

## Accounting systems, performance, and market orientation in Saudi Arabia SMEs



Rim Zouaoui <sup>1,\*</sup>, Mohamed Ali Brahim Omri <sup>2</sup>, Rabeb Hamdi <sup>1</sup>

<sup>1</sup>Marketing Department, Northern Border University, Arar, Saudi Arabia

<sup>2</sup>Accounting Department, Northern Border University, Arar, Saudi Arabia

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### ABSTRACT

The main purpose of this paper is to test the impact of Market Orientations (MO) on the performance of Small and Medium Enterprises (SMEs) in Saudi Arabia. More specifically, first, we examine the relationship between MO and Management Accounting Systems (MAS) use. The use of MAS is known to affect performance. Second, we study the role of Accountants' Participation in Strategic decision-making (ACCPS) applied in the relation between MO and MAS use. The data was collected via an electronic questionnaire distributed among a sample of managers operating in Saudi Arabia SMEs. The hypotheses were tested using structural equation modelling with data collected from 251 randomly selected SMEs. The results reveal that the MAS mediates the effect of market orientation on firm performance. They also indicate that the interaction among Market Orientations (MO) and Management Accounting Systems (MAS) use is increased by raising the Accountants' Participation in Strategic decision-making (ACCPS), which confirms a positive effect of the moderating variable. The implication of this research is to help Saudi companies achieve higher performance from MO (marketing variable) through the usage of accounting business processes (accounting variables).

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### 1. Introduction

The Gulf Cooperation Council (GCC) economies have traditionally relied on oil as their main source of tax and export revenues. However, GCC has changed significantly over the past decade, where the SMEs sector's growth has been one of their main strategies to promote skills and entrepreneurship. Saudi Arabia's Vision for 2030 tends to diversify the economy. Although oil and gas are essential pillars of the economy, they have begun to expand investment into additional sectors, especially with the importance given to the private sector, which plays a larger role in development. The contribution and the roles of SMEs have become an important economic engine (van Gils, 2005). Saudi Arabia has the most developed SMEs sector in the GCC, estimated at almost 90% of total businesses (Tagliapietra, 2019). Among the objectives for Vision 2030 are to increase

the contribution of SMEs to GDP from 20% to 35% and to increase the private sector's contribution from 40% to 65% of GDP (Rahman and Al-Borie, 2021). The incentive actions are those relating to increasing investment capabilities in order to open up new investment opportunities, facilitate investment, encourage innovation and competition and remove all obstacles preventing the private sector from playing a larger role in development (Amran et al., 2020).

In this context, the question of the marketing application within a Saudi company can be legitimately posed as a tool to improve the performance of Saudi companies. Therefore, for our research, we considered it more appropriate to choose the concept of market orientation which is considered "the implementation of marketing" (Kohli and Jaworski, 1990).

An important stream of research, bearing on the concept of market orientation (MO), emerged in 1990 in marketing and strategic management. Two approaches have emerged to define the concept of MO. These two positions find their origins in the work of Kohli and Jaworski (1990), and Narver and Slater (1990). The first takes a behavioral approach to MO, and the second takes a cultural approach. Researchers have referred to both approaches until

\* Corresponding Author.

Email Address: [rym.zouaoui@gmail.com](mailto:rym.zouaoui@gmail.com) (R. Zouaoui)

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Corresponding author's ORCID profile:

<https://orcid.org/0000-0002-0554-6147>

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recently, and there is no consensus on the two methods. These approaches are interested in measuring the magnitude of market orientation on performance. In this context, [Homburg and Pflesser \(2000\)](#) explored the theoretical aspect and [Gotteland et al. \(2007\)](#) investigated the empirical impact.

As the 90s have been influenced by the trend of MO, even management accounting research showed interest in studying this concept ([Helgesen, 2007](#)). Therefore, two theories have been developed to investigate the link between market orientation, performance, and accounting systems. The first theory is the Resource-Based View (RBV), indicating Management Accounting Systems (MAS) use as mediating variables. This study shows that MO within SMEs can effectively contribute to their performance through management accounting systems. Indeed, it seeks to determine the usefulness of the combination of MO (through marketing variables) and the management accounting system (through accounting variables). The second theory is the contingency theory referring to Accountants' Participation in strategic decision-making (ACCPS). ACCPS is a moderate role in MO and MAS use. [Nguyen \(2018\)](#) took into account the two theories to explore the moderating and mediating variables of the relationship between MO and company performance in Vietnam using the partial least squares (PLS) method. [Nguyen \(2018\)](#) examined the two theories to reveal more moderating and mediating variables indicating the relationship between MO and company performance in Vietnam using Partial Least Squares (PLS) method, and used the latest model of 2016 PLS method and found non-significant results. The newest model is introduced as the moderator variable and found significant results. For that reason, the authors of this study decided to use Structural Equation Method (SEM), putting into account the country's context. Our results converge to [Nguyen's \(2018\)](#) findings in Saudi Arabia as emerging market. Globally, we try to approximate the accounting and marketing interface to promote SME performance. Then the research question is: Does the management accounting system play a role in the relationship between MO and the performance of SMEs in Saudi Arabia?

