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OF MANAGEMENT AND BUSINESS RESEARCH: D

## Accounting and Auditing

A Study of Southern Region

The Role of Corporate Governance

} Highlights

} SME Performance in Bangladesh

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Discovering Thoughts, Inventing Future

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# The Role of Corporate Governance in Reducing the Adverse Impacts on the Reliability of Financial Statements Evidence from Saudi Listed Firms

By Alhanouf Abdul-Aziz Alhasani & Ibrahim Sweiti

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**Abstract-** The study aims to measure the role of corporate governance in reducing the adverse effects of financial statements. Moreover, it focuses on answering the question: Does corporate governance have a positive role in providing reliable financial statements? Based on the statistical analysis and theoretical framework, the researcher reached several results, namely: There is no significant relationship between the following independent variables, and reducing the adverse effects of the reliability of the financial statements as a dependent variable: the size of the board of directors, board meetings, a separation between the chief executive officer and the chairman of the board, compliance with regulations and laws, company size, profitability, and sector type. Also, it was revealed that there was a positive relationship between the following independent variables and the reduction of the adverse effects on the reliability of the financial statements as a dependent variable: non-executive directors of the board, audit quality, and financial leverage.

**Keywords:** *corporate governance, financial statements, reliability of financial statements.*

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# The Role of Corporate Governance in Reducing the Adverse Impacts on the Reliability of Financial Statements Evidence from Saudi Listed Firms

Alhanouf Abdul-Aziz Alhasani<sup>α</sup> & Ibrahim Sweiti<sup>σ</sup>

**Abstract-** The study aims to measure the role of corporate governance in reducing the adverse effects of financial statements. Moreover, it focuses on answering the question: Does corporate governance have a positive role in providing reliable financial statements? Based on the statistical analysis and theoretical framework, the researcher reached several results, namely: There is no significant relationship between the following independent variables, and reducing the adverse effects of the reliability of the financial statements as a dependent variable: the size of the board of directors, board meetings, a separation between the chief executive officer and the chairman of the board, compliance with regulations and laws, company size, profitability, and sector type. Also, it was revealed that there was a positive relationship between the following independent variables and the reduction of the adverse effects on the reliability of the financial statements as a dependent variable: non-executive directors of the board, audit quality, and financial leverage. The study established that the average number of members of the Governing Council was 9, that the average percentage of non-executive directors on the Board was about half, and that the average number of Board meetings was about five meetings.

**Keywords:** corporate governance, financial statements, reliability of financial statements.

## I. INTRODUCTION

In this chapter, we will review the general framework of the research that focuses on the problem of the study, which is the application of corporate governance mechanisms as one of the mechanisms that aim to establish a group of controls that realize confidence in financial data, as a result of the financial crises that the world faced during the nineties and led to mistrust in the financial statements.

The research problem comes by studying the role of corporate governance mechanisms in reducing the adverse effects of the reliability of financial data, which we will show in this chapter. The chapter also reviews the importance of the study, given that the application of corporate governance will significantly

help build confidence in the financial statements and thus helps investors and users of financial statements in rationalizing administrative decisions. This chapter also covers the study methodology, which depends on a descriptive and analytical approach to analyze the application of corporate governance mechanisms and their role in reducing the adverse effects on the reliability of financial statements.

## II. THE RESEARCH PROBLEM

The global economy witnessed the financial and accounting collapse of several international companies due to several reasons; the most important one is the insincerity and fairness of the financial statements of the financial position of these companies, which means harm to the users of these financial statements, through which investment decisions are made. It is well-known that investment decisions depend primarily on these companies' information and financial statements. Therefore companies seek to work on preparing their financial reports to achieve reliability and credibility in front of all parties and thus achieve a high degree of confidence in their operating environment, which will allow them to attract investors and companies and award them a competitive advantage and enable it to achieve its desired goals. Also, in light of the financial and accounting crises in the nineties, there needed to be more confident in the published financial statements and the preparers and approvers. Some studies confirmed that "successive financial crises, including the recent global financial crisis that occurred in the world (2008 AD), led to a low level of confidence that shareholders and other stakeholders place in the financial reports issued by public joint-stock companies (Ismail, 2010 AD)."

Therefore, interest in the term "governance" began in the nineties of the twentieth century, which aims to protect the rights of shareholders and all other parties with various related interests, whether inside or outside the company, and to provide an appropriate degree of reliability and reliability on the financial statements, as governance helps eliminate conflicts of interest, and achieve harmony and balance between the

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interests of different groups, both inside and outside the company. (Al-Ajmi, 2011 AD). Therefore, corporate governance has become an essential pillar of strengthening this confidence due to its important role in the areas of combating financial and administrative corruption in those companies on the one hand, and on the other hand, being a tool of risk management, enhancing transparency and disclosing financial information in its published financial reports, which are reflected positively, On its reputation and then on the market prices of its shares on the stock exchange (Al-Ghazwi, 2010). By reviewing previous studies and the experiences of developed countries, the researchers concluded that the application of good governance rules is of great importance, especially in companies listed in the stock exchange markets, because they constitute an element of reassurance for investors, which leads to gaining the confidence of dealers in the stock exchange market. Therefore, the problem of the study is represented in the following central question: What is the role of corporate governance in limiting the adverse effects on the credibility of financial statements? From this central question, several sub-questions arose.

1. Does the size of the board of directors have an impact on the reliability of the financial statements?
2. Do the executives, as part of the governance mechanisms, harm the reliability of the financial statements?
3. Does the activity of the Board of Directors affect the reduction of adverse effects on the reliability of the financial statements?
4. Does the separation between the CEO and the Chairman of the Board impact reducing the adverse effects on the reliability of the financial statements?
5. Does applying laws and regulations reduce adverse effects on the reliability of financial statements?
6. Does audit quality provide an effect in reducing the adverse impact on the reliability of the financial statements?

### III. MOTIVATION FOR THE STUDY

Because of the importance of the financial data that is published through the joint-stock companies in particular and because it is one- rather the most important- of the inputs to the investment decision in the stock exchange markets, the provision of these data in an appropriate manner by adding confidence and reliability in these data will have a positive impact on investment in the stock exchange markets, whose effect is reflected on stock prices and, consequently, on the level of development and growth of the company. Therefore, the motive for the study was to demonstrate the application of corporate governance mechanisms to reduce the adverse effects of the reliability of financial statements.

## IV. THE AIM OF THE STUDY

The study seeks to achieve the following objectives:

1. Clarifying the concept of corporate governance and highlighting its basic principles.
2. To determine the mechanisms used to apply corporate governance principles in Saudi public corporations to improve the accounting information in their financial reports.
3. It identifies the impact of applying governance mechanisms in reducing the adverse effects of shareholding companies in the Saudi stock exchange market and highlights its role in reducing financial and administrative corruption.
4. They are evaluating the impact of corporate governance principles on enhancing trust and increase credibility in the financial reports disclosed by shareholding companies in the Saudi stock exchange market.

## V. THE IMPORTANCE OF THE STUDY

The importance of the study can be seen in the following points:

1. The study reveals the extent to which the firms under investigation commit themselves to the principles and concepts of corporate governance.
2. The study helps show the positive application of corporate governance principles and concepts to reduce the adverse effects on data reliability.
3. The study contributes to spreading the idea of corporate governance and consolidating its principles in line with the environment of companies listed on the Saudi Stock Exchange.
4. The study represents an addition to the university library, as it presents scientific evidence on the impact of corporate governance in reducing the adverse effects on the reliability of the financial statements, as well as benefiting from the reports submitted to the owners of companies in identifying and avoiding deficiencies.

## VI. CONTRIBUTION OF THE STUDY

The study will provide a scientific framework that helps identify factors that can negatively affect the reliability of financial statements and factors that have a positive impact.

## VII. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Researchers have tackled the previous studies related to the issue of governance to identify the most important topics dealt with in these studies and to identify the points that the research should focus on to complement the findings of previous studies. The researcher dealt with many previous studies related to

the subject research, which revolves around governance and its role in providing reliable financial statements through the use of governance mechanisms in reducing the adverse effects of the reliability of financial statements. These studies were presented by addressing the most important findings of each study. At the end of these studies, a comment was presented to them, and then the study's role was addressed through previous studies' results. Al-Agha (2011) dealt with the role that corporate governance plays in reducing the adverse impact on the reliability of financial statements, taking creative accounting in particular as one of the methods of fraud and manipulation in financial reports, while the current study dealt with the role that corporate governance plays in reducing all adverse impacts on data reliability. Hassan (2010) Also dealt with the role of corporate governance towards paying attention to profit operations and reducing the chances of manipulation of share profits. Sabah (2022) focused on the role of corporate governance in reducing the adverse aspects of creative accounting, which is similar to some other studies, such as the study of Linda (2009), which is similar to this study in studying the role of corporate governance in reducing the adverse aspects of creative accounting on the reliability of financial statements, except It differs from it in that this study relies on the study of adverse effects, whether these adverse effects are from intentional or unintentional acts or actions, as creative accounting mainly depends on deliberate acts to distort the financial statements. Study Abdul Rahman (2020) also relies on corporate governance's role in financial performance-like other studies- as it agrees with this study in studying the role of corporate governance in its relationship to financial aspects. This study is based on a study of the role of governance companies in the reliability of financial statements. Previous studies have also shown that most individual investors are currently interested in economic performance information in the first place, followed by governance, and then corporate social responsibility in the next place. The study by Halabi Linda Hassan (2009) talked about "The role of the external auditor in reducing the effects of creative accounting on the reliability of data issued by Jordanian joint-stock companies. "Creative accounting methods and determining the role played by the auditors of those companies in limiting the creative accounting procedures practiced by the boards of directors of Jordanian public shareholding companies in the audited financial statements. The study also found that the boards of directors of the Jordanian joint-stock companies practice creative accounting when preparing financial statements. In return, the auditors conduct procedures and tests to detect these practices. Among the most important recommendations are adequate attention of auditors to review the financial statements, the development of legislation that regulates auditors'

work, and the development of legislation to tighten penalties for those who use creative accounting methods. Hassan, Hossam (2010) as pointed out the aims of his study to determine the extent to which the characteristics of corporate governance related to the financing structure affect the management's chances of manipulating dividends, which affects the evaluative role of dividends in determining share prices, earnings the evaluative role of profits, and the less the management of profits The more profitable the information, the more relevant and more reliable it is in making financial decisions. Hamada and Rasha (2020) and as a study entitled "The Role of Audit Committees in Reducing Creative Accounting Practices, A Field Study, aims to show the activities practiced by audit committees to limit creative accounting practices and their substantial The study concluded that the activities of the Audit Committee related to the supervision and control of financial reports, their examination and the study and evaluation of internal control systems, have a significant impact on reducing creative accounting practices in companies and that the activities of the Audit Committee related to supporting the internal/external audit function and mechanisms Governance has a medium effect in reducing creative accounting practices in companies. The study sample agreed that the activities carried out by the audit committee in risk management in companies have a weak effect in reducing creative accounting practices in companies. Among the recommendations of the study is also the generalization of the idea of audit committees to public and private companies because of the essential supervisory and control functions they provide, with the availability of the necessary qualifications and experience in the members of the committee members. A study by Mubarak and Al-Refai Ibrahim (2010), as well as the which entitled "The Quality of Internal Audit Activities and Their Role in Reducing Earnings Management Practices- An Applied Study on the Saudi Environment, aims to highlight the role that the internal audit function can play in limiting earnings management practices at the level A group of Saudi companies, the study found the following results: There is an inverse relationship between the quality of internal auditing and earnings management in Saudi joint stock companies. The current study is also similar to the study of Al-Agha and Imad Salim (2011) which, entitled "The Role of Corporate Governance in Reducing the adverse Impact of Creative Accounting on the Reliability of Financial Statements- An Applied Study on Palestinian Banks," aims to identify the role of corporate governance in reducing the adverse impact of creative accounting on Reliability of financial data, through an applied study on Palestinian banks. They concluded that corporate governance has a statistically significant role in reducing the adverse impact of creative accounting on the reliability of financial statements. Among the most important recommendations: work on developing and

amending the principles of corporate governance to suit the requirements of limiting the occurrence of such collapses, the commitment of banks to the principles of corporate governance, strengthening and raising ethical behavior because of its great role in reducing the risks that may be exposed to financial reports as a result of the use of methods and methods Creative Accounting. In addition, the current study is similar to that of Mirdasi (2019). It aims to clarify corporate governance's role in reducing the harmful practices of fraudulent accounting. The latter is one of the latest accounting manipulation practices practiced using accounting flexibility, multiple alternatives, accounting methods, and policies that affect the quality of accounting information by distorting and misleading information users. Finance without violating accounting laws and standards, as these adverse accounting methods are adopted either for tax evasion and tax reduction or to inflate the result of deception, lenders, and shareholders obtaining a financing ladder to beautify the image that is reflected in the numbers in these lists as a result of the financial position of the institution. Hence, solutions were thought to reduce these practices to the lowest possible level and demand corporate governance by activating its internal and external mechanisms to reduce the adverse effects of fraudulent accounting. Danoshana, S., and Ravivathani (2019) also examine the impact of corporate governance on the performance of listed financial institutions in Sri Lanka. The researchers use return on equity and assets to determine the company's performance. On the other hand, the size of the board of directors, the frequency of meetings, and the company's audit committee are used as variables to measure corporate governance. According to the analysis, corporate governance mechanisms positively impact corporate performance, such as the size of the board of directors and the size of the audit committee. However, the large number of meetings adversely affects the company's performance. Study Eman, B, and Malik. (2018), Along with verifying the assumptions of the agency theory regarding the relationship between corporate governance mechanisms and the financial performance of banks based on recent empirical research. The analysis of the relationship between corporate governance mechanisms and financial performance in the banking sector enabled us to indicate that the agency's theoretical assumptions regarding the impact of corporate governance mechanisms on the financial performance of banks are correct and strong after compiling various recent empirical studies. Study Al-Maskati et al. (2017). On the other hand, it examines the relationship between corporate governance and voluntary disclosure. The study found that the level of governance reached 47.1%. The percentage of voluntary disclosure reached 51.1% in the Bahrain Bourse, which is considered high compared to previous studies. The results of the study

test indicate that there is a positive relationship between the principles: the ownership of the largest shareholder, the size of the board of directors, the independence of the board of directors with voluntary disclosure, and that there is no relationship between the ownership of the three largest shareholders and voluntary disclosure. Zurika Kalezic's (2012), even so, research aims to assess the quality of corporate management practices in the systems of companies and banks in Montenegro. Based on the OECD Questionnaire on Corporate Governance, we surveyed 43 joint stock companies in Montenegro to compile a corporate governance ranking of Montenegrin companies and banks. The team provided a better perspective on the different corporate governance mechanisms developed in parallel with the corporate and banking systems in Montenegro. The OLS, Probit, and Log-it models show that the general corporate governance practice in the banking system can be considered better than the corporate sector. However, the difference is insignificant.

## VIII. HYPOTHESES DEVELOPMENT

### a) *The Size of the Board of Directors*

The Corporate Governance Regulations issued by the Capital Market Authority regarding the size of the Board of Directors refers to "several members commensurate with the size of the company and the nature of its activity, provided that the majority of it is non-executive members and that the number of independent members is not less than two or one-third of the members of the Board, whichever is greater." Article (17) also specified: "The company's articles of association specify the number of members of the Board of Directors, and that it shall not be less than three and not more than eleven members." (2017, p. 17) There are different opinions about the size of the board of directors: there are studies (Pfeiffer, 1972) that the increase in the size of the board of directors means the presence of a variety of knowledge and experiences that lead to the ability to manage the capital resources of the company, while another saw (Al-Jundi et al., 2013) that the size of the board Smaller ones provide more excellent quality of observation because there is no inconsistency in thinking or goals. Based on the argument that the small size of the board leads to the quality of monitoring and better disclosure, which means reducing the adverse effects of the financial statements, the following hypotheses can be formulated:

$H_1$ : There is a positive correlation between the size of the trim board of directors and the reduction of adverse effects on the reliability of the financial statements.

### b) *Non-Executive Directors*

Article (1) of the Corporate Governance Regulations issued by the Capital Market Authority states, "A non-executive member is a member of the Board of Directors who is not dedicated to managing

the company and does not participate in its daily business." As Article (16), paragraph (2), states: "The following shall be taken into account in the composition of the Board: The majority of it shall be non-executive members" (2017, p. 17, 6) Shareholders are keen to monitor the performance of the executives by authorizing the board of directors to monitor the decisions taken by the executives to be more effective and work for the benefit of the shareholders. Therefore, the proportion of executive directors must be the highest on the board. (Janadi, 2013), which means that this will reflect on the results of the company's activities, including reducing the adverse effects of the financial statements. Accordingly, the following hypothesis can be formulated:

$H_2$ : There is a positive correlation between the percentage of non-executive directors on the board and the reduction of adverse effects on the reliability of the financial statements.

c) *Activities of the Board of Directors*

Article (32) of the Corporate Governance Regulations issued by the Capital Market Authority states the following: "The Board of Directors holds at least four meetings a year, with no less than one meeting every three months" (2017, p. 29). In some studies (Elyati, Al-Mubarak, 2022), a positive relationship was found between the number of board meetings and the company's performance, as well as a study (Jamaan, Najat, 2017). However, in some studies, there is no statistically significant relationship between the number of board meetings and the company's financial performance (Roman & Persida, 2012). Therefore, based on the argument that the increase in board meetings means discussing matters related to the company continuously and developing appropriate solutions promptly, which means limiting the adverse effects of the financial statements, the following hypothesis can be formulated:

$H_3$ : There is a positive correlation between the activities of the board of directors and the reduction of adverse effects on the reliability of the financial statements.

d) *Separation between the Position of CEO and Chairman of the Board of Directors*

Article (24) of the corporate governance regulations issued by the Capital Market Authority states, "It is not permissible to combine the position of the chairman of the board of directors with any other executive position in the company." Paragraph (d) of the same article states the following: "In all cases, it is not permissible For a person to have the absolute power to make decisions in the company" (2017, p. 23). Some studies (Janadi, 2013); confirmed that the separation between the position of the chairman of the board of directors and the chief executive officer leads to strengthening the independent leadership of the board

of directors and achieving the interests of shareholders because the independent chairperson of the committee can monitor and supervise the activities of the CEO and senior managers. Moreover, based on the argument that says that the separation between the positions of the Chairman of the Board of Directors and the Chief Executive Officer leads to strengthening the independent leadership of the Board of Directors and realizing the interests of shareholders, which means reducing the adverse effects of the financial statements, so the following hypothesis can be formulated:

$H_4$ : There is a positive relationship between the separation of the positions of CEO and Chairman of the Board of Directors and the reduction of adverse effects on the reliability of the financial statements.

