

The Effect of Managerial Ability on Firm Investment Decisions: Evidence from Egyptian Stock Market

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ABSTRACT:

The research aims to present the idea of managerial ability and how to measure it, as well as to investigate the relationship between the managerial ability of managers and its influence on investment decisions in the company in terms of the availability of opportunities, the effectiveness of choosing investments, and the change in the volume of investments. The three key assumptions that will be tested in this study are as follows: (1) No significant statistical relationship between managerial abilities and the availability of investment opportunities. (2) No statistically significant correlation between the volume of investments and managerial ability. (3) The efficacy of investment decisions does not exhibit a statistically significant correlation with managerial ability. Both inductive and deductive methods are used in this study. The statistical analysis was carried out between 2013 and 2022 using annual financial statement data from the sample companies, which included 24 companies from the EGX 30 index of the Egyptian Stock Exchange. Data envelope analysis and Tobit regression were employed to estimate the three research models and test the hypotheses because the dependent variable had a range of values from 0 to 1. The study found that managerial ability has a positive association with investment decision efficacy, investment volume, and investment opportunities.

Keywords: Managerial ability, Demirjian model, Tobit regression, Investment prospects.

1. Introduction

The agency theory, developed by Jensen and Meckling in 1976, defines agency as a contractual relationship between two parties. One party, known as the agent, provides services to the other party, referred to as the delegate or principal. The principal benefits from the services and delegates decision-making authority. When it comes to managing companies, the board of directors is given authority by the owners of capital (financiers) to handle their money. The board then delegates decision-making powers to a group of managers, each specializing in a specific area. Consequently, the financial managers in companies bear the responsibility for financial matters. Financial management decisions, including both financing and investment choices, have a direct impact on a company's overall performance. This impact is evident in the business outcomes presented in the financial statements released at the end of the year. Corporate board performance is

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evaluated by owners based on business outcomes, which in turn impacts Goodwill's reputation and market valuation. Therefore, the managerial skill of financial managers is crucial in making financial decisions, particularly investment decisions. These decisions take up a significant amount of the managers' time, as they must decide whether to seek out new investment opportunities that will maximize the wealth of the owners or monitor existing investments to assess their quality and adjust as needed. This requires constant effort and attention. To assess investment decisions in relation to rivals or strategic plans in order to meet the company's overall objectives. Researchers in the field of finance have shown a growing interest in studying the Managerial ability of managers and its influence on investment decisions. This includes examining the availability of investments, the quality of investment decisions, and the efficiency of these decisions. Hence, the present study aims to assess the managerial competence of finance executives in Egyptian firms using a standardized measurement tool. In a quantitative study conducted by Demerjian *et al.* (2012), the researchers analyzed the financial statement data of companies from 2012 to 2022 to determine the impact of these companies on the size of available investment possibilities and the efficiency of investments. This research paper is commenced by introducing the research problem and its associated questions. Subsequently, it highlights the significance and objectives of the study. Following this, a comprehensive definition of Managerial ability outlines the methods employed to measure it. Additionally, it presents a review of prior studies that have examined the variable of managerial ability. Furthermore, it discusses the study variables and the techniques employed to measure them. The research then proceeds to conduct a statistical analysis and presents the resulting findings. Finally, introduce some conclusions and recommendations.

The primary focus of financial management is investment decisions, which consume a significant amount of time for managers. The quality of these decisions relies on the CEO or CFO's ability to make accurate choices, ultimately resulting in the company's profitability and the maximization of its owners' wealth. Consequently, there has been a growing interest in financial studies that aim to assess the competence of executive managers in making crucial decisions, such as financing and investment decisions. This assessment focuses on the managers' ability to identify investment opportunities and determine the appropriate size of investments, which ultimately affects the effectiveness of their decision-making process. Upon examining numerous studies on the correlation between the variable of Managerial ability and the variable of investment decision, no definitive conclusion was reached on the extent or magnitude of their influence on each other. The variation in outcomes can be ascribed to two theories proposed by Mohamad (2020) in his study on managerial ability. The rationale for investment decisions can be attributed to the disparity in findings from prior research, which can be summarized as follows: Previous research has proposed two theories that explain these contradictory findings. The first theory is the "effective contracting" theory, which emphasizes the significance of executive managers' traits in affecting different areas of investment. The second idea is the "rent extraction" or utility maximization theory. According to this theory, the influence of executives on various elements of investment is mostly determined by the nature and characteristics of the company, rather than the characteristics of the executives themselves. It suggests that executives have a relatively low level of importance in this regard. This

research aims to assess Managerial ability in the Arab markets, with a specific focus on the Egyptian market. It utilizes the model developed by Demerjian et al. (2012) to measure this ability. Additionally, the research seeks to examine the correlation between Managerial ability and the efficiency of investment decisions in companies. The analysis is based on data obtained from registered companies. Introducing a new finding in the Egyptian financial market allows for a comparison with earlier studies, either validating or challenging their conclusions, thereby paving the way for future research. The Research questions tackled include:

- ◆ To what extent does Managerial ability influence the efficiency of investment decision-making within Egyptian corporations?
- ◆ To what extent does Managerial ability affect the magnitude of investment prospects presented by Egyptian firms?
- ◆ Does Managerial ability influence the magnitude of investments made in Egyptian firms?

The academic significance of this study lies in its examination of the relationship between managerial ability and investment decision-making, an area that has been overlooked in Egyptian research and studies. By analyzing previous literature and studies on managerial ability and conducting measurement and analysis, this study aims to fill the existing research gap. In addition, this study Practical Significance presents empirical evidence from the Egyptian context about the influence of managerial ability on the effectiveness of investment decision-making in various companies listed on the Egyptian Stock Exchange. The Demerjian et al., 2012 methodology was employed to assess managerial ability, utilizing a quantitative approach. The study disregarded conventional metrics such as media citation rates, fixed managerial attributes, tenure of executive directors, manager's reputation, and other descriptive indicators in order to enhance the accuracy of the findings.

The research seeks to examine how the managerial ability of managers in various companies registered in the Egyptian Stock Exchange affects the effectiveness of their investment decisions and, subsequently, the magnitude of the investments at their disposal. The subsequent sub-objectives are derived from this primary objective:

- 1- This study focuses on examining the intellectual framework of managerial ability and its significance.
- 2- It also introduces Demerjian's Data Envelopment Analysis model, a quantitative measurement method published in 2012 and commonly used in research.
- 3- To analyze the factors that indicate investment decisions and evaluate their effectiveness.
- 4- Examine the influence of managerial ability on the effectiveness of investment choices and the accessibility of investment prospects.
- 5- To contribute towards the achievement of Sustainable Development Goal (SDG) No. 8, which focuses on promoting decent work and economic growth.