Finally, this paper aims to examine the influence of MAS use due to the relation between MO and firm performance. The researchers also define the effect of the increased MAS on SMEs' performance due to the interaction between Market Orientation (MO) and Accountants' Participation in Strategic decision-making (ACCPS) in Saudi Arabia. The contribution of this study can not only improve the literature on understanding the adoption of MO in developing countries but also provide useful guidelines for companies to optimize the use of a management accounting system. Thus, bearing the obtained results can help these companies to make informed decisions. The rest of the paper presents the empirical method, including sampling, measures, and analysis. Then it presents the empirical findings and discusses the results and their implications.

## 2. Theoretical framework

### 2.1. Market orientation and management accounting systems

The marketing literature provided several definitions of MO ([Hinson et al., 2017](#); [Mahmoud et al., 2019](#)). [Narver and Slater \(1990\)](#) defined MO as the basis of marketing and strategic planning, orienting the company toward creating and delivering superior value for its customers. From an organizational culture perspective, MO consists of three equally important behavioral dimensions. First, it refers to customer orientation, which includes the activities planned to acquire information about customers in the target market and disseminate that information throughout the firm. Second, it refers to competitor orientation, which denotes the activities undertaken to gather information about competitors in the target market and disseminate information throughout the company. Third, it bears on inter-functional coordination, representing the firm's coordinated efforts, involving more than the marketing department to create superior customer value

Previous research has suggested various mediating variables linking MO and SMEs' performance. Several studies have identified factors that mediate MO and performance, such as organizational innovation, brand trend, learning orientation, and environmental management accounting ([Solovida and Latan, 2017](#); [O'Cass and Voola, 2011](#); [Mohammed et al., 2019](#)). Meanwhile, the management accounting literature seems to lack empirical evidence supporting the MO-performance interaction. [Cadez and Guilding \(2008\)](#) proposed to test the impact of Strategic Management Accounting (SMA) techniques, that mediate the link MO/firm performance in Slovenia. The authors found that MO does not affect the use of SMA. Empirical research on the promotion of SMA within organizations also provided support for the proactivity of managers in developing this particular aspect of management accounting. For example, [Lord \(1996\)](#) presented case study evidence indicating that some aspects of SMA had been developed by marketing managers, independently of accountants. [Ma and Tayles \(2009\)](#) revealed the close integration between managers and accountants in developing new elements of strategic management in a single company. [Cadez and Guilding \(2008\)](#) provided survey evidence of managers' and accountants' joint participation in strategic decision-making processes. According to [Chenhall and Morris \(1986\)](#), there are four dimensions of general information explaining the use of MAS: Timeliness, scope, integration, and aggregation. [Naranjo-Gil and van Rinsum \(2006\)](#) defined these four components: Timeliness refers to the speedy provision of the requested information and the frequency of reporting collected information. Scope refers to how information generated by MAS reflects external versus internal events, future-oriented versus historical data, and qualitative

versus quantitative data. Aggregation refers to summing up temporal and functional information (e.g., cost center, marketing departments). Finally, integration refers to the coordination of the different segments within a sub-unit. MAS can be categorized as more traditional or innovative based on the score on these four dimensions. Then, taking into account the arguments presented in the introduction, the researchers try to study the effect of MO in the MAS. We can conclude that MAS uses its built-in general structures that engender management accounting data designed for insides operators. Accordingly, some scholars studied the effect of MO in MAS through various management accounting methods (Cadez and Guilding, 2012). Thus, this study proposes to test the following hypothesis.

**H1.** MO has a significant effect on MAS.

## 2.2. Management accounting system and performance

Management accounting is defined as a branch of accounting that channels information to managers regarding internal and external business environments (Appelbaum et al., 2017). Research on management accounting indicates that the concept plays an important role in ensuring the management efficiency of a firm and thus serves to improve firm performance. Ahmad and Zabri (2015) examining data collected from 500 Malaysian firms, reported that management accounting plays an important role in the management of SMEs, especially to increase efficiency and effectiveness in their management processes, resulting in better firm performance. Researchers of business performance used different components to measure the concept (Ahmed and Manab, 2016). A firm's competitive position can be evaluated in the form of financial performance as indicated by measures, such as profit and return on investment, or by customer satisfaction and loyalty (Day and Wensley, 1988). Financial performance can be measured from an objective or a subjective perspective or both (Getz and Carlsen, 2000). The objective perspective is more appropriate than the subjective one (Wesson and De Figueiredo, 2001). However, Dess and Robinson (1984) suggested using the subjective perspective when financial data are unavailable; for example, most managers in KSA refuse to disclose information about their financial performance. Then, it is appropriate to use a self-report (subjective assessment) method (Escandón-Barbosa et al., 2016).