e) *Complying with Laws and Regulations*

Article (94) of the Corporate Governance Regulations states the following: "The Board of Directors shall establish corporate governance rules that do not conflict with the provisions of these Regulations, and it shall monitor their application, verify their effectiveness, and amend them when needed. For example: Could you verify the company's compliance with these rules? - Reviewing and updating the rules under the regulatory requirements. - Reviewing and developing rules of professional conduct that represent the company's values and other internal policies and procedures to meet the company's needs. Corporate Governance Regulations (2017, p. 61) Compliance with the application of laws and regulations will, of course, lead to the safety and legality of work performance and thus reduce the adverse effects on the reliability of the financial statements. Accordingly, the following hypothesis can be formulated:

$H_5$ : There is a positive correlation between compliance with laws and regulations and the reduction of adverse effects on the reliability of financial statements.

f) *Audit Quality*

According to Article (80) of the Corporate Governance Regulations, "The company assigns the task of auditing its annual accounts to an independent, competent, experienced and qualified auditor, to prepare an objective and independent report for the board of directors and shareholders indicating whether the company's financial statements clearly and fairly express the company's financial position and its performance in all aspects. "Essentialism" Corporate Governance Regulations, (2017, pg. 50) the study, by Janadi. et al. 2013, and Al-Samrani and Al-Sharida (2011) proved a statistically significant positive relationship between the audit process and the quality of financial statements quality. Therefore, the quality of the audit leads to reducing the adverse effects on the reliability of the financial statements, and accordingly, the hypothesis can be formulated next:

$H_6$ : There is a positive correlation between audit quality and the reduction of adverse effects on the reliability of financial statements.

g) *Company Size*

It is well known that the size of the company is measured by the size of the assets acquired by the company. The size of the assets is small for small companies, and large companies have the size of significant investments. Therefore, the more the company's assets, the greater the size of the company, and thus the more influential the size of the financial statements, which means that the company may be exposed to some adverse effects that can affect the reliability of the financial statements, whether intended or unintended, which means that increasing the size of the company needs more effective controls to achieve oversight and reduce the adverse effects of the financial statements. Janaki. et al. 2013 study confirmed that the size of the company has a positive impact on financial disclosure, and based on that, the following hypothesis can be formulated:

$H_7$ : There is a positive correlation between the size of the company and the reduction of adverse effects on the reliability of the financial statements.

h) *Profitability*

The company's profitability is one of the most important financial indicators that measure the company's position in the stock exchange market. When analyzing the financial statements, the company's profitability is analyzed and compared historically for the same company, with industry ratios, or with similar companies to evaluate the company's financial position. The investor always looks at the company's profitability as a basis for assessing its work and the extent of trust in it. If the company's profitability is appropriate and in growth from one period to another, there is greater confidence among the users of the financial statements and vice versa. Thus, profitability can provide greater certainty to the users of the financial statements in the company's ability to continue and grow. Correctly and avoid any adverse effects that may affect it now and in the future. The study (Abdul Rahman, 2020) also proved the existence of a statistically significant relationship between corporate governance mechanisms and the rate of return on ownership so that the following hypothesis can be formulated:

$H_8$ : There is a positive correlation between profitability and the reduction of adverse effects on the reliability of financial statements.

i) *Sector Type*

Companies operate through many activities divided into three types: commercial shifting, industrial action, and service activity. Thus, commercial, industrial, and service sectors are the primary sectors for any

economic activity. Looking at the financial statements in each industry, we find some differences regarding the size of the financial information, for example, the commodity stock in the commercial sector. As for the service sector, there is no commodity stock, as only a service is provided for a fee. The sectors differ among themselves in terms of the quality and size of the financial statements. Therefore, each activity must establish the necessary controls commensurate with the activity's nature to achieve the required power and limit the adverse effects on the reliability of the financial statements that the action may be exposed to, as demonstrated by Janadi. Et study .al 2013 that the type of industry has a positive relationship with financial disclosure, and based on that, the following hypothesis can be formulated:

$H_9$ : There is a positive correlation between the type of sector and the reduction of adverse effects on the reliability of financial statements.

j) *Financial Leverage*

Financial leverage means the extent to which the company relies on borrowing from financial institutions to provide its financial needs and achieve a return that exceeds the cost of borrowing. The higher the financial leverage, the greater the borrowing, and thus this may lead to an increase in the risks that the company may be exposed to as a result of financing from outside the company. Suppose there are adequate supervisory controls on these funds, and thus help to achieve appropriate profitability for the company and gain the users' confidence in the financial statements of the company. In that case, the following hypothesis can be formulated:

$H_{10}$ : There is a positive correlation between financial leverage and the reduction of adverse effects on the reliability of financial statements.

k) *Summary of Hypotheses*

$H_1$ : There is a positive correlation between small board size and the reduction of adverse effects on the reliability of financial statements.

$H_2$ : There is a positive correlation between the percentage of non-executive directors on the board and the reduction of adverse effects on the reliability of the financial statements.

$H_3$ : There is a positive correlation between the activities of the board of directors and the reduction of adverse effects on the reliability of the financial statements.

$H_4$ : There is a positive relationship between the separation of the positions of CEO and Chairman of the Board of Directors and the reduction of adverse effects on the reliability of the financial statements.

$H_5$ : There is a positive correlation between compliance with laws and regulations and the reduction of adverse effects on the reliability of financial statements.

$H_6$ : There is a positive correlation between audit quality and the reduction of adverse effects on the reliability of financial statements.

$H_7$ : There is a positive correlation between the size of the company and the reduction of adverse effects on the reliability of the financial statements.

$H_8$ : There is a positive correlation between profitability and the reduction of adverse effects on the reliability of financial statements.

$H_9$ : There is a positive correlation between the type of sector and the reduction of adverse effects on the reliability of financial statements.

$H_{10}$ : There is a positive correlation between financial leverage and the reduction of adverse effects on the reliability of financial statements.

## IX. RESEARCH METHODOLOGY

The study relies on the use of the descriptive analytical approach to study and analyze the subject of the study. This approach is based on describing a phenomenon to reach the causes of this phenomenon and the factors that control it and draw conclusions for generalization. By studying the factors that can affect the reliability of financial information, some decisions can be removed, which can help increase the reliability of the financial statements. In addition, a study was conducted using the financial data of companies published on the Tadawul website to collect data. Concerning the measurement of corporate governance, which will be implemented through the study variables that include the principles of corporate governance issued by the Organization for Economic Cooperation

and Development (OECD), the financial analysis relied upon using the financial ratios of the financial statements of the study sample institutions, which consist of 50 companies listed in the Saudi Stock Exchange. To measure the reliability and diagnosis of data during the period (2019-2020) and then study the interrelationship between the two variables.

### a) Data and Sample

The study sample relies on several Saudi joint stock companies. The study data were taken through the Tadawul website, which presents the financial statements of the Saudi mutual stock companies registered in the stock exchange market (2020).

## X. DETERMINATION AND MEASURING OF VARIABLES

The study variables were determined as follows: The dependent variable is the reliability of the financial statements, and the independent variables are: the size of the board of directors, the independence of the board of directors, the activities of the board of directors, the freedom of the position of the CEO from the role of the president, compliance with regulations and laws, audit quality, the controlling variables, the size of the company, profitability, leverage, and sector type. The study form can be presented as follows:

$$Y = B_0 + B_1X_1 + B_2X_2 + \dots + B_{10}X_{10} + E$$

The following table No. (3) shows the measurement of the study variable.

Table No. 3: Measuring the Study Variables

Independent Variables	Measurement of the Variables
Board size ( $X_1$ )	Number of board of directors
Board independent ( $X_2$ )	The number of non-executive directors in the committee ÷ total number of directors in the committee.
Board activities ( $X_3$ )	Number of board of directors meeting
CEO duality ( $X_4$ )	1 if the company has a NED as chairperson; 0 if otherwise
Compliance with listing laws and regulations ( $X_5$ )	1 if the firms did not pay fine, 0 if otherwise
Audit quality ( $X_6$ )	1 if the company has a big-six auditor; 0 if otherwise
<b>Control variables:</b>	
Firm size ( $X_7$ )	Log=LIN (LIN= Of total assets of the firm)
Profitability ( $X_8$ )	ROE
Leverage ( $X_9$ )	Debt to total assets
Sector type ( $X_{10}$ )	1-for merchandise, 2 for industry and 3 for services sectors

Dependent variable	Measurement of the variables
reliability of financial statements(Y)	The personal correlation between price of share and ROE

From Table No. (3) above, the variables and how to measure them can be addressed as follows:

a) *Measurement of Independent Variables*

The size of the Board of Directors is symbolized by the symbol ( $X_1$ ). it is measured by the number of members of the Board of Directors, where the annual report was obtained for each company, in which each section presents information about the Board of Directors in terms of the number of members, the capacity of each member, the qualifications of each member, and other data about the member and related to the company.

1. The independence of the Board Committee - the non-executive members of the Board and symbolized by the symbol ( $X_2$ ) and is measured by the ratio of non-executive members to the total members of the Board, as the annual report of the company shows the number of members of the Board of Directors and the capacity of each independent, executive or non-executive member, and thus The number of non-executive members of the Board has been counted. This number is divided by the number of members of the Board of Directors.
2. The activities of the Board of Directors, symbolized by the symbol ( $X_3$ ), and it is measured by the number of meetings of the Board of Directors, where the annual report of the company displays in a special section the meetings of the Board of Directors in terms of the names of the members, the meeting number and date, and the number of sessions that took place during the year.
3. The separation between the Chairman of the Board of Directors and the Chief Executive Officer, symbolized by the symbol ( $X_4$ ), is measured using a scale of (1) if the Chairman of the Board is the Chief Executive Officer, (0) if otherwise, and this was evident through the annual report of the company, as it clarifies In the classification of the members of the Board of Directors and the Chairman of the Board of Directors, whether he is the Chief Executive Officer or not.
4. Compliance with laws and regulations is symbolized by the symbol ( $X_5$ ) and is measured using a scale (1) if the company does not pay fines (0) otherwise. This appears through the company's annual report, as it shows any penalties that the company paid during the year through a table that offers data on the sentence or fines that were produced, the amount paid, and the type of fine. If no penalties are

born, it is explicitly confirmed that no penalties were imposed on the company during the year.

5. The quality of the review is symbolized by the symbol ( $X_6$ ) and is measured using a scale (1) if it is one of the six significant offices (0); otherwise. This appears through the company's annual report and financial statements, where there is an auditor's report attached to the financial statements with the audit result for the fiscal year, indicating in the news the auditor's name. The audit company and whether it is one of the significant companies are determined through that.
6. The company's size is symbolized by the symbol ( $X_7$ ) and is measured by the logarithm of total assets. The necessary data was obtained through the company's financial statements - the list of financial positions- where the size of the assets of each company was accepted, then the logarithm of the total assets of each company was determined from the study sample.
7. Profitability is symbolized by the symbol ( $X_8$ ) measured by the rate of return on ownership (ROE). The necessary data was obtained through the financial statements - the income statement and the financial position statement - for each company, where the net profit was obtained from the income statement, the total shareholders from the financial position statement, and the rate of return on ownership was determined for each item of the study.
8. Financial leverage is symbolized by the symbol ( $X_9$ ) and is measured by total debt divided by total assets. The necessary data was obtained through the company's financial statements - statement of financial position - total obligations from the liabilities side and real support from the assets side, thus dividing the total debts by the full support to obtain the financial leverage for each of the study items.

The type of industry, symbolized by the symbol ( $X_{10}$ ), and is measured using a scale (1) commercial activity, (2) industrial action,(3) service activity, where the type of sector was determined through the Tadawul website, which places a classification for each company, whether the category is commercial or industrial or service.

b) *Measurement of the Dependent Variable*

The reliability of the financial data is symbolized by the symbol (Y) and is measured by the correlation between the share price and the rate of return on equity



(ROE). The necessary data was obtained through the Tadawul website, where the share price for each study item was obtained from the site. The rate of return on ownership was previously determined through the financial statements. Therefore, a correlation was made between the share price and the rate of return on request through spss statistical software. The year 2019 and 2020 was chosen, and each year was divided into four quarter: the first quarter, the second quarter, the third quarter, and the fourth quarter. Thus, we have eight chapters, and a statement of net income and shareholders 'equity was obtained. By dividing the net income by the shareholders, we get the return on equity. The share price data was also obtained through 8 sections. Thus, a correlation was made between the share price and the rate of return on ownership to get the reliability of the financial statements.

c) *Statistical Analysis and Testing of Hypotheses*

This section aims to test research hypotheses and statistical analysis for each view to verify the acceptance or rejection of the idea of the study and determine the results. The statistical analysis of the study variables was carried out using the E-views program. This chapter presents the size of the study sample, which consists of 50 Saudi joint stock companies, and it is presented in detail in this chapter. A statistical analysis is also done for the study variables, which are the independent variables, with ten independent variables tested against the dependent

variable, which is the reliability of the financial data through the statistical program used. At the end of the chapter, the statistical analysis results for each study variable and the final results for each variable were presented.

XI. POPULATION AND THE SAMPLE

The study population has represented the companies contributing to the Saudi stock exchange market. In contrast, the sample of the study is 50 companies listed on the stock exchange that apply corporate governance mechanisms according to the corporate governance regulations issued by the Capital Market Authority in 2006 and its amendments in 2017. The necessary data were obtained from the Tadawul website, the annual. Quarterly financial statements and the Board of Directors' annual reports were used to collect data for the study sample. Economic analysis was used through some financial ratios.

a) *Statistical Analysis*

i. *Descriptive Statistical*

Descriptive statistical analysis of the independent and dependent variables - through the E-views program.

In this section, we review the results of the descriptive statistical analysis of the independent and dependent variables, as shown in the following Table (5):

Table No. 5: Results of the Descriptive Statistical Analysis of the Independent and Dependent Variables Through the E-Views Program

Descriptive Statistics											
	y	BZ (X <sub>1</sub> )	BI (X <sub>2</sub> ) %	BA (X <sub>3</sub> )	CEOD (X <sub>4</sub> )	COMP (X <sub>5</sub> )	AQ(X <sub>6</sub> )	FZ (X <sub>7</sub> )	PROE (X <sub>8</sub> ) %	LEV (X <sub>9</sub> )	SECT (X <sub>10</sub> )
Mean	0.225	8.343	0.446	5.263	0.990	0.737	0.444	19.195	0.106	0.348	2.081
Median	0.400	9.000	0.450	5.000	1.000	1.000	0.000	20.550	0.080	0.400	2.000
Maximum	0.996	11.000	0.660	13.000	1.000	1.000	1.000	22.830	0.590	0.800	3.000
Minimum	-0.994	6.000	0.000	2.000	0.000	0.000	0.000	14.190	0.010	0.010	1.000
Std. Dev.	0.579	1.153	0.175	1.536	0.101	0.442	0.499	2.811	0.089	0.235	0.583
Skewness	-0.515	-0.136	-1.036	2.593	-9.798	-1.079	0.224	-0.506	2.148	0.096	-0.007
Kurtosis	2.108	2.823	3.773	14.108	97.010	2.164	1.050	1.665	10.649	1.748	2.913
Jarque-Bera	7.662	0.433	20.170	619.936	38040.580	22.088	16.510	11.571	317.489	6.623	0.032

Probability	0.022	0.805	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.036	0.984
Sum	22.269	826.000	44.176	521.000	98.000	73.000	44.000	1900.300	10.490	34.500	206.000
Sum Sq. Dev.	32.845	130.323	2.991	231.172	0.990	19.172	24.444	774.094	0.777	5.425	33.354
Observations	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	

From the previous table, No. (5) the following is evident:

1. The average of the independent variable is the size of the trim board of directors with its value (approximately eight members), with a median of its value (9 members), the upper value of the average board size (11 members), the minimum value (6 members), and the standard deviation value (1.153).
2. The average percentage of non-executive directors on the board is (44.6%), with a median of (45%), the highest percentage of the average rate of non-executive directors (66%), a minimum ratio of 0, and a standard deviation value of 0.175.
3. The average number of board meetings is (5.263), with a median value of (5 sessions), the upper value of the middle board meetings (13), the minimum value (2), and the standard deviation value of 1.536.
4. The average separation between the Chief Executive Officer and the Chairman of the Board is (0.99), with a median of 1.00, the highest value of the middle rift between the Chief Executive Officer and the Chairman of the Board is (1.00), the minimum value (0.00), and the standard deviation value (0.101).
5. The average compliance with laws and regulations is (0.737), with a median of (1.00), the highest value for the average compliance with laws and regulations (1.00), the minimum value (0.00), and the standard deviation value (0.442).
6. The average audit quality is (0.444), with a median of (0.00), the highest value of the audit quality average of (1.00), a minimum value of (0.00), and the standard deviation value of (0.499).
7. The average value of the company is (19,195), with a median of (20,550); the highest value of the average company size is (22,830), the minimum value is (14,190), and a standard deviation of (2,811).
8. The average profitability value is (0.106), with a median value of (0.080) and the upper value of the average profitability.

9. (0.590), the minimum value (0.010), and the standard deviation value (0.089).
10. The average leverage is (0.348), with a median of (0.400), an upper value of the average power of (0.800), a minimum value of (0.010), and a standard deviation of (0.235).
11. The average value of the sector type is (2.081), with a median of (2), the highest value of the middle sector type (3), the minimum value of (1), and the standard deviation value of (0.583).
12. The average reliability of the financial data is (0.225), with a median of (0.400), the upper value of the average reliability of the data is (0.996), the minimum value is (-0.994), and the standard deviation value is (0.579).

#### The Jarque-Bera Test

The decision rule is to accept the null hypothesis that the data follows a normal distribution if the probability value of the test is more significant than (0.05). To verify that the data are close to their normal distribution, the Jarque-Bera test was used: through the statistical software package (E-Views). Through the previous table, it turns out that:

- The BZ variable ( $X_1$ ) and the ( $X_{10}$ ) SECT variable follow a normal distribution with a value of (0.805 and 0.984), respectively, which is greater than (0.05).
- The remaining variables do not follow the normal distribution because they are less than (0.05), as shown in the previous Table.

#### Correlation Analysis

Correlation analysis between the independent variables through the E-views program. In this section, we present the results of the correlation analysis between the independent variables, as shown in the following table:

Table No. 6: The Results of the Correlation Analysis between the Independent Variables using the E-Views Program

Correlation Matrix										
	BZ (X <sub>1</sub> )	BI (X <sub>2</sub> ) %	BA (X <sub>3</sub> )	CEOD (X <sub>4</sub> )	COMP (X <sub>5</sub> )	AQ (X <sub>6</sub> )	FZ (X <sub>7</sub> )	PROE (X <sub>8</sub> ) %	LEV (X <sub>9</sub> )	SECT (X <sub>10</sub> )
BZ(X <sub>1</sub> )	1.000									
BI(X <sub>2</sub> ) %	0.214	1.000								
BA(X <sub>3</sub> )	0.121	0.049	1.000							
CEOD(X <sub>4</sub> )	-0.234	-0.002	0.017	1.000						
COMP(X <sub>5</sub> )	0.079	-0.186	-0.138	0.169	1.000					
AQ(X <sub>6</sub> )	-0.126	0.362	-0.087	0.090	-0.205	1.000				
FZ(X <sub>7</sub> )	-0.181	-0.130	0.099	0.080	0.101	-0.120	1.000			
PROE(X <sub>8</sub> ) %	-0.070	-0.037	-0.032	0.109	0.071	0.066	0.086	1.000		
LEV(X <sub>9</sub> )	0.133	0.326	0.203	-0.022	-0.190	0.149	0.164	0.216	1.000	
SECT(X <sub>10</sub> )	-0.087	0.075	-0.035	0.014	-0.154	0.051	-0.024	-0.186	-0.015	1.000

From Table No. (6) the following is clear

The rule in the analysis is that the closer the correlation value is to the correct one, the more there is a solid direct correlation and vice versa.

