

Management Accounting Techniques in Egyptian Business Firms: Expected Outcomes Perspective

Rola Nowar ^{a,*}

^a Faculty of Commerce, Cairo University, Giza, Egypt

* *Corresponding author*: rola_nawar@foc.cu.edu.eg

Abstract

This work aims to investigate two main issues to determine the theory underpinning the implementation of management accounting techniques (MATs) in Egyptian business firms. First, the impact of a set of driving forces (motives) on management's decision to adopt MATs within the business firm. Second, the impact of supply-side factors (barriers), existing within business firms' context, on the level of MATs' implementation. A study conducted on a sample of business firms operating in divergent industry sectors in Egypt was carried out in early 2022. Primary data were collected through a survey, using a questionnaire form, which was filled out mainly by top management of the surveyed firms. The survey response rate was 49.5% and the number of proper questionnaires utilized was 99. Multiple regression analysis is used to test the significance of the relationship between MATs implementation motives, barriers, and its level of implementation in practice. Statistical analysis of data collected revealed that non-financial motives have a significant impact on the implementation level of MATs within Egyptian business firms. No significant relationship was found between MATs implementation level and type of activity, firm age, firm size, firm strategy, and supply-side barriers. This result supports the use of institutional theory as a base for MATs implementation decisions in Egyptian firms. The research adds to the body of knowledge of management accounting practices in Egyptian firms from three aspects. First, identifying the theories/approaches underlying the implementation level of 44 MATs which is rarely addressed in management accounting literature. Second, exploring the implementation levels of 44 techniques that are considered to be the largest recent set of MATs being studied and analyzed in Egyptian firms. Third, classifying motivation factors influencing the adoption of MATs, for the first time in literature, into 2 categories; financial and non-financial for a more in-depth analysis of factors influencing MATs implementation within the Egyptian business environment context.

Keywords

Management accounting techniques; Contingency theory; Institutional theory; supply side factors; motivation; Egyptian business firms

Article history

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1. Introduction

Countries' welfare can be measured by the development of a country's gross national product (GNP). GNP is a measure of the value of a country's economic production from goods and services, and it's one of the indicators used to measure a country's national income and uses or public expenditures, which means that the business firm's output or production from goods or services directly affects a country's national product. The business firm's production or output is determined in light of a combined set of factors, one of which is information extracted from the business information systems, whether accounting or management information systems. This shows that accounting information systems play an integral role in maximizing business production or output. Therefore, their accounting information systems greatly influence the GNP.

The Management Accounting Information System (MAIS) is a subsystem of a business firm's accounting information system which depends on a set of techniques, each of which provides information that benefits a particular aspect of the firm's administrative and operational process. In order to improve the quality of information extracted from the firm's management accounting systems, innovations in management accounting systems have emerged. Innovations in management accounting systems have been reflected through contemporary or strategic MATs. What distinguishes contemporary or strategic MATs from traditional MATs, is the relation of the first to the firm strategy (Chenhall, 2008), in addition to the expansion in providing non-financial data, whether internal or external (Abemethy & Lillis, 1995; Chenhall & Langfield-Smith 1998; Chenhall, 2008). However, Weiss (2014) reveals ten and more differences between TMATs and SMATS.

There is a set of synonyms adopted by the accounting literature to denote management accounting innovations (MAIs). Many authors have used the strategic attribute to describe management accounting as an expression for MAIs or strategic management accounting (Cadez & Guilding, 2008, 2012; Carlson-Wall et al. 2015). Conversely, the contemporariness attribute was used to describe management accounting as an expression for MAIs or contemporary management accounting (Duh et al., 2008; Nuhu et al. 2017). Abernethy and Bouwens (2005) defined MAIs as either creating a new management accounting system or redesigning an existing management accounting system. Zawawi and Hoque (2010) defined MAIs as the application of a new or innovative form of management accounting and control system; such as Activity-Based Costing (ABC), Activity-Based Management (ABM), Time-Driven Activity-Based Costing (TDABC), Target Costing (TC), and Balanced Scorecard (BSC).

In this context, the definition of MAIs must include three combined aspects. The first aspect is the idea of innovation, addition, or improvement in the current management accounting system and the mechanism through which this innovation is to be applied. The second aspect is how to apply innovation, addition, or improvement in the management accounting system to the business firm

procedurally, and the suitability of the internal or external environmental variables to apply this innovation or addition or improvement. The third aspect is to evaluate the achieved outcomes from the application of innovation, addition, or improvement in the management accounting system of the business firm.

Figure (1) shows the three aspects that should be included in the definition of MAIs. The three representative aspects of MAIs may explain approaches or theories underlying the accounting literature in this area.

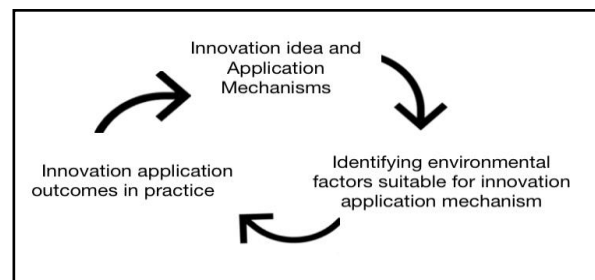


Fig. (1) The Three Aspects that Should Be Included within the Definition of MAIs

MATs and innovations had been categorized in literature according to three main bases; management information needs, historical evolution of management accounting, and focus and orientation. Although there were discrepancies among authors regarding which group of innovations to include within these broad categories, there was somehow consensus in the literature as to these three bases for classification. First, relevant to management information needs categorization base, MATs, and innovations have been categorized into five main groups; 1. Cost accounting systems group, which includes innovations such as; ABC, Activity Based Cost Management (ABCM), Attribute Costing (AC), and Quality Control Costing (QCC). 2. Planning and budgeting group, which includes innovations such as: Activity Based Budgeting (ABB), and Budgeting Systems for different purposes. 3. Management decision-making support group, which includes innovations such as; Customer Accounting (CA), and Value Based-Management (VBM). 4. Performance evaluation group, which includes innovations such as; Financial and Non-financial Measures, Economic Value Added (EVA), Divisional Profit, BSC, Benchmarking, and Operational/Manufacturing Performance Measures (O/MPM). 5. Strategic analysis group, which includes innovations such as; Long-range Forecasting, Competitor-Focused Accounting (C-FA), Product Life Cycle Costing (PLCC), Accounting for Brand Costing (BC), Strategic Cost Analysis (SC), Target Costing (TC), Kaizen Costing (KC) (Abdel-Kader & Luther, 2006; Mbawuni & Anertey, 2014; Pavlatos & Kostakis, 2015; Hussein, 2017; Nowar, 2017).

Second, in relevance to the historical evolution of management accounting categorization base, the International Federation of Accountants (IFAC) in 1998 focused on the conceptualization of the evolution of management accounting rather than the MATs which caused a lack of clarity as to which techniques or innovations were to be included within each phase of management accounting evolution (Abdel-

Kader & Luther, 2006, 2008). IFAC's conception of management accounting evolution included four stages: First, the pre-1950 stage focusing on cost determination and financial control, second, the 1965 period of information for management control and planning purposes, third, the 1985 period of resource waste reduction in business processes, and fourth, the 1995 period of value creation through effective resources (IFAC, 1998). Along with this line, the author may add one more stage to reflect the impact of digital transformation on MATs and innovations.

Third, in relevance to focus and orientation categorization base, MATs which focus mainly on enhancing earnings quality, and providing financial information only, are categorized as traditional management accounting techniques (TMATs), while those techniques focusing on strategic effectiveness, control, industry analysis, customer satisfaction, competitive status management and providing both financial and non-financial information, are categorized as contemporary/strategic MATs (CMATs/SMATs) (Abdel-Maksoud, 2011; Ngoc et al., 2011; Ahmed et al., 2012; Farouk & McLellan, 2017). The author prefers the term SMATs compared to CMATs because standard costing, and budgeting techniques for example are both TMATs, yet currently applied by most firms.

This research aims to; first, explore the current implementation level of 44 traditional and contemporary management accounting techniques. These techniques are classified into 5 groups according to the literature addressing management information needs (Abdel-Kader & Luther, 2006). Second, identifying the theories or approaches underlying MATs adoption and implementation decision in these firms. The remainder of this research proceeds as follows: Section 2 addresses the literature review and hypotheses development, followed by the research method in Section 3. Section 4 presents the data analysis and discussion. Section 5 addresses the conclusion, limitations, and future research.