Furthermore, Bontis (1998) stated that when they understand the organizational, behavioral, and economic implications, management accountants should be able to interpret and transfer management accounting information to participants. Therefore, it can be claimed that companies that use effective management accounting report accurate and timely information to their decision-makers. This leads them to overtake their competitors.

The relationship between MAS use and SMEs performance was investigated in certain research (Agbejule, 2005; Chia, 1995). The link between MAS and firm performance can be clarified through the Resource-Based View (RBV) theory (Sheikh et al., 2017; Nguyen, 2018). This management theory argues that attaining a sustainable competitive advantage is due to firm resources (Barney, 1991; Dyer and Singh, 1998). The configuration of MAS is a firm-specific process. MAS is considered a tool of the internal environment. Then, this variable is considered an inimitable resource (Abdel-Kader and Luther, 2008).

Moreover, MAS information can be analyzed into special information allowing the firm to produce goods or services more cheaply than competitors (Smith et al., 1996). Therefore, if MAS is a source of planning, controlling, and making perfect strategies, it could meet the conditions of valuable, rare, inimitable, and non-substitutable (Toms, 2010). Such a position could lead us to a positive relationship between MAS use and firm performance. This proposal motivated the following hypothesis:

**H2.** MAS has a significant effect on firm performance.

## 2.3. Market orientation and performance

Since 1990, two methods have emerged to define the notion of market orientation. These two definitions find their roots in Kohli and Jaworski (1990), and Narver and Slater (1990). The first position of Jaworski and Kohli (1993) referred to market orientation as a philosophy by which a company discovers and satisfies the needs of its customers through its products and services. The latter suggests three phases (generating market information from customers, sharing market knowledge, and addressing customers). The second position of Narver and Slater (1990) defined this concept as the basis of marketing and strategic planning, orienting the company toward creating and delivering superior value for its customers. This later perspective approves that market orientation is multidimensional, consisting of three behavioral elements (customer orientation, competitor orientation, and inter-functional coordination). These two first studies agree with the significant effect of market orientation on business performance.

Even though many researchers have examined either the direct or the indirect impact of MO on performance (Pelham, 2000; Verhoef et al., 2011; Balodi, 2014; Escandón-Barbosa et al., 2016; Hagen et al., 2017; Narver and Slater, 1990), according to Liao et al. (2011), there are a few of studies that could not identify a significant relationship between MO and firm performance compared to a great number of those founding a positive relationship and statistically significant between these two concepts (Greenley, 1995; Harris, 2001; Ho et al., 2018). The main findings confirm the presence of a significant link between MO and performance in developed

countries. However, other results found a positive effect on the MO performance of SMEs in developing countries, such as the results of [Osuagwu \(2006\)](#) in Nigeria, [Attia \(2013\)](#) in Egypt, and [Bamfo and Kraa \(2019\)](#) in Ghana. Accordingly:

**H3.** MO has a significant effect on firm performance.

**2.4. The participation of accountants in strategic decision-making as a moderator variable**

Accountants with large perceptions functioned as intermediaries with the different departments and manipulated all management information coherently ([Parker and Kyj, 2006](#)). For that, accountants are considered essential actors in all creating decisions. According to [Cadez and Guilding \(2008\)](#), the progress of strategic management accounting techniques has been supported by the major role of accountants in the strategic process of management. While the accountants' participation in strategic decision-making has traditionally been limited to providing useful information to decision-makers, recent studies show that current Accountants' Participation in Strategic decision-making (ACCPS) has become importantly involved in strategic decision-making practices. [Cadez and Guilding \(2008\)](#) have used the contingency theory to demonstrate the use of ACCPS. This organizational theory argues that there is no one good way to make any decision. Manager decisions depend on internal and external factors arising from the environment. Under the perspective of contingency theory, which has become a dominant approach to studying management accounting ([Naranjo-Gil and Hartmann, 2007](#)), the weight of a link across two variables depends on a third variable. The existence of moderators in bivariate relationships reduces the potential for misleading inferences and lets more precision in understanding contingency relationships ([Rosenberg, 1968](#)).