The preference is that whenever the correlation between the variables is weak or non-existent, the better for the study model so that the effect of each variable can be studied independently.

- Examining the correlation between the size of the trim board of directors and the rest of the study variables
  - The previous table shows that there is a very weak direct correlation with each of the following variables: percentage of non-executive directors (0.214), board meetings (0.121), compliance with laws and regulations (0.079), and financial leverage (0.133).
  - There is also a weak inverse correlation with each of the following variables: separation between the chief executive officer and the chairman of the board (-0.234), audit quality (-0.126), company size (-0.181), profitability (-0.070), and sector type (-0.087).
- Examining the correlation between the percentage of non-executive directors and the rest of the study variables
  - The previous table shows a weak direct correlation with the following variables: Board meetings (0.049) and sector type (0.075).

- There is also a weak inverse correlation with each of the following variables: separation between the CEO and the Chairman of the Board (-0.002), compliance with laws and regulations (-0.186), company size (-0.130), and profitability (-0.037). There is also a medium direct correlation with the following variables: review quality (0.362) and financial leverage (0.326).
- Examining the correlation between the meetings of the board of directors and the rest of the study variables
    - The previous table shows that there is a very weak direct correlation with each of the following variables: the separation between the CEO and the Chairman of the Board (0.017), the size of the company (0.099), and the financial leverage (0.203).
    - There is also a weak inverse correlation with each of the following variables: compliance with laws and regulations (-0.138), audit quality (-0.078), profitability (-0.032), and sector type (-0.035).
  - Examining the correlation between the separation between the CEO and the Chairman of the Board and the rest of the study variables
    - The previous table shows that there is a very weak direct correlation with each of the following variables: compliance with laws and regulations (0.169), company size (0.080), profitability (0.109), and sector type (0.014). There is also a weak inverse correlation with leverage (-0.022).

5. Examining the correlation between complying with laws and regulations and the rest of the study variables
  - The previous table shows a weak correlation between company size (0.101) and profitability (0.071).
  - There is also a weak inverse correlation with each of financial leverage (-0.190), sector type (-0.154), and review quality (-0.205).
6. Examining the correlation between audit quality and the rest of the study variables
  - The previous table shows that there is a very weak direct correlation with each profitability (0.066), financial leverage (0.149), and sector type (0.051).
  - There is also a weak inverse correlation with the company's size (-0.120).
7. Examining the correlation between the size of the company and the rest of the study variables
  - The previous table shows a weak correlation between profitability (0.086) and financial leverage (0.164). There is also a weak inverse correlation with sector type (-0.024).
8. Examining the correlation between profitability and the rest of the study variables
  - The previous table shows a weak direct correlation with financial leverage (0.216). There is also a weak inverse correlation with sector type (-0.186).
9. Examining the correlation between financial leverage and the rest of the study variables
  - The previous table shows a weak inverse correlation with the sector type (-0.015).
10. Examining the correlation between the type of industry and the rest of the study variables
  - This relationship with other variables was dealt with in the previous analysis.
  - Referring to the previous analysis, it is clear that the correlations between the independent variables are acceptable since it was at most 80% in all its correlations.

b) *Regression Analysis and Test of Hypotheses*

Regression analysis using time series through least squares through the E-views program. In this section, we review the results of the regression analysis using time series through least squares, as shown in the following table (7):

**Table No. 7:** Results of Regression Analysis using Time Series Through Least Squares Through the E-Views Program to Analyze the Extent of Acceptance and Rejection of the Study Hypotheses

Dependent Variable: SER01 Method: Panel Least Squares Sample: 2019 2020					
Total panel (unbalanced) observations: 99				Periods included: 2 Cross-sections included: 50	
Variable	Coefficient	Std. Error	T-Statistic	Prob.	
C	1.6786	0.980203	1.712502	0.0903	
BZ(X <sub>1</sub> )	-0.0726	0.056524	-1.284452	0.2024	
BI(X <sub>2</sub> ) %	0.755245	0.389556	1.938735	0.0557	sig.
BA(X <sub>3</sub> )	0.043997	0.039516	1.113408	0.2686	
CEOD(X <sub>4</sub> )	-0.51064	0.610277	-0.836728	0.405	
COMP(X <sub>5</sub> )	0.055251	0.144114	0.38338	0.7024	
AQ(X <sub>6</sub> )	-0.21794	0.13053	-1.66962	0.0985	sig.
FZ(X <sub>7</sub> )	-0.02136	0.022017	-0.970069	0.3347	
PROE(X <sub>8</sub> ) %	-0.30352	0.690564	-0.43952	0.6614	
LEV(X <sub>9</sub> )	-0.51385	0.284565	-1.805744	0.0744	sig.
SECT(X <sub>10</sub> )	-0.11229	0.102432	-1.096245	0.276	

From Table No. (7) the following is clear:

1. The sign of the fixed amount is a positive sign with a value of (1.6786), which represents the value of the reliability of the financial statements when the independent variables are BZ( $X_1$ ), the size of the board of directors, BI ( $X_2$ ) the percentage of non-executive directors in the panel, BA( $X_3$ ) the meetings of the board of directors, CEOD( $X_4$ ) Separation between CEO and Chairman, COMP( $X_5$ ) compliance with regulations, AQ( $X_6$ ) audit quality, FZ( $X_7$ ) company size, PROE( $X_8$ ) profitability, LEV( $X_9$ ) leverage, SECT( $X_{10}$ ) sector type equals zero.
2. Suppose the sign of the independent variable is positive. In that case, this indicates a direct relationship between them. Still, the association is inverse in the case of the adverse sign. The probability value (prob) determines whether or not there is a statistically significant relationship if it is less than 10%, i.e. (0.1). the relationship is statistically significant, the opposite is not statistically significant, and through the results shown in the previous table, the following can be reached:
  - *The First Hypothesis:* BZ ( $X_1$ ) the size of the board of directors: From the results shown in the table, it is clear that there is no significant relationship between the size of the board of directors and the reliability of the financial statements. Therefore, based on the results shown, the null hypothesis is accepted. The alternative hypothesis is rejected: "there is no positive correlation between the size of the small board and the reduction of the adverse effects on the reliability of the financial statements."
  - *The Second Hypothesis:* BI ( $X_2$ ) the percentage of non-executive directors in the council: Through the results shown in the table, it is clear that there is a significant relationship between the rate of non-executive directors in the board and the reliability of the financial statements, which means that the greater the number of non-executive directors in the board, the greater the reliability of the financial statements. This is evidenced by the probability value (prob) (0.0557), which is less than (0.1). Therefore, based on the results shown, the null hypothesis is rejected. The alternative view is that "there is a correlation between the percentage of non-executive directors in the board and the reduction of adverse effects on the reliability of the financial statements."
  - *The Third Hypothesis:* BA ( $X_3$ ) Board meetings: Through the results shown in the table, it is clear that there is no significant relationship between the meetings of the Board of Directors and the reliability of the financial statements. Therefore, based on the results shown, the null hypothesis is accepted. The alternative hypothesis is rejected: "there is no positive correlation between the activities of the Board of Directors and the reduction of adverse effects on the reliability of the financial statements."
  - *The Fourth Hypothesis:* CEOD( $X_4$ ) Separation between the CEO and the Chairman of the Board: From the results shown in the table, it is clear that there is no significant relationship between the separation between the CEO and the Chairman of the Board and the reliability of the financial statements. This is evidenced by the probability value (prob) (0.405), which is Greater than (0.1); therefore, based on the results shown, the null hypothesis is accepted, and the alternative hypothesis is rejected that "there is no positive relationship between the separation between the position of CEO and Chairman of the Board of Directors and the reduction of adverse effects on the reliability of the financial statements."
  - *The Fifth Hypothesis:* COMP ( $X_5$ ) Compliance with regulations and laws: Through the results shown in the table, it is clear that there is no significant relationship between compliance with rules and statutes and the reliability of financial statements. This is evident through the probability value (prob) (0.7024), which is greater than (0.1); therefore, based on the results shown, the null hypothesis is accepted, and the alternative hypothesis is rejected that "there is no positive correlation between compliance with laws and regulations and the reduction of adverse effects on the reliability of the financial statements."
  - *The Sixth Hypothesis:* AQ ( $X_6$ ) Audit quality: Through the results shown in the table, it is clear that there is a significant relationship between audit quality and the reliability of the financial statements. The results rejected the null hypothesis and accepted the alternative view that "there is a positive correlation between the audit quality and the reduction of the adverse effects on the reliability of the financial statements."
  - *The Seventh Hypothesis:* FZ ( $X_7$ ) Company size: Through the results shown in the table, it is clear that there is no significant relationship between the size of the company and the reliability of the financial statements. This is evident through the probability value (prob) (0.3347), which is greater than (0.1).
  - *The Eighth Hypothesis:* PROE( $X_8$ ) Profitability: The results in the table clearly show no significant relationship between profitability and the reliability of the financial statements. This is evident through the probability value (prob) (0.6614), which is greater than (0.1).

- *The Ninth Hypothesis:* LEV ( $X_9$ ) financial leverage: Through the results shown in the table, it is clear that there is a significant relationship between financial power and the reliability of the economic data. This is evident through the probability value (prob) (0.0744), which is less than (0.1).
- *The tenth hypothesis:* SECT( $X_{10}$ ) Sector type: Through the results shown in the table, it is clear that there is no significant relationship between the sector type and the reliability of the financial statements. This is evident through the probability value (prob) (0.276), which is greater than (0.1)

*Table No. 8:* Results of Regression Analysis using Time Series Through Least Squares - Correlation Coefficient Analysis

Dependent Variable: SER01 Method: Panel Least Squares Sample: 2019 2020 Periods included: 2 Cross-sections included: 50 Total panel (unbalanced) observations: 99      vation 100	
R-squared	0.128556
Adjusted R-squared	0.029528
S.E. of regression	0.570313
Sum squared resid	28.62265
Log likelihood	-79.0493
F-statistic	1.298179
Prob(F-statistic)	0.24407
Mean dependent var	0.224939
S.D. dependent var	0.578925
Akaike info criterion	1.819178
Schwarz criterion	2.107525
Hannan-Quinn criter.	1.935843
Durbin-Watson stat	2.097268

Referring to the statistical analysis as shown in Table (8), the following is evident:

- The R2 coefficient shows that there is a weak positive relationship between the dependent variable, the reliability of the financial statements, and the independent variables, as the value of R2 was (0.1285), and the Adjusted R-squared coefficient was (0.0295), or about 3% of the changes in the dependent variable - the reliability of the financial statements - The difference in the independent variables explained it. In comparison, other factors explain the remaining 97%, which is a large percentage.
- As shown in the previous table, the value of the F-statistic is (1.298) with a probability value of (0.2440), which is greater than (0.10), which indicates that the regression is not significant.
- The previous table shows the autocorrelation test between random errors: the existence of linear autocorrelation for first-order errors can be tested using the Durban-Watson test after extracting the calculated value from the linear regression table and comparing it with the tabular values, where we find that the value of (2.0972) falls Between the upper limit (2.23) 4-du and the lower limit du (1.77), which means that the calculated value (2.09) is in the acceptance region, which means that the zero hypotheses are accepted and that there is no autocorrelation between random errors.

## XII. RESULTS OF STUDY

Through the results of the current study, it is possible to address the relationship of these results to the effects of previous studies regarding the issue of

corporate governance regarding the financial statements and the level of corporate performance as follows:

*First:* The results of the study that are consistent with other studies

- The results of this study are consistent with the results of other studies regarding the percentage of non-executive members of the board of directors, as there is a positive impact on the financial statements with the possibility of trusting them in the event of an increase in the percentage of non-executive members. Among these studies (Al-Janadi, Rahman, Omer, 2013) (Abdul Rahman, 2020), (Harfoush, 2015).
- The results of this study are also consistent with previous studies regarding the quality of the audit. The higher the quality of the audit, relying on one of the significant audit offices, the more this leads to an increase in the reliability of the financial statements. Among these studies (Al-Halabi, 2009), (Al-Janadi, Rahman, Omer, 2013).

*Second:* The Results of the Study that Differ from other Studies

- This study proved that there is no positive effect of the size of the board of directors in reducing the adverse impact of the reliability of the financial statements. At the same time, other studies proved otherwise, including (Abdul Rahman, 2020) (Donoshana & Ravivathani, 2019).
- The study proved that there is no positive effect of the separation between the CEO and the chairman of the board of directors in reducing the adverse impact of the reliability of the financial statements. At the same time, other studies proved otherwise, including Al-Janadi, Rahman, and Omer (2013).
- The study proved that board meetings have no positive effect on reducing the adverse impact of the reliability of the financial statements. At the same time, other studies have proven otherwise, including these studies (Donoshana & Ravivathani, 2019), (Harfoush, 2015), (Abdul Rahman, 2020). - The study proved that there is no positive effect for each of the company's size, company profitability, and sector type in reducing the adverse impact of the reliability of the financial statements. At the same time, other studies proved otherwise, including (Al-Janadi, Rahman, and Omer, 2013).

### XIII. RECOMMENDATIONS

The researchers recommend the following recommendations, according to the findings of the theoretical and field studies:

1. Given the importance of the purpose of applying corporate governance - and the historical events that took place in some companies - which led to

many financial crises, the study provides evidence of the need for joint stock companies, in particular, to apply corporate governance mechanisms regularly.

2. The necessity of having specialized oversight bodies in corporate governance to monitor the extent to which corporate governance mechanisms are applied regularly and correctly.
3. The board of directors of joint-stock companies activates the corporate governance mechanisms correctly and follows up on their implementation permanently through the specialized committees.
4. The executive management of companies should provide appropriate financial statements to serve investors and other dealing parties to give confidence in the financial statements, which is reflected in the growth of the company's shares in the stock exchange market.

### XIV. FUTURE RESEARCH

The researchers recommend further study in corporate governance in general due to the great importance of this topic in financial and administrative control.

The researchers also recommend more research linking corporate governance, achieving integrity, and combating corruption by studying the possibility of integration between the virtue and boards of directors of joint-stock companies to achieve integration in work performance, combat corruption, and gain control and quality in the financial and administrative work.

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## L'effet Du Conservatisme Comptable Sur L'investissement

By Imen Jammoussi & Mourad Mroua

*Résumé-* L'objectif de cet article est d'étudier l'effet du conservatisme comptable sur l'efficacité des investissements.

Les résultats d'une recherche menée sur un échantillon de 300 entreprises françaises cotées sur une période de 2013 à 2018 ont révélé que la majorité des entreprises sont conservatrices dans leurs informations. Le modèle de Richardson a indiqué que les sociétés en surinvestissement représentent 55%, tandis que les sociétés sous-investies représentent 45% de l'ensemble de l'échantillon. Le résultat montre également qu'il existe une relation négativement significative entre le conservatisme comptable et les surinvestissements et les sous-investissements. Par ailleurs, il existe une relation positive entre le conservatisme comptable et le financement par emprunt dans les entreprises ayant un problème de sous-investissement.

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# L'effet Du Conservatisme Comptable Sur L'investissement

Imen Jammoussi<sup>a</sup> & Mourad Mroua<sup>o</sup>

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## I. INTRODUCTION

Les différents scandales qui ont éclaté ces dernières décennies sont dus essentiellement aux fraudes et à l'opportunisme, sans oublier l'internationalisation des marchés de capitaux qui a nécessité une certaine rapidité de l'information et a mis l'accent sur la nécessité de l'existence d'états financiers qualitatifs permettant la vérification rapide des rapports financiers. En conséquence le conservatisme comptable est né. Il s'agit de caractéristiques qualitatives qui garantissent l'existence d'exigences nécessaires dans les rapports. Il permet, entre autres, de réduire l'incertitude et de garantir la crédibilité de l'information financière tant il permet de reconnaître, en temps opportun, les pertes et les retards accusés dans la reconnaissance des gains.

Ajoutons qu'un reporting financier qualitatif joue un rôle important dans la réduction de l'asymétrie de l'information, améliorant ainsi l'efficacité des investissements. Nul doute alors que le conservatisme comptable est de nature à améliorer l'efficacité des investissements, grâce à la vérification systématique des conditions du conservatisme.

Bon nombre de recherches ont déjà examiné le rôle du conservatisme comptable dans l'amélioration de l'investissement des entreprises (Jin et al., 2018; Latif et al., 2020). Il en résulte trois points de vue principaux concernant l'effet d'une politique financière prudente sur

l'efficacité des investissements. D'abord en contrôlant l'opportunisme managérial, le conservatisme comptable peut aider à atténuer le problème de surinvestissement (Ball et Shivakumar, 2005; Xu et Lu, 2012; Liu, 2014; Ting, 2015). Ensuite, on soutient très souvent que le conservatisme comptable peut accroître l'aversion au risque, en rejetant les projets risqués même en présence d'une valeur actuelle nette positive et un problème de sous-investissement croissant (Guay et Verrecchia, 2006, Liu, 2014; Ashfaq et al, 2016). Enfin, le conservatisme comptable peut atténuer les incitations au sous-investissement des gestionnaires en encourageant des investissements prudents (Ahmed et al., 2002; Karthik, Watts et Zuo, 2016; Razaq, Riu et Donghua, 2016; Hong, Kim et Lobo, 2017).

En tout état de cause, les résultats révélés dans la littérature comptable concernant la relation entre conservatisme comptable et efficacité des investissements sont contradictoires. Dans ce sens, nous cherchons, à travers cette démarche, à contribuer à enrichir la littérature portant sur le conservatisme comptable et à examiner l'influence d'une information financière prudente sur l'efficacité des investissements.

Ajoutons que, comme plusieurs autres études précédentes, nous évoquerons l'association entre le conservatisme comptable, l'investissement efficace et le financement par emprunt.

### Section 1: Revue De La Littérature

#### a) *Conservatisme Et Niveau D'investissement*

La littérature comptable portant sur le conservatisme et la décision d'investissement et les incitations d'investissement des gestionnaires a mis en exergue deux points de vue principaux. Le premier est lié au sous (sur) investissement, tandis que le second porte sur la gestion des incitations et des coûts d'agence (Ball, R. et Shivakumar, L. (2005)).

Le conservatisme comptable peut contraindre le rôle du gestionnaire et diminuer les problèmes d'agence, qui peuvent éventuellement être causés par des entreprises qui cherchent à assurer un surinvestissement. Au contraire, le conservatisme comptable entraîne un investissement anormal ou médiocre, et incite les gestionnaires à finalement, renoncer à des projets de valeur actuelle nette positive (VAN), conduisant ainsi à un sous-investissement (Guay, W. et Verrecchia, RE (2007); Roychowdhury, S. (2010); Watts, R. (2003).