2. Literature Review and Hypotheses Development

In this section literature relevant to theories underlying MATs implementation in addition to implementation drivers is reviewed and research hypotheses are consequently developed.

2.1 Theories Underpinning MATs Implementation

Accounting literature addressing the theories or approaches underlying the diffusion and implementation of MATs can be categorized into three groups each describing an aspect of the definition of MAIs. Firstly, it is noted that the literature dealing with the descriptive approach came to adopt just the idea of technique, innovation, or addition in the field of management accounting, without looking for the environmental factors surrounding the application or implementation of this innovation or addition, and without measuring the outcomes of this application (Cooper, 1988a, 1988b; Kaplan & Norton, 1992; Stern Stewart, 1993).

Secondly, it is noted that the writings dealing with the contingency approach or the contingency theory - or what can be called the extrinsic influence perspective (Hung, 1998) - came to embrace the idea of identifying the environmental variables or factors surrounding the business firm and required for the implementation of a technique, innovation or addition in the management accounting area, and the extent to which the business firm achieve positive results, those that varied in the accounting literature in terms of measurement (profitability measure, user satisfaction measure), in the light of the set of contextual variables that determine the elements of management accounting innovation application (Baird et al., 2004; Brown et al., 2004; Cadez & Guilding, 2008).

Thirdly, it is noted that the writings addressing the institutional approach or theory - or what can be called the intrinsic influence perspective (Hung, 1998) - came to embrace the idea of what outcomes or returns on the business firm resulting from the application and implementation of this technique, innovation or addition in management accounting area as a result of the transfer of the successes of peer firms in achieving positive outcomes from the application of one or more MAIs. Perceived outcomes influenced MATs implementation without considering the environmental variables or factors surrounding the application or implementation of these techniques, innovations, or additions (DiMaggio & Powell, 1983; Tolbert & Zucker, 1983), counting on the business firm's capability to adapt its internal factors in order to achieve success in the application of SMATs or MAIs.

Isomorphism in the application of MAIs from a business firm that has successfully applied this innovation to another enterprise or entity can be identified due to some reasons such as: (1) Coercive Isomorphism, which occurs as a result of political influence, official or non-official pressures exercised by an entity over another, such as that which a holding company may exercise on a subsidiary to apply a particular accounting system. (2) Normative Isomorphism, which occurs, as a result of the influence of professional organizations or associations regulating business rules, such as those imposed by international or Egyptian Accounting Standards. (3) Mimetic Isomorphism, which occurs as a result of an entity's desire to capitalize on the successes of another.

Figure (2) shows the theories that underpinned the innovations of management accounting from a survey of 475 accounting studies during the period from the early nineties of the last century to the middle of the second decade of the current century (Bromwich & Scapens, 2016), the study revealed that during the period 2005-2014, management accounting literature adopted social and critical theories, followed by the contingency theory and the economic theory.

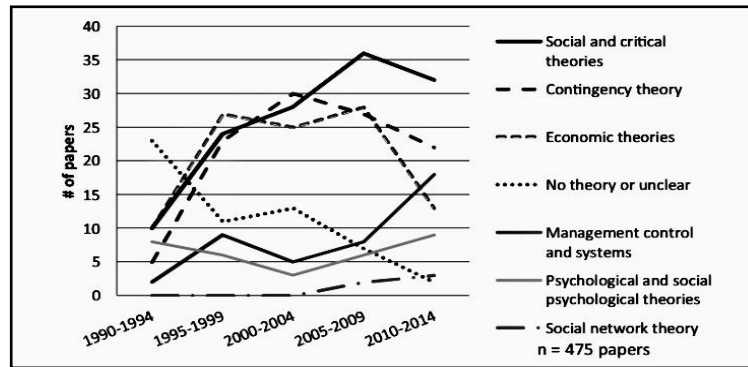


Fig. (2) Theories Dealing with MAIs
Source: Bromwich and Scapens (2016, p.4)

2.1.1 ABC Implementation as a Proxy for Contingency Theory-Based Application of MAIs

Management accounting literature, which adopted the contingency theory, preceded the literature that adopted the institutional theory, since the beginnings of accounting literature on the relationship between contingency theory and cost accounting systems date back to the 1970s. Gordon and Miller (1976) dealt with the use of contingency theory in the design of cost accounting systems and suggested the need to take into account the environmental, and organizational characteristics or factors, and administrative decision-making methods when designing cost accounting systems.

Accounting literature indicates that the ABC system, as an innovation of management accounting, has received the largest share of accounting literature (Zawawi & Hoque, 2010). Accounting literature dealing with the ABC system as an innovation of management accounting or as one of the contemporary or strategic MATs came either with the embracement of contingency theory, which represented the most commonly used theory (Kallunki & Silvola, 2008; Pavlatos, 2012; Zhang et al., 2015; Bromwich & Scapens, 2016), or the institutional theory (Tsai et al., 2011; Hofmann & Bosshard, 2017).

The outcomes from applying the ABC system have been determined from the perspective of contingency theory within the context of accounting literature from two points of view. First, measuring the outcomes from applying the ABC system from the user satisfaction view. Second, measuring the outcomes from applying an ABC system from the extent to which the business firm achieves better financial results view. In the first view, several studies have indicated that the success of the ABC system in influencing user satisfaction depends largely on a combination of behavioral, organizational, and technical factors or variables, top management support, and other contextual variables including the firm size, the type of activity the business firm is engaged in, and the strategy adopted by the firm (McGowan & Klammer, 1995; Krumwiede, 1998; Malmi, 1999; Brown et al., 2004; Chenhall, 2004). In the second view, Shields (1995) indicated a variation in the degree of

success and extent to which the ABC system achieved better financial results. Yet, Banker and Potter (1993) suggested that monopolistic and oligopolistic business firms are expected to achieve better financial results when applying the ABC system. Krumwiede (1998) study indicated that the probability of errors in cost calculations as a result of applying the ABC system depends on the size of the enterprise and the type of activity.

The factors necessary for the implementation and success of ABC have been addressed by several accounting literature. On one hand, organizational factors; organizational structure, administrative empowerment, the delegation of authority and decentralization, bureaucracy, integration between departments, and the degree of formalism, were considered among the factors affecting the implementation and success of the ABC system (Shields, 1995; Brown et al. 2004; Zhang et al. 2015). On the other hand, behavioral factors; personality, and social and moral responsibility, were among the factors influencing the success of the ABC system (Shields, 1995; McGowan & Klammer, 1997; Chenhall, 2004; Al-Omiri & Drury, 2007). Furthermore, accounting literature dealt with the support of top management as an essential prerequisite for the success of the ABC system (Krumwiede, 1998 ; Brown et al. 2004 ; Al-Omiri & Drury, 2007; Lu & Pan, 2007; De La Villarmois & Levant 2011).

Contextual variables such as the firm size, type of activity, and the strategy adopted by the business firm were studied in accounting literature in relation to the application of the ABC system, confirming the existence of a correlation between the size of the firm and the application of the ABC system (Krumwiede, 1998; Brown et al. 2004; De la Villarmois & Levant, 2011). With regard to the type of activity, it should be noted that the accounting literature dealt with the application of the ABC system within industrial businesses and service businesses did not find that the healthcare services sector was the focus of the majority of literature.

In reference to the institutional theory, Major (2012) examined the reasons explaining why one of the Portuguese telecommunications companies had switched from the traditional Volume Based Costing (VBC) to the ABC system. The study revealed that the company in question adopted the ABC system in order to achieve the expectations of users of management accounting information systems, especially after the reorganization and development of operational systems in the telecommunications sector in Portugal and the introduction of competition in the telecommunications market. The study also indicated that prior research in literature dealing with the development of management accounting systems needs to rely on institutional theory in its social aspect in order to achieve a deeper understanding.

The contributions of the ABC system in the field of management decision-making have been addressed in several accounting literature, and all the literature points to the essential role of the ABC system in providing more accurate cost information for management decision-making purposes (Swenson, 1995; Baird, 2007; La Villarmois & Levant 2011; la; Cadez & Guilding, 2008). In reference to the

relationship between the degree of ABC system usage and the business life cycle, Kallunki and Silvola (2008) revealed that the ABC system is more common in business firms within the maturity and regeneration phase than firms within the initial growth phase.