Nowadays, accountants have an interest in moving towards the development of the use of MAS to support the strategic management of commercial organizations ([Fry et al., 1995](#)). Accountants significantly participate in strategic decision-making by furnishing financial and also non-financial information. [Abernethy and Bouwens \(2005\)](#)

proposed that ACCPS may be creative to develop the use of MAS. Increased use of MAS may develop through increased involvement of accountants in the expansion and establishment of MAS. In addition, the significant participation role of accountants in the progression of MAS can lead functional managers to employ MAS ([Pierce and O'Dea, 2003](#)). This vision generates a concordance between MO and accountants at the strategic level. ACCPS may enhance the effect of MO on MAS. Accountants can be motivated to enhance the process of strategic decisions when they are invited to participate in the decision-making of MO ([Oliver, 1991](#)). Consequently, firms applying marketing can leverage more incentives to develop the MAS process, provided that accountants' participation is high when making a strategic decision. Accordingly, firms using MO are encouraged to devote more endowments to the expansion and establishment of MAS, further inspiring the use of MAS. As reported by previous theoretical proposals, the more that accountants participate in the process of strategic decision-making, the more the effect of MO on the MAS is positive. In this regard, this research proves the positive effect of the participation of accountants in the development of strategic decisions on the MO/MAS link. Then,

**H4.** ACCPS moderates the link between MO and MAS positively

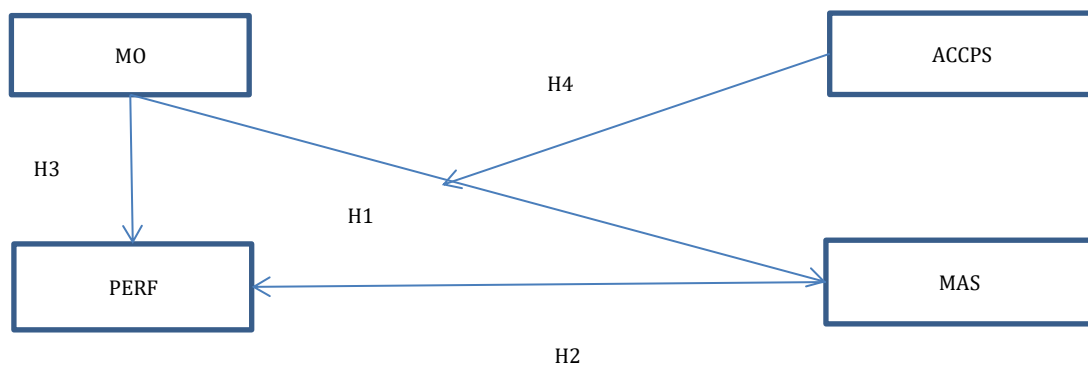
The conceptual framework on which this empirical study is based is illustrated in [Fig. 1](#). It consists of four categories of variables whose measurement is described below.

**3. Research methods**

After conducting the literature review, we completed a quantitative study to validate the research hypothesis.

**3.1. Measurement scales**

An integrated 30-item questionnaire was adapted from several authors. The items are assessed on a five-point Likert scale. These items represent four variables which are the following:



**Fig. 1:** Conceptual framework

- MO measurement scale: This study reexamines the scale properties of MO in Saudi SMEs; this amounts to reexamining the use of the marketing concept through the traditional known measures. Then we retained the scale developed by [Narver and Slater \(1990\)](#), known as the MKTOR scale. This integrated questionnaire measures the MO of firms using eight items: three to measure customer orientation, two to measure competitor orientation, and three to assess the degree of coordination between functions.
- PERF measurement scale: Following the proposal of [Calantone et al. \(2002\)](#) after the [Jaworski and Kohli \(1993\)](#) proposal, the financial performance is used to measure the perceived level of firm performance through three items: Return On Sales (ROS), Return On Assets (ROA) and Return On Investments (ROI). This measurement scale averages high financial performance.
- MAS measurement scale: Was developed by [Agbejule \(2005\)](#), and [Chenhall and Morris \(1986\)](#). This scale consists of fourteen items: Four to measure scope, three to measure integration, four to measure appropriate timing, and three to assess the degree of assembly in the studied SMEs ([Ismail et al., 2018](#)).
- ACCPS measurement scale: According to [Woodridge and Floyd \(1990\)](#), this measure comprises five items: Mark the problems and propose objectives, generate and give an evaluation of the options, detail the options, and take into account the measures necessary to place the changes ([Cadez and Guilding, 2012](#); [Nguyen, 2018](#)).

