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Investigation and Priority-Identification of the Requirements of Applying Management Accounting Techniques in Industrial Companies of Iran

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ABSTRACT

The vital role of management accounting on suitable data presentation for managers' decision-makings has been proved. Accordingly, management accounting must, by investigating the requirements of applying management accounting techniques and other available tools, provide managers with more precise and comprehensive data for their different decision-makings. Therefore, the present study has tried to identify and order the requirement priorities of applying management accounting techniques, based on the viewpoints of financial managers. The requirements of applying the techniques of management accounting have been classified into three groups of environmental requirements, technical-humanistic requirements and structural requirements. The research's intended techniques of management accounting also comprises balanced score cards, just-in-time management of availabilities, target costing, activity-based costing and total quality management. Data collection has been done by making use of Likert's five-choice scale. The main purpose of this research is to recognize and order the priorities of the main and basic requirements and prerequisites. The results of testing hypotheses depicted that all of environmental, technical-humanistic and structural requirements, from viewpoints of financial managers of above-mentioned companies, have been so important in applying management accounting techniques. Also it has been revealed that there is not significant difference between the importance of requirements and the importance of parts of each requirement is nearly the same.

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INTRODUCTION

No managers, even those who are very clever and wise, can come to proper and accurate decisions without sizeable information about working and operation facts of an institution. Managers whose decision-makings have been based on their own personal beliefs and presumptions rather than the institutional facts have come to undesirable results and have led their own institution to financial problems and economic crises (Etemadi, hosein.2002). The sum of such conditions and the need for precise, accurate and on time information for planning, organizing, decision-making and finally controlling have created a situation in which accounting (especially management accounting) has appeared as a desirable information system and a structural unit for providing the management with suitable information in their different decision makings (Fade, 2001).

The very important role of management accounting in suitable data presentation for managers' decision-makings has been proved. Additionally, the systems of industrial accounting, regarding the methods of data production and the importance of the data themselves in industrial accounting, must cope itself with production technology. Accordingly, the application of the techniques of management accounting seems necessary. (Rezayian, A,2004)

Management accounting information has a basic and determinant influence on total system of information management. So, correction and improvement of such information (which is done by implementing new techniques) make the management's available information more reliable and related for planning, decision-making and controlling. In industrial companies, improvement of industrial accounting information provides managers with more possibilities for planning, decision-making and controlling organizational processes. (Parsaeian, A,2009) The main purpose of this research is to recognize and order the priorities of the main and basic requirements and prerequisites of implementing these techniques then, by

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putting emphasis on prevision of such requirements and prerequisites, implementation of advanced techniques of management accounting will be possible and consequently more effective and useful information will be provided for the managers.

Coping with technological changes and operational environments and structures in industry and commerce, management accounting system which focuses on controlling and analyzing management decisions must be able to adjust itself. But a review of gradual development of management accounting reveals the fact that it hasn't had great progress in Iranian organizations, although this branch of accounting science has had some ascents and descents. (Angooti, A. 2006)

Noticing the investigations related to requirements of implementing management accounting techniques, if provided, it deserves to take quick and necessary actions to apply management accounting techniques to make organization managers able to use more suitable, precise and better reports for making more accurate decisions. Therefore, this study mainly aims at investigating the presence of such requirements and ranking them to specify the status and how of creating suitable basis for implementing management accounting techniques. Management accounting, by implementing techniques of management science and other available tools, provides managers with more exact and comprehensive information for making better decision-makings.

Among management accounting techniques, balanced score cards, just-in-time management of availabilities, target costing, activity-based costing and total quality management can be mentioned (Teemed, 2001).

Requirements of applying management accounting:

A. Environmental requirements: these requirements include lack of severe inflation, consistency of currency value, the consistency of rules and regulations, determination of goods and services' selling prices based on market status, the presence of customer-orientation culture in economic environment, inexistence of guaranteed prices and existence of competition.

B. Technical-humanistic requirements: such requirements includes existence of management accounting knowledge in the organization, managers' clear expectations of accounting information, presence of motivation for providing accounting information, managers' mastery in understanding accounting information, managers' command on organizational operations and affairs, presence of technical knowledge of production among the staff and presence of cooperative culture among the staff.