2. Theoretical Background

Executives' managerial ability constitutes a component of intellectual capital; therefore, assessing its influence on investment remains a subject of ongoing research in the domains of accounting, management, and economics, given that managerial ability impacts numerous facets of business performance. Identifying and quantifying the various components that comprise managerial ability was, thus, a subject of investigation in prior research. As an indicator of managerial ability, numerous metrics have been utilized in prior research, including historical stock returns, the rate of citations in the media, the turnover rate of executives, the duration of their contracts, and their reputation, among others. Concerning indicators. Considering the numerous limitations associated with the aforementioned indicators, Demerjian Lev and McVay (2012) introduced a novel framework that leverages operations research models. This framework assesses the efficiency of an organization by determining the degree to which executives can transform its resources into revenues, while also segregating the characteristics of the organization. The residual portion of these revenues signifies an indicator of administrative prowess. This metric exhibits a notable capacity to isolate managerial attributes from company-specific factors, while also reflecting administrative efficiency and productivity. This encompasses the experience and past experiences of executive managers, as well as psychological or psychological traits and values that guide their decision-making. A qualitative change occurred after the introduction of this model, as many studies followed to measure managerial ability using this model and measure its relationship with many other variables, such as the quality of financial reports (Garc. a-Meca and Garc.a-S.nchez, 2018) (Meligi, 2019).), the quality of earnings (Demerjian, Lev, Lewis and McVay, 2013)) (Ibrahim, 2017), the quality of the accounting information environment (Baik, Brockman, Farber and Lee, 2018; Petkevich and Prevost, 2018), earnings management (Huang and Sun, 2017), earnings management through real activities (Hussain, 2019), the impact on the relationship between accrual accounts and future cash flows (Choi, Han, Jung and Kang, 2015), and audit fees (Krishnan and Wang 2014; Li and Luo, 2017; Gul, Khedmati, Lim and Navissi, 2018), the effectiveness of internal control over the financial reporting process (Lee, 2015), the tone of earnings disclosure and market reaction (Luo and Zhou, 2017), and corporate governance. According to Weisbach and Hermalin (2017), the cost of capital (Mishra, 2014), the potential for a stock price decline (Habib and Hasan, 2017), (Meligi, 2019), and corporate performance, as well as tax avoidance (Koester, Shevlin, and Wangerin, 2016; Park, Ko, Jung and Lee, 2016; Akbari, Salehi, and Bagherpour Vlashani, 2018; Guan, Li, and Ma, 2018; Khurana, Moser, and Raman, 2018). Furthermore, firm risk-taking behavior (Andreou, Karasamani, Louca, and Ehrlich, 2017; Munoz, Vargas, and Marco, 2014) Establishes credit risk (Bonsall IV, Holzman, and Miller, 2016; Yung and Chen, 2018); enhancing innovation in organizations (Chen, Podolski and Veeraraghavan, 2015); the cash on hand (Huang-Meier, Lambertides and Steeley, 2016; Cho, Choi and Kim, 2018); the credit rating of the organization (Cornaggia, Krishnan and Wang, 2017); and prospects for expansion (Cox, 2017); technological advancements (Dziwornu, 2017; Koijen, 2014; Andreou Philip and Robejsek, 2016; Yung and Chen, 2018). Goodwill impairment (Petkevich and Prevost, 2018); goodwill impairment (Sun, 2016).

Investment opportunities have a significant impact on the financing of businesses, which in turn influences the capital structure, profit distribution policy, and future development prospects of the organization. Given the inaccessibility of such opportunities to external observers, establishing a correlation between executive managerial ability and the availability of investment opportunities is advantageous (Lee et al., 2018). According to Gan (2019), executives' exceptional capabilities enable them to have a value-oriented perspective on investment activities that align effectively with the organization's operational strategy. Consequently, this enables them to respond favorably to value-added investment opportunities. The organization uses prospective internal and external expansion. Additionally, he noted that these managers have a different perspective on the future prospects of the company than less competent managers, which influences their assessments, estimations, and preferences concerning the investment's associated risks.

Furthermore, this phenomenon becomes more pronounced as the skill sets possessed by these managers become more diverse; thus, more competent executives exhibit distinct behaviors when discerning investment prospects. Chemmanur, Paeglis, and Simonyan (2009) discovered that managers with greater capability are capable of acquiring more precise information regarding available investment opportunities. As a result, they can select investment alternatives that have a greater likelihood of yielding effective projects. The findings of the research (Lee et al., 2018) indicated that a company's investment opportunities are positively correlated with its managerial ability. Funding the available investment opportunities solely through internal profits is inadequate. Using ongoing negotiations with market participants, the organization can secure external sources of financing by profiting from the moral capital or reputation of its most competent managers. Therefore, managerial capability functions as a guarantee, as it ensures or By diminishing information asymmetry between internal parties and financial market dealers, it guarantees the caliber of external markets utilized to finance the company, consequently leading to a decreased cost of capital (Chemmanur & Paeglis, 2005; Chemmanur et al., 2009; Andreou et al., 2017). This decrease enables The presence of information asymmetry to enable creditors to forecast future performance and more precisely evaluate instances of default or payment cessation. This leads to reduced debt interest rates, loan spreads, and more enforceable contractual provisions (including less stringent covenants and contract terms). A reduction in collateral requirements and enhanced convenience (Francis et al, 2008; Andreou et al, 2017) contribute to a diminished expense associated with financing investments. Furthermore, it has been observed that managers who possess exceptional managerial capabilities are more adept at resolving agency problems (Chemmanur et al., 2009). This, in turn, enhances the managers' credibility among creditors and other stakeholders. The establishment of credibility is a critical component in the acquisition of external funding (Andreou et al., 2017). A positive correlation was observed between corporate investment and managerial ability (Andreou et al., 2017). This correlation can be attributed to the enhanced financial security that executives with high managerial abilities attain. Furthermore, they concluded that this correlation was positive even during the 2008 global financial crisis, as these firms could secure the greatest quantity of financial resources despite encountering obstacles, such as difficulties that hindered their ability to acquire adequate resources. Examples include a

decline in product demand. In this context, more competent executives can more efficiently manage financial resources. (Huang-Meier *et al.*, 2016), tend to maintain or increase financial balances for acquisitions and capital expenditures (Lee *et al.*, 2018), and (Yung & Chen, 2018) tend to increase spending on R&D and capital expenditures. Executives with a strong aptitude for management are inclined to allocate resources towards endeavors that yield a favorable net present value and execute them with exceptional proficiency (Chemmanur & Paglis, 2005). Chemmanur *et al.* (2009) provided evidence that executives possessing strong managerial capabilities are more adept at recognizing investment projects that yield a substantial positive net present value. Furthermore, these executives are capable of formulating investment decisions that align more closely with the operational attributes and strategic objectives of the organization. Additionally, (Andreou *et al.*, 2017) noted that a high managerial ability alleviates or reduces the issues associated with a deficiency or deficit in investment, thereby ultimately increasing the value of the company.

The body of research examining the correlation between administrative aptitude and numerous other variables has witnessed a surge since the introduction of the model by Demerjian *et al.* (2012). About the subject matter of the present investigation, which concerns the correlation between administrative capability and the diverse facets of investment in the organization, the subsequent studies have previously examined this subject matter: The purpose of the study (Karasamani, 2015) was to examine the relationship between managerial ability and information asymmetry, company value, and investment decision efficiency in multi-activity organizations. The methodology was implemented on a dataset comprising 345,868 observations (company-year) of American corporations spanning the years 1978 to 2011. The research revealed that administrative capability exerted a beneficial influence on the inverse correlation that existed between activity diversification and investment decision efficiency. The research of Andrew *et al.* (2017) examines the correlation between an organization's investments during the period of the global financial crisis in 2008 and its managerial ability before the crisis.

