

Utilizing Strategic Management Accounting Techniques in Iranian Firms

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Abstract

The main objective of this article is to describe and explain the utilization of Strategic Management Accounting Techniques (SMATs) in Iranian various firms. For this, a survey was carried out using questionnaires provided for the seventy-five Chief Executive Officers in productive and services firms. Data gathered from respondents about the usage rate of SMATs based on the five-point Likert scale. The findings show that the usage rate of SMATs is different in the strategic management of quality, business, market, and competitors. The results suggest that all approximately major of SMATs has used in the different firms, while the strategic tools such as market segment analysis, product profitability analysis, competitors' analysis, customers' profitability analysis, R&D and MRP and a few other techniques are widely known among firms. Also, the use of these tools and techniques are not the same among the firms operating in various industries and having different size and ownership. As a result, there were identified hidden reserves for wider dissemination of Strategic management accounting in practice. The research disclosed that strategic management accounting could be assessed company-wide, seeking to find an optimal configuration of the local management accounting system from Technical - managerial view.

Keywords: Management Accounting, Strategic Management Accounting Techniques, Technical-Managerial view, Iran.

Introduction

The history of accounting in Iran goes back to the earliest civilizations that took place in this land. The accounting evidence obtained over twenty-five centuries ago is related to the development of this knowledge in ancient Iran. Throughout history, numerous accounting methods have been devised to manage government affairs and conduct business, which has evolved in response to the needs of the time.

Changes in the economic structure of the 1920s and afterward and the expansion of the economic system led to the emergence of accounting as a technology that met the information needs of start-ups and enterprises. The emergence of large industrial groups, as well as the influx of foreign capital into Iran, provided the basis for the accounting system transformation in Iran (Mashayekhi and Mashayekh, 2008). Because traditional systems were unable to meet the information needs of today's competitive marketplace, they made modern management systems adaptable to external management systems.

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Management Accounting (MA) is a sub-system of the overall organizational information system (Wickramasinghe and Alawattage, 2012) and are defined as systematic processes of control used to influence members in organizations to achieve the firm's goals. Two styles of MA use can be identified: diagnostic use, which is financially and historically oriented, and interactive use, which is non-financially, prospectively, and technologically oriented. When management accounting practices serve the company's strategies, profitability is achieved. Strategy is responsible for understanding the global world of the organization. The classical approach to the strategic formula is based on logical methods of planning, resource allocation, and profitability (Fuertes et al., 2020). The literature suggests the existence of a relationship between management accounting and strategy. Strategic Management Accounting (SMA) comprises two terms management accounting and strategic management (Pires, Alves and Rodrigues, 2015). SMA is a type of management accounting concerned with collecting financial and nonfinancial data about a company, its competitors, and its customers. It is also concerned with analyzing such data through the use of a set of appropriate SMA practices. To establish a successful future strategy, SMA provide information that helps evaluate the strategic position of the company, its competitors, and the benefits that customers gain. This supports competitive advantage and increases profitability improvement opportunities (Mohamed, 2010). The term SMA was introduced by Simmonds in 1981. He defined it as "the provision and analysis of management accounting data about a business and its competitors, for use in developing and monitoring business strategy".

Studies in management accounting disclosed the significance of MA as a stimulus for organizational change, progress and substantiated the benefit of performance measurement process not only for financial results (improving financial indicators, increasing market value), but also for ongoing performance improvement, communication and control processes (Strumickas and Valanciene, 2010). Recent research has focused on analyzing how organizations manage their knowledge and has identified management accounting systems (MASs) as the key mediators to create sustainable value in the long term. One of the main roles of MASs is to communicate, locate, and apply knowledge in organizations. The type of information provided by MASs determines the quality of decision-making. Thus, an MAS could be understood not just as an information supplier tool, but as a system that provides top managers with updated, reliable, and accessible knowledge to facilitate decision-making and implement business strategies. Therefore, it is crucial to explore the way in which MASs are related to the acquisition of Long-term strategies (Vásquez and Naranjo-Gil, 2020).

This study has examined the status of Strategic Management Accounting Techniques (SMATs) and also the relationship of SMATs usage with the contingent variables in the different levels of strategy. Therefore, first we identify the techniques by studying the literature and then classified them into various types of strategic operations including cost management, market management, recourses management, competitor's management, customers' management, performance management. second, the survey method is used to describe the status of SMATs in the five different industries. Therefore, the purposes of this paper are twofold:

1. Describe and explain the status of SMATs in Iranian firms;
2. Examine the relationship between the contingent variables (industry, ownership, size) and the usage rate of SMATs.

The innovation of this study is that in order to identify a narrower research gap, we conducted a literature review and we found that there are significantly under-researched areas. First, the existing articles have often addressed only a limited range of SMA techniques and thus failed to provide a complete picture of SMA technique implementation. Second, the scope of the statistical sample (all Iranian firms active in Manufacturing, Construction, Insurance, Bank, Finance, Technology: software, communication, media, and Energy) distinguishes this research

from others. Finally, we are not aware of any article dealing with the study of strategic management accounting techniques at different levels of strategic activities. This research opted for an approach to understand the domain of strategic management accounting by focusing on the theories and teachings of significant thinkers of business strategy Wickramasinghe and Alawattage. It is possible to summarize that knowledge on worldwide implementation of SMA techniques is incomplete and also knowledge on the impact of various contingent variables on the degree of SMA use is scarce and inconclusive. It is therefore important to investigate these issues more profoundly and contribute to the development of a more robust and practically usable theory.