C. Structural requirements: these requirements comprise presence of ordering and consistency in the process of operational accomplishment, paying attention to liability evaluation, harmony among accounting system and operational system of the organization, application of suitable mechanized informative systems, presence of relevant, accurate and on time information, presence of planned strategy and strategic planning in the organization and presence of cooperative management culture in the organization.

Methodology:

Previous Research:

Hussein Keisha Forzani (2006) investigated the influence of applying project management techniques on profit indexes of abloom sugar factory. He concluded that, regarding specified indexes for measuring customers' satisfaction extents and regarding the collected diagrams and questionnaires of the factory, the application of project management techniques has influenced customers' satisfaction extents in Abloom sugar factory.

Lairize Agouti (2005) examined the efficiency of management accounting tools and concluded that innovation, meeting customers' needs, time and quality weren't reflected in accounting reports. In clarifying the origins of such results we can point to lack of competition among the companies, certain economic status of the society, inability of presenters and users of management accounting reports, absence of legal requirement for report presentation and absence of necessary tools for preparing the reports. Abdel-kidder and Luther (2003), by examining the status of available methods of management accounting in English companies, depicted that the methods of management accounting which are used in many English companies have no longer provided wide range of information for accurate decision-makings and budget-allotment, product's profit-making and financial performance criteria are still considered. Langat Ali (2007) studied the application of management accounting techniques in industries of India and showed that Indian companies are simultaneously applying management accounting techniques as activity-based costing, activity-based management, Life cycle costing and target costing. About %73 the companies are applying activity-based costing which reveals that activity-based costing information are accurate for product price-determination. The results of this study show that there is positive correlation between activity-based costing and companies' characteristics as type of cost classification, competition volume and size.

Lion and Temuco (2007) in their study titled "Whether procedural management accounting techniques have originated from procedures or not?" aimed at promoting managers' knowledge on management accounting techniques by studying Internet questionnaires of Italian companies. This study is a measuring one and shows that procedural management accounting techniques are extensively used.

Hypotheses:

Regarding the research elements, research hypotheses are presented as follows: The main research hypotheses:

First hypothesis:

Based on viewpoints of financial managers of industrial companies, environmental requirements are important variables in applying management accounting techniques.

Second hypothesis:

Based on viewpoints of financial managers of industrial companies, technical-humanistic requirements are important variables in applying management accounting techniques.

Third hypothesis:

Based on viewpoints of financial managers of industrial companies, structural requirements are important variables in applying management accounting techniques.

Fourth hypothesis:

Structural requirements are the most important requirements among other three requirements.

First sub-hypothesis:

The factor of the consistency of rules and regulations is the most important variable among environmental requirements.

Second sub-hypothesis:

The factor of the knowledge pertaining to applying accounting reports is the most important variable among humanistic and technical requirements.

Third sub-hypothesis:

The factor of harmony between accounting system and operational systems of the organization is the most important variable among structural requirements.

Research Method:

This research has a measuring, descriptive and applied methodology. In this research, viewpoints of managers about requirements of applying management accounting techniques are described. In this study, T-Test is used for analyzing the hypotheses and generalizing sample results to the whole society, Tukey Test is used for investigating average differences and coefficient is used to measure observation significance. Also descriptive methods such as frequency indexes, calculation of indexes related to central tendency and standard deviation, mean, average, variance, standard error and portraying related diagrams are used.

*Hypotheses Testing:**Test the first hypothesis(H1):*

From viewpoints of the managers of industrial companies in Iran, environmental requirements are important variables in applying management accounting techniques

Table 1: T-Test results of the first hypothesis

T	Test value=3				
	Freedom degree	Significance degree	Average difference	Reliability difference %95	
				Low degree	High degree
46/378	56	/000	1/32632	1/269	1/3836

Regarding the obtained amount in table 1, that is 46/378 for the first hypothesis, we find that it is bigger than the number related to the table of T distribution ($\alpha=0/05$) and freedom degree of 56, that is, 1/677. So H_0 is rejected. With reliability coefficient of %95, managers of industrial companies in Iran believe that environmental requirements are important variables in applying management accounting techniques.