The quantification of the organization's investment was based on its capital expenditures. Managerial ability was assessed using the study on a sample of 274 American companies during the period preceding the global financial crisis, which concluded in late 2006 AD. Investments were evaluated during the financial crisis, which lasted from early August 2007 to late August 2009. Managerial ability prior to the global financial crisis was positively correlated with corporate investment during the crisis, according to the study. A large number of control variables, including corporate governance characteristics, the incentive payment structure for executive directors, and the attributes of the top executive director, significantly influenced this relationship. This correlation was found to be more pronounced among executives possessing general skills rather than those with specialized skills. Furthermore, the research revealed that, on average, investments were assessed favorably by the stock market throughout the crisis. Nevertheless, the correlation between the two variables was evident solely within organizations distinguished by their formidable managerial capabilities before the crisis. The objective of the research (Habib and Hasan, 2017) was to furnish empirical data regarding the influence of administrative capability on

the efficacy of investment decision-making at the corporate level, and the subsequent ramifications for the company's susceptibility to future stock price crashes.

The evaluation of investment decision efficacy was conducted by comparing the actual investment to the anticipated investment level, with the anticipated investment level being determined by the growth prospects of the organization. The algorithm was implemented on data obtained from a sample comprising 76,249 observations (company-year) of American companies during the years 1987 to 2012. The study revealed that managers with higher levels of capability are able to engage in greater over-investment than those with lower levels of capability, even when accounting for the influence of financial reporting quality and other factors that affect the effectiveness of investment decisions. This evidence was robust and reliable when compared to alternative methods of assessing investment efficacy. Lee et al., (2018) seek to determine whether or not firms led by exceptional managers have a greater chance of securing advantageous investment opportunities. To assess the investment opportunities that were accessible, the capital expenditure rate and Tobin's q were utilized. The methodology was implemented on a dataset consisting of 159,448 observations (company-year) obtained from American corporations between 1987 and 2015. A correlation between administrative proficiency and the availability of investment prospects was identified as positive in the study. This relationship was only significant for businesses without financial constraints. Whereas Khurana et al., (2018) examined the correlation between the efficiency of investment decisions and corporate tax avoidance activity as influenced by administrative capability. The methodology was implemented on a dataset consisting of 17,742 observations of American corporations spanning the years 1994 to 2015. An analysis revealed that organizations possessing greater managerial ability exhibited enhanced investment decision efficiency, as evidenced by reduced deviations from anticipated levels of investment spending. Conversely, organizations with diminished managerial ability exhibited the opposite effect.

Furthermore, further examinations revealed that an improvement in corporate governance strength and tax avoidance activity correlates with a surge in the efficacy of investment decision-making. Conversely, a decline in corporate governance strength results in the opposite effect. Also, (Gan, 2019) examined the distinctions in investment decision-making behavior between executives with high and low managerial ability, with a particular focus on whether executive managerial ability can enhance investment efficiency. The quantity of investments was quantified utilizing four distinct metrics, and further examinations incorporated the degree to which this correlation was influenced by the incentive provision mechanism for executives and the level of oversight over them. The methodology was implemented on a dataset consisting of 20,323 observations obtained from American corporations between 1991 and 2013. It was discovered that investment decisions are executed more efficiently by executives with greater capability; more specifically, capital expenditures, acquisition expenses, and total investment are increased. This occurs when their organizations function within environments that are more prone to instances of insufficiency, underinvestment, or frailty; conversely, when their organizations operate in environments that are more prone to instances of

overinvestment or exaggeration. As a result, it was determined that administrative proficiency aids in surmounting the two primary causes of investment inefficiency. Exaggeration or excessive investment, as well as investment deficiency, insufficiency, or frailty, are examples of these. This positive impact of administrative capability on investment efficiency persisted across varying degrees of board supervision; however, its strength diminished as the exposure to equity risk escalated. Director-elective positions. Prior research exclusively focused on American companies. However, Garc.a-S.nchez and Garc. a-Meca (2018) conducted a study that utilized data from a sample of 2,185 companies spanning 24 countries worldwide from 2006 to 2015. The study received a total of 10,279 views (company-year), of which 35.41% were attributable to American companies. The objective of this research was to examine the correlation between managerial ability and investment decision efficiency, with a particular emphasis on the influence of internal and external corporate governance mechanisms' attributes on this association.

The measure of investment decision efficacy was established through the research of Biddle and Hilary (2009). Managerial ability was identified as a determinant of investment decision efficiency, contingent upon its ability to mitigate instances of overinvestment or underinvestment as well as instances of exaggeration or insufficiency in investment. The findings were reinforced by the fact that these outcomes were more pronounced in nations where corporations were situated and where investor protections were more robust, governance mechanisms served as effective supplementary measures to restrict ineffectual investment choices. Regarding its applicability beyond American corporations, the research (Salehi, Daemi & Akbari, 2020) utilized a sample comprising eighty-five industrial companies that were publicly listed on the Tehran Stock Exchange between the years 2011 and 2015. The objective of this research was to examine the influence of managerial capability on the correlation between product market competition and investment decision efficiency, specifically regarding investment exaggeration and risk-taking behavior. The assessment of investment decision efficiency was conducted utilizing the approach employed in the research (Richardson, 2006), which entails the concurrent determination of free cash flows and overinvestment. The research revealed that administrative capability has no discernible impact on the correlation between product market competition and the effectiveness of investment decision-making. Furthermore, the research conducted by Hussein (2019) was utilized on a subset of 56 Egyptian non-financial organizations that were officially registered between 2007 and 2017. The objective of this study was to examine the correlation between executive directors' commitment, the quality of financial reports, and their administrative expertise. The implementation of corporate governance mechanisms aids in mitigating the inefficiency that may arise from investment decisions, be they excessive or insufficient. The research employed an identical methodology to that of Biddle and Hilary (2009) when assessing the efficacy of investment choices. Increasing the administrative capability of administrators reduces the inefficiency of investment decisions in general and exaggerated or excessive investments in particular, without affecting the case of underinvestment fundamentally, according to the study's findings. The managerial ability was assessed using the model proposed by Demerjian et

al. (2012) in each of the studies. Several studies have assessed this administrative capability using methods other than the one described in this model, which was introduced in 2012.

Managerial ability definitions and measures:

Table No. (1) displays a group of different definitions of managerial ability, according to many writings and research that dealt with the concept of managerial ability through study and measurement, as follows:

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Table 1: Managerial ability definitions

Author	Definition
Nazari et al., 2016	It refers to the ability of managers to establish an efficient communication network among subordinates so that they may improve their abilities and communicate more clearly with all company stakeholders, with the ultimate goal of achieving performance effectiveness.
Francis et al., 2019	The notion of managerial ability embodies the notion of human capital, which guarantees the most efficient utilization of resources required for value generation.
Diri, 2020	It comprises the culmination of an individual manager's attributes, such as professional background, experience, reputation, management style, educational attainment, personal convictions, and propensity for undertaking risks.
Bhutta, 2021	In order to ensure the company's continuity for extended periods of time, managers must be capable of devising innovative approaches to resource development. In other words, management's responsibilities are not restricted to merely keeping up with economic, environmental, legal, and accounting developments.
Eissa & Hashad, 2021	New future opportunities are facilitated by the manager's ability to sustain high company performance and his or her level of understanding of the organization's financial situation and the conditions of the surrounding industry.
krema, 2022	The amalgamation of attributes, practical knowledge, and aptitudes that define a manager empowers him to devise approaches that maximize the utilization of the organization's resources, while simultaneously adapting to environmental and operational fluctuations. This enables the manager to sustain a balanced level of performance for the organization and generate additional prospects for the future.

