this indicated that the random effect regression should be used instead of the fixed effect.

**Table 4.15**

<table>
<thead>
<tr>
<th></th>
<th>Discretionary Accruals (DAC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hausman Test</td>
<td>\text{Prob&gt;chi2= 0.1316}</td>
</tr>
</tbody>
</table>

**Applying the Regression Using the Random effect Model**

A random effect model is estimated by Generalized Least Squares (GLS) regression using the stata program and the results are shown in table 4.16.
The model is found to be highly significant as the significance level is shown to be (0.0000) and the adjusted R Square is equal to (16.75%) which means that 16.75% variation in the dependent variable (earnings management) is explained by the independent variables (firm characteristics) this is similar to the results of (Waweru and Riro 2013) conducting a study on Kenyan listed firms.

Regarding the significance level between each independent variable and the dependent variable it was found that only the firms’ financial leverage has a significant relationship with earnings management with a significance level of (0.000) leading to the second hypothesis of the study to be accepted, in addition the coefficient is equal to...
(0.74046090), which shows a positive relationship between both variables, this is similar to the findings of (Weber 2006 and Efendi et al. 2007).

The rest of the independent variables show an insignificant relationship with the dependent variable as their values are greater than 0.05 and even greater than 0.1, as shown in table 4.17 and these results regarding the relation between the firm size, firm age and firms' audit quality are similar to the findings of (Jovanovic 1982, Al saeed 2006, Canegham 2004, Chung et al 2005, Albreth and Richardson 1990 and Lee and Choi 2002).

Based on that, table 4.17 summarizes the results of the Random effect GLS regression using the stata program for analyzing the relation between the firm characteristics (Firm size, firm age, firm financial leverage and firms audit quality) as independent variables and earnings management as the dependent variable.

### Table 4.17

#### Hypotheses Test Results using Random effect GLS regression

<table>
<thead>
<tr>
<th>Variables</th>
<th>Hypotheses</th>
<th>Results</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm Size</td>
<td>$H_1$</td>
<td>Rejected</td>
<td>Insignificant</td>
</tr>
<tr>
<td>Firm Leverage</td>
<td>$H_2$</td>
<td>Accepted</td>
<td>Significant Positive</td>
</tr>
<tr>
<td>Firm Age</td>
<td>$H_3$</td>
<td>Rejected</td>
<td>Insignificant</td>
</tr>
<tr>
<td>Firm Audit Quality</td>
<td>$H_4$</td>
<td>Rejected</td>
<td>Insignificant</td>
</tr>
</tbody>
</table>
4.9 Summary

This chapter applies the tools to measure the variables and it presents the results after conducting several types of analyses and statistics. Those analyses are the descriptive statistics that describe the data, as well as the correlation analysis that shows Pearson's correlation that is used to check for the multicollinearity problem. In addition, the regression analysis is conducted using the Ordinary Least Square regression (OLS) that shows the significance level of the model as well as the adjusted R square and the significance level of each independent variable with the dependent variable.

Followed by that was the section discussing the regression diagnostics to test that no problems exist regarding the use of the OLS, those tests are the linearity and normality check, as well as the homoscedasticity of residuals check and finally the autocorrelation checking. The study shows an autocorrelation problem as well as a heteroscedasticity problem and these were fixed using two techniques, the first is through the OLS regression on the SPSS by transforming the dependent variable by using its inverse (reciprocal). The second technique was assuming a panel data type and using the random effect GLS regression model on the Stata program.

As a conclusion for the results of this study that tests the impact of firm characteristics on earnings management taking a sample of the 50 most active firms listed in the Egyptian stock exchange for the period 2007-2011, the common results were between the OLS regression conducted using the SPSS and the random effect GLS regression using the Stata and the results state that the relationship between firm size and earnings management is insignificant which leads to the rejection of the first hypothesis of the study, same applies to the relation between firm age and earnings management as well
as the firm's audit quality and earnings management as the relation is also insignificant and leads to the rejection of their hypotheses in the study.

Firm financial leverage is the only independent variable that results in a significant relation with the earnings management, in addition the relation between firm financial leverage and earnings management is found to be positive, therefore the hypothesis stating this relation in this study is accepted.