On the other side, the usage rates of the ABC system may be viewed to be disappointing as the vast majority of business firms have implemented ABC over a short period of time (Kaplan & Anderson, 2007a, 2007b; Tse & Gong, 2009; Strattonet al., 2009; Hoozée & Bruggeman, 2010; Stout & Propri, 2011). This is confirmed by a survey conducted by Innes et al. (2000) on British companies, where the results of the study disappointingly revealed that only 17.5% of the study sample is applying the ABC system and that 15% of these firms have stopped applying ABC after evaluating its outcomes. The reasons indicated by the accounting literature concerning the unsuccessful application of the ABC system varied. First, there was a need for a large amount of information to implement ABC (Balakrishnan et al., 2012). Second, reliance on personal judgment may indicate the inaccuracy of the information derived from it (Kaplan & Anderson, 2007a; Demeere et al., 2009). Third, despite the large number of activities undertaken by business firms to deliver their products, the ABC system cannot sufficiently accommodate the complexity of daily operations (Kaplan & Anderson, 2007a, 2007b; Barros & Ferreira, 2017).

2.1.2 BSC Implementation as a Proxy for Institutional Theory-Based Application of MAIs

There have been numerous accounting studies on the positive aspects of BSC and its impact on the financial and non-financial performance of business firms. Kaplan and Norton's (1992, 1996, 2001) literature was the first accounting literature to support the positive relationship between BSC and a firm's performance. Accounting literature has shown some evidence that the use of BSC creates value for the firm. These studies describe how the BSC has provided the ability to communicate the strategy to all members of the business, while at the same time providing the means by which management can obtain information and insights from employees most linked to customers, thereby maximizing the firm's revenue. Malina and Selto (2001) indicated that BSC represents an approach or system for a firm's strategy transfer and is an effective management control tool, which improves the profitability of firms, and that the inaccuracy of the indicators for each aspect of BSC would lead to incompatibility of the firm with stakeholders. In the same direction, Joseph (2008) concluded that the application of a stakeholder-based management strategy using the BSC and Strategy Map created value and benefit for stakeholders as well as for shareholders.

The BSC has emerged to overcome the shortcomings associated with the use of financial indicators for performance evaluation and management decision-making. Kaplan and Norton (1992, 1996a, b) indicated that there are six features of the BSC; (1) The BSC is comprised of financial and non-financial indicators. (2) The financial and non-financial indicators contained in the BSC are represented by a limited

number of indicators ranging from 15-25 indicators. (3) The financial and non-financial indicators of the BSC are categorized into different groups: Financial, Customers, Internal Business Processes, Innovation, and Learning (Kaplan & Norton, 1992), but the last group has been modified to Learning and Growth (Kaplan & Norton, 1996). (4) The objectives of firms are defined in terms of the strategy, with a set of indicators to be determined to verify the extent to which these objectives are implemented, and these indicators are usually documented in tabular form, with each objective assigned one or two indicators. (5) Indicators are selected in such a way as to ensure the firm's top management support, reflecting their assessment of strategic information, and the importance of supporting strategic communications that may flow from a BSC if implemented. (6) The causal relationship between the groups of the scorecard may be explained by the idea that within each of these groups (except the financial perspective that is represented only by a set of lagging indicators), there is a set of influential leading indicators and another set of affected lagging indicators.

The stages of the development of the BSC came in the form of generations, and since its inception in the early nineties, accounting literature mainly dealt with four generations of BSC. The first generation of the BSC appeared in the early 1990s until 1996, where the BSC was used as a tool for measuring and evaluating performance (Kaplan & Norton, 1992, 1993). The second generation of the BSC was introduced by the end of 1996 till 2000, where BSC was used as a strategic management tool (Kaplan & Norton, 1996a, b). The third generation of the BSC was introduced from the end of 2001 till 2015, where the BSC was used as a strategic control tool by examining the relationship between activities and target outcomes (Destination Statement) (Lawrie & Cobbold, 2004). The fourth generation of the BSC emerged in 2015, where the BSC has been used as a decision-making tool from an experimental perspective (Decision-Making Trial and Evaluation Laboratory) (Valmohammadi & Sofiyabadi, 2015).

Although various theories were used in BSC literature, during the first generation of BSC development stages, few authors used theories in BSC research. Since 1997, authors relied on different theories in BSC research (Hoque, 2012). Psychology, organization behavior, and contingency theories were used to address the adoption, implementation, and use of BSC (Lipe & Salterio, 2000; Hoque & James, 2000; Banker, Chang & Pizzini, 2004; Tayler, 2010; Humphreys & Trotman, 2011). During later generations of BSC development stages, institutional, agency, stakeholders, and actor-network theories were remarkably used in BSC literature (Carmona & Granlund, 2003; Decoene & Bruggeman, 2006; Daniel, Myers, & Dixon, 2011; Qu & Cooper, 2011).

In Table (1), Hoque (2012) refers to BSC articles published in accounting journals by theory for the period (1992-2011). As indicated in the BSC theory-based literature frequency table, theories were not commonly used by studies addressing the early stage of adoption, implementation, and usage of BSC. Theory-based BSC literature began to surface by the start of 1997. Additionally, it is worth noting that

both contingency theory and institutional theory were used to address BSC adoption and implementation.

Table 1: Theory-based BSC Literature for the Period (1992-2011)
Source: Hoque (2012, p.7)

| Years | 1992-1996 | 1997-2001 | 2002-2006 | 2007-2011 | Total |
|--|-----------|-----------|-----------|-----------|-------|
| Psychology | 0 | 1 | 2 | 2 | 5 |
| Organizational Behavior Theory | 0 | 1 | 3 | 1 | 5 |
| Contingency | 0 | 2 | 2 | 3 | 7 |
| Sociological/Institutional Theory | 0 | 0 | 0 | 7 | 7 |
| Critical (General) | 0 | 0 | 1 | 0 | 1 |
| Agency | 0 | 0 | 0 | 3 | 3 |
| Stakeholder Theory | 0 | 0 | 0 | 3 | 3 |
| Actor-Network Theory | 0 | 0 | 0 | 2 | 2 |
| Cultural (National and Organizational) | 0 | 0 | 0 | 1 | 1 |
| Economics | 0 | 1 | 5 | 5 | 11 |
| Fad and Fashion | 0 | 0 | 0 | 1 | 1 |
| Multiple Theories | 0 | 0 | 4 | 3 | 7 |
| Historical | 0 | 0 | 0 | 1 | 1 |
| Constructivist Approach | 0 | 0 | 1 | 0 | 1 |
| Grounded Theory | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 1 | 4 | 11 | 16 |
| Nil/Not Stated | 0 | 11 | 13 | 9 | 33 |
| Total | 0 | 16 | 36 | 52 | 104 |

Figure (3) refers to the report prepared by 2GC Active Management (2017) on the prevalence of the BSC approach during 2016. The report shows the multiple trends of BSC approach deployment starting from the geographical spread of the BSC approach, passing through BSC usage fields, and finally the relative distribution of BSC usage according to the size of the business firm measured on the basis of the number of employees.