### 3.2. Data collection and sampling

Currently, in Saudi Arabia, around one million SMEs are registered for business purposes in the Kingdom. SMEs are widely present in the private sector, where they account for approximately 90% of all business. Trade represents one of the fundamental pillars of Saudi SMEs (48% of the total SMEs activities). The biggest rate of all districts is the 25% establishment rate in Riyadh (GASTA). For that reason, this study will focus on the trade sector. The study location of this study is Riyadh city (Saudi Arabia's capital), given the number of SMEs that this region has compared to others in the Kingdom. Data was collected via a survey answered by managers (marketing, accounting, chief executive officer) of SMEs in Riyadh. We opted for convenience sampling,

which seems best because applying empirical methods is easier and less costly in the field than random methods. Moreover, this method allows for selecting the respondents in an easy way and in a short period of time ([Giannelloni and Vernetto, 2012](#); [Perrien et al., 1983](#)). The convenience sample is defined as a sample "made up of individuals who were where and when the information is collected" ([Giannelloni and Vernetto, 2012](#)). Data were collected using an electronic survey from January 2019 to January 2020. Questionnaires are completed by several managers from each company. The survey was written in English and then converted into Arabic, the official language of Saudis. Translation in Arabic was serviced by an expert translator to guarantee conceptual equivalence. Taking into account the recommendations of [Giannelloni and Vernetto \(2012\)](#), piloting the questionnaire was carried out with a number of participants not exceeding thirty people. The piloting stage is to ensure a final comprehensive version of the questionnaire. Among the 500 randomly chosen companies, only 251 SMEs' responses are valid. The sample consists of 69.7% males and 33.5% managers. Furthermore, 37.1% of participants work in companies that have been operating for 11 years.

## 4. Results and discussion

In this section, the validity and reliability estimations of the measurement scales will be presented, followed by hypothesis testing and a discussion of the results.

### 4.1. Exploratory analysis

The survey data was assessed to check the reliability of different scales. Principal Component Analysis (PCA) and Cronbach Alpha are run for the different constructs: Market orientation, firm performance, accountants participation in strategic decision making, and the store visit. [Table 1](#) summarizes the different results of this analysis.

### 4.2. Confirmatory analysis

In this phase, structural equation modeling is used. This choice is justified because this method is based on the functionalities of regression analysis and factorial analysis ([Salindal et al., 2018](#)).

**Table 1:** Items for measuring variables

Construct	No. items	% explication	Alpha
Market orientation	Customer orientation	3	87.14%
	Competitor orientation	2	89.36%
	International coordination	3	78.84%
Firm performance	2	68.72%	0.91
Accountants' participation in strategic decision making	3	93.08%	0.96
Management accounting systems	Scope	4	74.61%
	Timeliness	4	79.24%
	Aggregation	3	91.79%
Integration	4	87.83%	0.95

For the measurement model, the Mardia coefficient is above 3; the multinormality is not verified. To solve this problem, previous research suggests the application of the Bootstrap method (Roussel et al., 2002). Considering the result presented in Fig. 2, the adjustment indicators for the measurement model have satisfactory values according to the standard indicated in the literature. In this context, Joreskog's Rho for all measures of the

variable is higher at 0.6. Thus, the reliability of the different measurement scales is confirmed. All items have a Critical Ratio (CR) superior to 1.96 and the Average Variance Extracted (AVE) of different measures is high at 0.5. Thus, validity is confirmed. The correlation link between all variables is down to the AVE of all constructs (Fornell and Larcker, 1981). Hence, discriminant validity is checked.