The next chapter is the last chapter in this study and it will conclude the major findings of the study as well as mentioning the limitations faced during conducting this research and it will also provide some recommendations that might help in any future research regarding this area of study.
CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter consists of several sections each with different aim, first there is the conclusion section, and this section summarizes the impact of the independent variables on the dependent variable as well as summarizing the results and findings of the different analysis conducted and a multiple regression model is applied to check for the different types of firm characteristics and earnings management. Followed by that a section that provides some recommendations for future studies that will explore more and better understanding for this research area. Finally, any research can face some limitations that are sometime unavoidable, so this study will explain the limitations faced in the last section of this chapter.

The data used in the this study is analyzed over five years starting from 2007 to 2011 using the disclosure book, noting that 2011 is the last year for publishing the disclosure book.

The research model of this study is conducted on a sample of the 50 most active firms listed in the Egyptian stock exchange; however the banks and insurance companies are excluded in this study due to their separate and different corporate governance rules and regulations, However the final number of firms used in the study is 60 firms as a survival dummy variable is used to represent whether the firm was active or inactive during then five years of the study. And any missing information is obtained from the Egyptian Company for Information Dissemination (EGID).
5.2 Conclusion

This study examines the impact of firm characteristics on earnings management of firms listed in the Egyptian stock exchange taking four firm characteristics to conduct the research model which are the firm size, firm financial leverage, firm age and firm's audit quality. Therefore the research model is conducted to measure and test for the effect of those four firm characteristics on the dependent variable which is earnings management.

The study extends research on the quality of financial reporting and its importance. The findings are of great importance for future researchers who aim to conduct further studies in this topic in the Egyptian market and generally speaking the finding are important for investors in developing countries as well as other stakeholders as they depend on the reported financial information to take investment and other decisions.

Findings from the tests conducted indicate that only 15.3% change in the firm's earnings management practice is explained by firms' characteristics (firm size, firm's financial leverage, firm age and firms' audit quality), which is not a high percentage however very close and similar to other studies analyzing the same relation. The findings of the regression analysis can be summarized in the following points and table:

Table 5.1

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>OLS regression before transformation</th>
<th>OLS regression after transformation</th>
<th>Random effect GLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Rejected</td>
<td>Rejected</td>
<td>Rejected</td>
</tr>
<tr>
<td>H2</td>
<td>Accepted</td>
<td>Accepted</td>
<td>Accepted</td>
</tr>
<tr>
<td>H3</td>
<td>Rejected</td>
<td>Rejected</td>
<td>Rejected</td>
</tr>
<tr>
<td>H4</td>
<td>Rejected</td>
<td>Accepted</td>
<td>Rejected</td>
</tr>
</tbody>
</table>
Using OLS regression before transformation:

- There is an insignificant relationship between firm size and earnings management with a significance level of (0.320), and this leads to the rejection of the first hypothesis of the study (H₁: There is a significant relationship between Firm size and earnings management).

- There is a significant positive relationship between firm financial leverage and earnings management with a significance level of (0.000), and this leads to the acceptance of the second hypothesis of the study (H₂: There is a significant relationship between Firm Financial Leverage and earnings management). Based on prior research mainly two reasons for this positive relation exist, like (Sweeny 1994 and Mohrman 1996) stating that firms with a high level of leverage tend to use accounting techniques that will increase their current income level confirming this relation is the study by (Klein 2002). The second reason proposed which adds to the above reason is that when firms rely on debt they try to increase their current income level and this helps them avoid any costs that might result from not abiding to the debt covenants like the banks and the bondholders., explaining this are the studies by (Inoue and Thomas 1996 and Beatty and Weber 2003).

- There is an insignificant relationship between firm age and earnings management with a significance level of (0.775), and this leads to the rejection of the third hypothesis of the study (H₃: There is a significant relationship between Firm Age and earnings management).

- There is an insignificant relationship between firms' audit quality and earnings management with a significance level of (0.234), and this leads to the rejection
of the fourth hypothesis of the study (H₄: There is a significant relationship between firms' audit quality and earnings management).