Source: Prepared by author based on literature reviews

In the preceding discourse on the diverse definitions of managerial ability, this study concurs with Crema's definition (2022), which stands in contrast to prior definitions as the most exhaustive and lucid. Various metrics had been employed to assess managerial ability, commencing with descriptive measures like media coverage frequency, fixed characteristic measurements, and contract tenure with the same managers, among others. It wasn't until 2012 that Demirjian and his colleagues developed a quantitative approach utilizing financial statement data to evaluate managerial ability. This method will be implemented. The estimation of the managerial ability variable, which will be elaborated upon in the subsequent explication, is predicated on this research. Demirjian et al. introduced a quantitative metric for assessing managerial ability in 2012 called Data Envelopment Analysis. This approach partitioned the overall efficiency of the organization into two components: one reflecting management efficiency and the other associated with

the efficiency of the organization itself. Specifically, the portion of the total efficiency that remains after removing efficiency measures associated with the organization signifies the managerial ability. Administrative efficiency refers to the capacity of managers to maximize revenues (outputs) using the same resources (inputs) at their disposal. This method of measurement is advantageous due to the availability of financial data that is utilized for estimation purposes. This enhances the accuracy and comprehensiveness of the model, thereby increasing the likelihood that the results can be relied upon. This is accomplished via the subsequent procedures:

- a. The closed data envelopment analysis method is employed to assess the efficiency of a company in its efforts to minimize expenses and maximize revenues. This is accomplished by utilizing financial variables such as purchased goodwill, fixed assets, research and development expenses, cost of inventory, and administrative and general expenses.
- b. In the initial stage of the regression equation, the attributes of the company are omitted. This leaves only the attributes of managerial ability, which are denoted by the following variables: company size, market share, age, free cash flows, profits from currency differences, and a dummy variable representing the year.
- c. The model is characterized by its emphasis on management efficacy and productivity, as opposed to considerations of reputation, experience, and management style. Additionally, it is notable for its capacity to isolate the constituents of administrative capability from the efficiency of the organization. However, it has been subject to criticism for its heavy reliance on numerous variables, which consequently amplifies the likelihood of measurement errors. Furthermore, due to data constraints, certain variables may be omitted.

4. Research methodology and Hypothesis

The study uses both deductive and inductive approaches. First, it applies the deductive approach, examining the literature that is currently available on the definition of managerial ability, how to measure it, and how it relates to the effectiveness of investment decisions. Next, using a practical application to test the research hypotheses on a sample of companies listed on the Egyptian Stock Exchange, the inductive approach is used to try and determine the relationship between managers' managerial ability and its reflection on the effectiveness of their investment decisions.

The subsequent hypotheses can be formulated by organizing prior research and studies that examined managerial ability via measurement and research, whether as an independent, mediating, or monitoring variable:

H₀₁: No significant statistical relationship between managerial abilities and the availability of investment opportunities

H₀₂: No statistically significant correlation between the volume of investments and managerial ability

H₀₃: The efficacy of investment decisions does not exhibit a statistically significant correlation with managerial ability.

5. Research Variables

The research employed a statistical model that is derived from the model proposed by Demerjian et al. (2012). In assessing the volume of investments, the efficiency of investment decisions, and the accessibility of investment opportunities, Demerjian (2012) utilized a model derived from Mohamad's (2020) research on the influence of managerial ability on investment, with a specific focus on Saudi companies. The explanation of the research variables and the methodology for measuring them is provided in Table 2.

Table 2: Research variables measures

Type	Aprivation	Variable names	Measures
Independent Variables	MAS	Managerial ability	mesures as (Demerjian et .al,2012) model
	MASH	High Managerial ability	high than average mesured by (Demerjian et .al,2012)
	MASL	Low Managerial ability	Low than average mesured by (Demerjian et .al,2012)
Dependent Variables	InvO	Investment Opportunities	Tobin Q
	Inv	Investment size	Log investment cash flow from cash flow statement
	InvE	Investment Efficiency	Different between expected and actual investment
Control Variables	cash	Cash	Cash / Total assets book value
	SLAC	Cash to fixed assets	cash / Total P,P&E
	CF	Operating cash flow	(NI+Depreciation)/ Equity
	CFOS	Operating cash flow to sales	(NI+Depreciation)/ Sales
	TANG	Tangible assets ratio	P,P&E / Total assets
	ATO	Assets turnover	Sales/ average assets
	GRO	Assets Growth rate	(Ending total assets - Beg total assets)/ Beg total assets
	STD	Short term debt	change in Current liabilities /beg current liabilities
	LEV	Financial Leverage	long term debt / total assets
	DIV	Cash dividend	Dummy variable 0,1
	Size	Firm Size	logarithem total assets
	LnAge	Firm age	logarithemfirm age
	loss	Firm loss	Dummy variable 0,1
	RET	Average stock return	average stock weekly return
	ROE	Return on Equity	Net operating income / average equity
	ROA	Return on assets	Net operating income / average assets
MTB	Equity Market value / Equity Book value	Equity Market value / Equity Book value	

Source: Prepared by author based on literature reviews

6. Research Sample and Population

All companies that were included in the EGX 30 index of the Egyptian Stock Exchange, which was introduced in March 2009, were represented within the research population. The selection of the corporations included in this index was based on the subsequent criteria:

1. The EGX 30 index comprised the thirty most actively traded and liquid corporations.
2. The EGX 30 index is adjusted by the ratio of free float shares to the total number of shares included in its weighting by market capitalization. To calculate the adjusted market capitalization of a publicly traded company, multiply the number of restricted shares by the percentage of freely traded shares and the closing price in Egyptian pounds. (Website of the Egyptian Stock Exchange)
3. To be eligible for inclusion in the index, the free trading percentage of the company must be at least 15%. Alternatively, the market capitalization-weighted by freely trading

shares at the time of the periodic review cannot be less than the median value computed for all companies that were traded during the period under review. This guarantees that the constituents of the index accurately reflect firms engaged in active trading, thereby establishing the index as a dependable and valid indicator of the Egyptian market for the benefit of market participants. (Website of the Egyptian Stock Exchange)

4. companies that exhibit significant breaches of the regulations governing registration and disclosure are omitted from this index. As a result, only those companies that disclose the research variables are included in this index. (Website of the Egyptian Stock Exchange)
5. Consequently, the final sample comprises 24 companies that are listed in the EGX 30 index. During a period from 2013 to 2022, Each of the 20 variables comprising the basic and sub-variables of the study is represented by 230 observations. Certain companies were excluded for the following reasons:(a) Financial companies and banks were omitted due to the unique characteristics of their financial reporting. (b) Organizations that lacked data for the period of analysis were also excluded.