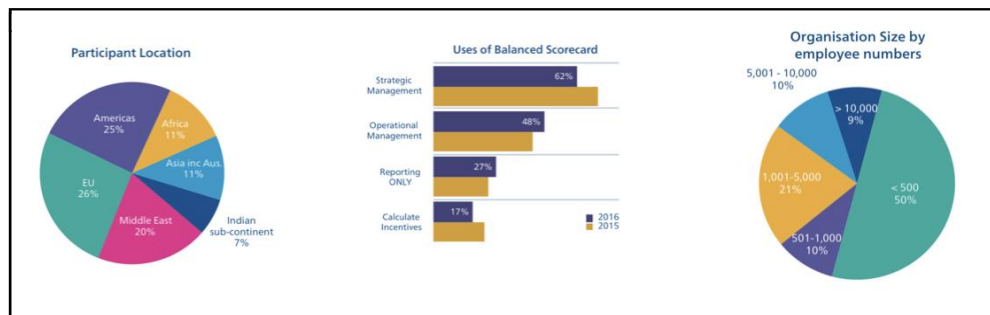


Fig. (3) The Extent of BSC Deployment during 2016
Source: 2GC Active Management BSC Usage Survey Report (2017)

In terms of views opposed to BSC, Epstein and Manzoni (1998) argued that reaching an agreement on a clearly defined strategy for the entire firm and all its members is difficult. In line with this argument, it can be said that it is difficult to measure and control an arguable strategy; and it is one of the main reasons that led to the failure of the BSC in the process of its practical implementation. Further, Vaivio (1999) points to doubts that the firm management can translate its strategy into a limited number of quantitative measures without ignoring aspects of the strategy. Added to this are the visions of Nørreklit (2000) and Nørreklit et al. (2012)- the most

criticizing authors of the BSC in the uncertainty of the causal relationship between the four aspects of BSC: financial, customer satisfaction, internal aspects, learning (innovation) and growth and the corresponding value chain for each one of these four aspects. Nørreklit (2000) argued that although relationships seem to be “logical”, the cause-effect relationship should, at least, be questioned. Llach (2017) argued that the current focus is on complicating the business in such four aspects and coordinating these aspects with the firm’s strategy to align individual goals within the firm with the firm’s overall objectives, which is considered a complicated issue.

2.2 Factors Influencing MATs Implementation

Business firms are continuously striving to keep pace with recent and upcoming local and global competition and the speedy massive advancements in technology. Adoption of SMATs came as a part of business firms’ response to the inadequacy of TMATs to meet changing management information needs since they lack the ability to make predictions, analyze and manipulate data, and report for non-financial information (Ittner & Larcker, 1997; Chenhall & Langfield-Smith, 1998; Cooper & Kaplan, 1999). MATs implementation decision is derived from a group of factors classified in the literature as either external to or internal within business firms. External drivers may encompass political pressures, global competition economic crisis, globalization, mergers/joint ventures, and sometimes influences of management gurus and consultants on business, while internal drivers may encompass increasing profits, decreasing costs, improving customer satisfaction, product development, improving quality, supporting planning, and monitoring functions within the firm (Preda & Watts, 2004; Sturdy, 2004; Mbawuni & Anertey, 2014).

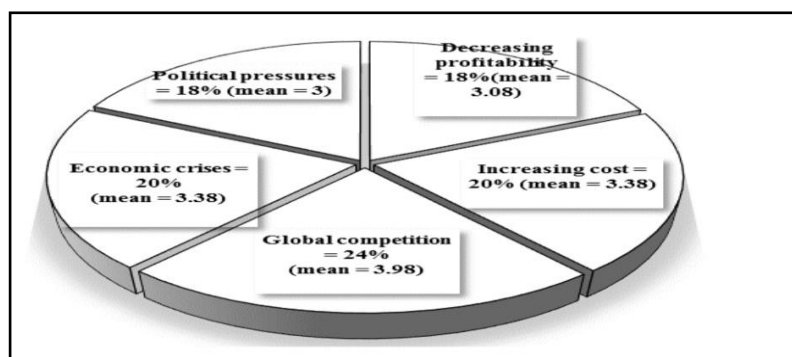


Fig. (4) Reasons for Adopting MATs
Source: Mbawuni and Anertey (2014, p.71)

Figure (4) shows the significance of a group of factors surrounding and within the business firm context as potential reasons for the implementation of MATs through a survey conducted by Mbawuni and Anertey (2014) covering 100 accounting/finance staff members in a telecommunication company in Ghana. Their study showed that global competition was the primary reason for adopting MATs, followed by the economic crisis and increasing costs factors, yet increasing

profitability had very low significance, and finally political pressures with the least significance suggested that it should not be considered as a reason for MATs implementation.

Preda and Watts (2004) classified MATs' implementation driving forces into three elements: importance, organizational and strategic use, and organizational and strategic benefits. A set of factors/drivers is assigned to each element to measure its significance. The important element, for example, can be represented by such factors; profitability, cost-effectiveness, and customer satisfaction. The organizational and strategic use is represented by another set of factors such as: decision support for top management and operating levels' management, evaluation of customer, and product profitability, which in turn support improving quality and identifying business strategic needs. The organizational and strategic benefit is represented by: understanding how the business works, facilitating the implementation of change, providing support for the organizations, planning and monitoring functions, and facilitating control functions within the organization.

The set of factors acting as drivers for the implementation of MATs indicated by Preda and Watts (2004) are analyzed in the current research as drivers for MATs implementation decisions by business firms, in addition, they are further classified into financial and non-financial motivational factors. For the current research purpose, the extent of considering such factors as driving force (motivation) to implement MATs will be measured to determine whether Institutional theory underpins MATs implementation within the sampled firms, or if it represents a weak justification for such implementation. Thus, with respect to the motives influencing MATs implementation, the following hypotheses can be formulated:

H1 There is no significant relationship between financial motives to implement MATs and their implementation level within Egyptian enterprises.

H2 There is no significant relationship between non-financial motives to implement MATs and their implementation level within Egyptian enterprises.

MATs implementation factors are not confined to drivers catalyzing the implementation of MAIs, they encompass some contextual variables and supply-side factors acting as barriers to the implementation process of MATs within business firms. Although supply-side factors could explain the diffusion and implementation level of MATs that the driving forces failed to justify, few studies tended to explore the effect of MATs implementation hindering factors (Nassau et al., 2011). Ahmed and Leftesi (2014) and Abulghasim (2006) explored the management accounting practices in Libyan manufacturing business firms and agreed that barriers to the diffusion of advanced management accounting systems were mostly related to institutional factors among which are: lack of training concerning advanced techniques, lack of management accounting bodies, and absence of management accounting education. Then, lower degrees of MAIs implementation barriers were factors related to characteristics of respondent firms or that personnel in charge of

executing MAIs adoption decisions, among which are: lack of skilled employees, lack of financial resources, and business firm ownership type. The least influential barriers to MAIs implementation included: non-observance of clear benefits or added value from MATs, no problems encountered with currently applied MATs, and the high costs related to new advancements in management accounting. For the current research purposes, the significance of such supply-side factors as barriers hindering the implementation of MATs will be measured to determine whether attributes of adopting firms and MATs could explain the level of their implementation within the sampled enterprises or whether such factors represent a weak justification for analyzed implementation level. Thus, with respect to the contextual variables and supply-side barriers influencing MATs implementation, the following hypotheses can be extracted:

H3 There is no significant relationship between business firm type of activity and MATs implementation level within Egyptian enterprises.

H4 There is no significant relationship between business firm age and MATs implementation level within Egyptian enterprises.

H5 There is no significant relationship between business firm size and MATs implementation level within Egyptian enterprises.

H6 There is no significant relationship between business firm strategy and MATs implementation level within Egyptian enterprises.

H7 There is no significant relationship between contextual and supply-side factors (Barriers) and MATs implementation level within Egyptian enterprises.

Prior studies rarely explored the accounting theory underpinning MATs' implementation within divergent contexts, and the focus was rather directed towards measuring the extent of diffusion of such techniques and its classification followed different orientations. The current study tends to explore the relationship between accounting theories and the implementation level of 44 MATs in a number of Egyptian enterprises operating across different industries being randomly selected for analysis. Figure (5) summarizes the proposed conceptual research model illustrating the relationship among the three main variables deduced from prior studies and considered for analysis and measurement under the current study.