Using OLS regression after transformation:

- There is an insignificant relationship between firm size and earnings management with a significance level of (0.145), and this leads to the rejection of the first hypothesis of the study (H₁: There is a significant relationship between Firm size and earnings management).

- There is a significant positive relationship between firm financial leverage and earnings management with a significance level of (0.047), and this leads to the acceptance of the second hypothesis of the study (H₂: There is a significant relationship between Firm Financial Leverage and earnings management).

- There is an insignificant relationship between firm age and earnings management with a significance level of (0.164), and this leads to the rejection of the third hypothesis of the study (H₃: There is a significant relationship between Firm Age and earnings management).

- There is a significant positive relationship between firms' audit quality and earnings management with a significance level of (0.064) with a significance level of 10%, and this leads to the acceptance of the fourth hypothesis of the study (H₄: There is a significant relationship between firms' audit quality and earnings management).

Using random effect GLS regression:

- There is an insignificant relationship between firm size and earnings management with a significance level of (0.326), and this leads to the rejection of the first hypothesis of the study (H₁: There is a significant relationship between Firm size and earnings management).
• There is a significant positive relationship between firm financial leverage and earnings management with a significance level of (0.000), and this leads to the acceptance of the second hypothesis of the study (H2: There is a significant relationship between Firm Financial Leverage and earnings management).

• There is an insignificant relationship between firm age and earnings management with a significance level of (0.790), and this leads to the rejection of the third hypothesis of the study (H3: There is a significant relationship between Firm Age and earnings management).

• There is an insignificant relationship between firms' audit quality and earnings management with a significance level of (0.232), and this leads to the rejection of the fourth hypothesis of the study (H4: There is a significant relationship between firms' audit quality and earnings management).

To sum up the kind of relationships between each independent variable and the dependent variable based on the prior literature which were different from one study to another based on the sample and the number of years and the different conditions, taking the firm size as a start. Many studies proved a positive relationship between firm size and earnings management stating that large firms more likely to manage earnings than small sized firms and that was agreed upon by (Barton and Simko 2002, Mark et al 2002, Watts and Zimmerman 1978 and Richardson 1997).

On the other hand, other researchers viewed a negative relation and examples for them are (Persons 1995, Lobo and Zhou 2006, Degeorge et al 1999 and Lee and Choi 2002). Despite that, the relation between firm size and earnings management to (Burgstahler and Dichev 1997) is considered unknown.
Moving to the second independent variable which is firm financial leverage, some of the prior research views a negative relation between firm financial leverage and earnings management while others find a positive relation between those two variables. Examples for the studies that view a negative relation between those variables are (Jensen 1986, Ke 2001, Pourheidari and Hemmati 2005 and Habbash 2010) all stating that highly leveraged firms have no motivation to manipulate earnings. The other type of relation is the direct relationship stated by (Waweru and Riro 2013, Dechow et al 1996 and Bekiris and Duokakis 2011) as firms that are about to default from debt covenants are more likely to make violation and practice earnings management.

Moreover, the third independent variable which is the firm age, mostly all the studies tackling the relation between firm age and earnings management find a negative relation as firms that have been in the market for a long time have a reputation to protect, they became efficient in what they do and they have a great value in the market so the tendency to practice earnings management decreases, these are the reasons for an inverse relation based on (Al Saeed 2006, Akhtaruddin 2005 and Loderer et al 2009).

Finally, the last independent variable which is firms' audit quality, the majority of the prior research views a negative relation between firms' audit quality and earnings management while very few find a positive relation between those two variables. It is proposed that a quality audit constrains the practice of earnings management by the firm and reduces the risk of issuing reports with financial misstatements (Lin and Hwang 2010 and Davidson et al 2005) so this indicates the existence of a negative relation.
Others who view a positive relation are (Burilovich 1997) stating that auditing firms that are well known and have a value in the market tend to allow greater discretion to the client in determining accruals. Also (Memis and Cetenak 2012) find that audit quality doesn’t constrain the earnings management practice in emerging countries.