7. Data Analysis:

7.1 Measuring the independent variable: Managerial ability

The first stage: measuring the company's degree of efficiency.

$$\text{max}\theta = \frac{\text{Sales}}{(\text{v1CoGS} + \text{v2SG\&A} + \text{v3PPE} + \text{v4OpsLease} + \text{v5R\&D} + \text{v6Goodwill} + \text{v7OtherIntan})}$$

0:

represents the degree of efficiency of the company, CoGS: represents the cost of goods sold, SG&A: represents general and Managerial expenses, OpsLease: represents operating lease expenses, R&D: represents research and development expenses, PPE: represents fixed assets, Goodwill: Represents purchased goodwill, OtherIntan: Represents other intangible assets. The items operating lease expenses, research and development expenses, and purchased goodwill, representing other intangible assets, were excluded because they were not disclosed. Therefore, the company's degree of efficiency was measured by the following equation:

$$\text{max}\theta = \frac{\text{Sales}}{(\text{v1CoGS} + \text{v2SG\&A} + \text{v3PPE} + \text{v7OtherIntan})}$$

The second stage: measuring the degree of the company's Managerial ability: The degree of Managerial ability is measured according to the model (Demerjian et. al 2012) by performing a regression of the degree of competence extracted in the first stage on a group of elements, which can be attributed to the characteristics of the company itself more than to the characteristics of the managers, which are represented in six elements. The regression model used for this was as follows:

$$\text{Firm Efficiency} = \alpha_0 + \alpha_1 \text{Ln}(\text{Total Assets}) + \alpha_2 \text{Market Share} + \alpha_3 \text{Positive Free Cash Flow} + \alpha_4 \text{Ln}(\text{Age}) + \alpha_5 \text{Business Segment Concentration} + \alpha_6 \text{Foreign Currency Indicator} + \text{Year Indicators} + \varepsilon$$

Firm Efficiency: The degree of efficiency extracted in the first stage, (Ln)Total Assets: represents the natural logarithm of total assets, used to express the size of the company, Market Share: represents the company's market share, Positive Free Cash Flow: represents free cash flows, (Ln)Age: represents the natural logarithm of the company's age, Business Segment Concentration: The company's operating sectors, Foreign Currency: Foreign currency indicator, Year Indicators: A dummy variable representing the year. The company's operating sectors and foreign currency index were excluded from the regression model, which became as follows:

$$\text{Firm Efficiency} = \alpha_0 + \alpha_1 \text{Ln}(\text{Total Assets}) + \alpha_2 \text{Market Share} + \alpha_3 \text{Positive Free Cash Flow} + \alpha_4 \text{Ln}(\text{Age}) + \text{Year Indicators} + \varepsilon$$

A Tobit regression model was used with this equation because the dependent variable takes values between zero and one. The value of the residuals in the previous regression equation represents the factors that can be attributed to the company's Managerial team, so it is considered the MA-Score, which represents a measure of the Managerial ability of the company's executives during the year under study. This variable is symbolized by (MAS).

7.2 Measure dependent variables:

The first dependent variable, the available investment opportunities variable, was measured through Tobin's q measure by dividing the company's market value by the book value of total assets and is symbolized by the symbol InvO. The second dependent variable, the investment size variable, was measured by the size of capital expenditures. The size of capital expenditures was determined through the second section of the cash flow statement and is symbolized by the symbol Inv. The third dependent variable, the efficiency of investment decisions variable, was measured by calculating the difference or variance in the actual investment from the expected level of investment. (a) Actual investment is the cash payments for investment activities included in the second section of the statement of cash flows. (b) The level of investment was measured based on the company's growth opportunities and calculated through the simplified model proposed by Hubbard, which takes the form of the following equation:

$$INV_{i,t} = \gamma_0 + \gamma_1 \text{REVGROWS}_{i,t-1} + \varepsilon_{it}$$

Whereas: INV represents the volume of investment during the current year, REVGROWS represents the annual revenue growth rate during the previous year, which was calculated by dividing the difference between the current year's revenues and the previous year's revenues by the previous year's revenues. The value of the residuals is a measure of the efficiency of the investment. This variable is denoted by the symbol (InvE).

Study model (1): test the first hypothesis to determine the impact of managerial ability on available investment opportunities. The model takes the following form:

$$\text{InvO}_{i,t} = \alpha_0 + \alpha_1\text{MAS}_{i,t} + \alpha_2\text{Cash}_{i,t} + \alpha_3\text{Size}_{i,t} + \alpha_4\text{MTB}_{i,t} + \alpha_5\text{LEV}_{i,t} + \alpha_6\text{ROE}_{i,t} + \alpha_7\text{STD}_{i,t} + \varepsilon_{it}.$$

Study model (2): test the second hypothesis to determine the effect of managerial ability on the volume of available investments. The model takes the following form:

$$\text{Inv}_{i,t} = \alpha_0 + \alpha_1\text{MAS}_{i,t} + \alpha_2\text{Size}_{i,t} + \alpha_3\text{MTB}_{i,t} + \alpha_4\text{LEV}_{i,t} + \alpha_5\text{GRO}_{i,t} + \alpha_6\text{RET}_{i,t} + \alpha_7\text{ROE}_{i,t} + \alpha_8\text{Cf}_{i,t} + \varepsilon_{i,t}$$

Study model (3): test the first hypothesis to determine the effect of managerial ability on the efficiency of investment decisions. The model takes the following form:

Unit root test using Dickey-Fuller test to ascertain the extent of stability of the

$$\text{INVE}_{i,t} = \alpha_0 + \alpha_1\text{MAS}_{i,t} + \alpha_2\text{Size}_{i,t} + \alpha_3\text{MTB}_{i,t} + \alpha_4\text{ROA}_{i,t} + \alpha_5\text{DIV}_{i,t} + \alpha_6\text{CFOS}_{i,t} + \alpha_7\text{ATO}_{i,t} + \alpha_8\text{Age}_{i,t} + \alpha_9\text{TANG}_{i,t} + \alpha_{10}\text{SLAC}_{i,t} + \alpha_{11}\text{Loss}_{i,t} + \varepsilon_{i,t}$$

time series for the variables under study.

Table 3: Results of the unit root test

No	variable	lag	level		1st difference		stationary
			T-test	p-value	T-test	p-value	
1	InvO	0	-4.743	0.013	-	-	I(0)
2	Inv	2	-2.307	0.305	-4.568	0	I(1)
3	InvE	0	0.659	0.942	-3.843	0	I(1)
4	cash	1	-4.084	0.011	-	-	I(0)
5	Size	0	-6.109	0	-	-	I(0)
6	MTB	0	-2.766	0.171	-3.932	0	I(1)
7	LEV	2	-2.366	0.249	-8.39	0	I(1)
8	ROE	2	-3.296	0.001	-	-	I(0)
9	STD	1	-5.217	0.012	-	-	I(0)
10	GRO	0	-2.538	0.275	-2.986	0	I(1)
11	RET	0	0.725	0.847	-2.293	0.016	I(1)
12	CF	1	-4.493	0.01	-	-	I(0)
13	CFOS	0	-3.347	0	-	-	I(0)
14	ATO	0	-1.043	0.154	-3.913	0	I(1)
15	LnAge	2	-2.602	0.225	-6.195	0	I(1)
16	TANG	1	-3.625	0.001	-	-	I(0)
17	SLAC	0	-5.739	0.001	-	-	I(0)
18	loss	2	-6.792	0.009	-	-	I(0)
19	MAS	0	0.797	0.876	-5.081	0	I(1)
20	ROA	0	-4.942	0.001	-	-	I(0)
21	DIV	2	-2.862	0	-	-	I(0)

Source: From E-views v14 outputs

It is clear from the previous table that the variables (Inv-INvE- MTB-LEV-GRO-RET-ATO-LnAge- MAS) are not stationary at the level, and after taking the first difference, the variables became stationary at the first difference, while the rest of the variables are stationary at the level.

Jarque-Bera test: to examine the normal distribution of each variable separately; This is to indicate whether the variable follows a normal distribution or not, and if the values are greater than 0.05, this indicates that the data follows a normal distribution.