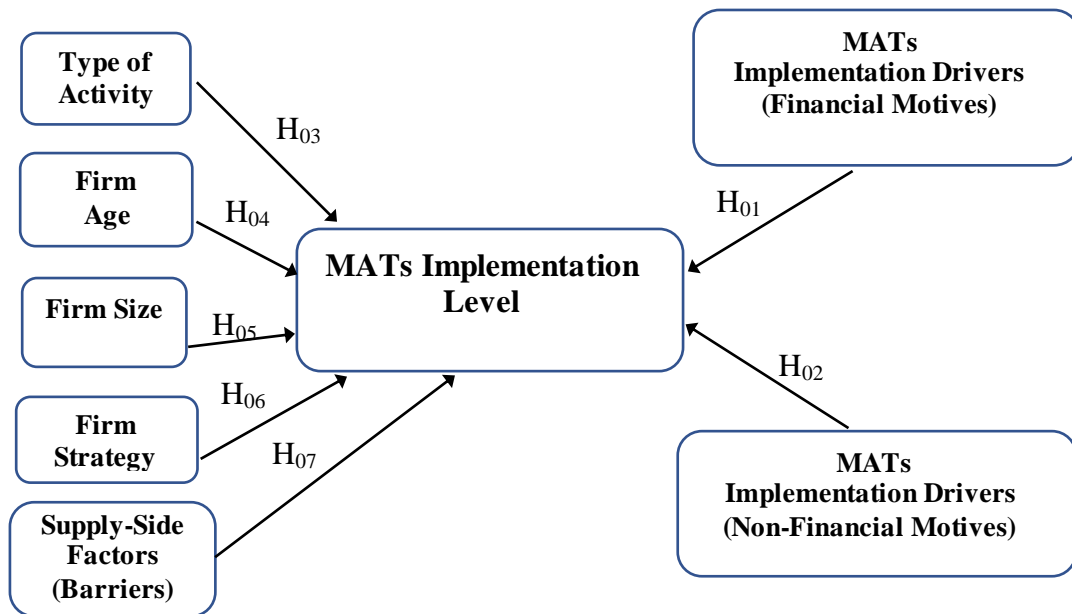


Figure (5): Research Conceptual Model: Relations among Variables

The research model can be formulated in the form of a regression equation to test the research hypotheses. Equation (1) will be considered for analysis and measurement through the research method.

$$Y = \alpha + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \beta_5x_5 + \beta_6x_6 + \beta_7x_7 + \epsilon \quad (1)$$

Where (Y) represents MATs implementation level, α represents regression constant, (β_1) represents regression coefficient resulting from change in contingent variable (x1) financial motives, (β_2) represents regression coefficient resulting from change in contingent variable (x2) non-financial motives, (β_3) regression coefficient resulting from change in contingent variable (x3) type of activity, (β_4) regression coefficient resulting from change in contingent variable (x4) firm age, (β_5) regression coefficient resulting from change in contingent variable (x5) firm size, (β_6) regression coefficient resulting from change in contingent variable (x6) firm strategy, (β_7) regression coefficient resulting from change in contingent variable (x7) supply-side barriers, and (ϵ) is random error in regression equation.

3. Method

The empirical study is based on a survey through collecting data from a set of questions relevant to each variable included in the research model. After conducting ten pilot interviews with a group of practitioners and academics specialized in the area of management accounting, some adjustments were conducted as recommended through the pilot study and a questionnaire was distributed to intended business firms.

Collected data are linked with each other by the research model by creating relationships among variables and statistical analysis methods that fit the nature of variables relationships are used to test such relationships. Within the framework of

this research, it should be noted that the empirical study does not end at the limit of identifying the relationship among the variables of the research hypotheses but is also concerned with discussing the results of the statistical analysis as an essential step for deciding and recommending which relationship should exist between the variables covered by the research model. This part of the research deals with sample selection and data collection, measuring the research variables, determining the appropriate statistical techniques to test both the goodness of fit and the research model hypotheses, analyzing the data statistically, and finally discussing the results of the statistical analysis.

3.1 Sample Selection and Data Collection

To determine the appropriate sample size in the presence of a basic variable (MAIs implementation level) in addition to a set of motives and contextual variables included within the research model (firm size, age of the business establishment, the nature of the facility's activity, the strategy that the facility follows, and supply-side factors), Roscoe's (1975) rule of thumb indicates that the minimum size for the sample is 50. In order to achieve this minimum that must be relied upon for data collection, a survey form was distributed to 200 business firms, and within these 200 survey forms distributed representing the sample under study, 105 forms were received (with a response rate of 52.5%), and among these 105 forms of the survey received, 6 questionnaires were excluded due to their invalidity as a result of not answering more than 10% of the questions in the list (Anh et al., 2018), and 99 survey forms (with a percentage of 49.5% usable rate) were relied upon for use as the inputs of the SPSS.

The participating firms were selected randomly. The criteria to participate in this study are that (a) the firms should be for-profit operating firms, (b) the respondents must be among top management of the businesses firms operating in the Egyptian market, (c) the respondents must be participants in the decision-making process and must have good knowledge of the business operations, (D) the business firms selected should be located along different Egyptian governorates.

Sampled firms included business firms operating in different industry sectors across different regions within Egypt including Great Cairo, Alexandria, Delta, Canal, and Upper Egypt. Industry sectors included financials, consumer goods & services, technology, telecommunications, industrials, oil & gas, utilities, and healthcare activities. The sample was selected as a subset of the total population of all the business firms within a specific geographical area. 200 participants were chosen because they are representative enough for the research work given the secrecy attached to the exchange of business information in Egypt.

Primary data for the study were obtained through the use of a self-guided questionnaire to produce data on relevant variables. The primary data are generated through a self-administered questionnaire. The instrument was administered initially to a group of academics and professionals in the field as a pilot study and the final

adjusted questionnaire was translated into Arabic language (to avoid misinterpretation of statements), and distributed to participating firms to determine the level of MATs implementation therein. For the purpose of testing the research hypotheses, information gathered from the survey includes the implementation level of a set of TMATs and SMATs, firm divergent contextual factors, a set of supply-side barriers, and a set of MATs implementation drivers. Data were collated from business firms' chairmen, department heads, and accountants. The collected data were analyzed statistically to establish the findings.

The questionnaire encompassed three sections. The first section included 3 statements related to business firm demographics (type of activity, age, and size). The second section included 11 statements related to firm strategy and 18 questions related to supply-side factors that represent barriers affecting MATs implementation. The third section included 21 questions related to drivers (motives) influencing MATs implementation level and a list of 44 questions related to the implementation level of 44 TMATs and SMATs (A classified list of 44 MATs under study is shown in Appendix 1). The list of MATs used in the questionnaire was developed based on prior research such as Abdel-Kader and Luther (2006), Mbawuni and Anertey (2014), and Pavlatos and Kostakis (2015).

The research hypotheses were tested through using the survey questionnaire employing a 5-point Likert scale response options, structured, and customized in line with the research hypotheses, for the purpose of reflecting the direction of respondents' perceptions toward the given questionnaire statements. Multivariate analysis is used to test the seven research hypotheses through; Analysis of Variance (ANOVA), Pearson Correlation, and multiple regression analysis, which were used for data analysis to measure the relationship between the implementation level of MATs and a set of contextual factors/motives/barriers related to the sampled business firms.

3.2 Variables Measurement

3.2.1 MATs Implementation Level

Previous studies used the management accounting system as an independent variable that can be measured by the existence and implementation of different groups of MATs, whether traditional or strategic, including, but not limited to Standard Costing; Johnson and Kaplan (1987), Williamson (1996), Lucas (1997), Zimmerman (1997), Fleischman and Tyson (1998), Guilding et al. (1998), McWatters et al. (2001), Sulaiman et al. (2005), Küçüksavaş (2006), Marie and Rao (2010), Badem (2013), Activity Based Costing; Innes (2000), Chen et al. (2001), Ittner et al. (2002), Baird et al. (2004), Cohen et al. (2005), Moalla (2007), Rahmouni (2008), Pavlatos and Pagglos (2009), Ngongang (2010), Budgeting; Chenhall and Brownell (1988), Chow et al. (1988), Shields and Young (1993), Lindquist (1995), Libby (1999), Libby (2001), Wentzel (2002), Stevens (2002), Lau and Tan (2006), Davis et al. (2006), Church et al. (2012), Kenno et al. (2018), Cost-Volume-Profit

Analysis; Anthony and Govindarajan (1995), Zimmerman (1996), Kaplan and Atkinson (1998), Weetman (1999), Mcwatters et al. (2001), Blocher et al. (2002), Hongren et al. (2003), Hilton et al. (2003), Hilton et al. (2006). Maher et al. (2006), Stefan et al. (2008), Atkinson et al. (2012).

In the current research, the management accounting system is treated as a dependent variable that can be measured by the implementation level of a group of TMATs and SMATs. Across 5-Point Likert Scale, forty-four MATs implementation level is assessed in sampled business firms (Appendix 1), respondents are required to scale MATs application across 5 levels of application; (1) never was used and won't be used in the future, (2) was used in the past but currently not used, (3) wasn't used in the past but will be used in the future, (4) somehow used, and (5) completely used.