This study is organized as follows. Section “Literature Review” provides an overview of the historical evaluation of MA based on different periods from managerial-technical views and emergence of strategic management accounting and develops question for the status of strategic management accounting techniques and the effects of contingent variables on the usage rate of SMATs. Section “Materials and Methods” is one part that measures twelve groups of strategic tools and discusses the research method and its measurements. The analyses and results are presented in Section “Results and Discussion”. Finally, conclusions, limitations, and recommendations are discussed in Section “Conclusions and Recommendations”.

Literature Review

In the past three decades, changes in manufacturing and production processes have pushed MA to update its practices. The integration of technological advances into the accounting department has made it easier and less expensive for business owners to make data-driven decisions about their firms. The evolution of cost-related accounting science can be divided into its traditional and modern development. Cost accounting is concerned with cost accumulation for inventory valuation; whereas management accounting relates to appropriate information provision for decision making, planning, controlling, and performance evaluating (Rahnamay Roodposhti and Ahyaei, 2015). Focusing on the history of management accounting is important in exploring the current and future states of management accounting. Therefore, this section has examined various periods of development of management accounting practices from a Technical-managerial view. Also, at the end of this section, empirical researches on strategic management accounting are reviewed.

Introduction of Management Accounting Techniques Before the 1950s

The International Federation of Accountants (1998) describes management accounting before the 1950s as a technical activity required for the pursuit of organizational objectives. It was predominantly oriented towards the determination of product cost (Kamal, 2015). The label “management accounting” was not used in the Anglo-Saxon world prior to 1950s. The term of “cost accounting” was used to define processes for the computation of costs and financial control. Through the use of budgeting and cost accounting technologies, the focus was on cost determination and financial control (Waweru, 2010).

According to (Chandler, 1977), management accounting systems first appeared in the United States during the nineteenth century. During this period, cost accounts were used to determine the direct labor and overhead costs of converting raw materials into goods. According to Porter (1980), some companies in the USA used sophisticated sets of cost accounts. During this period, the role of the new accounting systems of accounting was cash control, which provided management with timely and accurate reports on expenditures. According to Johnson and Kaplan (1987), cost accounting has not only been a tool for evaluating the internal processes of converting raw materials into products, but also as a measure of evaluating the performance of

low-level managers in the nineteenth century (Kamal, 2015). New cost measurement techniques for analyzing productivity and relating profits to products were developed during the late nineteenth and early twentieth century (Askarany, 2004). They also developed new cost accounting procedures to evaluate and control the physical and financial efficiency of tasks and processes in complex machine-making firms and to assess the overall profitability of the enterprise during the nineteenth century (Kamal, 2015).

Introduction of Management Accounting Techniques from 1950 to 1979s

In this decade, the focus of management accounting shifted to the provision of information for planning and controlling purposes. In this phase, management accounting is seen by International Federation of Accountants (1998) as a management activity, but in a staff role, it involved staff (management) support to line management through the use of such technologies as decision analysis and responsibility accounting. Rather than strategic and environmental considerations, management controls were oriented towards manufacturing and internal administration (Kader and Luthar, 2004). Since the 1950s, more than 30 popular cost and management accounting techniques have been introduced. The majority of these innovations have been introduced during the last two decades. According to Hagerty (1997) and Smith (1999), the major developments in management accounting since the 1950s can be explained as follows:

- In the 1950s, it can be identified as discount cash flows, total quality management, cusum charts, and optimum transfer pricing.
- In the 1960s, it can be identified as computer technology, opportunity cost budgeting, zero-base budgeting, decision tree, critical path scheduling, and management by objectives.
- In the 1970s, it can be identified as information economics and agency theory, just-in-time scheduling, strategic business units, experience curves, portfolio management, materials resource planning, diversification, matrix organization and product repositioning (Kamal, 2015).

Emergence of Strategic Management Accounting: strategy and management accounting

The period between 1980 and 1999s became known as the “post-modern period” or the “new wave” of management accounting. Strategic accounting is the last stream of thought that had an important impact on management accounting. Two schools can be found, one related to Simmonds and Chandlers seeks to understand the causes and effects, and the other associated with Robert Kaplan, Thomas Johnson and Robin Cooper has taken an interest in developing new cost control and decision methods and tools. The second line has the dominant presence in today’s management accounting, Tom Johnson advanced the activity management approach as a vital ingredient for companies pursuing total quality management and just-in-time operations, while Bob Kaplan with Robin Cooper, extended the transaction-costs approach into comprehensive activity-based cost management systems (Johnson and Kaplan, 1987), the balanced scorecard (Kaplan and Norton, 1996) and strategic maps (Kaplan and Norton, 2000; Armitage and Scholey, 2006).

The term strategic management accounting was introduced by Simmonds (1981, 1982). He stated that strategic management accounting was concerned with the provision and analysis of management accounting data for companies and their competitors and the use of such data in developing and rationalizing the business strategy. Therefore, SMA embraces the management accounting techniques with a clear strategic focus, with future-orientated stance and explicit external focus forming the core of the concept of SMA (Ma and Tayles, 2011). When an organization is in different business, the planning can be facilitated by creating a strategic

business unit (SBU). SBU represents a unique business or a group of business related, for which is possible to formulate a common strategy. Each SBU will have its own distinctive mission and different competitors; this allows it to have an independent strategy from the other business of the organization (Fuertes et al., 2020).

Most of the literature regarding strategic management accounting was at the conceptual levels. In recent years, research on SMA is increased due to the increasing importance of information from outside the boundaries of the firm to managers. The following of this study was dedicated to review the research literature on the importance and application of MA.