Table 4: Jarque-Bera test results

No	variable	Jarque-Bera	Probability
1	InvO	8.042	0.267
2	Inv	5.078	0.234
3	InvE	7.062	0.52
4	cash	6.578	0.427
5	Size	9.007	0.299
6	MTB	5.688	0.262
7	LEV	7.367	0.479
8	ROE	10.088	0.335
9	STD	6.37	0.294
10	GRO	4.992	0.336
11	RET	6.836	0.235
12	CF	4.317	0.206
13	CFOS	6.002	0.212
14	ATO	5.591	0.376
15	LnAge	7.656	0.263
16	TANG	4.835	0.231
17	SLAC	6.262	0.421
18	loss	8.575	0.295
19	MAS	5.415	0.258
20	ROA	4.109	0.203
21	DIV	5.323	0.371

Source: From E-views v14 outputs

The previous table shows that all study variables follow a normal distribution, as the P-value for all study variables ranges between (0.203-0.520), which is greater than 0.05. For the first hypothesis, Pearson Correlation Coefficient test provides information about the size of the association and the direction of the relationship. The following table shows the results of the test, including the relationship between the dependent variable available investment opportunities and the independent variable managerial ability, as well as the relationship with the control variables.

Table 5: Results of the correlation coefficient for the first hypothesis

	INVO	MAS	CASH	Size	MTB	LEV	ROE	STD
INVO	1							
MAS	0.3783	1						
CASH	0.1741	0.6854	1					
SIZE	0.4375	0.4385	0.3904	1				
MT8	0.5552	0.1767	0.1908	0.4466	1			
LEV	0.7161	0.1707	0.4134	0.0536	0.2709	1		
ROE	0.2379	0.3064	0.2353	0.1753	0.2253	0.6943	1	
STD	0.1457	0.5586	0.0948	0.1562	0.2073	0.4146	0.6031	1

Source: From E-views v14 outputs

The former table shows that the relationship between Managerial ability and investment opportunities is a direct relationship with a correlation coefficient of 0.3783,

which indicates the existence of a positive relationship between them. It is also clear that the relationship between investment opportunities and control variables (cash-size-mtb-lev-roe-std) is a direct relationship. This is consistent with previous studies.

7.3 Estimating the regression model using the least squares method

A multiple regression model was used To verify the study's first hypothesis, as shown in the following table.

Table 6: Results of estimating the first model

Variable (INVO)	Coefficient	t-Statistic	prob.
MAS	0.4096	7.1921	0.000
CASH	0.0898	3.3413	0.000
SIZE	0.0239	3.0598	0.006
MTB	0.1765	13.0196	0.000
LEV	0.1057	3.4474	0.002
ROE	0.0283	9.1795	0.000
STD	0.0096	3.3379	0.003
c	0.0583	8.2414	0.006
R-squared	0.6885	F-statistic	22.835
Adjusted R-squared	0.6545	Prob(F-statistic)	0.000
Durbin-Watson stat	2.2371		

Source: From E-views v14 outputs

According to the data in the previous table:

$$\text{INVO} = 0.058 + 0.409*\text{MAS} + 0.089*\text{CASH} + 0.023*\text{SIZE} + 0.176*\text{MTB} + 0.1057*\text{LEV} + 0.028*\text{ROE} + 0.0096*\text{STD}$$

The subsequent relationships are apparent from the preceding model coefficient: (a) There is a direct relationship between managerial ability (MAS) and investment opportunities (InvO). An increase of 100% in managerial ability leads to a 40% increase in investment opportunities. The significant level of this variable is 0.00, which is less than 0.05, indicating a valid relationship between the two variables. (b) Control variables also have a direct relationship with investment opportunities. The Cash variable affects investment opportunities by 8%, while both company size and return on equity (ROE) affect investment opportunities by 2%. The market value ratio variable affects investment opportunities by 17%, financial leverage (LEV) by 10%, and short-term debt (STD) by 0.9%. The significant levels of the control variables range from 0.00 to 0.006, all below 0.05, indicating valid relationships between the control variables and investment opportunities in the model. (c) The R-squared coefficient of determination is 0.6885, indicating a high explanatory power for managerial ability in the model, explaining 68% of the changes in investment opportunities. The Durbin-Watson test result of 2.2371 indicates no serial autocorrelation problem between the residuals.

7.4 Comparison of the relationship between high and low managerial ability model (1):

Table 7: Comparison of High and Low Managerial Ability Models (1)

variable	High Managerial ability		low Managerial ability	
	Coef.	p-value	Coef.	p-value
InvO	0.3353	0.0000	-	-
MASH	0.3353	0.0000	-	-
MASL	-	-	-0.3211	0.0030
cash	0.0000	0.0030	0.0000	0.0011
Size	0.0203	0.0000	0.0300	0.0000
MTB	0.1850	0.0000	0.1866	0.0025
LEV	0.1204	0.0000	0.0991	0.0072
ROE	0.0000	0.0000	0.0000	0.0000
STD	0.0250	0.0070	0.0422	0.0000
Constant	0.0560	0.0000	0.2260	0.0040

Source: From E-views v14 outputs

Based on the data presented in the preceding table, it is evident that investment opportunities (InvO) are adversely affected by limited managerial ability (MASL), as investment opportunities are reduced by 0.3211 at a significance level of 0.003, which is below 5%. Conversely, with a significance level of 0.00, investment opportunities are impacted by 0.3353 in the case of high managerial ability (MASH). The initial hypothesis was denied in favor of the alternative hypothesis due to the findings that managerial ability positively influences investment opportunities.

Moving to the second hypothesis: the following table shows the results of the correlation test between the dependent variable, the size of investments (INV), and the independent variable, managerial ability (MAS), and also the relationship with the control variables (Size-Mtb-Lev-Gro-Ret-Roe-Cf)

Table 8: Results of correlation coefficients for the second hypothesis

	INV	SIZE	MTB	LEV	GRO	RET	ROE	CF	MAS
INV	1								
SIZE	0.3535	1							
MTB	0.1908	0.4466	1						
LEV	0.4149	0.5358	0.0027	1					
GRO	0.1387	0.7298	0.2777	-0.2898	1				
RET	0.5533	0.4055	0.3453	0.0030	0.3679	1			
ROE	0.3934	0.7130	0.2253	0.0694	0.2551	0.1492	1		
CF	0.6117	0.4142	0.6757	0.0274	0.0617	0.8378	0.4351	1	
MAS	0.3158	0.4385	0.1047	0.1707	0.6439	0.0416	0.3064	0.1135	1

Source: From E-views v14 outputs

As shown in the antecedent table, the correlation coefficient of 0.3158 between managerial aptitude and investment volume indicates a positive relationship between the two variables. Furthermore, an evident correlation is evident between investment volume and control variables (Size-Mtb-Lev-Gro-Ret-Roe-Cf), as indicated by correlation

coefficient values for control variables ranging from 0.6117 to 0.1387 at a 5% level of significance.

Table 9: Results of estimating the second model.