5.3 Recommendations and future research

The financial information reported by a firm is of great importance to the stakeholders as based on the provided information, stakeholders take several decisions including investing decisions by investors and institutions and providing loans decisions by banks and other lenders, and many other decisions are based on the information provided by firms. Therefore, in order to avoid the risk of losing the financial information credibility and the trust of the financial information users and in order not to face problems with the auditing firms, firms must try not to manipulate earnings and so they must try to reduce the practice of earnings management. Firms can also insure the existence of one of the big four auditing firms auditing them to provide credible and reliable information.

Moreover, managers in the firms must work for the interest of the shareholders and not for their own personal interests as well as providing them with all the useful information needed for taking a decision, so as to avoid the occurrence of the agency problem or the information asymmetry problem, in addition the financial reports should be efficient as they are considered a signal for the financial reporting process.

Based on the results of this study, the firms’ financial leverage has a significant positive relation with earnings management which gives an indicator for the firms to control the level of leverage as to avoid the existence of the earnings management practice.
As for the stakeholders, it is based on the results of this study, as mentioned, that they should focus on the level of leverage of a firm as it’s the only independent variable in this study that shows a significant impact on earnings management.

Also the relation is found to be positive which indicates that highly leverage firm tends to practice earnings management and this might be guidance for the stakeholders to focus and understand the leverage level of the firm before taking any decision. Other independent variables show an insignificant relation with earnings management so the size and age of the firm as well as the firm's audit quality might not affect the decisions of the stakeholders.

Since the results of the OLS regression before transformation and the results of the random effect GLS regression are very similar, it is recommended to better use the panel data type for this type research, because beside the huge similarity in the results, the autocorrelation and the heteroscedasticity problems are solved and this goes back to the fact that the Ordinary Least Square (OLS) and the generalized least square (GLS) regressions have different assumptions. So choosing the right regression model is very important based on the area of research.

Future research could consider other firm characteristics rather than those used in this study and other independent variables like corporate governance variables and cultural dimensions, that might have a greater impact on the dependent variable (earnings management, measured by the discretionary accruals), as it was proved in the regression analysis that the firm characteristics, used in this research, explain a small percentage of the variations in earnings management.
In addition, future research could try using other models to measure the discretionary accruals as a proxy for earnings management rather than the modified Jones model as also recommended by (Uwuigbe et al 2015) conducting a study on firms listed in the stock exchange of Nigeria.

5.4 Research Limitations

External Validity is defined by (Saunders et al 2009) as the extent to which the research results are generalizable, that is, whether the findings may be equally applicable to other research settings, such as other organizations. Based on the above statement, this research faces several limitations that are explained in the following paragraphs.

First of all, this research showed the effect of only four independent variables which are the firm size, firm financial leverage, firm age and firm's audit quality as the variables constituting the firms' characteristics. Those are the most commonly used characteristics in the prior literature testing their effect on earnings management. So this could be a limitation as there might be other characteristics that can explain earnings management and raise the level of the adjusted R square which showed a low percentage using these four variables only which means that a large percentage of the change in discretionary accruals is explained by other variable than the four independent variables used in this study.

This study calculated adjusted R square under three scenarios, the first time after conducting the OLS regression results an adjusted R square of (15.3%), the second scenario which used OLS regression after transformation had a very low adjusted R square percentage which is (1.8%) and the third scenario assuming a panel data type using random effect GLS regression results in an adjusted R square of (16.75%).
Another limitation of this research that proves the firstly mentioned statement by (Saunders et al 2009) that the result of this study cannot be generalized, is that the research is conducted only on the 50 most active firms listed in the Egyptian Stock Exchange (EGX) and not all the firms listed. A third limitation is the unavailability of access to any data so this research is constrained only to the firms located in Egypt.