Petera and Soliakov (2019) investigated the degree of use of SMA techniques and the main factors affecting that in the Czech Republic. They investigated eleven SMA techniques and measured their degree of use on a 5-point Likert scale. They found that the three most-used SMA techniques are (in descending order): strategic planning and budgeting, customer accounting, and target costing. The least-used SMA techniques are (in ascending order): integrated PMS (e.g. balanced scorecard), strategic pricing, and activity-based costing. Also, the results of regression analysis showed that there is no statistically significant positive influence of size, perceived environmental uncertainty or industry on the SMA-use index. Nevertheless, implementation of differentiation strategy has a statistically significant and positive influence on SMA.

Cescon, Costantini, and Grasseti (2018) examines the relationship between strategic choices and the use of SMA techniques in large Italian companies and investigates whether external factors such as environmental uncertainty and competitive forces affect the SMA system. The survey results show that SMA usage does not depend on strategy type and only marginally depends on geographic orientation. The descriptive statistics of SMA techniques based on senior corporate accountants' perceptions, indicate a high SMA importance in large manufacturing companies. logit regression results show a positive influence of competitive forces on SMA technique usage, such as strategic pricing, balanced scorecard, risk analysis (management), target costing and life-cycle costing. These results provide evidence that competitive forces are external factors relevant for a strategy that may affect the SMA system.

Nouri and Soltani (2017) analyzed the use of strategic management tools and techniques among Iranian firms. The results show that the mission and vision statements, SWOT analysis, cost-benefit analysis, core competencies, financial analysis, critical success factors, total quality management, price analysis, stakeholder analysis, and benchmarking, respectively as the ten tools of strategic management techniques, are widely known among Iranian managers. In addition, the use of these tools and techniques are not the same among the companies operating in various industries and having different size and ownership.

Saponja and Suljovic (2017) investigated the usage of seventeen strategic management techniques in the Republic of Serbia. ABC is the most used technique in the observed companies followed by quality costing. Value chain costing is in use some of the time, attribute costing and benchmarking, too. The least used techniques are target costing, competitor performance appraisal based on public financial statements and Environmental Management Accounting. Also, through statistics, they declared that there is a strong correlation between the implementation of various techniques of strategic management accounting and the positive impact on cost control and cost reduction.

Akmeşe and Bayrakçı (2016) studied the usage of the management accounting practices in the food and beverage, especially fast-food businesses operating in Konya. According to the research results, the fast-food businesses are still applying the traditional practices within the scope of the costing system, budgeting, performance evaluation, information for decision making and strategic analysis practices. The managers who have applied some practices into their businesses within the context of the modern management accounting practices have underlined that the related practices haven't been completely integrated into their businesses.

Kalkan and Bozkurt (2013) have been seeking to identify the attitudes of executives of small and medium-sized companies towards selection and use of strategic management accounting tools and techniques. The required information was collected by sending questionnaires to high and middle level managers of the companies of the sample and, finally, 192 completed questionnaires were collected. Based on the analysis of the research data, the most widely used strategic management tools of the companies during the period of five years had been as follows: Strategic planning, human resources analysis, total quality management, customer relationship management, outsourcing, financial analysis in the firm owners, mission statement, PEST analysis, financial analysis of competitors, benchmarking, strategic planning software, portfolio analysis, critical success factors, stakeholder analysis, value chain analysis, organization's cultural analysis, SWOT, scenario analysis and conditional analysis.

Ramljak and Rogošić (2012) studied a population of 400 Croatian large-sized companies, and observed the following frequency of the selected SMA techniques: Activity-based costing with a frequency of 40%; Quality costing with a frequency of 39,4%; Target costing with a frequency of 25,8% companies; and, the balanced scorecard with a 15,2%. The least used techniques were: life cycle costing with a frequency of 9,1% and environmental costing with a frequency of 6,1%. Also, their results revealed that the usage of two or more strategic management accounting techniques had a positive effect on cost control and reduction improvement.

Hassas Yeganeh, Dianati and norouzbegi (2011) investigated the status of 38 management accounting techniques in terms of the IFAC's Conception of the Evolution of management accounting and their usage rate in Iranian firms listed on the Tehran Stock Exchange. The results obtained from the management reports indicate that 73.6% of the companies studied are in the first stage of development (cost determination and financial control). Also, managers use management accounting techniques such as income statement and balance sheet analysis, cash flow statement analysis, financial ratio analysis, annual budgeting and material requirements planning. On the other hand, cases such as: balanced scorecard, multiple regression, and kaizen costing were used much less than other techniques. There are joint techniques between the research of Hasas Yeganeh et al. (2011) and our research, which are mentioned in the results section.

In 2010, Khodamipour and Talebi investigated the level of use of eight management accounting techniques in Iranian manufacturing firms listed on the exchange. The results showed that the managers of sample firms use budgeting, deviation analysis, and breakeven point analysis tools. but, managers do not use the balanced scorecard, reengineering process, responsibility accounting, target costing and activity based costing.

Elbanna (2007) examined the use of strategic management tools as a part of strategic planning process. He concluded that "traditional tools" such as Porter's five forces, BCG matrix, value chain analysis, experience curve analysis, General Electric matrix, and Delphi technique can be used in organizations in small cases.