3.2.2 MATs Implementation Drivers (Motives)

Prior studies measured the impact of several motives and drivers on the decision to implement or extent of implementing MATs in business firms without analyzing the link between these drivers and the perceived outcomes approach of the institutional theory. These drivers include the objective to attain profits (Preda & Watts, 2004; Mbawuni & Anertey, 2014) and the need to evaluate customers and product profitability, provide decision support for top management and at operational levels, and improve quality and other driving factors relevant either to the importance of MATs to business firms success or the strategic use of such techniques within the processes of business firms (Preda & Watts, 2004). Besides profitability and strategic use, drivers for adopting MATs encompassed firms' responses to political perspectives in order to secure power (Sturdy, 2004). Using the Likert scale, a set of 21 MATs implementation motives are employed in the research to examine the impact of adopting the institutional theory on MATs implementation level in Egyptian business firms (Appendix 2). Respondents are required to scale the extent to which the factors included in this section represent a motive for applying MATs, across 5 levels; (1) very weak motive, (2) weak motive, (3) average motive, (4) strong motive, and (5) very strong motive.

3.2.3 Contextual Variables and Supply-Side Barriers

Multiple contextual variables are used in prior studies in conjunction with MATs implementation. Table (2) shows the contextual variables, contextual variables measurements, and references that addressed the contingent variables and their measures.

Table 2: Contextual Variables Used in Management Accounting Literature

| Variable | Measurement | Reference |
|------------------|----------------------------------|---|
| Type of Activity | Industry Sector | Abdel-Maksoud et al. (2012) Nowar (2017) |
| Firm Age | Firm Maturity | Davila (2005) Shil et al. (2017) |
| Firm Size | Number of Employees | Axe and Greve (2017) Abdel-Maksoud et al. (2012) Cinquini and Tenucci (2008) Abdel-kader and Luther (2008) |
| | Asset Value | Nowar (2017) |
| Firm Strategy | Cost Leadership /Differentiation | Govindarajan and Fisher (1990) Abdel-kader and Luther (2008) Nowar (2017) |

Following management accounting literature, the research assessed the impact of firm size (asset value), firm strategy (cost leadership/differentiation), firm age (number of years since firm establishment), type of activity (industry sectors), and a set of 18 supply-side barriers on MATs implementation level (Abulghasim, 2006; Nassau et al., 2011; Ahmed & Leftesi, 2014). Supply-side barriers (listed in Appendix 2) are also measured across a 5-Point Likert scale, where respondents are required to scale the extent to which the factors included in this section represent a barrier hindering MATs implementation, across 5 levels; (1) very weak barrier, (2) weak barrier, (3) average barrier, (4) strong barrier, and (5) very strong barrier.

4. Data Analysis and Discussion

The collected data were recorded first on SPSS 20 for Windows. To conduct data analysis, the author used a one-way analysis of variance (ANOVA), Pearson Correlation to determine the potential associations between the variables, and a multiple regression statistical model. The author regressed the independent variables (contextual factors, barriers, and motives) against the dependent variable (MATs implementation level).

4.1 Descriptive Statistics

The sample consists of 99 business firms. Demographic distribution of the sample reveals the following: (1) For the Type of Activity variable: Service firms (34.3%), Commercial firms (29.3%), Industrial firms (15.2%), and other sectors (21.2%), (2) For Firm Age variable: firms with more than 20 years (53.5%), firms with 15-20 years (22.2%), firms with 10-15 years (9.1%), firms with 5-10 years (7.1%), and firms less than 5 years (8.1%), (3) For Firm Size variable: firms with more than 400M (27.3%), firms with 300-400M (13.1%), firms with 200-300M (36.4%), firms with 100-200M (8.1%), and firms with less than 100M (15.2%).

Descriptive statistics related to the dependent variable, such as Management Accounting Implementation, is presented in Table (3), where the forty-four MATs analyzed, are classified into 5 groups namely; Costing, Performance Evaluation, Decision Support, Budgeting, and Strategic Analysis. For the techniques within each group, the adoption rate within the sampled firms is given based on frequency descriptive analysis for each technique. The adoption rate reveals that TMATs adoption in Egypt is much higher than SMATs. This result goes along with the results of several research studies analyzing the adoption of MATs in emerging economies (e.g., Bromwich & Bhimani, 1989; Guilding et al., 2000; Abdel-Kader & Luther, 2008).

Table 3: Descriptive Statistics for Dependent Variable

| Costing | Adoption Rate % |
|--|------------------------|
| Batch/Job Order Costing | 95 |
| Process Costing | 92 |
| Absorption Costing | 84 |
| Activity Based Costing ABC | 87 |
| Activity Based Management ABM | 96 |
| Activity Based Planning ABP | 77 |
| Performance Evaluation | |
| Standard Costing & Variance Analysis | 90 |
| Performance Evaluation: ROI | 93 |
| Performance Evaluation: EVA | 93 |
| Controllable Profit | 89 |
| Divisional Profit | 85 |
| Residual Income | 83 |
| Customer Satisfaction Surveys | 91 |
| Non-Financial Measures | 85 |
| Performance Evaluation: BSC | 71 |
| Decision Support | |
| Variable Costing | 88 |
| CVP Analysis | 86 |
| Product Profitability Analysis | 84 |
| Benchmarking of Operational Process | 90 |
| Benchmarking of Product/Service Characteristics | 80 |
| Total Quality Management | 84 |
| Just-In-Time | 76 |
| Budgeting | |
| Activity Based Budgeting ABB | 85 |
| Budgeting for Long Range Planning | 95 |
| Budgeting for Coordinating Performance of Business Uni | 38 |
| Budgeting for Daily Operations | 59 |
| Capital Budgeting Tools | 58 |
| Flexible Budgeting | 65 |
| Budgeting for Controlling Costs | 80 |
| Budgeting for Evaluating Manager's Performance | 82 |
| Strategic Analysis | |
| Long-Range Forecasting | 98 |
| Strategic Plans Developed with Budgets | 88 |
| Industry Analysis | 87 |
| Analysis of Competitive Position | 86 |

| | |
|-------------------------------------|----|
| Shareholder Value Analysis | 77 |
| Target Costing | 67 |
| Life Cycle Costing | 74 |
| Value Chain Analysis | 69 |
| Value Engineering | 65 |
| Customer Profitability Analysis | 78 |
| Product/Service Life Cycle Analysis | 82 |
| Strategic Cost Management | 77 |
| Strategic Pricing | 74 |
| Competitor Cost Assessment | 76 |

To test for the normality of the data set (i.e., the degree to which the distribution of the sample data corresponds to a normal distribution), the Kolmogorov-Smirnov test is used. Since the significance level of Kolmogorov-Smirnov is greater than 0.05 (0.065) for all the research constructs, it can be concluded that all data are normally distributed. Moreover, the error is normally distributed since the significance level of Kolmogorov-Smirnov is greater than 0.05 (0.2). Thus, normally distributed data can be analyzed using parametric tests of hypotheses.

4.2 Reliability Tests

Prior to statistically analyzing which of the identified independent variables have an impact on MATs implementation level in sampled Egyptian business firms, the reliability of sampled firms' responses to the items included in the questionnaire should be tested. Cronbach's alpha is the widely used measure of reliability coefficient. As indicated by Hair et al. (2007), Cronbach's Alpha measure of reliability that ranges from 0 to 1, with values of 0.6 to 0.7 is deemed the lower limit of acceptability. Thus, it is used in the research to measure the validity of sampled firms' responses regarding the measures suggested for independent variables: firm type of activity, firm age, firm size, firm strategy, MATs implementation motives, and hindering barriers. According to data analysis, the reliability coefficient and intrinsic validity for research dimensions are (0.925) and (0.926) respectively. This refers to high internal consistency based on the average inter-item correlation. According to Table (4) related to the model summary, an adjusted R² of 0.215 indicates that about 22% of the variation in MATs implementation level in sampled Egyptian business firms can be explained by independent variables of the model. Therefore, the outcome variable is moderately well explained by the independent variables.