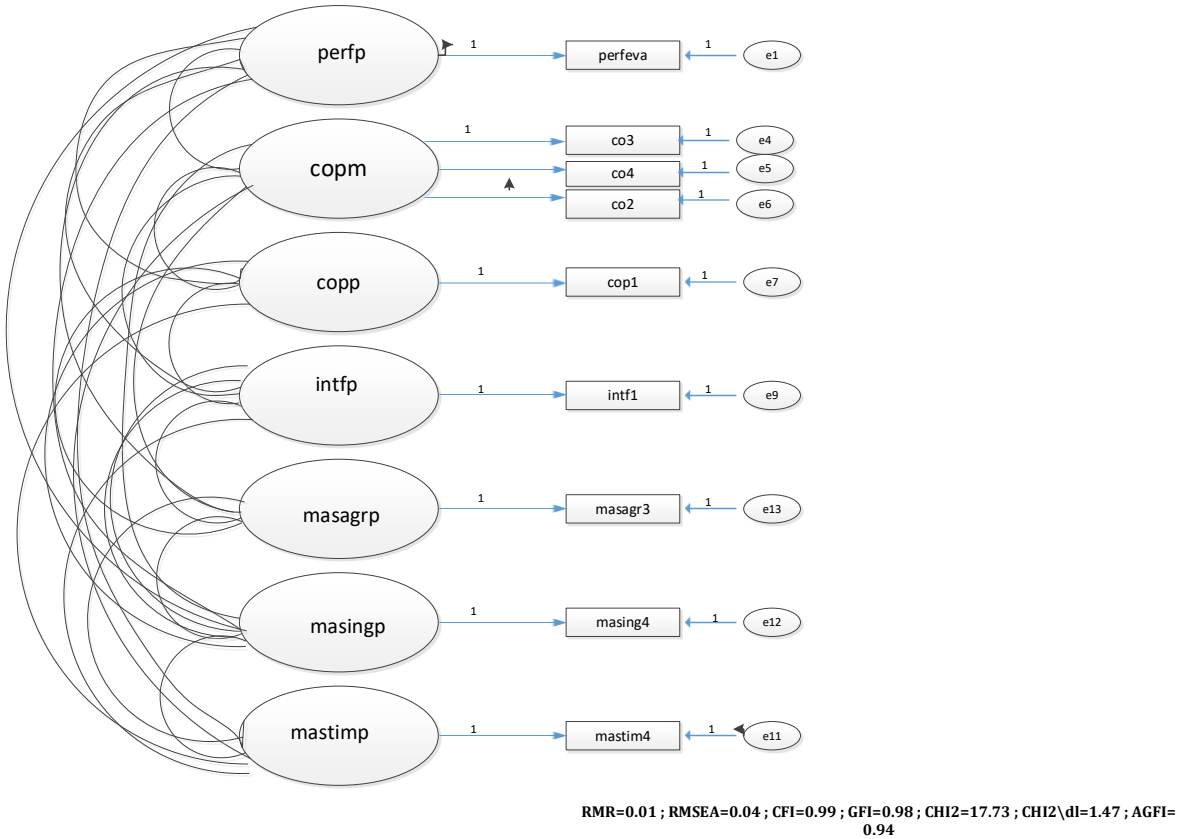


Fig. 2: Measurement model

The adjustment indicators for the structure model have satisfactory value according to the standard indicated in the literature. For example, the Root Mean Squared Error of Approximation (RMSEA) has a value under 0.08. This indicates a solid model fit and a better explanation of the relationship among variables. At this stage, we commove on to testing the research hypothesis. So, when the C.R value exceeds 1.96, the regression link is significantly different from zero at risk of error of 5% (Akrouf, 2018). Table 2 summarizes the different results.

**4.3. Discussion**

The structural link between Market Orientation (MO) and Management Accounting Systems (MAS) (Fig. 3) is acceptable (C.R=12.455; p=0.000). So, the

hypothesis that Market Orientation (MO) has an effect on management accounting systems (MAS) is confirmed. Thus, 56% of the total variance of MAS is explained by MO in the firms. The results prove that there are important positive relationships between the two components of MO, Customer orientation and inter-functional coordination, and firm performance. This finding is consistent with the previous literature indicating that MO affects MAS (Solovida and Latan, 2017; Guilding and McManus, 2002; O'Cass and Voola, 2011). Therefore, market orientation can be used and strengthened to create strong management in accounting systems. The structural link between management accounting systems and firm performance is significant with a C.R of 5.539 (p=0.000) and a regression coefficient of 0.166.

Table 2: Structural links between the latent constructs

			Estimate	S.E.	C.R.	P
Accounting	<-	Market orientation	.565	.045	12.455	.000
Performance	<-	Market orientation	.591	.043	13.611	.000
Performance	<-	Accounting	.166	.030	5.539	.000