Sulaiman, Nik Ahmad and Alwi (2004) examined the extent to which traditional and contemporary management accounting tools are being used in four Asian countries: Singapore, Malaysia, China, and India. Overall, the evidence reviewed showed that the use of contemporary management accounting tools is lacking in the four countries. The use of traditional management accounting techniques remains strong. In India, the future emphasis is on traditional management accounting techniques. The respondents envisaged traditional tools such as ROI and variance analysis to be further emphasized. In Singapore, there was increasing use of CVP, standard costing and traditional budgeting. In Malaysia, companies reported that they measured customer satisfaction/product quality as part of performance evaluation, and there was target costing and ABC. While the use of budgets in India, Malaysia, and Singapore

remains high, there is very limited use of budgets in China. In China, standard costing is predominantly used for joint product costing and budgeting and BSC not used.

According to the reviewed scientific works, it could be stated that the exploration of the issue, i.e. research of SMA and its changes, separate techniques and identification of relations among types of organizations and SMA tools is fragmented. There is no integrated framework encompassing applicable tools of SMA and types of organizations for which particular tools should be applied (Strumickas & Valanciene, 2007, 2008). So, the eclecticism of researches, theories and tools pushes us forward to the question:

1. what is the status of strategic management accounting in Iran and how do managers should know what tools they have to use, what they don't and what composition of SMATs gives the most effective result?
2. Does the type of industry, the type of ownership and its size affect the application of strategic management accounting techniques?

And we tend to answer these questions at our research. With an abundance of strategic theories, frameworks and books available, this research opted for an approach to understand the domain of strategic management by focusing on the theories and teachings of significant thinkers of business strategy Wickramasinghe and Alawattage. The researcher conducted a structured and systematic review of existing literature and synthesized the information and results in this study.

Material and Methods

This study aims to describe and explain the status of SMATs in the Iranian firms active in various industries. Therefore, this study has an applied-developmental nature and is in the survey-exploratory research.

Society and statistical sample

Therefore, statistic population consists of all Iranian firms active in different industries (Manufacturing; Construction; Bank, Finance, Insurance; Technology: software, Communication, Media, and Energy). Also, the sample consists of Chief Executive Officers such as general director, management accountant, chief marketing officer, chief financial officer, chief human resources officer, etc.

Data Collection

The data used in this research project were collected through two methods: interviews and questionnaires. First, prior literature and empirical studies on strategic management and strategic management accounting were reviewed to identify the SMATs and it was discovered thirty-nine SMATs. In order to understand the essence of strategic management accounting tools and techniques, an operational definition of them presented (see Appendix A). Then were interviewed with a set of management accounting experts to planning a questionnaire for assessing the status of SMATs to support strategic processes.

The questionnaire was set in three part including a cover letter, scientific questions, and demographic questions. In the cover letter, in addition to the research title, the purpose of data collection by the questionnaire and the necessity of the sincere cooperation of the respondents in filling the questionnaires have been described; finally, the respondents were appreciated. In the part of scientific questions, each of strategic management accounting tools and techniques has been proposed, and the managers' use of them has been questioned based on 5-point Likert scale (Table 1). Demographic questions include information on the firms' general specifications

such as the industry type, ownership type, and size based sales, as well as demographic information of the respondents such as age, field of study, and their period organizational tenure.

Table 1. Status of usage rate of SMATs based on five-point Likert scale.

Never	Seldom	Sometimes	Most of the times	Always
0	1	2	3	4

The questionnaire distribution method was: internet (web questionnaire), fax, post and physical distribution by the researcher. Some firms refused to participate in the survey for various reasons. The reasons for not participating were divided in a “too busy at the moment” or “not enough time”, “firm is engaged in auditing”, “not interested participate in the survey because the SMATs considered in the questionnaire are irrelevant for our organization”, “the firm policy does not permit us to compile research questionnaires” and “we outsource the accounting activities”.

Considering all these reasons and removing those firms not participate in the survey, the final sample size became 75 firms. Sample firms are included forty-five manufacturing firms, three construction firms, seventeen banks /financing /insurance firms, eight technology firms (software/ communication/ media) and two energy firms (table 2).

Table 2. Sample of research

Industry	Frequency
Manufacturing	45
Construction	3
Bank/Finance/Insurance	17
Tech (software/ Communication/Media)	8
Energy	2
Sum of sample frequency	75

Validity and reliability

The validity of the tool ensures that a sufficient number of appropriate questions to measure the concept are considered and construct validity indicates apparent ability to measure the concept. For facial and content validity, the questionnaire was debated by experts both academics and professionals.

In order to analyze the reliability of the research instrument is examined Cronbach's alpha. The results are depicted in Table 3. The reliability Alpha of the SMATs is proposed to be 0.976. Because of the non-normal distribution of SMATs, the current study has adopted Spearman's correlation in this context. It has been used to further test internal consistency and to confirm the reliability of techniques (see Appendix B). The result of Spearman's correlation indicates that the thirty-nine SMATs are significant at 0.01 and 0.05 levels and except for strategic management of customers the correlation coefficient ranges from 0.716 to 0.926, which reflects a high correlation between items.

For the analysis of data obtained from the survey, descriptive statistics such as mean, median, standard deviation, frequency, etc., and inferential statistics such as mean test, correlation, etc. have been used. Also, Excel and SPSS 25 software has been used for the implementation of statistic methods.

Result and discussion

Statistical tools/analysis procedures

Demographic variables will be described with frequency tables and the main variables will be described with mean and standard deviation statistics. Descriptive statistics were performed to give a summary of the firms and respondents' bio-data.