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En général, le conservatisme donne accès à des fonds externes à moindre coût et diminue les chances de sous-investissement des entreprises n'ayant point de problèmes d'agence (Chen, X. D et Huang, DS (2007). Le conservatisme contrôle les gestionnaires, évite leurs manipulations en comptabilité, donne accès à d'autres sources et donne des signaux d'avertissement en temps opportun aux entreprises pour éviter toute perte future. Pour Guay, W. et Verrecchia, RE (2007), Ahmed, AS et S. Duellman (2007), LaFond, R. et RL Watts. (2008) et Jackson, SB, X. Liu et M. Cecchini. (2009), l'utilisation de l'approche conservatiste par l'entreprise, peut assurer d'énormes investissements en capital. Le conservatisme peut également provoquer un problème de sous-investissement. En effet, il y a une relation particulièrement négative entre le conservatisme comptable et le sous-investissement. De même, Tao M. (2014) a échoué à trouver une relation positive entre conservatisme et investissement efficace. Les entreprises conservatrices sont moins susceptibles de sous-investir ou de surinvestir et garde souvent un bon niveau d'investissement (Garcia Lara, JM, B. Garcia Osma et F. Penalva, (2010)).

La reconnaissance des pertes en temps opportun incite le gestionnaire à parcourir des projets moins risqués, décourage les investissements dans les projets à valeur actuelle nette négative, peut affecter indirectement les incitations à la gestion et provoque un sous-investissement de l'entreprise. Tao M. (2014) a fait valoir que le conservatisme peut avoir des effets néfastes sur les incitatifs à l'investissement des gestionnaires et peut les encourager à ignorer des projets à valeur actuelle nette positive. Pour sa part, Roychowdhury, S. (2010) a expliqué que les projets les plus risqués ont tendance à être des projets négatifs. Ainsi, le conservatisme peut être aversif aux risques, incite à abandonner les projets risqués tout en conservant les investisseurs à valeur actuelle nette positive. Il incite les gestionnaires à éviter les projets à valeur actuelle négative.

Toutefois, force est de relever que les managers manipulent quelque fois les rapports financiers et ont tendance à investir dans des investissements inefficaces pour maximiser leurs intérêts. L'asymétrie de l'information, les contrats imparfaits et les marchés inefficaces sont d'autres facteurs qui conduiraient les gestionnaires à prendre des décisions d'investissement inefficaces. Lorsqu'elles sont inefficaces, les décisions d'investissement peuvent conduire à des problèmes de surinvestissement ou de sous-investissement qui peuvent avoir un effet destructeur sur la valeur des entreprises.

Le problème de surinvestissement résulte d'un abus de la direction lors d'un investissement dans des projets non rentables, ce qui nuit à la valeur des entreprises. Une des sources du surinvestissement est

la séparation entre la propriété et la gestion, conduisant à des conflits d'intérêts (Cherkasova et Zakharova, 2016). Généralement, un problème d'agence se produit en raison d'un conflit d'intérêts entre les créanciers et les actionnaires (Hernandez, Minguez et Sanchez, 2015). Le surinvestissement dans des projets à haut risque permet aux actionnaires d'augmenter la volatilité des activités de l'entreprise pour augmenter leur propre richesse. Ainsi, la valeur de l'action de l'entreprise augmente, tandis que la valeur de la dette diminue.

Le problème de sous-investissement résulte du rejet d'un projet de valeur actuelle nette positive, ce qui diminuerait la valeur de l'entreprise (Jensen et Meckling, 1976). Le surendettement, tout comme le fait d'éviter les risques, constituent les principaux facteurs pouvant causer un problème de sous-investissement. Le surendettement survient lorsqu'il y a un niveau élevé d'endettement risqué constituant une charge sur le bilan d'une entreprise, et pouvant inciter les gérants à renoncer aux opportunités d'investissement avec une valeur actuelle nette positive (Occhino, 2010). Éviter les risques constitue une autre cause du problème de sous-investissement. En effet, Roeca, Catiota et Roeca (2005) soutiennent qu'une entreprise ayant une dette risquée et des opportunités de croissance élevées, ses gérants choisissent une stratégie conservatrice quant aux investissements, pour éviter le risque de perdre le contrôle de l'entreprise.

#### b) *Revue De La Littérature Et Développement Des Hypothèses*

L'investissement joue un rôle fondamental dans la croissance de l'entreprise et la création de nouvelles valeurs pour les propriétaires. Parallèlement, le conservatisme améliore la capacité et les conditions d'emprunt de l'entreprise, et contribue par conséquent à limiter la tendance à réduire l'investissement (Balakrishnan et al., 2016). Un certain nombre d'études indiquent que les créanciers préfèrent un reporting financier. Gox et Wagenhofer (2009) ont présenté un modèle qui montre que le conservatisme est un idéal comptable pour les entreprises confrontées à des contraintes financières. Kravet (2014) indique qu'une information financière prudente aide les créanciers à surveiller les décisions d'investissement de l'entreprise. Donovan et al. (2015) ont démontré que les créanciers des entreprises conservatrices ont un taux de couverture élevé. Hui et al. (2012) ont présenté des preuves que les fournisseurs et les clients à long terme préfèrent le reporting prudent. D'autres études indiquent que les créanciers récompensent les emprunteurs plus prudents en leur offrant des taux d'intérêt plus bas (Wittenberg-Moerman, 2008; Gormley et al., 2012; Haw et al., 2014).

A contrario, d'autres recherches suggèrent que le conservatisme comprend un certain biais qui conduit

les investisseurs et les créanciers à prendre de mauvaises décisions. Gigler et coll. (2009), ont indiqué que le conservatisme augmente la possibilité de faux avertissements, ce qui conduit à réduire l'efficacité des contrats de dette. Ishida et Ito (2014) ont trouvé une corrélation négative entre le conservatisme conditionnel et le niveau d'investissement, et une corrélation positive entre le conservatisme non conditionnel et l'investissement.

Imhof (2014), étudiant l'impact du conservatisme comptable sur l'investissement des entreprises, a montré que des niveaux plus élevés du conservatisme réduisent la sensibilité des investissements aux flux de trésorerie. Sur la même ligne d'idées, Hong et al. (2019) ont indiqué que le conservatisme réduit la relation négative entre investissement et fluctuation des flux de trésorerie en facilitant l'accès aux sources de financement externes. Balakrishnan et coll. (2016) ont examiné l'effet du conservatisme sur le niveau d'investissement au cours de la période de la crise, pour constater que les entreprises les moins conservatrices pratiquaient une réduction significative des activités d'investissement. Nakano et Al. (2014) ont fait la distinction entre le conservatisme conditionnel et inconditionnel, pour constater que les entreprises qui offrent un niveau de conservatisme conditionnel sont plus susceptibles de limiter l'investissement et leurs investissements sont moins risqués, alors que les entreprises qui affichent un niveau plus élevé de conservatisme inconditionnel ont un niveau d'investissement plus élevé et leurs investissements sont plus risqués. Ji et Ryu (2019) ont trouvé une relation entre le conservatisme et les investissements étrangers. Ils ont constaté que les entreprises ayant des investissements étrangers à long terme ont des niveaux plus élevés de conservatisme. Pour leur part, Chiou et Chang (2020) ont indiqué que le conservatisme améliore la qualité de l'information et réduit les risques encourus par les investisseurs.

Plusieurs recherches ont examiné l'association entre le conservatisme comptable et l'efficacité de l'investissement en examinant l'effet du conservatisme comptable sur le surinvestissement et le sous-investissement. Concernant le surinvestissement, Ting (2015) a examiné l'effet du conservatisme comptable sur le surinvestissement pour différents types de propriété des entreprises en Chine. L'auteur a constaté que le conservatisme comptable améliorerait l'efficacité globale de toutes les entreprises en améliorant la qualité des rapports et en atténuant les problèmes de surinvestissement.

Brockman, Liu et Ma (2015) et Manawadu et al. (2018) ont prédit que le conservatisme comptable pourrait réduire le problème de surinvestissement et conduirait à des incitations dysfonctionnelles vers des

projets à valeur actuelle positive. Les résultats ont montré qu'il y avait une association négative entre conservatisme comptable et surinvestissement. Reconnaître les pertes éventuelles en temps opportun empêche les gestionnaires de surinvestir dans un projet de valeur actuelle nette négative.

Ashfaq et al., (2016) ont indiqué qu'il existe une relation positive entre le conservatisme et l'efficacité des investissements. Cela s'explique par le fait que le conservatisme évite la gestion managériale opportuniste, atténuant ainsi le surinvestissement. De plus, Cho (2016) a démontré qu'il existe une relation négative entre le conservatisme conditionnel et le surinvestissement et que le conservatisme inconditionnel n'était pas significativement corrélé au surinvestissement. Ainsi, le conservatisme conditionnel est considéré comme un mécanisme efficace de contrôle qui sert à surveiller le comportement opportuniste des managers. Razzaq, Riu et Donghua (2016) ont indiqué qu'il y a une relation positive entre le conservatisme comptable et l'efficacité des investissements. Le conservatisme comptable réduit le problème de surinvestissement en surveillant les décisions des managers et en diminuant le cash-flow libre disponible pour eux. Par ailleurs, le conservatisme comptable réduit le problème de sous-investissement grâce à la résolution du problème de diminution de la dualité des PDG.

Concernant l'association entre le conservatisme comptable et le problème de sous-investissement, Karthik, Watts et Zuo (2016) ont examiné l'effet du conservatisme comptable sur les investissements des entreprises pendant la crise financière mondiale (2007-2008), pour aboutir aux résultats que les entreprises dont les rapports sont moins prudents souffrent d'une forte baisse de l'investissement après la crise financière. De plus, le conservatisme comptable aide les entreprises en situation de sous-investissement à résoudre leurs problèmes en facilitant l'accès aux sources de financement externes et en abaissant le coût du capital.

Par conséquent, le conservatisme constitue un mécanisme efficace pour atténuer le problème de sous-investissement. Par ailleurs, Lara, Osma et Penalva (2016) ont montré que le conservatisme atténuait à la fois les problèmes de surinvestissement et de sous-investissement dans les entreprises ayant un problème de surinvestissement.

Le conservatisme comptable contrôle les décisions de gestion et conduit à une meilleure sélection des investissements. Pour les entreprises qui souffrent d'un problème de sous-investissement, le conservatisme facilite le financement par emprunt et réduit le coût de la dette, réduisant ainsi le problème de sous-investissement.

Pan (2017) a constaté que les entreprises ayant une comptabilité plus prudente prennent de meilleures décisions d'investissement. Le conservatisme comptable aide à suivre les décisions de la direction quant à l'allocation de capital pour améliorer l'efficacité des investissements. Hong Kim et Lobe (2017) et Saffar et al. (2021) ont montré que le conservatisme réduit la sensibilité des investissements des entreprises à la volatilité des flux de trésorerie. En plus, le conservatisme réduit le problème de sélection adverse et contribue à faciliter le financement externe.

Yasir (2018) a démontré que le conservatisme comptable augmente la prudence des managers concernant la sélection des projets et les incite à éviter les projets à valeur actuelle nette négative.

Par conséquent, le conservatisme réduit le problème de surinvestissement, et encourage le financement par emprunt en présence d'asymétrie d'informations.

En revanche, Brockman, Liu et Ma (2015) et Fatchanetal., (2021) ont fait valoir que le conservatisme augmente l'aversion au risque et motive les managers à éviter les projets risqués qui conduisent au sous-investissement. Ashfaq et al., (2016) et Lobo et al., (2020) ont également constaté qu'il existe une relation positive entre le conservatisme et le sous-investissement. Selon les auteurs, le conservatisme peut restreindre les gestionnaires à investir dans des projets risqués, entraînant ainsi un sous-investissement.

Sur la base de toutes ces discussions, nous retenons que la majorité des études ont révélé que le conservatisme comptable améliore l'efficacité des investissements en atténuant le surinvestissement. Des rapports comptables prudents améliorent l'environnement de l'information, restreignent les comportements opportunistes des managers et améliorent la prudence managériale en matière de sélection des investissements. Cependant, le débat reste entier en ce qui concerne l'effet du conservatisme comptable sur les problèmes de sous-investissement. Certaines recherches ont postulé qu'il n'y a pas de relation entre eux (Brockman, Liu et Ma, (2015); Ashfaq et al., (2016)). Le financement par emprunt est un facteur clé de la croissance des entreprises. Le conservatisme comptable contribue à augmenter le niveau d'émission de la dette, et l'accès des entreprises au capital et améliore leur flexibilité financière (Kim, 2013; Lara, Osma et Penalva, (2016); Pan, (2017); Yasir, (2018)). La discussion ci-dessus conduit aux hypothèses suivantes:

*H1:* Le conservatisme comptable est associé négativement au surinvestissement et sous-investissement.

*H2:* Le conservatisme comptable est positivement associé au financement par emprunt pour réduire le problème de sous-investissement.

## II. LES TESTS EMPIRIQUES

### a) Sélection De L'échantillon

L'échantillon initial de cette recherche comprend 300 entreprises françaises cotées sur le marché français. Il couvre toutes les industries à l'exception des institutions financières (telles que les banques, compagnies d'assurance et de courtage) et les entreprises de services publics qui disposent de capitaux et de structure d'investissement différents. La période d'observation s'étale sur 6 ans allant de 2013 à 2018.

### b) Mesures Des Variables

#### i. Conservatisme Comptable Et Efficacité Des Investissements

Le conservatisme comptable (AC) est considéré comme la variable indépendante portant sur l'association entre le conservatisme comptable et le sur (sous) investissement. Le niveau du conservatisme sera mesuré à l'aide de «la mesure négative fondée sur la comptabilité d'exercice». Nous avons choisi cette mesure tant elle capture l'effet des deux types de conservatisme puisque les gestionnaires ne seraient pas en mesure de différencier si ces régularisations négatives résultaient de la reconnaissance d'un événement d'actualité (CC) ou d'une politique cohérente de mesure des valeurs comptables (UC) (Ruch et Taylor, 2014; Xie, 2015). Les valeurs positives de (Contre-Accruals) indiquent un plus grand niveau de conservatisme, alors que les valeurs négatives indiquent le contraire.

$$\text{Contre-Accruals} = [(NI - CFO + DEP)/AVASS] * -1 \quad (1)$$

Où:

NI: Revenu avant éléments extraordinaires.

CFO: flux de trésorerie liés aux opérations.

DEP: dotation aux amortissements.

AVASS: Actif total moyen.

Le sur (sous) investissement, est considéré comme la variable dépendante de l'association entre conservatisme comptable et sur (sous) investissement. Le sur (sous) investissement est mesuré à l'aide du modèle de Richardson (Biddle, 2009; Lara, Osma et Penalva, 2016; Yasir, 2018), qui est utilisé pour mesurer les opportunités de croissance dans chaque entreprise. Le résidu de ce modèle est utilisé comme approximation des écarts par rapport à l'investissement optimal.

$$\text{Investissement}_{it} = \beta_0 + \beta_1 \text{Croissance des ventes}_{it-1} + \varepsilon_{it} \quad (2)$$

Où:

*Investissement<sub>it</sub>*: Les paiements d'immobilisations corporelles (PPE) de l'année (t) à (t-1).

*Croissance des ventes*  $_{it-1}$ : variation en pourcentage des ventes de l'année (t-1) à (t-2).

Les entreprises seront classées en surinvestissement ou sous-investissement en fonction de l'ampleur du résidu ( $\epsilon_{it}$ ) qui est l'écart par rapport à l'investissement prévu.

Le surinvestissement est le résidu positif dans les observations de l'année-entreprise dans notre échantillon, tandis que le sous-investissement serait le résidu négatif. Pour les deux: sur (sous) investissement, les variables seraient considérées comme des variables fictives, le surinvestissement est donc classé (1) et le sous-investissement est classé (0).

En nous basant sur la littérature antérieure (Xu et Lu, 2012; Wang, Zhu et Homeire, 2015; Ting, 2015; Cho, 2016; Lara, Osma et Penalva, 2016), nous cherchons à contrôler les variables pouvant affecter le niveau d'investissement de l'entreprise. Les variables de

$$\text{Sur (sous) investissement}_{it} = \beta_0 + \beta_1 AC_{it} + \beta_2 \text{Size}_{it-1} + \beta_3 \text{CFO}_{it-1} + \beta_4 \text{Div}_{it-1} + \beta_5 \text{ROA}_{it-1} + \epsilon_{it} \quad (3)$$

Où: Sur (sous) investissement: variable fictive qui prend la valeur (1) en cas de surinvestissement et (0) en cas de sous-investissement.

AC: Conservatisme comptable de l'entreprise  $i$  à l'année  $t$ .

Size  $_{it-1}$ : Taille de l'entreprise  $i$  à l'année  $t-1$ .

CFO  $_{it-1}$ : Flux de trésorerie provenant de l'exploitation de l'entreprise  $i$  à l'année  $t-1$ .

Div  $_{it-1}$ : Ratio de distribution des dividendes de l'entreprise  $i$  à l'année  $t-1$ .

ROA  $_{it-1}$ : Rendement des actifs de l'entreprise  $i$  à l'année  $t-1$ .

#### ii. Conservatisme Comptable, Efficacité Des Investissements Et Financement Par Emprunt

Le conservatisme comptable (AC) est la première variable indépendante concernant l'association entre le conservatisme, le sous-investissement et le financement par emprunt. Dans cette démarche, le conservatisme sera mesuré à l'aide de «la mesure négative fondée sur la comptabilité d'exercice», proposée par Givoly et Hayn (2000) comme indiqué précédemment dans l'équation (1).

Le sous-investissement est la deuxième variable indépendante de la deuxième hypothèse concernant l'association entre conservatisme, efficacité des investissements et financement par emprunt. Il est mesuré à l'aide du modèle de Richardson et serait le résidu négatif des observations par année-entreprise dans l'échantillon, comme indiqué dans l'équation (2).

Le financement par emprunt est la variable dépendante de l'association entre conservatisme, sous

$$\Delta \text{ Dette Fin}_{it} = \beta_0 + \beta_1 AC_{it} + \beta_2 \text{investissement}_{it} + \beta_3 \text{Lev}_{it-1} + \beta_4 \text{CFO}_{it-1} + \beta_5 \text{MB}_{it-1} + \beta_6 \text{ROA}_{it-1} + \epsilon_{it} \quad (4)$$

$\Delta \text{ Dette Fin}_{it}$ : évolution du financement par emprunt de l'entreprise  $i$  à l'année  $t$ .

contrôle comprennent la taille de l'entreprise, le fonctionnement, le taux de distribution des dividendes et le rendement des actifs. La taille de l'entreprise est mesurée en calculant le logarithme naturel des actifs totaux de l'entreprise  $i$  à l'année  $t$ . Le flux de trésorerie d'exploitation (CFO  $_{it-1}$ ) est calculé comme le flux de trésorerie des opérations mis à l'échelle par l'actif total à l'année  $t-1$ .