Variable	Coefficient	t-Statistic	prob.
SIZE	0.4625	6.544564	0.006
MTB	0.0481	9.069166	0.038
LEV	0.2157	7.33688	0.006
GRO	0.8058	5.720448	0.002
RET	0.1676	9.60453	0.000
ROE	0.0407	7.357035	0.001
CF	0.198	9.395521	0.000
MAS	0.2627	5.254626	0.001
c	0.1434	4.575342	0.005
R-squared	0.8117	F-statistic	31.452
Adjusted R-squared	0.7987	Prob(F-statistic)	0.000
Durbin-Watson stat	2.1686		

Source: From E-views v14 outputs

$$\text{Inv} = 0.143 + 0.26*\text{MAS} + 0.46*\text{SIZE} + 0.048*\text{MTB} + 0.21*\text{LEV} + 0.80*\text{GRO} + 0.16*\text{RET} + 0.04*\text{ROE} + 0.19*\text{CF}$$

Determining the model coefficient from the preceding equation reveals the following (a) The managerial ability (MAS) and the volume of investments (Inv) are directly proportional. An increase of 100% in managerial ability results in a corresponding 26% increase in the volume of investments. The observed significance level of 0.0015, which is below the conventional threshold of 0.05, provides support for the hypothesis that the relationship between the two variables is valid (b) Additionally, a direct correlation exists between control variables and the total magnitude of investments (Inv). An investment's magnitude is influenced by the company's scale by 46%, the market value to equity (MTB) ratio by 4%, and the level by 21%. (c) A direct relationship with an 80% effect exists between the volume of investments and the growth rate of the company's assets (GRO). Additionally, a 16% direct correlation exists between the quantity of investments and the average weekly returns (RET). Similarly, investments' sizes are influenced by the variable return on equity (ROE) to the extent of 4%. 16% is the impact that financial flows have on the magnitude of investments; this is the most influential variable in the second model. (d) The control variables exhibited a significance range of 0.00 to 0.038, which is below the conventional threshold of 0.05. This suggests that the correlation between the control variables and investment volume in the second model is indeed valid. (e) The value of the R-squared coefficient of determination, which amounted to 0.812, indicates a high explanatory power for managerial ability in the second model. This means that 81% of the changes that occur in the volume of investments are explained in this model. The explanation coefficient also indicates that 81% of the changes that occur in the volume of investments are due to the change in managerial ability, in addition to the model's control variables. The value of the F test reached 31.45, with a significance level of 0.00, which is less than 5%, indicating the quality and validity of the relationship explained in the second model. (f) The Durbin-Watson test also proved that there is no

problem of serial autocorrelation between the residuals (Durbin-Watson stat = 2.1686). The goal of the Durbin-Watson test is to test the problem of serial autocorrelation between the residuals.

Table 10: Comparison of High and Low Managerial Ability Models (2)

variable	High Managerial ability		low Managerial ability	
	Coef.	p-value	Coef.	p-value
Inv				
MASH	0.6729	0.0031	-	-
MASL	-	-	-0.2454	0.0010
Size	0.3526	0.0062	-0.0354	0.0078
MTB	0.1778	0.0083	0.1825	0.0021
LEV	0.2334	0.0094	0.0627	0.0064
ROE	0.2298	0.0042	0.0937	0.0000
RET	2.2339	0.0000	0.1487	0.0000
CF	0.0870	0.0052	0.0250	0.0010
Constant	0.4191	0.0062	0.1422	0.0008

Source: From E-views v14 outputs

The data indicates that a reduction in managerial ability (MASL) has an adverse effect on investment volume. Specifically, investment opportunities are impacted by a magnitude of -0.2454, with a significance level of 0.001, which is below the threshold of 5%. Conversely, an elevation in managerial ability (MASH) results in a 0.6729% impact on investment opportunities, which holds at the 0.003 level of significance. the null hypothesis is rejected, and accepted the alternative hypothesis, managerial ability positively influences the volume of investments.

The correlation test results for the third hypothesis are presented in the subsequent table. It includes the relationship between the dependent variable Investment Decision Efficiency (InvE) and the independent variable MAS Managerial ability, in addition to the control variables MAS-Size-Mtb-Lev-Gro-Ret-Roe-Cf.

Table 11: Results of correlation coefficients for the third hypothesis.

	INVE	MAS	SIZE	MTB	ROA	DIV	CFOS	ATO	LNAGE	TANG	SLAC	LOSS	ROE
INVE	1												
MAS	0.6849	1											
SIZE	0.3528	0.1852	1										
MTB	0.9141	0.3128	0.1476	1									
ROA	0.1208	0.4164	0.2617	0.1198	1								
DIV	-0.3699	0.1285	0.7128	0.7611	0.2445	1							
CFOS	-0.0755	0.0007	0.3870	0.0373	0.1657	0.0122	1						
ATO	-0.0249	0.3902	0.4149	0.7685	0.1555	0.4578	-0.0688	1					
LNAGE	-0.1475	0.8186	0.1220	0.7077	0.8391	0.1238	0.0689	0.0210	1				
TANG	0.0349	0.6094	0.1636	0.1249	0.0463	0.0769	0.2315	0.0352	-0.1202	1			
SLAC	-0.0495	0.1639	0.4747	0.2607	0.3831	0.1781	0.0105	0.0045	0.1947	-0.4359	1		
LOSS	0.0320	0.8658	0.3917	0.2425	0.5678	0.1602	0.0827	0.3523	-0.0245	-0.0820	0.2979	1	
ROE	-0.1395	0.2950	0.1793	0.2096	0.3637	0.0104	0.1305	0.1700	0.1479	-0.4478	0.0375	0.4094	1

Source: From E-views v14 outputs

The correlation coefficient of 0.6848 in the preceding table indicates that managerial ability and the effectiveness of investment decisions are positively correlated and have a direct relationship. Additionally, there exists a direct correlation between the control variables (Size-Mtb-Roa-Tang-Loss) and the efficacy of investment decisions. The range of correlation coefficient values for the control variables is 0.0320 to 0.9141.

Nevertheless, it is evident from the data presented in the table that the correlation coefficient values for the control variables (Div-Cfos-Ato-LnAge – Slac – Roe) exhibit an inverse relationship, spanning from -0.0249 to -0.1475. The preceding analysis suggests that a correlation exists among the variables of the model.

Table 12: Results of estimating model 3

Variable	Coefficient	t-statistic	prob.
MAS	0.5372	4.7154	0.0000
SIZE	0.1827	3.9167	0.0014
MTB	0.2945	4.4224	0.0022
ROA	0.4874	2.9453	0.0046
DIV	-0.0955	5.2551	0.0015
CFOS	-0.0502	7.0530	0.0032
ATO	-0.1443	2.4623	0.0161
LNAGE	-0.1245	2.1684	0.0319
TANG	0.5157	4.5107	0.0000
SLAC	-0.3543	5.9329	0.0017
LOSS	0.3297	4.8453	0.0066
ROE	-0.4918	4.8514	0.0051
c	0.2717	2.8949	0.0053
R-squared	0.7151	F-statistic	4.0471
Adjusted R-squared	0.6785	Prob(F-statistic)	0.0000
Durbin-Watson stat	2.7434		

Source: From E-views v14 outputs

From the previous model, it is evident that the estimated model Coefficient shows the following relationships:

$$\begin{aligned} \text{INVE} = & 0.27 + 0.53 * \text{MAS} + 0.18 * \text{SIZE} + 0.29 * \text{MTB} + 0.48 * \\ & \text{ROA} - 0.09 * \text{DIV} - 0.05 * \text{CFOS} - 0.14 * \text{ATO} - 0.12 * \text{LNAGE} \\ & + 0.51 * \text{TANG} - 0.35 * \text{SLAC} + 0.32 * \text{LOSS} - 0.49 * \text{ROE} \end{aligned}$$

It is evident from the estimation of model parameters that a direct correlation exists between managerial ability (MAS) and investment decision efficiency (InvE). An increase of 100% in managerial ability results in a 53% improvement in the efficacy of investment decisions. The obtained significance level of 0.00, which is below the conventional threshold of 0.05, confirms that a relationship does indeed exist between the two variables. Additionally, a direct correlation can be observed between the efficiency of investment decisions (InvE) and the control variables (Size-Mtb-Roa-Tang-Loss). Regarding the variables Div-Cfos-Ato-LnAge-Slac-Roe and the efficacy of investment decisions, an inverse relationship exists between them. The control variables' significance levels, which varied from 0.0319% to 0.000, are all below the conventional threshold of 0.05. This suggests that the correlation between the control variables incorporated in the initial model and the efficacy of investment decisions is indeed valid. The coefficient of determination (R²) for this model was 0.71, which suggests that managerial ability, in addition to the control variables in the model, accounts for 71% of the variance in investment volume and 71% of the variance in investment decision efficiency. The F-test, with a significance level of 0.00 and a value of 4.05, indicates that the relationship explained by the model is of high quality and validity, as it is below the 5% threshold. Additionally,

the Durbin-Watson test demonstrated the absence of serial autocorrelation among the residuals (Durbin-Watson stat = 2.74). The objective of conducting the Durbin-Watson test is to examine whether or not the residuals exhibit serial autocorrelation.