For inferential statistics were performed Analysis of variance (ANOVA), and Kruskal–Wallis ranking test at a 0.05 level of significance. Finally, appropriate techniques for each industry have been proposed based on the relationship between the usage rate of SMATs and the types of industries.

Table 3. Cronbach's Alpha

Title	Strategic categories	Number of Question	Cronbach's Alpha
Strategic management accounting techniques Cronbach's alpha: 0.976	Strategic costing	6	0.926
	Strategic cost management	4	0.716
	Strategic programming	5	0.85
	Strategic Management of Manufacturing	4	0.747
	Strategic Quality management	4	0.728
	Strategic management of the Business	6	0.802
	Strategic management of product	1	1.00
	strategic management of the market	2	0.831
	Strategic management of competitors	1	1.00
	Strategic management of customers	2	0.673
	Strategic Management of Resources	3	0.785
	Strategic assessment of performance	1	1.00

Descriptive statistics

This section presents the firm's characteristics and the respondents' personal information. This aspect of the survey, provides basic information about the samples. It provides a level of assessment of the respondents' understanding and ability to provide valid responses to the questionnaire items without any form of misperception and bias. The outcome of these analyses is contained in the table 4.

As shown in the Table A.4, in types of industry, sixty percent of the firms are manufacturing and 22.7% are bank, finance and insurance, 10.7% are technology, 4% are construction and others are energy.

In types of ownership sixty-two point seven percent of the firms are privately owned and 30.7% of them are government-owned and the rests are semi-publicly owned. In sales revenue, more than fifty percent of sample firms have revenue over 1000 Billion Riyals, that all of them are joint-stock firms. Therefore, descriptive analysis of firms show that based on the mentioned features, the majority of firms are manufacturing with private ownership and revenue more than 1000 Billion Riyals.

Also, based on demographic information 65.3% of respondents are less than forty years old, 22.7% are between 40–49 years, 10.7% are between 50–59 years and others didn't announce. In field of study, 69.3% of respondents have accounting degree and 14.7% have economics, business management, cost management and other field of management. In organizational tenure, 53.3% of respondents have less than 5 years of work experience.

Description of the main variables (Strategic Management Accounting Techniques)

Table 5 reports the frequency and percentage of frequency of the classes of indicators of the SMATs based on the Likert scale.

Table 4. Descriptive statistics of sample

Descriptive Statistics	Questions	Categories	Frequency	Percentage	
Firms	Type of Industry	Manufacturing	45	60%	
		Construction	3	4%	
		Bank/Finance/Insurance	17	22.7%	
		Energy	2	2.7%	
		Technology	8	10.7%	
	Type of Ownership	public	23	30.7%	
		private	47	62.7%	
		Semi-public or semi-private	5	6.7%	
	Size based on sales revenue (goods and services)	< 100 Billion Rials	small	12	16%
		101 -1000 Billion Rials	medium	13	17.33%
>1000 Billion Rials		large	44	58.67%	
Unknown			6	8%	
Age	< 40 years		49	65.3%	
	40-49		17	22.7%	
	50-59		8	10.7%	
	60>=		0	0	
	Unknown		1	1.3%	
Respondents	field	accounting	52	69.3%	
		Economics, Business Management, Cost Management and other fields of management	11	14.7%	
		other	12	16%	
	Tenure (time in current job)	1-5 years		40	53.3%
		5-10 years		16	21.3%
10 years>			18	24%	
	Unknown		1	1.33%	

In term of strategic costing, six SMATs were evaluated where five techniques including activity-based costing (ABC), performance-focused activity-based costing (PFABC), marginal costing (GPK), life cycle costing (LCC) and quality costing (QC) are sometimes used in Iranian firms. Time-driven activity-based costing (TDABC) has never used.

In term of strategic cost management, the four SMATs are examined. The two techniques including activity-based management (ABM) and business process management (BPC/M) most of the time are used, the target costing (TC) sometimes used, and The Kaizen costing (KC) is rarely used in Iranian firms.

In term of strategic programming, six SMATs were surveyed. Two techniques including R&D and material requirements planning (MRP) are always used, and enterprises resource planning (ERP) is most of the time used. Two techniques including unused capacity management (UCM), and the theory of constraint (TOC) is sometimes used in Iranian firms.

In term of strategic manufacturing, four techniques including lean production (LP), just in time (JIT), reverse engineering (RVE), and master production schedule (MPS) are most often used in Iranian firms.