Test the second hypothesis(H2):

From the viewpoints of the managers of industrial companies in Iran, technical and humanistic requirements are important variables in applying management accounting techniques.

Table 2: T-Test results of the second hypothesis

T	Test value=3				
	Freedom degree	Significance degree	Average difference	Reliability difference %95	
				Low degree	High degree
32/672	56	/000	1/03008	/9669	1/0932

Regarding the obtained amount in table 2, that is 32/672 for the second hypothesis, we find that it is bigger than the number related to the T-Test distribution table ($\alpha=0/05$) and freedom degree of 56, that is 1/677. So H_0 is rejected. With reliability coefficient of %95, managers of industrial companies in Iran believes that technical and humanistic requirements are important in applying management accounting techniques.

Test the Third hypothesis (H3):

From the viewpoints of the managers of industrial companies in Iran, structural requirements are important in applying management accounting techniques.

Table 3: T-Test results of the third hypothesis

T	Test value=3				
	Freedom degree	Significance degree	Average difference	Reliability difference %95	
				Low degree	High degree
29/369	56	/000	/98997	/9224	1/0575

Regarding the obtained amount in table 3, that is 29/369 for the third hypothesis, we find that it is bigger than the number related to T-Test distribution table($\alpha=0/05$) and the freedom degree of 56, that is 1.677. So H_0 is rejected. With reliability coefficient of %95, the managers of industrial companies in Iran believe that structural requirements are important in applying management accounting techniques.

Test the fourth hypothesis (H4):

Structural requirements are the most important requirements among the three above-mentioned requirements.

Table 4: the results of Freedman's Test.

Data number	57
X^2	33/798
Freedom degree	2
Significance level	/000

For investigating this hypothesis, we must firstly examine the existence of difference among environmental requirements, technical and humanistic requirements and structural requirements. So Freedman's Test, based on table 4, is used. In this test we examine H_1 and H_0 .

$$H_0: \mu_1 = \mu_2 = \mu_3$$

$$H_1: \mu_1 \neq \mu_2 \neq \mu_3$$

When we accept this hypothesis, its significance level becomes greater than (0/05). Since this amount has been zero in Freedman's Test, we reject this hypothesis which reveals the fact that environmental requirements, technical and humanistic requirements and structural requirements are varied regarding their importance.

Table 5: Toki's Test Results

Kid1	Kid 2	Significance differences 1 and 2	Standard error deviation	Significance level	Reliability difference %95	
					Low degree	High degree
1	Technical and Humanistic	/2962	/4433	/000	/1914	/4011
	Structural	/3363	/4433	/000	/2315	/4412
2	Environmental	-/2962	/4433	/000	-/4011	-/1914
	Structural	/0401	/4433	/638	-/0647	/1449
3	Environmental	-/3363	/4433	/000	-/4412	-/2315
	Technical and Humanistic	-/0401	/4433	/638	-/1449	/0647

Based on table 7, Turkey Test shows that, regarding the averages, environmental requirements is in one group and technical- humanistic and structural requirements are in the other group. We will accept the forth

hypothesis if the average of structural requirements is bigger than both averages of environmental requirements and technical-humanistic requirements. For investigating this issue, we use dependent two-sample T-Tests. Our pairs are environmental and structural requirements as one pair and structural and technical-humanistic requirements as another pair.

Table 6: The results of the dependent two-sample T-Test

Pairs	Hypotheses	Pair differences				T	Freedom Degree	Significance Level
		Average	Standard deviation	Reliability difference %95				
				Low degree	High Degree			
Environmental-Structural	First –Third hypotheses	/33634	/30910	/25433	/41835	8/215	56	/000
Structural -technical and humanistic	Second-Third hypotheses	/04010	/37965	-/06064	/14084	/797	56	/429

According to table 6 and regarding the obtained amount, that is, 8/215, we observe that it is bigger than the number related to T-Text distribution table(= 0/05) and the freedom degree of 56, that is, 1/677. Consequently, it is shown that environmental requirements are more important than structural requirements. Since significance level for the second pair, that is, structural and technical-humanistic requirements is bigger than 0/05, these two kinds of requirements aren't significantly different regarding their importance. So the forth hypothesis is rejected.