Finally, the use of the disclosure book as a data source is considered a limitation for this study as the last disclosure book issued is that presenting the financial statements and annual reports for the year ending 2011, and no disclosure book was issued after that, so the sample of this research stopped at year 2011. Also some data was missing as the most active firms are not constant due to the entering and exiting of some firms from a year to another, however this was solved by using another data source which is the Egyptian Company for Information Dissemination (EGID).
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# Table of Content

List of Tables ................................................................................................................................. x
List of Figures ................................................................................................................................. xi

**CHAPTER 1: INTRODUCTION** ........................................................................................................ 1  
1.1 Preface ...................................................................................................................................... 1  
1.2 Research Background .............................................................................................................. 1  
1.3 Research Focus ....................................................................................................................... 4  
1.4 Research Problem ................................................................................................................... 5  
1.5 Research Aim and Objectives ................................................................................................. 5  
1.6 Research Value ....................................................................................................................... 5  
1.7 Research Question .................................................................................................................. 7  
1.8 Research Hypotheses ............................................................................................................. 7  
1.9 Research Outline ................................................................................................................... 7  

**CHAPTER 2: LITERATURE REVIEW** .......................................................................................... 10  
2.1 Introduction ............................................................................................................................ 10  
2.2 Theoretical Framework .......................................................................................................... 10  
  2.2.1 Stakeholders Theory ....................................................................................................... 11  
  2.2.2 Agency theory ................................................................................................................. 13  
  2.2.3 Signaling theory .............................................................................................................. 14  
  2.2.4 Information Asymmetry Theory ................................................................................... 15  
2.3 Financial Reporting ................................................................................................................ 16  
2.4 Earnings management ............................................................................................................ 19  
2.5 Firm characteristics and earnings management ....................................................................... 25  
  2.5.1 Firm size and earnings management ........................................................................... 26  
  2.5.2 Firm Financial Leverage and earnings management ....................................................... 30  
  2.5.3 Firm Age and earnings management ........................................................................... 33  
  2.5.4 Firm's Audit quality and earnings management ............................................................ 34  

**CHAPTER 3: RESEARCH METHODOLOGY** ............................................................................... 40  
3.1 Introduction ............................................................................................................................ 40  
3.2 Research Strategy .................................................................................................................. 40  
3.3 Research Philosophy ............................................................................................................. 40  
3.4 Research Methods ................................................................................................................ 41  
   3.4.1 Data Collection and Sample Selection ....................................................................... 42  
   3.4.2 Panel Data .................................................................................................................... 43  
   3.4.3 Fixed effect Vs. Random effect .................................................................................. 44  

133
3.5 Variables Measurement ........................................................................................................... 47
  3.5.1 The proxy for earnings management (Dependent Variable) ........................................... 47
  3.5.2 Independent variables .......................................................................................................... 54
  3.6 Model specification .................................................................................................................. 57

CHAPTER 4: FINDINGS AND ANALYSIS .................................................................................... 59
  4.1 Introduction ............................................................................................................................ 59
  4.2 Regression results for Earnings Management (Discretionary Accruals) ............................... 59
  4.3 Descriptive statistics .............................................................................................................. 61
  4.4 Correlation and Multicollinearity analysis .......................................................................... 64
  4.5 Regression analysis ............................................................................................................... 69
    4.5.1 Firm size and earnings management ............................................................................. 73
    4.5.2 Firm leverage and earnings management .................................................................... 74
    4.5.3 Firm Age and earnings management .......................................................................... 76
    4.5.4 Firm Audit quality and earnings management ............................................................. 77
  4.6 Regression Diagnostics .......................................................................................................... 80
    4.6.1 Checking Linearity ............................................................................................................ 81
    4.6.2 Checking Normality of the errors ................................................................................... 84
    4.6.3 Checking for Homoscedasticity of residuals .............................................................. 85
    4.6.4 Checking for Multicollinearity ......................................................................................... 87
  4.7 Results of the regression analysis after the transformation ................................................... 89
  4.8 Testing for Fixed effect Vs Random effect ............................................................................ 94
    4.8.1 Results of the regression analysis using Stata Program ............................................... 94

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS .......................................................... 100
  5.1 Introduction ........................................................................................................................... 100
  5.2 Conclusion ............................................................................................................................. 101
  5.3 Recommendations and future research .............................................................................. 106
  5.4 Research Limitations ............................................................................................................ 108

References ..................................................................................................................................... 110