Table 13: Comparison of High and Low Managerial Ability Models 3

variable	High Managerial ability		low Managerial ability	
	Coef.	p-value	Coef.	p-value
MASH	0.177	0.009	-	-
MASL	-	-	-0.208	0.000
Size	0.229	0.021	0.985	0.000
MTB	0.914	0.003	0.679	0.052
ROA	0.802	0.002	0.528	0.024
DIV	-0.349	0.005	-0.759	0.001
CFOS	-0.269	0.004	0.847	0.003
ATO	-0.652	0.000	-0.374	0.005
LnAge	-0.385	0.047	0.853	0.005
TANG	0.822	0.040	0.374	0.000
SLAC	-0.472	0.007	0.942	0.018
loss	0.814	0.009	0.914	0.004
ROE	-0.500	0.001	-0.708	0.049
Constant	0.853	0.004	0.270	0.000

Source: From E-views v14 outputs

The data presented in the preceding table indicates that a reduction in managerial ability (MASL) detrimentally affects the efficacy of investment decision-making. Specifically, investment opportunities are impacted by a magnitude of 0.208, with a corresponding significance level of 0.000, which is below the threshold of 5%. Conversely, an increase in managerial ability (MASL) has a 0.17-point impact on investment opportunities, with a 0.0090-point significance level. In light of the aforementioned findings, leading to reject the third null hypothesis and accept the alternative one, which demonstrates that managerial ability augments investment decision efficiency.

8. Conclusion

The managerial ability of individuals in leadership positions encompasses a collection of attributes, practical knowledge, and expertise that define the manager and empower him to devise approaches that maximize the utilization of the organization's resources while adapting to operational and environmental fluctuations. An extensive array of indicators exists to assess managerial ability, the majority of which are contingent upon factors such as knowledge, reputation, the manager's continued existence, and influence. For instance, citation rates in the media (The Media Citation) and the fixed attributes of managers (The Manager Fixed Effects) are examples of such indicators. However, the mainstream of these measures was subjective and not objective until Demerjian et al. (2012) developed Data Envelopment Analysis, a method that infers managerial ability by assessing the overall efficiency of the organization and subsequently excludes company characteristics (such as size, market share, age, cash flows, and profits from currency differences) via the Tobit regression equation even that the use of Tobit regression, while appropriate for censored data, might not account for all potential biases in the data.

The objective of this study is to assess the influence of managers' managerial proficiency in Egyptian firms on the effectiveness and caliber of investment choices, as well as the scope of investment alternatives accessible to the firm. This will be determined using financial statement information from 24 Egyptian firms that are constituents of the EGX30 index comprising 31 firms. Financial institutions and corporations were omitted from the sample due to the unique characteristics of the time frame spanning from 2013 to 2022. Additionally, the study employed Demerjian's Data Envelopment Analysis model, which he introduced in 2012, to assess managerial ability. This method is considered critical due to its quantitative approach rather than a descriptive one, and it was utilized in conjunction with the Habib and Hasan model (2017). To assess the effectiveness of investment decisions, the variance or discrepancy between the actual and anticipated investments was measured. Following statistical analysis, the results supported the acceptance of the alternative hypotheses, which postulate the following: (1) there exists a positive direct correlation between managerial ability and investment opportunities; (2) a reduction in managerial ability has no negative impact on investment opportunities; and (3) the aforementioned alternative hypotheses were accepted. (2) A direct and positive correlation exists between the level of investment and the proficiency of management. (3) A correlation has been observed between managerial ability and investment decision efficiency; statistical analysis reveals that a 53% increase in investment decision efficiency is equivalent to a 100% increase in managerial ability. This is consistent with the findings of numerous researchers' prior investigations. Mohamad's (2020), Lee et al. (2018), Gan (2019), Chemmanur, Paeglis, and Simonyan (2009), Huang-Meier et al. (2016), Biddle and Hilary (2009). Additionally, it is important to address the potential issue of endogeneity, where the ability of managers may be influenced by the performance of the company, resulting in reverse causality. Therefore, it is recommended to advise the boards of directors of various Egyptian companies on the importance of prioritizing competencies when selecting executive managers. This is because executive management has a direct and significant impact on the quality, scale, and effectiveness of investments available to the organization. Consequently, this holds considerable importance for shareholders, as the investment decisions made by the company's owners directly affect the optimization of their wealth and the attainment of the company's overarching objective.

9. Recommendations

It is suggested by the present study that there should be a greater emphasis on investigating the diverse facets of managerial ability. The subject has received insufficient attention thus far despite its significance in Arabic countries. Subsequent investigations may concentrate on a multitude of aspects that were not examined in the present study, such as: 1. Focus new research on determining how managerial ability affects key performance indicators, including earnings management, the quality of financial reports and profits, the quality of the accounting information environment, and the relationship between accrual accounts and future cash flows. Additionally, it seeks to determine how managerial ability influences audit fees, the effectiveness of internal control mechanisms governing financial reporting, the tone of earnings disclosure, market reaction, corporate governance, and the cost of capital. 2. The current study utilized a single method for

measuring Tobin's q indicator (MTB); subsequent research may investigate alternative methods for measuring this indicator. 3. For control variables future research may yield divergent results if these variables are altered or assessed in a manner inconsistent with the methodology employed in the present study. 4. The present investigation assessed the growth prospects of a company using the simplified model introduced by Hubbard (1998); variations in outcomes may ensue when alternative models embodying an expansion of this model are applied, as illustrated in prior research (Eberly, 1997; McNichols and Stubben (1102, 1102). (Biddle and Hilary, 2009; Chen et al., 2008). 5. The present research utilized the managerial ability model proposed by Demerjian et al. (2012). It is important to note that the outcomes might vary if alternative models, such as the study model proposed by Lai and Liu (2018), are applied.

10. Research scope and limitation:

Data Envelopment Analysis (DEA) is a quantitative model utilized to measure management capacity (Demerjian et al., 2012). The study focuses on companies listed on the Egyptian Stock Exchange index EGX 30, excluding banks and financial companies. A total of 24 companies with complete financial data were included in the study, covering the period from 2013 to 2022. However, it is important to note that this timeframe may not fully capture long-term trends or the influence of economic cycles. Furthermore, the study mainly depends on data extracted from financial accounts, which may not consistently mirror the current managerial performance or investment efficiency. Enhancing this data by incorporating qualitative judgments or market-based measures could offer a more comprehensive perspective.

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