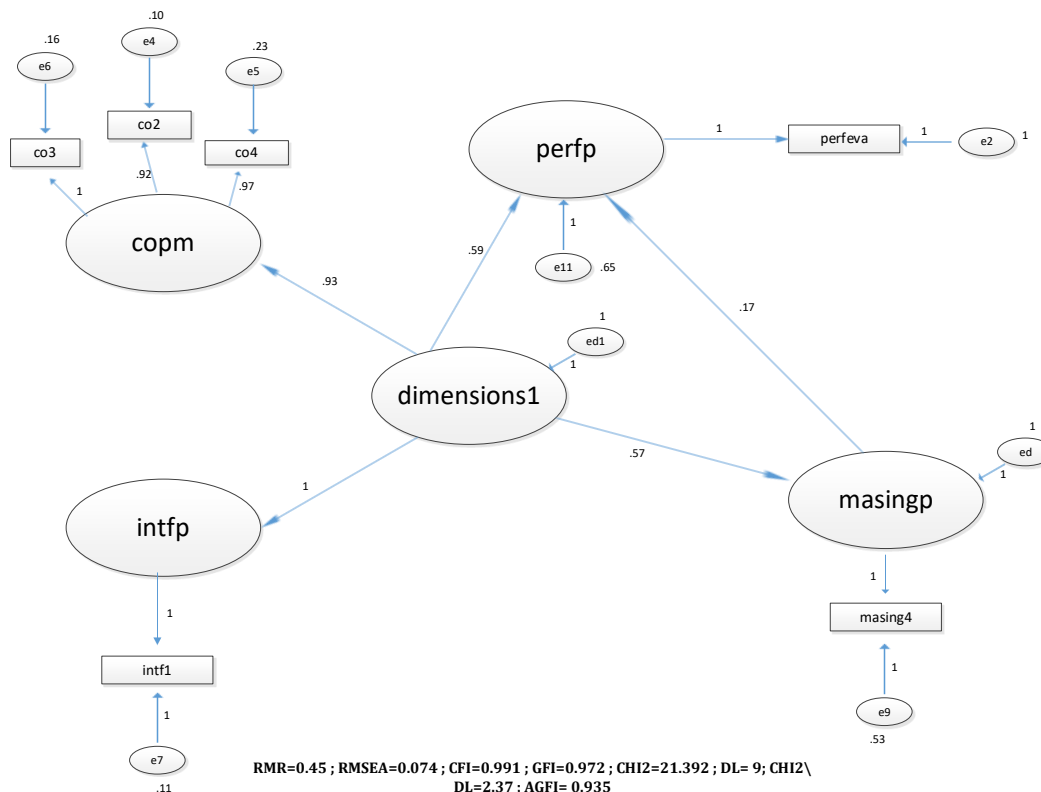


Fig. 3: Structural model

Therefore, the second hypothesis is confirmed. Accordingly, management accounting systems and, in particular, the integration dimension is a significant variable for the companies selected in this study to increase their performance. This research also indicates those of [Nguyen \(2018\)](#), who studied large Vietnamese firms and found that generally, all firms have comparatively higher management accounting systems. The study further supports the findings of other researchers, who found that the integration dimension of MAS positively affects firm performance. Furthermore, the positive effect of MAS on the performance of SMEs in the present study is similar to the result found by [Sheikh et al. \(2017\)](#). The structural link between market orientation and firm performance is important (C.R=13.611; p=0.000). Thus, the third hypothesis is

confirmed. Thus, 59% of the total variance of SMEs' performance is clarified by market orientation in the firms under study. This result is in the same line as the findings found among similar constructs in the research of [Ho et al. \(2018\)](#). Therefore, market orientation can be used and strengthened to achieve higher firm performance ([Attia, 2013; Bamfo and Kraa, 2019; Harris, 2001](#)).

To test the mediating effect explored by this study, we apply [Baron and Kenny's \(1986\)](#) method, which remains "highly recommended given its simplicity and robustness, compared to other methods of analysis" ([Roussel and Wacheux, 2005](#)). According to [Baron and Kenny \(1986\)](#), the test of the mediating effect of a construct follows four steps as indicated in [Tables 3-5](#).

Table 3: Step 1: The direct effect of the independent construct on the dependent construct

	Estimate	S.E.	C.R.	P
Performance <--- Market orientation	.684	.042	16.260	.000

Table 4: Step 2: The direct effect of the independent construct on the mediator construct

	Estimate	S.E.	C.R.	P
Accounting <--- Market orientation	.565	.045	12.471	.000

Table 5: Step 3: The relationship between the mediator and the dependent construct is significant

	Estimate	S.E.	C.R.	P
Performance <--- Accounting	.531	.060	8.780	.000

The results prove that market orientation has a significant effect on firm performance in the

presence of management accounting systems, with p < 0.05. Therefore, mediation is partial ([Table 6](#)).

Table 6: Step 4: The type of mediation

	Estimate	S.E.	C.R.	P
Accounting <--- Market orientation	.565	.045	12.455	.000
Performance <--- Market orientation	.591	.043	13.611	.000

What remains to be checked is its significance using the Sobel Test (Akrouf, 2018; Roussel and Wacheux, 2005). This test is carried out directly on the internet (Roussel and Wacheux, 2005). Then the results indicate that management accounting systems are a mediator construct (partial mediation) in the relationship between MO and firm performance in Saudi Arabia (Table 7).