Le ratio de distribution des dividendes (Div  $_{it-1}$ ) est considéré comme des dividendes en espèces payés par les entreprises et calculés en tant que dividendes en espèces versés par l'entreprise, proportionnels au total de l'actif à l'année  $t-1$ . L'actif (ROA  $_{it-1}$ ) représente la rentabilité de l'entreprise. Il est calculé comme le revenu net de l'entreprise divisé par le total des actifs à l'année  $t-1$ .

Sur la base de la discussion précédente, le modèle empirique suivant est construit comme suit:

investissement et financement par emprunt. La variation du financement par emprunt ( $\Delta \text{ Debt Finit}$ ) est utilisée comme mesure de financement par emprunt. La variation du financement par emprunt est calculée comme la différence entre le financement par emprunt de l'entreprise  $i$  à l'année  $t-1$  et  $t$ , où le financement par emprunt est le total du passif de l'entreprise divisé par le total de l'actif. Le deuxième modèle empirique fait intervenir des variables de contrôle qui affectent le financement par emprunt, y compris l'endettement, les flux de trésorerie liés à l'exploitation, le rendement des actifs et le ratio marché/livre. L'effet de levier (Lev) mesure la liquidité de l'entreprise. Il est calculé par le rapport entre la valeur comptable du total des passifs et la valeur comptable du total des actifs à l'année  $t$ . Le flux des opérations (CFO) permet de contrôler les capacités de financement interne de l'entreprise (Cho, 2016). Le CFO est calculé en divisant le flux de trésorerie lié à l'exploitation par le total des actifs à l'année  $t-1$ .

Le rendement des actifs (ROA) est calculé comme le revenu net de l'entreprise déflaté par le total de l'actif à l'année  $t$ . Le ratio marché/valeur comptable (ratio MB) est utilisé pour contrôler les opportunités d'investissement de l'entreprise.

Le MTB est calculé comme le rapport entre la valeur de marché des capitaux propres et la valeur comptable des capitaux propres à l'année  $t-1$ .

Sur la base de ce qui a été dit, le modèle empirique est construit comme suit:

AC: Conservatisme comptable de l'entreprise  $i$  à l'année  $t$ .



Sous-investissement: les résidus négatifs dans les observations de l'année-entreprise, comme indiqué précédemment dans l'équation (1).

$Lev_{it-1}$ : effet de levier de l'entreprise  $i$  à l'année  $t-1$ .

$CFO_{it-1}$ : Flux de trésorerie d'exploitation de l'entreprise  $i$  à l'année  $t-1$

$MB_{it-1}$ : Ratio marché/livre de l'entreprise  $i$  à l'année  $t-1$ .

$ROA_{it-1}$ : Rendement des actifs de l'entreprise  $i$  à l'année  $t-1$ .

## Section 2: Vérifications Empiriques

### III. STATISTIQUES DESCRIPTIVES

Désormais, nous présentons l'analyse descriptive de l'ensemble des variables utilisées dans cette recherche.

Les statistiques descriptives sont utilisées pour décrire les propriétés de l'échantillon et tester la validité de la distribution. Les statistiques descriptives impliquent la moyenne, la médiane, la valeur maximale, la valeur minimale, l'écart-type, l'asymétrie, le kurtosis et le Jarque-Bera test de chaque variable. Les résultats sont présentés dans le tableau 1.

Tableau 1: Statistiques Descriptives Des Variables

	AC	Over (under) Investment	Size <sub>it-1</sub>	Lev <sub>it-1</sub>	Div <sub>it-1</sub>	ROA <sub>it-1</sub>	MB <sub>it-1</sub>
Mean	0,125	0,96	0,24	20,49	0,37	0,04	0,027
Median	0,011	0,96	0,01	20,58	0,32	0,04	0,02
Maximum	0,154	0,10	0,16	23,82	1,09	0,19	0,09
Minimum	-0,173	0,82	-0,10	16,93	0,00	-0,10	0,00
Std. Dev.	-0,432	0,05	0,05	1,69	0,25	0,05	0,02
Skewness	2,811	-0,15	0,17	-0,18	0,57	0,13	0,80
Kurtosis	4,493	3,10	2,78	2,30	2,86	3,03	3,01
Jarque-Bara	0,083	1,21	1,90	7,35	16,16	0,8	30,76
Probability	00,083	0,54	0,38	0,25	0,00	0,64	0,00

Les statistiques descriptives d'AC montrent des valeurs moyennes et médianes de (0,125) et (0,011) et indiquent que la majorité des entreprises de l'échantillon cotées sont conservatrices dans leurs informations. La valeur maximale est (0,154) et la valeur minimale de AC est (-0,173). La valeur de l'asymétrie et l'aplatissement sont respectivement (-0,432) et (2,811) indiquant que les valeurs de AC sont normalement distribuées car la valeur d'asymétrie doit être comprise entre -3 et +3, la valeur du kurtosis doit être comprise entre -10 et +10. De plus, le «test jarque-bera» est utilisé pour mesurer la distribution de la normalité de toutes les variables financières de cette étude avec une valeur de signification supérieure à 0,05. Par conséquent, AC est normalement distribué à (4,493, valeur  $p = 0,083$ ).

Par ailleurs, la valeur moyenne du sur (sous) investissement est (0,961) et la médiane est (0,967). La valeur maximale est (1,107) et la valeur minimale du sur (sous) investissement est (0,824) avec un écart-type (0,054) révélant qu'en moyenne les entreprises de l'échantillon font davantage de décisions d'investissement. Les valeurs de l'asymétrie et de l'aplatissement sont (-0,152) et (3,101) indiquant respectivement que les valeurs d'investissement sont normalement distribuées. La valeur du test de jarque-bera est normalement distribuée à (1,220, valeur  $P = 0,543$ ).

L'évolution du financement par emprunt montre des valeurs moyennes et médianes de (0,04) et (0,020). Les valeurs maximales et minimales sont

respectivement (0,184) et (-0,05). La plage est (0,272) indiquant qu'il existe une variation entre les entreprises concernant les décisions de financement par emprunt. L'écart-type est (0,053), les valeurs d'asymétrie et d'aplatissement sont (0,181) et (2,802) indiquant respectivement que la variation du financement par emprunt est normalement distribuée. Par ailleurs, la valeur du test de jarque-bera est (2,11 valeur  $P = 0,386$ ) indiquant que la variation de la dette est également normalement distribuée.

Concernant les variables de contrôle, les résultats montrent que toutes les variables de contrôle sont normalement distribuées. Cependant, jarque-bera (valeurs  $P$ ), s'agissant de la taille de l'entreprise, de l'effet de levier, du ratio de distribution des dividendes, les taux de MB sont de 0,03, 0,00, 0,00 et 0,01, ce qui indique qu'ils ne sont pas normalement distribués.

Cependant, Kline (2015) a mentionné dans ce sens, qu'en sciences sociales, il est courant de violer la normalité ; par conséquent, il n'y a pas de problème de série pour appliquer les analyses paramétriques et tester les hypothèses si l'asymétrie et l'aplatissement de chaque élément dans l'intervalle  $\pm 3$  et l'aplatissement à l'intérieur plage  $\pm 10$ .

### IV. STATISTIQUES DE DIAGNOSTIC

Pour évaluer la validité de toutes les variables de la recherche actuelle et garantir que les résultats ne seront pas biaisés, cinq tests de diagnostic sont effectués sur toutes les données avant d'exécuter

l'analyse de régression. Ces tests comprennent le test de racine unitaire de groupe, le test de co-intégration Phillips–ouliaris, le test de corrélation, le test d'hétérogénéité et le test de la variable omise.

a) *Test De Racine Unitaire*

*Tableau 2:* Test De Racine Unitaire De Groupe Pour Toutes Les Variables

Method	Statistic	Prob.**
Levin, Lin & Chu(LLC)	-29,2399	0.0000
Im, Pesaran and Shin W-stat (IPSW)	-29,3668	0.0000
Fisher Chi-square (ADF)	778,8240	0.0000
Fisher Chi-square (PP)	792,6664	0.0000

Le tableau montre que les valeurs P des tests LLC, IPSW, ADF et PP sont (valeur P = 0%) inférieures à (0,05). Cela signifie que toutes nos variables sont stationnaires. Ainsi, les résultats de la présente recherche peuvent être généralisés pour les périodes futures.

*Tableau 3:* Test De Co-Intégration Concernant Toutes Les Variables

Dependent	Tau-Statistic	Prob	Z-Statistic	Probability
AC	-15,0286	0.0000	-236,0950	0.0000
Over(Under) Investment	-10,0387	0.0004	-128,0450	0.0004
Δdebt Fin	-17,0706	0.0000	-278,4940	0.0000
Size	-12,2400	0.0895	-80,9749	0.1028
Leverage	-12,7400	0.0000	-186,2898	0.0000
Cfo	-15,6663	0.0000	-249,5595	0.0000
Dividend Payout	-9,1681	0.0047	-110,1782	0.0042
Roa	-13,4420	0.0000	-201,8966	0.0000
MB Ratio	-10,9962	0.0000	-150,3088	0.0000

Le tableau montre que presque toutes les variables (AC, sur (sous) investissement, financement par emprunt, effet de levier, CFO, ratio de distribution de dividendes, ROA et ratio MB), sont significatives, puis que les valeurs P sont inférieures à (0,05). Ainsi, il existe des relations d'équilibre à long terme entre les variables dans le premier et le deuxième modèle. Cependant, les résultats montrent également que la valeur de la taille de l'entreprise

La statistique Tau est (0,090). Elle est supérieure à (0,05). Ainsi, la taille de l'entreprise n'a pas de relations d'équilibre avec les autres variables.

*Tableau 5:* Test De Corrélation En Série De Breusch-Godfrey Pour Toutes Les Variables

F-Statistic	9,9824	Prob. F(2,279)	0,1021
Obs*R-Squared	5,9654	Prob. Chi-Square (2)	0.0999

Comme le montre le tableau 5, la probabilité du test F (0,102) et la probabilité du chi carré (0,099) sont supérieures à (0,05). Ainsi, il n'y a pas de corrélation entre la variable indépendante et les variables dépendantes dans les deux modèles empiriques. Cela signifie que nos résultats seront corrects et nos conclusions ne seront pas biaisées.

Une série chronologique stationnaire nous a permis de généraliser les résultats pour les périodes futures.

b) *Test De Co-Intégration*

Ce test est utilisé pour vérifier l'existence d'un équilibre à long terme entre les variables de séries chronologiques avec un taux de signification inférieur à (0,05). Le tableau 4 présente le test de co-intégration Phil–ouliaris.

c) *Test De Corrélation En Série Breusch-Godfrey*

Ce test est utilisé pour tester la présence d'une corrélation en série de Breusch-Godfrey

Le test de corrélation utilise la statistique F et la valeur du chi carré à un niveau de signification (valeur  $P > 0,05$ ).

Le tableau 5 présente le test de corrélation en série de Breusch-Godfrey pour toutes les variables.

d) *Test d'hétéroscédasticité: Breusch-Pagan-Godfrey*

*L'hétéro-scédasticité:* Signifie que l'écart type des variables n'est pas constant, ce qui peut conduire à des résultats biaisés ou à une spécification erronée d'autres tests. Mesures d'essai de Breusch-Pagan.

*L'hétéroscédasticité:* Dans un modèle utilisant la statistique F et le test du chi carré à une valeur de

signification supérieure à (0,05). Le tableau 6 présente le test d'hétéroscédasticité.

**Tableau 6:** Test D'hétéroscédasticité: Breusch-Pagan-Godfrey Concernant Toutes Les Variables

F-Statistic	0,0132	Prob.	0,9320
Obs*R-Squared	0.0267	Prob.	0,9513
Scaled Explained SS	0.0711	Prob.	0,9212

Ce tableau montre que la probabilité de la statistique F est (0,9320) et la probabilité du chi carré est (0,9513, 0,912). Tant que les valeurs sont supérieures à (0,05), il y a homo-scédasticité (variance constante) entre toutes les variables du modèle.

Nous résumons que nos résultats ont abouti à la conclusion que l'ensemble des variables de notre recherche ont une série chronologique stationnaire, ainsi les résultats de recherche actuels peuvent être généralisés pour les périodes futures. De plus, les variables ont un équilibre à long terme à l'exception de la taille de l'entreprise. Enfin, il n'y a pas de corrélation sérielle et d'hétéro-scédasticité, indiquant que les résultats de notre étude ne sont pas biaisés.

## V. RÉSULTATS CONCERNANT L'ASSOCIATION ENTRE CONSERVATISME COMPTABLE ET INVESTISSEMENT

Dans cette section, nous présentons les résultats de régression de la première hypothèse. En premier lieu, l'analyse présentée divise les entreprises en entreprises en surinvestissement et en entreprises en sous-investissement.

Le test de corrélation et l'analyse de régression sont présentés.

### a) Test Des Moindres Carrés Ordinaires

Pour pouvoir tester l'effet du conservatisme comptable sur le sur (sous) investissement, il nous appartient de tester l'association entre l'investissement (mesuré par PPE t/PPE t-1) et la croissance des ventes (SG).

Le tableau 7 présente le test des moindres carrés ordinaires.

**Tableau 7:** Test Des Moindres Carrés Ordinaires Concernant Le Premier Modèle Empirique

Variable	Coefficient	T-Statistic	Prob.	VIF
SG	0.312	3.415	0.0114	1.009
Investment	0.751322	16.90294	0.0000	1.009
C	0.323412	7.141425	0.0000	---
R-squared	0.541821	0.94171		
Adjusted R-Squared	0.540011	0.06243		
S.E. of Regression	0.037866	-3.69903		
Sum Squared Resid	0.402902	Schwarz Criterion		-3.66048
Log Likelihood	528.2627	Hannan-Quinnriter.		-3.68357
F-Statistic	161, 121			
Prob (F-Statistic)	0.000000			

Le tableau illustre l'association entre la croissance des ventes et l'investissement. Le coefficient de SG est positif (0,312) et est statistiquement significatif au niveau de 1,1%. Cela signifie que plus le degré de SG, plus l'entreprise ne prend des décisions d'investissement. De plus, la valeur du test F est (161, 121, valeur P = 0%); ce qui montre l'importance globale du modèle. En conséquence, le modèle est significatif car la valeur significative est inférieure à (0,05). La valeur du carré R est 51,8%, ce qui signifie que la croissance des ventes peut expliquer 51,8% de la variation de l'investissement. Le résidu égal à 48,2% s'explique par d'autres variables explicatives qui doivent être incluses dans le modèle.

La variance du facteur d'inflation (VIF) est utilisée pour mesurer le degré de multi-colinéarité dans

un ensemble de variables de régression. VIF doit être inférieur à 10, une valeur supérieure à 10 indique un problème de multi-colinéarité. Comme indiqué dans le tableau, la valeur VIF est (1,009), il n'y a donc pas de problème de multi-colinéarité entre les variables indépendantes.

Ainsi, après avoir examiné l'association entre l'investissement et la croissance des ventes, nous avons abouti aux résultats qu'il existe une relation positive entre les deux variables dans toutes les entreprises cotées. Le modèle de Richardson (2006) est utilisé pour déterminer le surinvestissement et le sous-investissement des entreprises.

Le tableau 8 présente la répartition des sur (sous) investissements, concernant le premier modèle empirique.

Tableau 8: Résultats Du Sur (sous) Investissement Concernant Le Premier Modèle Empirique

Variable		Frequency	Percent	Cumulative Percent
Valid	Underinvestment	810	48.4	45
	Overinvestment	990	51.2	100.0
Total		1800	99.6	
Total		1800	100.0	

Le tableau 8 montre qu'après application du modèle de Richardson à toutes les entreprises cotées, les entreprises en surinvestissement représentent 55%, tandis que les sociétés à sous-investissement représentent 45%.

#### b) Test De Corrélation De Pearson

La corrélation de Pearson mesure la force et la direction de l'association linéaire entre toutes les

variables prises deux à deux. Par ailleurs, ce test mesure l'hypothèse de la validité de l'absence de la multi-colinéarité de l'analyse de régression.

Le tableau 9 présente les coefficients de corrélation de Pearson pour le premier modèle empirique.

Tableau 9: Matrice De Corrélation De Pearson Concernant Le Premier Modèle Empirique

Variables	Over (under) Investment	AC	Size	CFO	Dividend	ROA
Over (under) Investment	1.000000					
AC	-0.2566	1, 2				
	0.0003	-----				
Size <sub>it-1</sub>	0.1572	0.1070	1,2			
	0.0333	0.1621	-----			
CFO <sub>it-1</sub>	0.3336	0.0727	0.1386	1,2		
	0.0000	0.3727	0.063	-----		
Div <sub>it-1</sub>	0.1111	-0.1047	0.0157	0.2113	1,2	
	0.1448	0.1720	0.9918	0.036	-----	
ROA <sub>it-1</sub>	0.1706	-0.5287	0.0372	0.4478	0,4559	1, 2
	0.01	0.0000	0.7240	0.0000	0.0000	-----

Le tableau 9 montre qu'il existe une corrélation négative significative entre le conservatisme comptable et l'investissement et ( $r = -0,2566$ ) et la valeur  $P < 0,05$ . Cela signifie que le conservatisme comptable améliore l'efficacité des investissements en réduisant les (sous) investissements. Concernant les variables de contrôle, les résultats montrent qu'il y a une corrélation significative entre le sur (sous) investissement et la taille de l'entreprise, le CFO et le ROA.

Il n'en demeure pas moins qu'il existe une corrélation insignifiante entre le sur (sous) investissement et le ratio de distribution de dividende

parce que (valeur  $P > 0,05$ ). De plus, la corrélation la plus élevée existe entre le ratio de distribution et ROA ( $r = 0,455$ ). Par conséquent, il n'y a pas de problèmes de multi-colinéarité, étant donné la faible corrélation entre les variables explicatives.

#### c) Analyse De Régression

Une analyse de régression multiple permet de tester la première hypothèse concernant l'association entre conservatisme comptable et efficacité des investissements. Le tableau 10 présente les résultats obtenus.

Tableau 10: Résultats D'estimation Concernant Le Premier Modèle

Variable	Coefficient	T-Statistic	Prob.
AC	-0.1203876	-9.0995448	0.0102
Size <sub>it-1</sub>	-0.0047988	-3.1888332	0.04404
CFO <sub>it-1</sub>	0.0558168	2.5222692	0.78036
Div <sub>it-1</sub>	-0.2923344	0.544842	0.0000
ROA <sub>it-1</sub>	0.017158	-6.895000	0.6449
C	0.881401	24.81544	0.0000
R-Squared	0.9198792	Mean dependent var	1.1527632
Adjusted R-Squared	0.8359728	S.D. dependent var	0.039054
S. E. of Regression	0.02151	Akaike info criterion	-6.0052308

Sumsquaredresid	0.0836676	Schwarz criterion	-4.9850208
Loglikelihood	928.94016	Hannan-Quinnriter.	-5.5961616
F-statistic	13.155684	Durbin-Watsonstat	1.927836
Prob(F-statistic)	0.00000		

Comme le montre le tableau 10, les résultats montrent que le coefficient de AC est négatif (-0,10) et est statistiquement significatif au niveau de 0%. Cela signifie que les entreprises avec un degré plus élevé de prudence bénéficient de décisions d'investissement plus efficaces. D'où notre première hypothèse H 1 est acceptée.