Table 5. Frequencies (f) and Descriptive statistics of the SMATs usage status

Variables	Indicators	Never		Seldom		Sometimes		Most of the time		Always		Mean	Median	Std. Deviation
		F	%	F	%	F	%	F	%	F	%			
Strategic costing	ABC	6	8	3	4	11	14.7	8	10.7	9	12	2.3	2	1.372
	TDABC	8	10.7	2	2.7	7	9.3	5	6.7	5	6.7	1.89	2	1.502
	PFABC	6	8	4	5.3	8	10.7	6	8	3	4	1.85	2	1.322
	GPK	4	5.3	1	1.3	9	12	9	12	4	5.3	2.3	2	1.235
	LCC	6	8	5	6.7	10	13.3	3	4	6	8	1.93	2	1.388
	QC	5	6.7	5	6.7	11	14.7	8	10.7	10	13.3	2.33	2	1.344
Strategic cost management	ABM	7	9.3	5	6.7	6	8	11	14.7	6	8	2.11	2	1.409
	BPC/M	3	4	3	4	13	17.3	15	20	9	12	2.56	3	1.119
	TC	4	5.3	3	4	16	21.3	8	10.7	18	24	2.67	3	1.265
	KC	7	9.3	2	2.7	6	8	4	5.3	7	9.3	2.08	2	1.573
Strategic programming	ERP	4	5.3	1	1.3	12	16	17	22.7	15	20	2.78	3	1.159
	R&D	2	2.7	5	6.7	15	20	15	20	22	29.3	2.85	3	1.127
	MRP	3	4	4	5.3	8	10.7	14	18.7	16	21.3	2.8	3	1.217
	UCM	4	5.3	4	5.3	16	21.3	13	17.3	7	9.3	2.34	2	1.14
	TOC	5	6.7	5	6.7	11	14.7	8	10.7	6	8	2.14	2	1.287
Strategic manufacturing	LP	5	6.7	2	2.7	4	5.3	7	9.3	8	10.7	2.42	3	1.501
	JIT	4	5.3	3	4	8	10.7	14	18.7	8	10.7	2.51	3	1.239
	RVE	2	2.7	2	2.7	10	13.3	10	13.3	6	8	2.53	3	1.106
	MPS	3	4	2	2.7	11	14.7	14	18.7	11	14.7	2.68	3	1.15
Strategic quality management	TQM	3	4	3	4	12	16	14	18.7	9	12	2.56	3	1.141
	6 σ	3	4	2	2.7	9	12	12	16	3	4	2.34	3	1.111
	CI	3	4	3	4	15	20	15	20	10	13.3	2.57	3	1.109
	RE	5	6.7	2	2.7	8	10.7	7	9.3	7	9.3	2.31	2	1.391
Strategic management of the business	BCG	5	6.7	3	4	9	12	6	8	3	4	1.96	2	1.28
	GE	4	5.3	2	2.7	5	6.7	4	5.3	4	5.3	2.3	2	1.658
	IA	2	2.7	6	8	13	17.3	15	20	19	25.3	2.78	3	1.15
	RM	3	4	4	5.3	16	21.3	14	18.7	17	22.7	2.7	3	1.16
	PFF	6	8	1	1.3	5	6.7	8	10.7	3	4	2.04	2	1.43
	SP	1	1.3	5	6.7	11	14.7	18	24	8	10.7	2.63	3	1.001
Strategic management of product	PPA	2	2.7	2	2.7	9	12	17	22.7	21	28	3.04	3	1.058
Strategic management of market	MSA	2	2.7	2	2.7	5	6.7	15	20	22	29.3	3.15	3	1.074
	MMA	2	2.7	4	5.3	12	16	14	18.7	15	20	2.77	3	1.127
Strategic management of competitors	CA	4	5.3	2	2.7	6	8	18	24	19	25.3	2.94	3	1.197
Strategic management of customers	CPA	2	2.7	2	2.7	11	14.7	16	21.3	15	20	2.87	3	1.067
	CLV	4	5.3	4	5.3	1	1.3	10	13.3	14	18.7	2.79	3	1.431
Strategic management of resources	SCA	2	2.7	5	6.7	11	14.7	15	20	11	14.7	2.64	3	1.123
	RA	1	1.3	5	6.7	12	16	18	24	13	17.3	2.76	3	1.031
	RCA	4	5.3	3	4	8	10.7	9	12	11	14.7	2.57	3	1.335
Strategic assessment of performance	BSC	3	4	3	4	9	12	9	12	9	12	2.65	3	1.368

In strategic quality management, three techniques including total quality management (TQM), six sigma (6σ) and continuous improvement (CI) are most often used and the re-engineering sometimes used in Iranian firms.

In strategic management of the business, the usage status of six SMATs were examined. Two techniques include industry analysis (IA) and risk management (RM) are always used, and two techniques including Porter's five forces analysis (PFF) and strategic positioning (SP) are most often used, the two techniques of the Boston matrix (BCG) and the General Electric (GE) matrix are sometimes used in Iranian firms.

In strategic management of the market, both market segment analysis (MSA) and market mix analysis (MMA) is most often used in Iranian firms.

In strategic management of competitors, the technique of competitor's analysis (CA) have high important and always used in Iranian firms.

In strategic management of the customers, the technique of customer's profitability analysis (CPA) is most often used and the technique of customer lifetime value (CLV) always used in Iranian firms. Because, the customer profitability depends on customer satisfaction, so the customer should be the target of the company.

In strategic management of the resources, three of SMATs are examined. Resources consumption analysis (RCA), supply chain analysis (SCA) and resource analysis (RA) are most often used in Iranian firms.

In strategic management of the product, product profitability analysis (PPA) and the competitor's analysis are always used. Also, for strategic management performance, the Iranian firms are sometimes used balanced scorecards (BSC).

The compare usage Rates of Strategic Management Accounting Techniques

The reminder of this section will analyze the difference in the use of strategic management accounting tools and techniques based on the features of the firms including the industry type, ownership type, and their sale revenue (size).

Table 6 compares the use of strategic management accounting tools and techniques based on the industry type in the five groups of industries including (1) Manufacturing, (2) Construction, (3) Bank, Finance and Insurance, (4) Technology (software/ communication/ media) and (5) Energy.

Table 6. Comparing the use of SMATs based on industry type (ANOVA Test)

Variables	F	Sig.
Strategic costing	1.185	0.329
Strategic cost management	0.639	0.637
Strategic programming	1.761	0.148
Strategic Manufacturing	1.800	0.145
Strategic quality management	2.677	0.043
Strategic management of business	1.980	0.109
Strategic management of products	2.427	0.061
Strategic management of market	2.589	0.049
Strategic management of competitors	2.942	0.031
Strategic management of customers	2.541	0.053
Strategic management of resources	0.875	0.485
Strategic management of performance	0.724	0.583

The results of the Table 6 shows that based on industry type, product and non-product firms are different only in using the tools and techniques such as strategic quality management,

strategic management of market, strategic management of competitors, and strategic management of customers; while, these firms are similar in using other tools and techniques.