Table 4: Explanation Level of the Model

| R | R Square | Adjusted R Square | St. Error of the Estimate | Durbin-Watson |
|-------|----------|-------------------|---------------------------|---------------|
| 0.528 | 0.279 | 0.215 | 0.36091 | 1.716 |

-Predictors: (Constant), Supply-Side Barriers, Firm Size, Motivation - Financial Drivers, Type of Activity, Cost Leadership Strategy, Firm Age, Differentiation Strategy, Motivation – Non-Financial Drivers

-Dependent Variable: Management Accounting

Table 5: Pearson Correlation Matrix

| Variables | | Type of Activity | Firm Age | Firm Size | Cost Leadership Strategy | Differentiation Strategy | Motivation Non-Financial Drivers | Motivation Financial Drivers | Supply-Side Barriers | Management Accounting |
|------------------------------------|---------------------|------------------|----------|-----------|--------------------------|--------------------------|----------------------------------|------------------------------|----------------------|-----------------------|
| Type of Activity | Pearson Correlation | 1 | | | | | | | | |
| | Sig. (2-tailed) | | | | | | | | | |
| | N | 99 | | | | | | | | |
| Firm Age | Pearson Correlation | .318** | 1 | | | | | | | |
| | Sig. (2-tailed) | .001 | | | | | | | | |
| | N | 99 | 99 | | | | | | | |
| Firm Size | Pearson Correlation | .338** | .476** | 1 | | | | | | |
| | Sig. (2-tailed) | .001 | .000 | | | | | | | |
| | N | 99 | 99 | 99 | | | | | | |
| Cost Leadership Strategy | Pearson Correlation | -.093 | .309** | .177 | 1 | | | | | |
| | Sig. (2-tailed) | .361 | .002 | .080 | | | | | | |
| | N | 99 | 99 | 99 | 99 | | | | | |
| Differentiation Strategy | Pearson Correlation | -.166 | .244* | .087 | .595** | 1 | | | | |
| | Sig. (2-tailed) | .101 | .015 | .389 | .000 | | | | | |
| | N | 99 | 99 | 99 | 99 | 99 | | | | |
| Motivation – Non-Financial Drivers | Pearson Correlation | .000 | .078 | -.023 | .517** | .538** | 1 | | | |
| | Sig. (2-tailed) | 1.000 | .445 | .825 | .000 | .000 | | | | |
| | N | 99 | 99 | 99 | 99 | 99 | 99 | | | |
| Motivation – Financial Drivers | Pearson Correlation | -.052 | .025 | -.013 | .416** | .419** | .832** | 1 | | |
| | Sig. (2-tailed) | .608 | .809 | .900 | .000 | .000 | .000 | | | |
| | N | 99 | 99 | 99 | 99 | 99 | 99 | 99 | | |
| Supply-Side Barriers | Pearson Correlation | -.150 | .075 | -.045 | .226* | .270** | .146 | .089 | 1 | |
| | Sig. (2-tailed) | .139 | .464 | .657 | .025 | .007 | .150 | .383 | | |
| | N | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | |
| Management Accounting | Pearson Correlation | -.124 | .074 | .062 | .283** | .397** | .462** | .401** | .221* | 1 |
| | Sig. (2-tailed) | .221 | .468 | .541 | .004 | .000 | .000 | .000 | .028 | |
| | N | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 |

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

4.3 Pearson Correlation

Rational correlation among variables is tested in Table (5) to determine if there is a significant relationship among variables. Pearson Correlation matrix is used to detect the expected multicollinearity among any of the independent variables. Anh et al. (2018) stated that multicollinearity exists if the Pearson Correlation coefficient is greater than 70% between any two independent variables. According to the correlation matrix given in Table (5), it is revealed that there are significant positive linear relationships only among; type of activity, firm age, and firm size, with correlation coefficients of less than 70%. The table indicates that cost leadership strategy, differentiation strategy, and implementation motives (financial and non-financial) are significantly correlated with the dependent variable (MATs implementation level) at the 1% significance level, while supply-side barriers are significantly correlated with MATs implementation level at the 5% level.

4.4 Analysis of Variance ANOVA (Appropriateness of the Model)

Results of the analysis of variance (ANOVA) in Table (6) with probability value = 0.000 (Sig. \leq 0.01) show that at a 99% confidence level, the model proposed based on the literature review is completely consistent with the actual data. That is, the independent variables are linearly correlated with the dependent variable.

Table 6: Analysis of Variance- ANOVA

| | Sum of Squares | df | Mean Square | F | Sig. |
|------------|----------------|----|-------------|-------|------|
| Regression | 4.536 | 8 | .567 | 4.353 | .000 |
| Residual | 11.723 | 90 | .130 | | |
| Total | 16.259 | 98 | | | |

-Dependent Variable: Management Accounting

-Predictors: (Constant), Supply-Side Barriers, Firm Size, Motivation - Financial Drivers, Type of Activity, Cost Leadership Strategy, Firm Age, Differentiation Strategy, Motivation – Non-Financial Drivers

The results of the multicollinearity test through Variance Inflation Factor (VIF) in Table (7) show that the VIF coefficients of all the factors in the model are smaller than 5, and tolerance greater than 0.2, proving that the independent variables are not closely related. Therefore, there is no multicollinearity observed across variables. This result confirms Pearson Correlation.

Table 7: Multicollinearity

| | Unstandardized Coefficients | | Standardized Coefficients Beta | t | Sig. | Collinearity Statistics | |
|-----------------------------------|-----------------------------|------------|-----------------------------------|--------|------|-------------------------|-------|
| | B | Std. Error | | | | Tolerance | VIF |
| (Constant) | 1.688 | .403 | | 4.190 | .000 | | |
| Type of Activity | -.034 | .029 | -.123 | -1.177 | .242 | .739 | 1.353 |
| Firm Age | .001 | .035 | .004 | .038 | .970 | .650 | 1.538 |
| Firm Size | .035 | .032 | .116 | 1.090 | .278 | .709 | 1.410 |
| Cost Leadership Strategy | -.050 | .073 | -.084 | -.687 | .494 | .536 | 1.867 |
| Differentiation Strategy | .105 | .076 | .170 | 1.369 | .174 | .522 | 1.917 |
| Motivation - Financial Drivers | .040 | .111 | .058 | .357 | .722 | .301 | 3.323 |
| Motivation – Non-Financial Driver | .235 | .122 | .350 | 1.922 | .058 | .242 | 4.134 |
| Supply-Side Barriers | .130 | .098 | .125 | 1.325 | .189 | .901 | 1.110 |

-Dependent Variable: Management Accounting

4.5 Regression Analysis

Regression analysis is carried out to explore the most significant factor that impacts MATs implementation level as shown in Table (8). According to regression coefficients' significance levels, the variables: type of activity, firm age, firm size, cost leadership strategy, differentiation strategy, financial motives, and supply-side barriers had Sig. > 0.05, showing no significant relationship with MATs implementation as a dependent variable. The variable non-financial motives regression coefficient has Sig. < 0.05. Therefore, the correlation is statistically significant with the dependent variable, MATs implementation level, at the confidence level of 95% or more.

Table 8: Regression Analysis

| | Unstandardized Coefficients | | Standardized Coefficients Beta | t | Sig. | 95.0% Confidence Interval for B | |
|----------------------------------|-----------------------------|------------|-----------------------------------|--------|------|---------------------------------|-------------|
| | B | Std. Error | | | | Lower Bound | Upper Bound |
| (Constant) | 1.688 | .403 | | 4.190 | .00 | .887 | 2.488 |
| Type of Activity | -.034 | .029 | -.123 | -1.177 | .24 | -.093 | .024 |
| Firm Age | .001 | .035 | .004 | .038 | .97 | -.069 | .071 |
| Firm Size | .035 | .032 | .116 | 1.090 | .28 | -.029 | .098 |
| Cost Leadership Strategy | -.050 | .073 | -.084 | -.687 | .49 | -.194 | .094 |
| Differentiation Strategy | .105 | .076 | .170 | 1.369 | .17 | -.047 | .257 |
| Motivation - Financial Drivers | .040 | .111 | .058 | .357 | .72 | -.181 | .260 |
| Motivation – Non-Financial Drive | .235 | .122 | .350 | 1.922 | .05 | -.008 | .477 |
| Supply-Side Barriers | .130 | .098 | .125 | 1.325 | .189 | -.065 | .325 |

-Dependent Variable: Management Accounting

According to regression analysis, it can be concluded, as per the coefficient of determination, that the independent variable 'financial motives' explains 22% of the variation of the dependent variable, while the remaining percent is due to either random error in the regression model or other independent variables excluded from the regression model. In addition, all the variables in the model (except non-financial motives) have regression coefficients significance > 0.05, which is consistent with

the hypothesized direction of the relationship. Based on data analysis, Table (9) summarizes the results of testing the research hypotheses.