**Table 7:** Test of Sobel

Structural link	Sobel test	Probability
Market orientation–management accounting systems – firm performance	4.9	0.0000

Market orientation can generate direct and indirect impacts on SMEs performance. Therefore, checking MO and its subsequent impact on MAS use, which is known to enhance firm performance, is in order. The findings support the Resource-Based View (RBV), which asserts that resources would bring a competitive advantage to improving performance (Sheikh et al., 2017; Nguyen, 2018). Consequently, the mediating effect of MAS use

proved in the present research recommends integrating MAS along with MO to improve firm performance. The research indicates the same result as in Vietnam. There is interesting to reorganize the management of systems in accounting using a strong strategy of MO (Customer orientation and Inter-functional coordination) to enhance the effect of MAS on the performance of SMEs in KSA.

By applying a multi-group analysis, ACCPS moderates the link MO/MAS use is assessed. Therefore, the fourth hypothesis is confirmed. The results are reported in Tables 8 and 9. ACCPS can positively improve the MO effect on the use of MAS at the strategic level, taking into account the effect of the accounting department in the progression of the MAS of the firm in a market access environment. At this level, the obtained results converge with the conclusions presented in the literature. Several researchers (Abernethy and Bouwens, 2005; Nguyen, 2018) showed that ACCPS plays the role of moderating variable in the relation between MO and its dimensions, such as MAS.

**Table 8:** Estimation of the structural link by adding the moderator construct

Lien structural	G1: Low ACCPS				G2: High ACCPS			
	Estimation	S.E.	C.R.	P	Estimation	S.E.	C.R.	P
MAS<---MO	.577	.058	9.981	.000	.358	.028	12.582	.000
PERF<---MAS	.098	.039	2.510	.012	.051	.012	4.363	.000
PERF<---MO	.521	.063	8.335	.000	.687	.040	17.353	.000
Chi 2 = 31.703 Df = 18 P = 0.024				Chi 2 = 31.703 Df = 18 P = 0.024				

**Table 9:** The five models test with simultaneous multi-group analysis

Model	NPAR	CMIN	DF	P	CMIN/DF
Unconstrained	24	31.703	18	.024	1.761
Measurement weights	22	51.950	20	.000	2.597
Structural weights	18	72.931	24	.000	3.039
Structural residuals	17	110.891	25	.000	4.436
Measurement residuals	12	240.217	30	.000	8.007
Saturated model	42	.000	0		
Independence model	12	1569.322	30	.000	52.311

## 5. Conclusion

This study examines mediates and moderates variables in the market orientation-performance link. In the literature, the model tested by Nguyen (2018) is used to validate this relation. Moreover, we extend this model by using it in another context (Saudi Arabia) by applying a Structural Equation Method (SEM). We include the same variables in this model to test the impact of market orientation on firm performance.

Our results can help researchers to understand the improvement of the performance of SMEs through MO and MAS use. This can be interesting for managers to be more market-oriented in an intensely competitive market environment. This research aims to explain the link between MO and ACCPS and its consequent impact on MAS use. This latter is known to enhance, in turn, firm performance. Unlike a few studies that have empirically examined the impact of MO on business performance through MAS, this study confirms that

the use of MAS is a partial median of MO and PERF, as indicated by Nguyen (2018). Baron and Kenny (1986) argued that mediation is strongest when total mediation (only the indirect effects are significant). As long as there are both direct and indirect effects, partial mediation dominates, as is the case in this study. These findings will help marketing companies better understand the character of MO in influencing the performance of SMEs. It will also provide valuable information for management-accounting decision makers. For SME managers to survive in today's increased competition, it is important to be market-oriented and follow strategic planning.

This study argues that MO can affect PERF through the role of MAS. We found support for the hypothesis that MO can affect PERF both directly and indirectly through MAS use. The empirical evidence shows a positive and significant effect of MO on MAS use, which in turn can improve firm performance. The structural equation analysis results strongly prove that intangible assets, such as a company's MO and MAS use, improve its performance. Thus, the



importance of ACCPS promotes the positive effect of MO in MAS use.

However, this research has some limitations that need to be mentioned. Firstly, many Saudi companies refused to disclose information on their company, as most companies treat this information as "confidential." Then we had to be persistent with our respondents to get the right information. Second, performance was measured by subjective indicators, which represent judgments and perceptions of SMEs' managers. Future research should use longitudinal research designs to make these results applicable to Saudi Arabia firms. According to Venkatraman (1989), longitudinal designs are necessary for configuration studies. Lumpkin and Dess (1996) claimed that most MO and performance studies use cross-sectional designs. However, it may take a long time for the effects of MO to be observable. Overall, the researchers feel that it is necessary to replicate this study using qualitative approaches. This study may offer some practical recommendations to top Saudi managers to succeed in a highly MO-oriented competitive market.

### Compliance with ethical standards

### Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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