Table 7 shows the average use of tools and techniques in the product and non-product firms, which have a different situation.

Table 7. Comparing the average use of different SMATs based on the industry

Variables	SMATs	Mean Rank				
		Manufacturing	Construction	Bank/Finance/ Insurance	Energy	Technology
Strategic quality management	TQM	23	3.5	25.25	12.5	16.75
	6 σ	16.93	15.25	16.29	7.33	7.25
	CI	24.5	15.5	25.38	7	28
Strategic management of market	RE	16.03	15.25	17.58	5.83	13.67
	MSA	24.9	11.83	27.83	8.5	24.4
Strategic management of competitors	MMA	24.56	13.17	25.88	15.33	29.5
	CA	26.5	33.83	26.23	8.83	19.92
Strategic management of customers	CPA	23.02	21.25	28.09	5.75	23.9
	CLV	15.59	20.5	20.21	6.5	23.5

Based on the results of Table 7, in term of strategic quality management, manufacturing, construction, bank, finance and insurance firms have used the tools of continues improvement (CI) and total quality management (TQM) equally. This is while that the managers of energy firms have been more intended to use TQM and the managers of technology firms have been more intended to use of CI.

In term of strategic management of market, firms active in construction, energy and technology have more use market mix analysis (MMA) and bank, finance and insurance firms have more use market segment analysis (MSA). While manufacturing firms use both techniques equally.

In strategic management of competitors, the use of competitor's analysis has the highest and lowest rank in construction firms and energy firms respectively.

In term of strategic management of customers, all of industries except of energy have more used customer profitability analysis (CPA). Energy firms use both CPA and CLV equally.

The results of the Table A.8 shows that in terms of ownership type there is a difference among the companies with public, private, and both ownership only in the use of tools strategic management of business including BCG matrix, GE matrix, industry analysis, risk management, Porter's five forces analysis and strategic positioning.

Table 8. Comparing the use of SMTT based on ownership type (ANOVA Test)

variables	F	Sig.
Strategic costing	1.164	.320
Strategic cost management	.835	.439
Strategic programming	2.952	.059
Strategic manufacturing	1.178	.316
Strategic quality management	.247	.782
Strategic management of business	3.431	.039
Strategic management of products	.241	.787
Strategic management of market	.185	.831
Strategic management of competitors	2.117	.132
Strategic management of customers	.169	.845
Strategic management of resources	.665	.519
Strategic management of performance	2.609	.090

Based on the results of the Table 9, semi-private or semi-public firms have made a greater use BCG matrix, GE matrix, risk management and strategic positioning. In contrast, the use of industry analysis and porter's five forces analysis by the private firms have been higher.

Table 9. Comparing the average use of different SMATs based on ownership type

Variable	SMATs	Ownership type		
		Public	Private	Semi-public or private
Strategic management of business	BCG matrix	12.17	11.45	15.71
	GE matrix	11.17	7.93	12.1
	IA	7.33	30.01	27.64
	RM	14.9	28.69	28.97
	PFF	10	12.29	12.06
	SP	14.13	22.78	22.86

The results of the table 10 show that in terms of size (sale revenue) there is a difference among the small, medium and large firms only in the use of tools such as strategic quality management and strategic management of business. while, these firms are similar in using other tools and techniques. Table 11 indicates the average use of tools and techniques, which have a different situation by the size. Based on the results of the Table 11, large companies have made a greater use of TQM, Continuous improvement, Reengineering, BCG, GE, Industry analysis, Risk management. In contrast, managers of the medium companies have been more intended to use the tool of 6 σ , PFF and Strategic positioning.

Table 10. Comparing the use of SMTT based on firm size (ANOVA Test)

Variables	F	Sig.
Strategic costing	0.495	0.688
Strategic cost management	1.977	0.129
Strategic programming	0.781	0.509
Strategic manufacturing	1.596	0.203
Strategic Quality management	2.891	0.045
Strategic management of business	2.721	0.050
Strategic management of products	0.654	0.585
Strategic management of market	0.511	0.676
Strategic management of competitors	0.963	0.418
Strategic management of customers	0.512	0.676
Strategic management of Resources	1.225	0.310
Strategic management of performance	2.445	0.083

Table 11. Comparing the average use of different SMTT based on size

variables	SMATs	Firm size		
		Small	Medium	Large
Strategic quality management	TQM	10.57	18.25	20.98
	6 σ	6.38	16.83	14.79
	CI	16.78	20.3	22.54
	RE	8.43	11.17	15.5
Strategic management of the business	BCG	8.92	9.67	14.15
	GE	5.7	7.38	11.88
	IA	18.56	23.72	26.97
	RM	23.94	20.25	25.76
	PFF	4.8	13.63	12.71
	SP	13.93	22.31	21.76

Conclusion and Recommendations

This paper contributes to the empirical literature on SMA. Its main purpose being to describe and explain the status of strategic management accounting techniques in Iranian firms and to investigate the effects of the main contingent factors (Industry type, Ownership type and Size). the statistical population of the study was all Iranian companies. According to the mentioned objectives theoretical for the development of MAS adjusted with the environment of an organization and satisfying management needs of timely receiving the most relevant information with no surplus costs was examined in this paper. The analysis of scientific literature, the systemization of results of different researches related to SMA, the studies of business companies, the conduction of financial and managerial analysis, the synthesis of management/MA theories, methods and practical cases were made in this research. The research disclosed that MA could be assessed company-wide, seeking to find an optimal configuration of the local management accounting system from Technical - Managerial View.