De plus, les résultats montrent qu'il existe une relation négativement significative entre la taille de l'entreprise et le ratio de distribution des dividendes avec sur (sous) investissement. D'une manière inattendue, les résultats de la régression montrent qu'il existe une relation insignifiante entre ROA, CFO et plus (sous) investissement, car la valeur P est supérieure à (0,05).

Par ailleurs, la valeur du test F est de (10,963), donc le modèle est significatif en raison de la valeur significative ( $p = 0,000$ ) inférieure à (0,05). La valeur du carré R est de 76,6%, ce qui signifie que les variables indépendantes (AC et variables de contrôle incluses)

expliquent 76,6% des variations du sur (sous) investissement.

## VI. RÉSULTATS CONCERNANT L'ASSOCIATION ENTRE CONSERVATISME COMPTABLE, SOUS-INVESTISSEMENT ET FINANCEMENT PAR EMPRUNT

Cette section présente les résultats de la régression des deuxième et troisième modèles empiriques, y compris le test de corrélation de Pearson et l'analyse de régression.

### a) Test De Corrélation De Pearson

Le test de corrélation de Pearson est utilisé pour mesurer la force et la direction de la relation linéaire entre toutes les variables prises deux à deux.

Le tableau 11 présente les coefficients de Pearson pour le deuxième modèle empirique.

Tableau 11: Matrice De Corrélation De Pearson Concernant Le Deuxième Et Le Troisième Modèles

Variables	$\Delta$ Debt Fin	AC	Lev <sub>it-1</sub>	CFO <sub>it-1</sub>	ROA <sub>it-1</sub>	MBratio <sub>it-1</sub>	Underinv
$\Delta$ Debt Fin	1.1						
AC	0.2708 0.0039	1.1 -----					
Lev <sub>it-1</sub>	0.099 0.3229	0.1634 0.0900	1.1 -----				
CFO <sub>it-1</sub>	-0.2402 0.0111	0.1542 0.1109	0.1743 0.0695	1.1 -----			
ROA <sub>it-1</sub>	-0.1677 0.0815	-0.33 0.00022	-0.2189 0.0209	0.3913 0.0000	1.1 -----		
MB ratio <sub>it-1</sub>	-0.2055 0.0309	-0.044 0.7043	0.2442 0.0095	-0.1311 0.1800	-0.0228 0.8889	1.1 -----	
Under Investment	-0.2709 0.0033	-0.11 0.2674	-0.0506 0.6465	0.4851 0.0000	0.1056 0.2887	-0.308 0.0324	1.1 -----

Comme le montre le tableau 11, il existe une corrélation positive et significative entre le financement par emprunt et le conservatisme comptable puisque la valeur de r est de (0,246) et la valeur de P est <0,05. La corrélation entre le financement par emprunt et le sous-investissement est négative car la valeur r est de (-0,246) et est significative (valeur p <0,05). En ce qui concerne les variables de contrôle; il y a une corrélation négative entre CFO, ratio MB et financement par emprunt. Cependant, il y a une corrélation insignifiante entre l'endettement de l'entreprise, le ROA et le financement par emprunt car la valeur P > 0,05. La

corrélation la plus élevée existe entre le CFO et le sous-investissement ( $r = 0,441$ ), indiquant l'absence de problèmes de multi-colinéarité, étant donné les faibles corrélations entre les variables.

### b) Analyse De Régression

Une analyse de régression multiple est utilisée pour tester la deuxième hypothèse. Les résultats sont donnés dans le tableau 12.

Tableau 12: Les Résultats Du Test Du Troisième Modèle

Variable	Coefficient	T-Statistic	Prob.
AC	0.2886273	6,8937193	0.0000
<b>Under investment</b>	- 0.2151305	-4.4840016	0.00104
Lev <sub>it-1</sub>	0.1218555	10.2417822	0.0000
CFO <sub>it-1</sub>	0.0446381	5.2039611	0.01.3
ROA <sub>it-1</sub>	0.0757081	3.9732563	0.00351
MBratio <sub>it-1</sub>	- 0.0376818	-14.15765	0.0000
<b>C</b>	0.2936986	5.145309	0.00013
R-Squared	0.2923037	Mean Dependent Var	0.0343213
Adjusted R-Squared	0.2214511	S. D. Dependent Var	0.0470821
S. E. of regression	0.0428857	Akaike info criterion	-5.09028
Sum squared resid	0.1810848	Schwarz criterion	-4.814524
Log likelihood	364.22932	Hannan-Quinn criter.	-4.9782187
F-statistic	5.363098	Durbin-Watson stat	2.2700496
Prob (F-statistic)	0.0000143		

Comme le montre le tableau 14, nos résultats montrent que le coefficient de AC est positif (0,288) et statistiquement significatif au niveau de 0%. Cela révèle que les entreprises avec un degré plus élevé de rapports prudents prennent plus de décisions de financement par emprunt dans les entreprises sous-investies. Ainsi, la deuxième hypothèse (H 2), qui stipule que le degré de conservatisme comptable est positivement associé au financement par emprunt en cas de sous-investissement des entreprises, est acceptée. Nos résultats montrent également qu'il existe une relation négative et significative entre le sous-investissement et le financement par emprunt ( $r = -0,215$ ). Concernant les variables de contrôle, les résultats montrent qu'il existe une association positive et significative entre l'effet de levier, le CFO, le ROA et le financement par dette, alors qu'il existe une relation négative significative entre le ratio MB et la même variable (financement par dette). Par ailleurs, la valeur du test F est (5,363), ce qui montre la signification globale du modèle, qui est significatif puisque la valeur significative ( $p = 0,000$ ) est inférieure à (0,05). La valeur de R carré est de 29,2%, ce qui signifie que les variables indépendantes (AC et variables de contrôle incluses) expliquent 29,2% de la variation du financement par emprunt.

## VII. DISCUSSION DES RÉSULTATS

Cette section présente les principaux résultats de notre recherche. En premier lieu, nos résultats montrent que le conservatisme comptable dans les sociétés cotées de notre échantillon est assez pratiqué. Les statistiques descriptives révèlent des valeurs moyennes et médianes positives sur l'ensemble de l'échantillon.

Par conséquent, selon la mesure des régularisations négatives, la majorité des entreprises cotées sont prudentes dans leurs rapports financiers. En second lieu, les résultats montrent que le

pourcentage d'entreprises ayant des problèmes de surinvestissement est plus important que le pourcentage d'entreprises sous-investies.

En dernier lieu, la régression OLS montre qu'il existe une relation négative et significative entre conservatisme comptable et sur investissement et sous-investissement. En d'autres termes, il y a une relation positive entre le conservatisme comptable et l'efficacité des investissements. Ainsi, la première et la deuxième hypothèse sont acceptées. L'association positive entre le conservatisme comptable et l'efficacité de l'investissement s'explique par l'effet du conservatisme sur le sur- investissement et le sous-investissement. Le conservatisme comptable améliore la présentation de l'information financière, ce qui encourage les gestionnaires à sélectionner les projets avec soin et à abandonner les mauvais projets d'investissements.

Concernant le sous-investissement, le conservatisme comptable aide les entreprises confrontées au financement à éviter les difficultés en termes de financement et le risque d'insolvabilité. Plus précisément, le conservatisme facilite l'accès aux dettes supplémentaires et réduit leurs coûts. Ces résultats sont cohérents et corroborent ceux des études antérieures portant sur l'association entre conservatisme et investissement sur (sous) investissement (Kim, 2013; Ting, 2015; Lara, Osma et Penalva, 2016; Pan, 2017; Yasir, 2018). Ils concordent également avec les études qui ont conclu que le conservatisme améliore la transparence en augmentant la qualité du reporting financier et en améliorant ainsi la prise de décision managériale (Makhlouf et Alsufy, 2018). Cependant, ce résultat contredit ceux des études antérieures qui soutiennent que le conservatisme nuit à l'efficacité des investissements et augmente la problème de sous-investissement (Liu, 2014; Brockman, Liu et Ma, 2015; Ashfaq et al., 2016).

Par ailleurs, les résultats de la régression révèlent qu'il existe une relation entre le conservatisme

comptable et le financement par emprunt. Ce résultat est plus prononcé dans les entreprises connaissant des problèmes de sous-investissement. Il affiche une relation négative entre le financement par emprunt et le sous-investissement. Cela signifie que le problème de sous-investissement peut résulter du manque de sources de financement. Sa disponibilité réduirait le problème du sous-investissement. Toujours est-il que le conservatisme comptable aide les entreprises qui présentent un risque d'insolvabilité et qui souffrent de problèmes de sous-investissement à augmenter le niveau de financement par emprunt, en encourageant les gestionnaires à investir dans de nouveaux projets, augmentant ainsi le niveau d'investissement. Par conséquent, la deuxième hypothèse est acceptée.

Ce résultat concorde avec les conclusions de la littérature antérieure qui ont montré que le conservatisme comptable réduit le coût de la dette et facilite le processus de passation aux marchés (Karthik, Watts et Zuo, 2016; Razzaq, Riu et Donghua, 2016; Lara, Osma et Penalva, 2016; Hong, Kim et Lobo, 2017, Yasir, 2018). Il ne reste pas moins qu'il contredit les résultats d'autres études qui ont constaté que le conservatisme pourrait décourager les gestionnaires à investir dans des projets rentables à haut risque (Liu, 2014; Brockman, Liu et Ma, 2015; Ashfaq et al., 2016).

## VIII. CONCLUSION

Dans cet article, nous avons étudié l'effet du conservatisme comptable sur l'efficacité des investissements en vérifiant si le conservatisme atténue les problèmes de surinvestissement et de sous-investissement. Nous avons ainsi cherché à savoir si l'effet d'un reporting prudent sur le financement par emprunt constitue un moyen pour réduire le problème de sous-investissement. Nous avons ainsi constaté que la littérature a affiché un résultat mitigé, s'agissant de l'effet du conservatisme sur le surinvestissement et le sous-investissement. En effet, la plupart des études ont révélé qu'il y a une association positive entre le conservatisme comptable et l'efficacité des investissements via la réduction des problèmes de surinvestissement et de sous-investissement (Kim, 2013; Lara, Osma et Penalva, 2016; Pan, 2017; Yasir, 2018). D'autres études ont révélé que le conservatisme augmente le sous-investissement en faussant les décisions managériales et en empêchant les managers d'investir dans des projets à risque même avec une valeur actuelle nette positive (Guay et Vierrecchia, 2006, Liu, 2014; Ashfaq et al., 2016).

Notre échantillon est constitué de 300 entreprises françaises cotées sur une période de 2013 à 2018. Le conservatisme comptable est mesuré en utilisant la mesure négative fondée sur la comptabilité d'exercice pour refléter le degré de prudence général. Le surinvestissement et le sous-investissement ont été

mesurés à l'aide du modèle de Richardson où le surinvestissement serait les résidus positifs dans les observations de l'année-entreprise dans l'échantillon, tandis que le sous-investissement serait le résidu négatif. Enfin, l'évolution du financement par emprunt est mesurée comme la différence entre le financement par emprunt entre l'année t et l'année t-1 où le financement par emprunt correspond au total du passif de l'entreprise divisé par le total de l'actif.

Nos résultats ont révélé que la majorité des entreprises cotées en bourse constituant notre échantillon sont conservatrices dans leurs informations, puisque les statistiques descriptives du conservatisme montrent une moyenne et une médiane avec des valeurs positives. Le modèle de Richardson a indiqué que les sociétés en surinvestissement représentent 55%, tandis que les sociétés sous-investies représentent 45% de l'ensemble de l'échantillon. Le résultat montre également qu'il existe une relation négativement significative entre le conservatisme comptable et les surinvestissements et les sous-investissements. Ceci implique que le conservatisme a un impact positif sur l'efficacité des investissements. Ce résultat s'explique par une vérification asymétrique du conservatisme. En effet, les exigences contraignent les actes de la direction et les empêchent d'investir dans des projets qui réduisent le problème de surinvestissement. Par ailleurs, il existe une relation positive entre le conservatisme comptable et le financement par emprunt dans les entreprises ayant un problème de sous-investissement. Des rapports financiers prudents encouragent les investisseurs à fournir des capitaux aux entreprises ayant des problèmes de sous-investissement. Ainsi, le conservatisme facilite le financement par emprunt et réduit le problème de sous-investissement.

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# Managerial Skills in the Face of Full Costing in SMEs: The Case of Senegal

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This contribution aims to reinforce the existing work by examining the following question: what are the managerial competences of the SME manager that explain the practice of full costs within SMEs?

Using the behavioural approach of contingency theory, a quantitative study was conducted with 140 SME managers.

The analysis of the empirical data shows that the human capital of the manager, materialized by a managerial training and a proven professional experience in business, significantly explains the practice of full costs in Senegalese SMEs. Our results also confirm a normative isomorphism, but suggest a fashion effect in the practice of full costs within SMEs.

**Keywords:** *managerial skills; full costing practices; SMEs; management control; human capital.*

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MANAGERIAL SKILLS IN THE FACE OF FULL COSTING IN SMEs THE CASE OF SENEGAL

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## I. INTRODUCTION

Small and medium-sized enterprises (SMEs) in Senegal are generally confronted with a number of constraints (lack of technical and human resources, access to financing and public contracts, and poor use of management tools). Among the difficulties noted, the poor use of management tools remains for us essential because it can cause a lack of competitiveness without delay. Competitiveness is the capacity of a company to face competition through a balanced cost structure.

Moreover, Porter (1980) had adopted this thought by estimating that competitiveness is based on a strategy of domination by costs. In a context marked by increasing globalisation of trade and increased competition, knowledge of production or service costs is becoming an imperative for steering the performance of companies, especially SMEs. This requires decision-making tools such as management accounting.

Some authors specify in this regard that management accounting practices are a variety of methods specifically taken into consideration by companies in order to support the organisational

infrastructure (Ittner and Larcker, 2002a) or a set of cost methods deployed by companies to measure the expenses they incur, to set acceptable prices, to know the results (overall and partial) achieved on the various products (Wade and Dieng, 2019b).

Moreover, two types of costing practices are identified in the literature: traditional costing practices (full costing, direct costing, rational allocation method, etc.) and modern costing methods [Activity Based Costing (ABC), target costing, value-added unit method, among others].

In this contribution, we wish to focus on the practice of full costing, understood here as the adoption or use of full costing by SME managers, with a view to knowing the costs of products, goods or services, in order to set appropriate prices in the light of the competitive dynamics of markets.

In Africa, research has been carried out in this field to further support the management of enterprises in general and SMEs in particular.

In this sense, the study of Lassoued and Abdelmoula (2006), in the Tunisian context, reveals that most of the SMEs in the sample (76.2%) have a system of cost calculation (full costs, direct costs, variable costs, marginal costs) with, however, a predominance of the full cost method. This idea is confirmed in the Cameroonian context where Ngongang (2010) finds that more than half of the companies in his sample (66.3%) apply the full costing method at a time when modern costing methods (ABC method) are very little developed.

Still analysing the specificities of the accounting information system of Cameroonian SMEs, Ngongang (2013) also noted that the most used costing method is full costing. In the same context, a recent contribution by Foka Tagne et al (2021) shows that industrial SMEs (78.6%) use full costs as the majority costing method in their management practices.

The same observation was made in the Moroccan context with El Bakirdi and Radi (2017) who note that some managers establish a real cost accounting system based on a rigorous and detailed calculation of the different costs such as the full cost and partial cost methods, but the full cost method generally seems to be the most practiced in SMEs.

In Senegal, existing work (Diop, 2016, Wade and Dieng, 2019b, Wade and Diouf, 2021; Diouf, 2022) has shown the diversity of costing practices (full costing,

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partial costing, rational allocation, pre-set costs and ABC) within SMEs.

However, an in-depth examination of the empirical results reveals, as do the other studies, a low level of instrumentation of the full cost method in companies, despite the fact that it remains the salient method in management practices to the detriment of the ABC method.

This situation is described by Gosselin (2007) as the paradox of the ABC method, which is unable to supplant traditional cost analysis systems (full costing, among others) because of its cumbersome nature and the cost and time required to update it (Kaplan and Anderson, 2004). It is also worth recalling that the studies carried out in our context have mainly focused on the contingency of activity-based costing systems in firms (Diop, 2016), costing practices in industrial SMEs (Wade and Dieng, 2019b), the determinants of management control tools in SMEs (Wade and Diouf, 2021) or the contingency of costing tool adoption in SMEs (Diouf, 2022). As a result, none of these studies has sought to specifically apprehend the personal characteristics of the manager that could explain the practice of full costs within SMEs.

The originality of the present study therefore remains the taking into account of this aspect in order to better understand the managerial competences of the manager which make it possible to explain the adoption or not of a particular management instrument such as the full cost method. If we start from the general observation that in the SME, the manager is involved in almost all aspects relating to management (Julien and Marchesnay, 1988; Mamboundou, 2003) and is often confused with the company (Julien, 1990), then the choice of a tool or a method should integrate his personal characteristics.

With all these considerations in mind, it now seems relevant to analyse the managerial skills of the SME manager, which argues in favour of a more advanced full-cost practice within SMEs. Based on the theory of behavioural contingency, this research builds on previous work by examining in depth the following questions:

- What is the level of adoption of the full cost method in Senegalese SMEs?
- What are the managerial skills of the manager that explain the practice of the method in Senegalese SMEs?
- Among these skills, which is the most decisive in the practice of full costs in Senegalese SMEs?

The objective of this study is twofold. On the one hand, it is a question of showing the level of use of the full cost method within SMEs and, on the other hand, testing the personal characteristics of the SME manager that can significantly explain the practice of full costs in order to highlight the most decisive one. This

will serve as a lever for more effective cost management in SMEs.

To achieve this, the theoretical and methodological aspects are first presented before the empirical results of the research are presented and discussed to lead to managerial recommendations.

## II. THEORETICAL CONSIDERATIONS OF THE RESEARCH

The theoretical aspects of the research concern the definition of concepts and the review of the literature.

### a) *Conceptual Framework of the Research*

Our conceptual analysis focuses first on the notion of method, then on competence and finally on managerial competence.

Concerning the method, the literature distinguishes it from the management tool. Indeed, Nobre (2001) notes that the method is a procedural construct which defines the operational steps leading to the management tool, whereas the latter is a conceptual construct which is materialised by an accounting, financial, quantitative or qualitative formalisation.

For the author, management instruments therefore include tools and methods. In this article, we invoke the notion of full cost practice to see the personal characteristics of the manager that influence it.

In this sense, the concept of adoption that we often mobilise is understood here as the practice or use of the full cost method within SMEs.

With regard to competence, it explains the effectiveness of behaviours (Lorrain et al. 1998) and materialises, as it were, what a person is capable of doing through components such as knowledge, know-how and know-how (Ngongang, 2014).