Table 9: Hypotheses Testing Results

| Hypotheses | NULL Option | Alternate Option |
|--|-------------|------------------|
| H1 There is no significant relationship between financial motives to MATs implementation and their implementation level within Egyptian enterprises. | Accepted | Rejected |
| H2 There is no significant relationship between non-financial Motives to MATs implementation and their implementation level within Egyptian enterprises. | Rejected | Accepted |
| H3 There is no significant relationship between business firm type of activity and MATs implementation level within Egyptian enterprises. | Accepted | Rejected |
| H4 There is no significant relationship between business firm age and MATs implementation level within Egyptian enterprises. | Accepted | Rejected |
| H5 There is no significant relationship between business firm size and MATs implementation level within Egyptian enterprises. | Accepted | Rejected |
| H6 There is no significant relationship between business firm strategy and MATs implementation level within Egyptian enterprises. | Accepted | Rejected |
| H7 There is no significant relationship between contextual and supply-side factors (barriers) and MATs implementation level within Egyptian enterprises. | Accepted | Rejected |

Regression analysis is carried out to explore the most significant factor that impacts MATs implementation level. Results of the analysis revealed that there is no significant relationship between firm attributes such as strategy, age, size, and type of activity and MAPs adoption level in Egyptian firms. No significant relationship is revealed between managers' perception of MATs implementation financial motives and the implementation level of such MAIs. A significant relationship is revealed between managers' perception of MATs implementation non-financial motives and MAIs implementation. The results agree with prior studies that emphasized that MATs implementation decision is derived from a group of external and internal factors (e.g., Preda & Watts, 2004; Sturdy, 2004; Mbawuni & Anertey, 2014) and disagree with studies that referred MATs implementation to contingent factors such as firm size, age, strategy, and type of activity (e.g., Krumwiede, 1998; ; Shields, 1995; Brown et al. 2004; Brown et al. 2004; Lu & Pan, 2007 ; Al-Omiri & Drury, 2007; De La Villarmois & Levant 2011; Zhang et al. 2015).

5. Conclusion, Limitation, and Future Research

The research aims to investigate the impact of a set of driving forces (motives) on management decisions to adopt MATs within the business and the supply-side factors (barriers) existing within the business firms' context on the level of MATs implementation. Therefore, a study was conducted on 200 Egyptian firms. The results showed that there is no relationship between forms' contingency factors, such as size, age, and strategy on the implementation level of MATs. No relationship was also found between supply-side factors or different implementation barriers on the MATs implementation level.

Results revealed that motives, which are the business owner's point of view regarding outcomes perceived from applying MATs, can predict the implementation

level of such techniques. This may suggest that in order to increase the implementation level of MATs, the resulting outcomes of implementation and their impact on firm performance must be assessed. If the owner has better awareness and good knowledge of the outcomes of these techniques, in terms of improving quality, identifying firm strategic needs, coordinating business processes, supporting planning and monitoring functions, and facilitating the implementation of change, the enterprise will be able to apply MATs with high levels. In addition, businesses need to increase the awareness of the successful application of MATs by peer local and international enterprises to imitate their implementation of these techniques, thus minimizing the risk of failure. The results support prior studies suggesting the use of institutional theory in conjunction with MATs and support earlier studies criticizing contingency theory as a base of management accounting literature (e.g., Chenhall, 2003).

Most of the accounting literature that dealt with the innovations of management accounting was based on one of the following intellectual approaches or theories: descriptive theory, contingency theory, and institutional theory. Within this research, MAIs are categorized into the five areas of management accounting; cost accounting, budgeting, management decision-making, performance evaluation, and strategic management accounting. The attempt to find a relationship between accounting literature dealing with MATs and the approaches or theories that embedded the application of these techniques suggests that each of the MAIs has taken a trend or theory from the accounting theories or approaches. Addressing all MATs is not feasible in single research. Therefore, the current research focused on studies addressing the outcomes resulting from the application of MATs in the area of cost measurement “ABC” and performance evaluation “BSC”, considering that the ABC and the BSC are the most discussed and controversial MATs. This research did not address techniques related to budgeting or management decision-making; hence, such techniques can be addressed in future research. In addition to this limitation, MATs are not analyzed under all the theories and the concepts behind their implementation, only the institutional theory and the contingency theory were addressed by the research since they are the most common theories in MATs literature (Bromwich & Scapens, 2016).

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- نوار، رولا سامي (٢٠١٧). التأثير الوسيط للابتكار المستدام في العلاقة بين نظم المحاسبة الإدارية والأداء المستدام لمنشآت الأعمال دراسة ميدانية. مجلة الفكر المحاسبي. العدد الثالث ص ٦٩٩-٧٣٠.

Appendix (1) MATs Analyzed

Costing

Batch/Job Order Costing

Process Costing

Activity Based Costing ABC

Activity Based Management ABM

Activity Based Planning ABP

Absorption Costing

Decision- Making Support

CVP Analysis

Variable Costing

Product Profitability Analysis

Benchmarking of Operational Process

Total Quality Management

Just-In-Time

Benchmarking of Product/Service Characteristics

Performance Evaluation

Standard Costing & Variance Analysis

Performance Evaluation: Customer Satisfaction Surv

Performance Evaluation: Controllable Profit

Performance Evaluation: Divisional Profit

Performance Evaluation: Non Financial Measures

Performance Evaluation: Residual Income

Performance Evaluation: ROI

Performance Evaluation: EVA

Performance Evaluation: BSC

Planning and Budgeting

Capital Budgeting Tools

Flexible Budgeting

Budgeting for Controlling Costs

Budgeting Systems for Day-by-Day Operations

Budgeting for Planning Financial Position & Cash F

Budgeting for Coordinating Activities across Busine

Budgeting for Evaluating Manager's Performance

Activity Based Budgeting ABB

Strategy Analysis

Industry Analysis

Analysis of Competitive Position

Shareholder Value Analysis

Value Chain Analysis

Value Engineering

Product/Service Life Cycle Analysis

Target Costing

Long-Range Forecasting

Competitor Cost Assessment

Customer Profitability Analysis

Strategic Cost Management

Life Cycle Costing

Strategic Pricing

Strategic Plans Developed with Budgets

Appendix (2) Motives/Barriers Affecting MATs Implementation

| Motives | Barriers |
|--|--|
| 1. Profit maximization | 1. Lack of an active professional management accounting society |
| 2. Cost effectiveness | 2. Lack of local training programs about advanced techniques |
| 3. Cost quality | 3. Lack of relevant courses on such advanced techniques in academic institutions |
| 4. Production efficiency | 4. Lack of software packages relevant to advanced techniques |
| 5. Customer satisfaction | 5. Lack of up-to-date publications about advanced techniques |
| 6. Employees satisfaction | 6. Absence of Egyptian companies that have adopted advanced techniques |
| 7. Product development | 7. Lack of relevant employee skills because of insufficient training provided by the company |
| 8. Decision support for senior management | 8. Lack of financial resources |
| 9. Decision support for operating levels | 9. Lack of decision-making autonomy at lower levels |
| 10. Evaluation of customer and product profitability | 10. Company ownership type |
| 11. For responsibility accounting purposes | 11. Insufficient support from top management |
| 12. Supports efforts to improve quality | 12. No significant problems with current system |
| 13. Identify business strategic needs | 13. Lack of confidence in the value of advanced techniques |
| 14. Facilitate business strategic implication | 14. Lack of compatibility of the advanced techniques with existing system |
| 15. Contributes to a better understanding of how the business works | 15. High cost to implement these advanced techniques |
| 16. Shows whether the business is following its business strategy | 16. Complexity of the advanced techniques |
| 17. Facilitates the implementation of change | 17. Benefits from advanced techniques are difficult to observe |
| 18. Facilitates co-operation across functional boundaries | 18. No significant benefits perceived from adopting advanced techniques |
| 19. Provides support for the organizations planning and monitoring functions | |
| 20. Are used at all levels of the organization | |
| 21. Facilitates integrated control within the organization | |