The first research question addressed the status of SMATs use. We investigated 39 SMATs and measured the usage rate on a 5-point Likert scale. The paper provides descriptive statistics pertaining to these results. We found that the five most-used SMATs are market segment analysis (MSA), product profitability analysis (PPA), competitors' analysis (CA), customers' profitability analysis (CPA) and R&D, respectively. The least-used SMATs are PFABC, TDABC, BCG matrix and LCC. Our results about most-used SMATs are in accordance with Petera and Soliakov (2019), who also find competitors analysis and customers analysis ranked highly. Also, in our research accordance with other studies (Khodamipour and Talebi, 2010; Hassas Yeganeh et al. 2011; Ramljak and Rogošić, 2012) life cycle costing (LCC) and activity techniques ranked as the least-used technique.

Overall, the status of management accounting has changed in Iranian firms over the past. The comparison using of SMATs in the present study and Hassas Yeganeh et al. (2011) reveal that managers used most of the management accounting techniques related to market management, competition and customers' analysis, quality management in addition to costing, financial control, and budgeting. It can be said that in recent years, changing economic infrastructure, such as privatization, entry of small businesses and startups and expanding product diversification, has increased the competitive environment in the market, and the need of management accounting and strategic management accounting has been felt by managers. However, techniques such as kaizen costing, just in time, BSC and activity based techniques are not used in Iranian firms.

Also, the second research question about the effects of three contingency factors show there is significant positive influence of industry type, ownership type and size on the SMATs-use index. Based on industry type, firms are different in using the tools and techniques such as TQM, 6 σ , Continuous improvement, Reengineering, Market segment analysis (MSA), Market mix analysis, Competitors' analysis, Customers profitability analysis, Customer lifetime value. The usage rate of SMATs such as BCG matrix, GE matrix, Industry analysis, Risk management, Porter's five forces, Strategic positioning is different in the private and public firms. In addition, firms size has different effect on the use some of SMATs.

Regarding industry, our study is the first to use advanced statistical methods to investigate the relationship of this contingent variable with SMATs use. We operationalized industry as an ordered variable with five values: (1) manufacturing industry, (2) Construction, (3) Bank, Finance, and Insurance, (4) Technology: software, Communication, Media, and (5) Energy. Our study indicates that there is statistically significant positive influence of manufacturing industry on SMA use. Again, further research is needed, both in the form of quantitative studies and in the form of comparative qualitative studies, which could provide deeper insights into

reasons why and when industry influences the extent of SMA use. The result of this study is in accordance Mclellan and Moustafa (2013) and Valipour and Kaviani Fard (2017).

the results of the various studies about the effect of firm size differ. Our result is in accordance with cadez and Guilding (2008), Pavlatos (2015), Siska (2016), Nair and Nian (2017) and Nouri and Soltani (2017); but it differs from the results of studies by Peter and Soliakov (2019), Pavlatos and Kostakis (2018), Cescon et al. (2018) and Cinquini and Tenucci (2010), who find there is no statistically significant positive influence of size and on the SMATs-use index. It is possible to suggest that the differences stem from the structure of respondents, because our study, investigated small, medium and large companies while in other study medium and large companies are investigated. This would support the hypothesis that SMA techniques are relevant to all companies from a certain size upwards. On the other hand, the studies of Cadez and Guilding (2008) and Pavlatos (2015) address only medium and large companies and yet their results support the hypothesis of the positive influence of size on SMA use. Further research is therefore needed.

The results of this study should be viewed in the context of its limitations. From a statistical perspective, the main limitation is associated with the number of observations. Furthermore, the adoption of a SMA is different in the various firms. Indeed, on the one hand, the problem is that a minor use in one company is considered equal to an extensive use in another one. On the other hand, obtaining a reliable measure of the level of use of SMA techniques can be much more complex, and it can cause other types of measurement errors.

The above-mentioned results and limitations can serve as starting points for further research. First, we found that the usage of various SMATs differs in the individual studies (and therefore countries) significantly. in addition, the effects of contingency variables on SMATs usage depends on geographic orientation. Second, replication of the research in other countries (especially in the Asian countries) would be interesting. Third, the careful selection of additional contingent factors could increase the theoretical and practical implications of the research (e.g. Intensity of competition, market share, managerial ownership, products diversity, which may be connected with additional know-how regarding SMATs).

This study is only a response to the need for empirical evidence of SMA adoption and application in Iranian firms. This study in itself is not conclusive, and so, its findings only form a basis for further research openings in developing countries. However, research in management accounting, especially SMA is very new in Iran. Therefore, it is recommended to do the following:

- The results of this study indicate the importance of SMA for Iranian firms, but there are problems with its implementation. Therefore, identify managers' problems.
- Researchers in the area of SMA should know that describing the status of SMA solely on the basis of the use or non-use of techniques can lead to misleading results. Because Firms may or may not use a technique under distinct conditions. It is recommended that researchers study the impact of corporate accounting culture on the design of an SMA system.
- This research and others in the field of SMA have shown that management accounting in Iran is not expansive. Identify and introduce methods and factors that will lead to the widespread use of strategic management accounting in different industries.

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