Indeed, according to Rouby and Solle, (2002), knowledge is the basic knowledge essential to maintaining competence. It is derived from training, which, according to Beamish and Dhanaraj (2003), is a series of planned learning activities aimed at acquiring knowledge to encourage individuals and groups to adapt to their social and professional environment.

As for know-how, it refers to the practical dimension of the skill expressed under the fire of action. Thus, from basic knowledge, know-how is developed to stimulate its maintenance or implementation (Rouby and Solle, 2002). This notion is therefore supported by professional experience. As such, it refers to what the person acquires through practice, i.e. through the performance of tasks in a professional field, over a more or less long period of time (Rogalski and Leplat, 2011). The authors argue that experience involves dimensions other than cognitive and necessarily exceeds the knowledge acquired in training.

With regard to "savoir-être", it represents the individual and collective attitude that enables the

development of knowledge and know-how (Rouby and Solle, 2002). This notion therefore covers the social aspects of competence. However, in this research, the emphasis is shifted to knowledge and know-how as a dimension of competence. This refers to the idea of some authors (McCormick and Tiffin, 1974; Pettersen and Jacob, 1992) who state that competence refers to the ability of individuals to learn (knowledge) and to perform tasks (know-how). These abilities are acquired through training or the accumulation of experience (Szilagyi and Schweiger, 1984).

Competencies are divided in the literature into four groups: entrepreneurial competencies, management skills, relational competencies and managerial competencies (Lorrain et al. 1998). As the latter were the subject of this study, we define them as the ability of managers to make their knowledge actionable in order to enable the company to achieve a certain level of competitiveness.

From the above, it is clear that managerial skills refer to the manager's training and professional experience, described as cognitive resources (Wade and Dieng, 2019b) or human capital (Drucker, 1993). The latter dimension is valued in this research.

#### b) *Review of Previous Work*

This contribution is in line with the behavioural approach of contingency theory (Chapellier, 1994; Lavigne, 1999). According to this approach, the behavioural characteristics of each organisational actor are likely to influence management practices within companies. In reality, it is a subjective approach that complements the objective approach (structural contingency). It focuses on the human construct in which the central actor (the SME manager) plays a very particular role (Chapellier and Ben Hamadi, 2012). The managerial skills of the leader could have a significant effect on the practice of full costs and as such, deserve to be studied.

According to the work carried out, the profile of the manager retained as managerial skills to explain the adoption or practice of full costs are the type of training, the level of training and the professional experience.

Studies that have mobilised the theory of behavioural contingency have made it possible to test the existence of significant relations between the profile of the actors and the accounting information system of SMEs (full cost method, among others).

Indeed, the work of Mayimbi Ekuli Ngokana et al (2021) emphasised the fact that managers who have received managerial training generally have proven knowledge of management control tools and their role in steering performance. This opinion is shared by other authors (Chapellier, 1997; Nobre, 2001; Lavigne, 2002; Affes and Chabchoub, 2007) who believe that the most complex management control practices are identified in companies where managers have management training.

In the same vein, the research of Chapellier (1994) and Ngongang (2007) demonstrates the existence of links between accounting practices and behavioural determinants such as the training of the manager. Recently, in our context, the empirical results of Diouf (2022) maintain that the degree of use of costing tools (full costs, among others) is higher in SMEs where the manager has a managerial background.

On the other hand, other empirical works have detected the opposite relationship. At this level, the results of Foka Tagne et al (2021) reveal a negative relationship between the type of training of the manager and the choice of the full cost method. This means that the chances of choosing the full cost method decrease with managers who have received management training. This result suggests that management training is not a panacea for the adoption of full costing.

Despite a rather mixed literature, we follow the view of most authors by posing the following hypothesis:

*H1: Full costing is more prevalent in SMEs where the manager has a management background* Research has attempted to examine the link between the level of training of the manager and the adoption of accounting information systems, analysed here from the angle of the use of management tools (full costing, among others).

Indeed, authors such as Chapellier and Mohammed (2010), as well as Lacombe-Saboly, (1994) have shown, through their research, that managers with a high level of training most often have more complex accounting information systems.

In the same vein, other authors (Lassoued and Abdelmoula, 2006; Chapellier and Ben Hamadi, 2012) reveal that managers with higher education have more complex accounting data systems than others. Foka Tagne et al (2021), in a recent contribution, support this thought by estimating that the manager's level of education significantly influences the probability of choosing the full cost method.

In contrast, the empirical study by Diouf (2022), in the Senegalese context, shows that the level of education of the management control manager has no effect on the degree of use of costing tools (full costing, among others).

In view of the contrasting results found in various contexts, we pose the following hypothesis:

*H2: The practice of full costing increases with the level of education of the SME manager.* The relationship between professional experience and the adoption of costing tools or the use of accounting information has also been the subject of some scientific production.

While some authors (Chapellier and Mohammed, 2010; Lacombe-Saboly, 1994; Wade and Diouf, 2021) argue that the use of accounting information increases with the level of experience of the manager, others (Chapellier, 1994; Nadeau et al. 1988) take the

opposite view. However, Diouf (2022), in a recent study, notes that the degree of use of costing tools (full costing, among others) increases with the professional experience of the management controller. This opinion is also shared by Wade and Diouf (2021) where the authors consider that the experience of the management control officer is an explanatory factor of the degree of use of costing tools in the context of Senegalese SMEs.

What then is the practice of full costing in our context? Therefore, we pose the following hypothesis:

H3: The practice of full costing increases with the professional experience of the SME manager to refute these hypotheses, we use binary logistic regression. Indeed, it is recommended when the dependent variable is categorical (full cost practice) and the explanatory variables are either qualitative or categorical (type of training, level of training), or quantitative or metric (professional experience).

Thus the research model is as follows:

$$PCC(0, 1) = \alpha_0 + \alpha_1(TF) + \alpha_2(NF) + \alpha_3(EXPR)$$

With: PCC = Full cost practice: it takes the value 1 if the SME uses full costing, 0 otherwise TF= type of training; NF= level of training; EXPR= work experience;  $\alpha_0$ : constant;  $\alpha_1, \alpha_2, \alpha_3, \alpha_4$ : regression coefficients.

### III. METHODOLOGICAL APPROACHES

#### a) Selection and Characteristics of the Sample

A convenience sampling resulted in a final survey of 140 SMEs with between 10 and 250

employees. Very small enterprises (VSEs) are excluded because of a still embryonic costing system. The administration of the questionnaire, done by direct interviews (face to face), was made possible thanks to the assistance of three professional auditors of the Master in Accounting and Finance of the Catholic University of West Africa (UCAO/St Michel) trained for this purpose. Finally, the survey was conducted mainly among SMEs operating in the regions of Dakar and Diourbel which, according to data from the National Agency for Statistics and Demography (ANSD, 2016), concentrate a very large number of SMEs.

In addition, the sample is composed of 86 managers with managerial training (61.4%) compared to 54 managers whose training is purely technical (19.6%). Regarding the level of education, we find 111 managers with at least a bachelor's degree, i.e. 79.3% of the sample, while only 29 managers (20.7%) have not reached this level of education. The survey also shows that 96 managers (68.6%) have less than 10 years' experience, while the other 44 managers (31.4%) have more experience in business management (more than 10 years).

#### b) Operationalisation of Variables and Data Analysis Method

Two types of variables are considered in this research: the dependent variable and the independent variables. The dependent variable is "full cost practice" and the independent variables are type of training, level of training and work experience.

The following table summarises their operationalisation.

Table 1: Measurement of Research Variables

Independent variables	Measurement criteria	Nature of the variable
Type Of Training	Value 1 if management training and 0 if not	Categorical Variable
Level Of Education	Value 1 if high level of education(Bac +2 or more) and 0 otherwise (level below Bac +2)	Categorical Variable
Work Experience	Years of experience in the job	Variable Metric
Dependent Variable	Measurement criteria	Nature of the Variable
Full Cost Practice	Value 1 if the SME adopts full costing and 0 otherwise	Binary Variable

Source: inspired by Diouf (2022)

### IV. RESEARCH FINDINGS AND DISCUSSIONS

This section focuses on the results related to the adoption rate of full cost accounting, but also those related to the different research assumptions. It is dedicated to the results related to the adoption rate of the full cost method, but also to those related to the different research assumptions. It is dedicated to the results related to the adoption rate of the full cost method, but also to those related to the different research assumptions.

#### a) Full Costing Practice Less Available in SMEs

Our ambition in this section is to answer the following question: What is the level of adoption of the full cost method in Senegalese SMEs?

This will allow us to differentiate between SMEs that use the method and those that do not (see Table 2).

Table 2: Level of Adoption of Full Costing

Senegalese SMEs	Small Enterprises (SEs)	%	Medium Enterprises (MEs)	%	Total	%
Adopters	18	13%	21	15%	39	28%
Non-Adopters	60	43%	41	29%	101	72%

Source: Survey Data

The results in the table above show that the majority of SMEs in the sample do not use full costing (72%). This situation is much more prevalent in small companies (43%) than in medium-sized companies (29%).

On the other hand, the situation is reversed when it comes to the adoption of the method. Indeed, out of 39 SMEs surveyed, 21 medium-sized companies use the full cost method, i.e. 15% of the sample, compared with 18 small companies representing only 13% of the sample.

Thus, we can point to a low level of full costing in Senegalese SMEs, which is not specific to small companies.

This result can be related to the one found by Wade and Dieng (2019b) in the same context where the authors argue that "tools related to costing are weakly used and the weak instrumentation is not specific to small SMEs" (p 54).

This puts into perspective the view that the management model of African SMEs in general and Senegalese SMEs in particular is based exclusively on

intuition and the production of mandatory accounting data (financial accounting) to comply with tax obligations.

However, in view of this low level of instrumentation (only 28%), SME managers would benefit from an in-depth understanding of the levers that allow for a more sustained practice of full costing in order to be able to face competition both nationally and internationally.

This is the subject of the next sub-section, which aims to answer the following question: what are the managerial skills that explain the practice of full costs within SMEs?

*b) Human Capital Explains the Practice of Full Costing in SMEs*

We recall that the variables retained in this research to explain the practice of full costs are the type of training, the level of training and the professional experience. But before testing the hypotheses, let us first check the overall significance of the model (Table 3).

Table 3: Model Specification Elements

Elements		Chi-Square	Ddl	Sig.	Hosm and Lemeshow Test (P-Value)	Cox & Snell R-Two	Nagelkerke R-Two	Percentage Ranking
Stage 1	Step	27,487	3	000	0,434	0,178	0,255	77,1%
	Block	27,487	3	000				
	Model	27,487	3	000				

Source: Survey Data

Table 3 shows that the model correctly explains the dependent variable (full cost practice): Nagelkerke's R2 (0.255) is greater than 0.20, which is considered satisfactory with regard to Chesneau's (2015) criterion which allows an R2 coefficient greater than this threshold. Similarly, the Chi-square specification test is significant (P-value=0.000) and the model's classification percentage (77.1%) is above the Gillet (2010) threshold estimated at 50%. The Hosmer and Lemeshow test, also significant at the 5% threshold (P-value =0.434>0.05), shows that the model is compatible with the data used.

In the end, we argue that the model is globally robust and allows us to retain two managerial competences that explain the practice of full costs within SMEs (Table 4).

Table 4: Logistic Regression Result

Statistiques	A	E.S.	Wald	Ddl	Sig.	Exp ( $\alpha$ )
TF	-1,683	,616	7,467	1	,006***	0,186
NF	-,272	,802	,115	1	,735 NS	,762
EXPR	,133	,039	11,351	1	,001***	1,142
Constant	-1,574	,413	14,522	1	,000	,207

Significance level: \*(P-value < 0.1); \*\*(P-value < 0.05); \*\*\*(P-value < 0.01); NS: not significant

Source: Survey Data

Examination of the data in Table 4 shows that two managerial competences are identified to explain the practice of full costing: precisely the type of training (TF) and work experience (EXPR).

An analysis of the odds ratio of the type of training (TF) indicates that the use of full costing has a lower chance (18.6%) of being practised by a non-

managerial trained manager than by a manager trained in management.

To confirm this result, we used the Student's t test which shows a significant difference (P-value = 0.000 < 0.01) between the practice of full costing by managerial executives (0.40) and non-managerial or purely technically trained executives (0.11) (Table 5).

Table 5: Full Costing Practice by Managerial Background

	Type Of Training	Means	T-Test	P-Value
Full Cost Practice (FCP)	Manager	0,40	14,284	0,000
	Non-manager	0,11		

Source: Survey Data

The various tests carried out allow us to conclude that managers with a management background have a greater propensity to adopt the full cost method than others. This does not refute hypothesis H1, which anticipated that the practice of full costing is more prevalent in SMEs where the manager has a management background. This result is in line with previous work in various contexts (Chapellier, 1997; Nobre, 2001; Ngongang, 2007; Diouf, 2022) where the authors conclude that the most complex management control practices are identified in companies where the managers have a management background. This means that managers with a management background have a greater ability to understand and model the

SME's costing system than other managers with a purely technical background.

The Odds Ratio for the professional experience variable (EXPR) shows that when using the full costing method in SMEs, there is a high chance (114.2%) that it is done by a more experienced manager (more than 10 years) than a less experienced manager (less than 10 years).

Furthermore, the comparison of means via Student's t test indicates a significant difference (P-value = 0.000 < 0.01) between the full costing practice of more experienced managers (0.50) and less experienced managers (0.19) (Table 6).

Table 6: Full Costing Practice by Manager's Experience

	Professional Experience	Means	T-Test	P-Value
Full cost practice (FCP)	More than 10 years	0,50	15,868	0,000
	Less than 10 years	0,19		

Source: Survey Data

Considering the results of the two tests, we can conclude that the adoption of full costs is more sustained in SMEs where the managers have some management experience than in other SMEs. This gives the opportunity not to refute the hypothesis H3 according to which the practice of full costs increases with the professional experience of the SME manager.

In relation to the literature, this result perfectly matches the conclusions of certain empirical works in the field (Chapellier and Mohammed, 2010; Lacombe-Saboly, 1994; Wade and Diouf, 2021; Diouf, 2022) where

the authors maintain that the degree of use of management tools (full cost method, among others) increases with the experience of the manager or the person in charge of management control within the SME.

Against all expectations, the level of training of the manager has no effect on the adoption of the full cost method: this refutes the hypothesis H2 (favoured in the literature) which anticipated that the practice of full costing increases with the level of training of the SME manager.



However, this result found in the Senegalese context reopens the debate on the relationship between the level of education of the manager and management accounting practices such as the full cost method. Given that the sample contains a large number of managers (79.3%) with a high level of education (Bac+2), this debate naturally raises the issue of the adequacy between the level of education (obtained in universities and business schools) and the ability to set up a reliable costing system in a company.

The various results allow us to stabilise the research model as follows:  $(FCP) (0.1) = - 1.683 (TF) + 0.133 (EXPR) - 1.574$

In the end, the model shows that the human capital of the manager, in the form of his or her education and professional experience, explains a much more extensive use of the full cost method. However, the professional experience in business management proves to be the most determining skill in the practice of full costs in the context of Senegalese SMEs.

#### c) *Managerial Implications of the Research*

The results show that, on the one hand, there is a low level of instrumentation of the full cost method and, on the other hand, that management training and, above all, professional experience are the managerial competences that explain a more sustained practice of full costing in SMEs.

From this point of view, SME managers, especially the smallest ones, must immediately make use of the knowledge economy to incorporate the practice of full costing more into the management universe of their structures in order to be in phase with the process of cost control, which is a guarantee of competitiveness.

To understand and seize these opportunities, they must have in-depth knowledge of management based on their initial training or acquired later through their professional experience in business management. As these elements are components of human capital, managers are called upon to continuously improve their skills in order to make SMEs more efficient and to be able to cope with the uncertainty of competitive markets.

On the other hand, the results show that the purely technical training, but also the lack of experience of some managers are factors that limit the practice of full costs in SMEs.

Considering these aspects, we recommend them to use external competences, in this case accountants (fashion effect). This idea is all the more justified if we consider the specificity of some SMEs where all operational tasks are concentrated in the hands of the managers; this raises the obligation, in the current context, to collaborate with accounting experts to favour the production of new knowledge useful for the practice of full costs.

However, as the SME becomes more complex, the manager must think about having an internal competence (an accountant, an administrative and financial director or a management controller) and the expert will be responsible for transferring the skills through the phenomenon of organisational learning.

This vision that we advocate is close to that of Penrose's (1959) resource theory. According to this approach, it is the skills held internally by the company that enable it to develop a competitive advantage over its competitors. These skills are materialised here by a solid managerial education and proven professional experience in business management and especially in SMEs.

In addition, apart from the behavioural dimension which has just been developed, we can also have another reading of our results under the prism of the neo-institutionalist approach (Meyer and Rowan, 1977; Di-Maggio and Powell, 1983). Like these authors, we consider the adoption of the full cost method by certain managers as the result of a normative type of isomorphism (Ben Hamadi et al, 2014) insofar as the 'rules' and 'codes' acquired during their management training could largely explain their tendency to adopt the same full cost practices within SMEs.

## V. CONCLUSION

The objective of this paper was to study the managerial competences that could explain the use of full costing in SMEs.

Considering the theory of behavioural contingency, our results show that the practice of full costing is more noticed in SMEs where managers have a management background and proven professional experience in business.

Through these results, we sought to theoretically enrich previous research in the Senegalese context (Diop, 2016; Wade and Dieng, 2019b; Wade and Diouf, 2021; Diouf, 2022) by contributing other concepts that are not sufficiently explored. These include the practice of full costs and managerial skills that reflect the human capital of the SME manager.

From a managerial point of view, beyond the recommendations, we have noted that managers with identical profiles have identical behaviours. This can be interpreted as the result of isomorphic practices, in particular a normative isomorphism linked to managerial training which explains, in part, the adoption of management accounting practices (full cost method) taught in universities and management schools.

As with all scientific research, this is not without its limitations. Beyond the size of the sample (140 SMEs) which remains very limited, the convenience sampling does not allow for a generalisation of the results.

Moreover, certain behavioural factors related to soft skills, notably the family culture of the manager

(Ngongang, 2014), were not taken into account in this study.

In terms of perspectives, our ambition is to continue this research by exploiting more the cultural dimension of the leader. This seems to be an interesting perspective because, to our knowledge, it has never been the subject of a formal study in Senegal. Such research will make it possible to understand how certain managers, because of their family cultures, use management tools more than others to make their structures more efficient and competitive.

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# Effects of Management Accounting Practices on SME Performance in Bangladesh: A Study of Southern Region of Bangladesh

By Md. Faykuzzaman Mia

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**Abstract-** The following article emphasizes on determining the effects of Management Accounting Practices on Small and Medium sized Enterprises (SME). The SMEs studied in the research belong to the southern part of Bangladesh including Faridpur, Madaripur, Bagherhat, Khulna and Gopalganj. Quantitative research approach has been used and data was collected from 252 SME managers by using a well-structured questionnaire. The sample was selected through random sampling methods. SPSS (Statistical Package for the Social Science), update version was used to analysis the data. The article has introduced multiple regression analysis to identify the relationship between management accounting practices and business performances of an organization. Multiple regressions analysis has been used to measure the impact of the relationship in the research model. The results of regression analysis showed that a positive relationship was existed between management accounting practices and SMEs business performance.

**Keywords:** *costing system, budgeting, performance evaluation, information for decision making, strategic analysis, and business performance.*

**GJMBR-D Classification:** *JEL Code: H83*



*Strictly as per the compliance and regulations of:*



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**Abstract-** The following article emphasizes on determining the effects of Management Accounting Practices on Small and Medium sized Enterprises (SME). The SMEs studied in the research belong to the southern part of Bangladesh including Faridpur, Madaripur, Bagherhat, Khulna and Gopalganj. Quantitative research approach has been used and data was collected from 252 SME managers by using a well-structured questionnaire. The sample was selected through random sampling methods. SPSS (Statistical Package for the Social Science), update version was used to analysis the data. The article has introduced multiple regression analysis to identify the relationship between management accounting practices and business performances of an organization. Multiple regressions analysis has been used to measure the impact of the relationship in the research model. The results of regression analysis showed that a positive relationship was existed between management accounting practices and SMEs business performance. These applied studies explore the impact of management accounting practices on SME business and play a useful role to the academicians by creating a significant contribution in future research in this field within in Faridpur, Madaripur, Bagherhat, Khulna and Gopalganj five districts of southern region of Bangladesh. In concluding remarks included which reflects the MAPs have an impact on the performance of an organization and how the study help to improve the MAPs that positively influenced the performance of SMEs.

**Keywords:** costing system, budgeting, performance evaluation, information for decision making, strategic analysis, and business performance.

## I. INTRODUCTION

Development of small and medium enterprises (SMEs) is envisaged as a key element in this development strategy. For achieving double digit growth in manufacturing, matching development of SMEs is considered critical. Enhanced micro, small and medium enterprise activities in the rural and backward regions constitute a key component of the strategy for rural development and reduction of poverty and regional disparity (Bakht & Basher, 2015)

Small and Medium Enterprises (SMEs) are treated as the engines of growth and drivers of innovation worldwide. They play a significant role in

driving economic growth and generating jobs. In Bangladesh, the sector is actually changing the face of the economy. SMEs are playing a vital role for the country's accelerated industrialization and economic growth, employment generation and reducing poverty. SMEs now occupy an important position in the national economy. They account for about 45 percent of manufacturing value addition, about 80 percent of industrial employment, about 90 percent of total industrial units and about 25 percent of the labor force. Their total contribution to export earnings varies from 75 percent to 80 percent. The industrial sector makes up 31 percent of the country's gross domestic product (GDP), most of which is coming from SMEs (Muhammad & Al-Amin, 2022).

SMEs play an important role for the national economy and world economy by creating employment opportunity and value added backing to innovation. SMEs are dominant to the efforts to attain environmental sustainably and more comprehensive growth (Eniola & Ektebang, 2014). Small and Medium Enterprise (SMEs) play an important role in any economy through generation of employments contributing to growth of GDP, embarking on innovations and stimulating of other economic activities (Gamage, 2003).

Small and medium business in Bangladesh has a resilient position which is treated as the backbone of the national economy. The role of SMEs is immense to alleviate poverty from the country. By extending SME with a lower investment can provide huge employment opportunity for the densely populated countries like Bangladesh. SME are expected to create jobs, reduce poverty and drive robust national economy (Alauddin & Chowdhury, 2015).

Small and Medium Enterprise (SME) are treated as the engines of growth and drivers of innovation worldwide. SME play a vital role in driving economic growth and generating jobs. In Bangladesh, the sector is truly shifting the face of the economy. SMEs have an impact for country's accelerated industrialization and economic growth, employment generation and reducing poverty. SMEs now occupy an important position in the national economy, they account for about 45 percent of manufacturing value addition, about 80 percent of industrial employment, about 90 percent of total industrial units and about 25 percent of the labor force.

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Their total contribution to export earnings varies from 75 percent to 80 percent. The industrial sector makes up 31 percent of the country's gross domestic product (GDP), most of which is coming from SMEs (Bakht, 1998).

## II. LITERATURE REVIEW

Mbogo (2011) conduct a study on the impact of managerial accounting skill on the success and growth of SMEs & Medium enterprises in Kenya. The paper use census research design and collect 31 responses by giving a self-administered questionnaire to all participants. The result of the research concluded that manager's capabilities in management accounting and training level have a significant strong positive relation with the SMEs performance and decision making therefore influence the success and growth of SMEs.

Another study conducted by Ahmad (2012) on the role and use of management accounting practices in Malaysian SMEs. The study utilized primary data, 160 respondent's responses within 1000 questionnaires distributed in manufacturing sector to Malaysian SMEs. The findings of the study is that the use of budgeting system, costing system and performance evaluation system are significantly higher effect than the decision support system and strategic management accounting. The study conclude that MAPs playing effective roles in the management of Malaysian SMEs and poor management accounting practices is the main cause of failure of SMEs.

Lavia Lopez and Hiebl (2014) mentioned that as SMEs faced challenges for more managerial skill and capital than large organizations, so they need special treatment when the care is about management accounting practices, in the research which is conducted on the use management accounting in small and medium enterprises. The researcher also mentioned that management accounting practices is very inadequate in SMEs and different from large companies.

The first empirical insights on the impact of using a package of traditional and a package of contemporary management accounting practices in the public sector was given by Nuhu (2016) in the study investigated on the relation between organizational change and performance with the use of MAPs. This study covers 740 public sector organizations for data collection based on a distributed mail survey. The paper suggests that the contemporary MAPs plays an effective role rather than traditional MAPs for the increasing performance and staring organizational change.

The effect of using MAPs on the Business performance of SMEs within the Gauteng Province of South Africa was studied by Maziriri and Mapuranga (2017) by using quantitative research design and utilizing primary data collected from 380 SME managers. The paper resulted that MAPs has a positive relation

with business performance of SMEs. As per the research though information for decision making has no significant effect on business performance but costing system, budgeting system, performance evaluation system and strategic analysis has a positive effect on business performance.

Alkhajeh & khalid (2018) also studied on the impact of MAPs on SMEs business performance within the Gauteng region of South Africa. The researcher used both primary and secondary data to meet the objectives of the study. This paper concluded that there is a positive relation with MAPs & business performance and it highlighted that with the increased implications of managerial accounting practices Manager can able to confirm a enhanced performance and growth.

To manage and handle the highly competitive business environment organizations need to adopt many changes which is required for meeting the ever changing demand of customers (Ahmad et al., 2013). To manage such environment organizations need to be informed time to time; MAPs provide necessary information and helps to be flexible for adopting changes by motivating behavior and guiding the proper action of the managers (Mitchell & Reid 2000).

Maziriri and Chinomona, (2016) mentioned that for stimulating business performance MAPs has a greater influence because it helps to improve organizations managerial efficiency consequently business performance.

## III. PROBLEM STATEMENT

A significant transformation of the SME sector has taken place in Bangladesh over time with various public and private initiatives. It is estimated that 7.5 million MSMEs (including cottage) constitute a significant component of economic enterprises accounting over 97% of all enterprises in Bangladesh, and the share of SMEs in GDP is estimated at about 25% in an ADB study of 2015 and it may be even more if properly estimated. The government of Bangladesh has taken some initiative towards enhancing and flourishes the SMEs banks disbursed huge loan for the SMEs (Alam, & Ullah, 2006).

In Bangladesh the most of the owners of SMEs are not aware or lack of knowledge to use relevant management accounting tool that will help by providing information. The SMEs are plagued by a lack of business management skills which were hampering the overall activities of SMEs including their operation and making them more competitive in global world. Various study and research article mentioned that these factors are the result of lack of management accounting practices in SMEs. Various literatures focus on the economic importance of SMEs, their techniques for survival, management accounting practices like costing system, budgeting, performance evaluation, and

information for decision making, strategic analysis, and business performance (Yeshmin & Hossan, 2011).

SMEs as a failure with low profitability and high risk of default for the inappropriate use of management strategy. This study focuses on the impact of SMEs business performances of MAPs in Bangladesh. It is obligatory that this gap need to be overcome to avoid the failure of SME (Jahur, & Quadir, 2012).

#### IV. THEORETICAL FRAMEWORK

Grant & Osanloo (2014) described theoretical framework as one of the most important aspects in the research process though often misunderstood by doctoral candidates. It explains the application of a theory in a dissertation providing also a strong evidence of academic standards and scholastic functions.

A theoretical framework is a foundational review of existing theories that serves as a roadmap for developing the arguments you will use in your own work. Theories are developed by researchers to explain phenomena, draw connections, and make predictions.

A theoretical framework is a foundational review of existing theories that serves as a roadmap for

developing the arguments you will use in your own work.(October 14, 2015 by Sarah Vinz and Revised on September 14, 2022 by Tegan George)

Most of the research on the need, application and practice of management accounting conducted on the basis of contingency theory, this study is done based on the framework of contingency theory.

#### V. CONCEPTUAL MODEL AND HYPOTHESIS DEVELOPMENT

To evaluate how management accounting practice keep impact on business performance of small & medium enterprise, a conceptual model is developed on the basis of reviewed literature on management accounting and business performance. Costing system, budgeting, performance evaluation, information for decision making and strategic analysis are independent variables while business performance of small and medium enterprises is a dependent variable. The hypothesized correlation between independent variables and dependent variable is represented in this conceptualized research model.

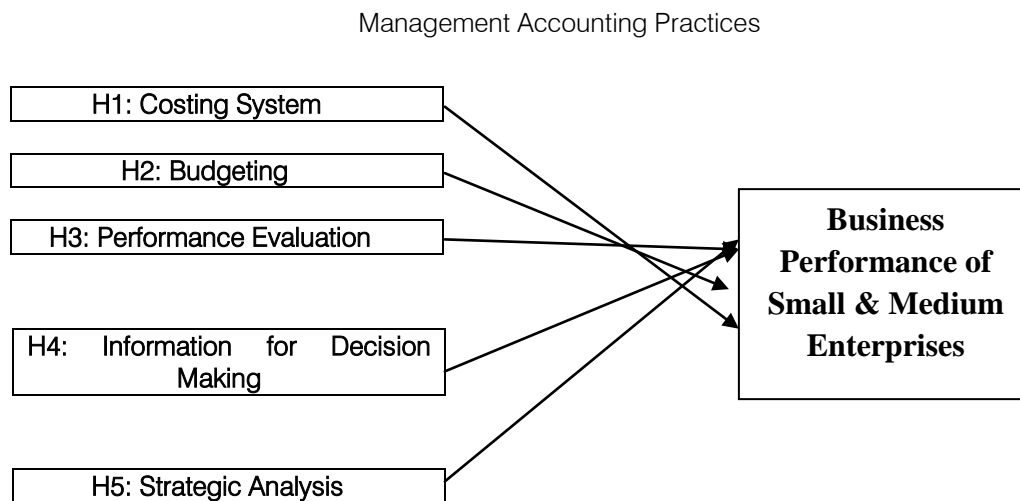


Figure 1: Proposed Research Framework

a) Based on the Literature Espoused, the Following Hypothesis has been Formulated

H1: The costing system positively related with the business performance;

H2: Budgeting has a positive relation with business performance;

H3: Performance evaluation positively related with the business performance;

H4: Information for decision making has a positive relation with the business performance;

H5: Strategic analysis positive influence the business performance.

#### VI. RESEARCH DESIGN AND METHODOLOGY

This paper targeted to conduct survey on trading and manufacturing SMEs (where the service related SMEs was excluded) that were operating in the southern part of Bangladesh. To get a proper response, stratified sampling technique is selected so that the response could ensure an appropriate illustration of every sub sample.

The survey was conducted in SMEs functioning within the Gopalganj region.

After considering sampling cost, dynamism of population, sample group, relevance, accuracy as well



as obligatory information for the study, a sample size of 250 was selected for the study.

A well-thought-out and consistent questionnaire was distributed via mail to the owners or the managers or the accountants of each SMEs. The demanded details of the research questionnaire were about business and participants related in the first section. The last section was asking about the dependent variable- business performance and the other remaining section desired details regarding the independent variable- MAPs which include costing system, budgeting, performance evaluation, information for decision making and strategic analysis.

Like art scale was utilized for desiring response where strongly Agree = 5 and Strongly Disagree = 1.

## VII. RESULTS RELATING TO THE SAMPLE COMPOSITION

To conduct the study a set of questionnaire has been distributed to different retail SME managers and owners in southern part of Bangladesh including Faridpur, Madaripur, Bagherhat, Khulna and Gopalganj five districts. Only 252 questionnaires are usable out of 310 questionnaires distributed. The valid response rate is approximately 81%. Table1 show the demographic information of participants of questionnaires.

Table 1: Demographic Information of Participants

Gender	N	%
Male	98	39
Female	154	61
Total	252	100
Age Group	N	%
25-35 years	161	64
36-45 years	66	26
46 + years	25	10
Total	252	100

## VIII. MULTIPLE REGRESSION ANALYSIS

### a) Regression Analysis Results

The table shows that BP has a strong positive correlation with the costing system (0.064), Budgeting

(0.184), performance evaluation (0.337), and strategic analysis (0.424), where it has a weak negative correlation with information for decision making (-0.163)

Table 2: Multiple Regression Analysis: Management Accounting Practices and Business Performance

Independent Variable Management accounting practices	Standardized Beta	T (t)	Sig (p)
Costing system	0.064	1.722	0.048
Budgeting	0.184	2.235	0.002
Performance evaluation	0.337	5.412	0.000
Information for decision making	-0.163	-1.139	0.001
Strategic analysis	0.424	3.421	0.011
R=0.412 Adjusted R <sup>2</sup> = 0.424 Significant at the 0.05 level			

## IX. DISCUSSION

The following analysis determining the effects of management accounting practices on performance of small and medium sized enterprises (SME).

### a) Costing System and Business Performance

The costing system has a result of  $\beta = 0.064$ ,  $t = 1.722$  and  $p = 0.048$  in the regression analysis. This indicates that the costing system is a statistically significant predictor of business performance. And business performance is positively affected by the costing system. So, the result reveals that an improved costing system emerged as a positive contributor to business performance of SMEs. This statement is justified by Elhamma and Zhang (2013) that reveals the

performance of SMEs are highly influenced by costing system.

### b) Budgeting and Business Performance

The table shows that Budgeting has a positive impact on business performance with a result of  $\beta = 0.184$ ,  $t = 2.235$  and  $p = 0.002$  in the regression analysis. This indicates that budgeting is a statistically significant predictor of business performance. The performance of business can be improved through the sound utilization of budgeting. This result was obtained and conducted by Qi (2010) which show the impact of budgeting MAP on SMEs in China.

### c) Performance Evaluation and Business Performance

Performance evaluation appeared as a statistically insignificant predictor of SMEs business

performance with sig (p) 0.000. Besides It has a result of  $\beta = 0.337$  &  $t = 5.412$ . This indicates that performance evaluation has significantly influence on business performance. This result is contradicting and acknowledged by Joseph (2015), and Quresh & Hasan (2013).

d) *Information for Decision Making and Business Performance*

The sig (p) result value depicts that information for decision making is not the statistically most significant predictor of SMEs business performance. It has a result of  $\beta = -0.163$ ,  $t = -1.139$  & sig (p) = 0.001. This result shows that business performance of SMEs is not highly influenced by information for decision making. The information for decision making has an impact on business performance. It is more relevant that the decision-making process of small business entrepreneurs is different in decision making, which proves that many current models of strategic decision-making are not suitable for explaining decision-making in small firms (Gillmore and Carson, 2000).

e) *Strategic Analysis and Business Performance*

The result of  $\beta = 0.424$ ,  $t = 3.421$  and sig (p) = 0.044 indicates that an improved strategic analysis system and environment can keep positive contribution to business performance. It's proved that strategic analysis was solidest conjecturer and it has a great impact on business performance. The results of the analysis are supported by Parnell (2013), which showed the strong relationship between MAP and business performance.

## X. CONCLUSION AND IMPLICATIONS OF THE STUDY

This research provides information that influences future research methods and literature by providing information on management accounting. Researchers can use this paper as a reference for future research on this topic. Also this study greatly affects SME business in southern part of Bangladesh by validating management accounting practices costing system, budgeting, performance evaluation, information for decision making, strategic analysis. This study also demonstrates that SMEs that are directly involved in business management accounting practices are growing at a faster pace and have increased business performance. There are theoretical and practical implications of this study. Performance evaluations indicate that there is a strong underlying relationship between the use of management accounting and increased business performance. Just as this study will be useful in the literature of current researchers, it will influence the development of SME business in a developing country like Bangladesh by providing different directions for the practice of management

accounting in the future, especially in the southern part of Bangladesh.

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# GLOBAL JOURNALS GUIDELINES HANDBOOK 2023

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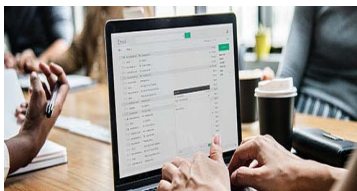
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**6. Bookmarks are useful:** When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

**7. Revise what you wrote:** When you write anything, always read it, summarize it, and then finalize it.

**8. Make every effort:** Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

**9. Produce good diagrams of your own:** Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

**10. Use proper verb tense:** Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

**11. Pick a good study spot:** Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

**12. Know what you know:** Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

**13. Use good grammar:** Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice. Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

**14. Arrangement of information:** Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

**15. Never start at the last minute:** Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

**16. Multitasking in research is not good:** Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

**17. Never copy others' work:** Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

**18. Go to seminars:** Attend seminars if the topic is relevant to your research area. Utilize all your resources.

**19. Refresh your mind after intervals:** Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

**20. Think technically:** Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.



**21. Adding unnecessary information:** Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

**22. Report concluded results:** Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

**23. Upon conclusion:** Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium through which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

## INFORMAL GUIDELINES OF RESEARCH PAPER WRITING

### **Key points to remember:**

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

### **Final points:**

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

*The introduction:* This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

### **The discussion section:**

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

### **General style:**

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

**To make a paper clear:** Adhere to recommended page limits.

### *Mistakes to avoid:*

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.



- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

#### **Title page:**

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

**Abstract:** This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

*Reason for writing the article—theory, overall issue, purpose.*

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

#### **Approach:**

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

#### **Introduction:**

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

*The following approach can create a valuable beginning:*

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.



**Approach:**

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

**Procedures (methods and materials):**

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

**Materials:**

*Materials may be reported in part of a section or else they may be recognized along with your measures.*

**Methods:**

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

**Approach:**

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

**What to keep away from:**

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.

**Results:**

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.



**Content:**

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

**What to stay away from:**

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

**Approach:**

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

**Figures and tables:**

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

**Discussion:**

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.



**Approach:**

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

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	A-B	C-D	E-F
<i>Abstract</i>	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form  Above 200 words	No specific data with ambiguous information  Above 250 words
<i>Introduction</i>	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
<i>Methods and Procedures</i>	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
<i>Result</i>	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
<i>Discussion</i>	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
<i>References</i>	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring



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