Test the First sub hypothesis(H5):

The factor of rule and regulation consistency is the main requirement among environmental requirements. In the first sub-hypothesis, its amounts are derived from the second question.

Table 7: pair T-Test results pertaining to the first sub-hypothesis

Pairs	Question Comparison	Pair differences				T	Freedom degree	Significance level
		Average	Standard deviation	Reliability difference %95				
				Low degree	High Degree			
The first pair	1 with 2	/649	/517	/512	/786	9/475	56	/000
The second pair	2 with 3	/053	/742	-/144	/250	/535	56	/594
The third pair	2 with 4	/070	/821	-/148	/288	/646	56	/521
The forth pair	2 with 5	/123	/734	-/072	/317	1/264	56	/212

Now, we use pair T-Test for comparing the second question with the rest of first hypothesis questions. Based on table 7, the only significance amount related to the first pair is smaller than 0/05 which reveals the fact that there is difference between the causes of lacking inflation and the consistency of currency in one hand and the consistency of rules and regulations on the other hand. But other significance amounts are bigger than 0/05 which reveals the fact that there is no significant difference between the factor of rule and regulation consistency in one hand and other related factors to the first hypothesis. This shows that the factor of rule and regulation consistency isn't more important than other environmental requirements and consequently the first sub-hypothesis is rejected.

Test the Second sub hypothesis (H6):

The factor of using accounting reports is the most important requirement among technical-humanistic requirements. In the second sub-hypothesis, the amounts are related to factors of the existence of management accounting knowledge and managers' knowledge to understand accounting information which are addressed in questions 6 and 9 from whose combination the variable L is acquired.

Table 8: pair T-Test results pertaining to the second sub-hypothesis

Pairs	Question Comparison	Pair differences				T	Freedom degree	Significance level
		Average	Standard deviation	Reliability difference %95				
				Low degree	High degree			
The first pair	L with 7	/0614	/82953	-/28151	/1587	-/559	56	/578
The second pair	L with 8	/4824	/98636	-/74417	/2207	-3/693	56	/001
The third pair	L with 10	/14912	/80714	-/36329	/0650	-1/395	56	/169
The forth pair	L with 11	/23684	/89195	-/47351	/0001	-2/005	56	/050
The fifth pair	L with 12	/14912	/86067	-/37749	/0792	-1/308	56	/196

Based on table 8, the only significant amount for the second and fourth pairs is smaller than 0/05 which reveals the fact that there is difference between the importance levels of the factors of the existence of management accounting knowledge and managers' knowledge of understanding accounting information (L) in one hand, and the existence of motivation for preparing accounting information and the existence of technical production knowledge among the staff on the other hand. But other significant amounts are bigger than 0/05 which indicates that there is no significant difference between the factors of the existence of management accounting knowledge and managers' knowledge of understanding accounting information (L) in one hand and the other related factors to the second hypothesis. This shows that the factors of the existence of management accounting knowledge and managers' knowledge of understanding accounting information (L), comparing with other environmental requirements, aren't more important. Consequently, the second sub-hypothesis is rejected.

Test the third sub hypothesis(H7):

The factor of harmony between accounting system and operational systems of the organization is the most important requirement among structural requirements.

In the third sub-hypothesis, the amounts related to the factor of harmony between accounting system and operational systems of the organization are derived from the question 15.

Table 9: pair T-Test results of the third sub-hypothesis

Pairs	Question comparison	Pair differences				T	Freedom Degree	Significance Level
		Average	Standard deviation	Reliability difference %95				
				Low degree	High degree			
The first pair	13 with 15	/175	/984	-/086	/437	1/346	56	/184
The second pair	14 with 15	/158	/922	-/087	/402	1/293	56	/201
The third pair	15 with 16	-/135	1/164	-/344	/274	-/227	56	/821
The fourth pair	15 with 17	-/018	1/026	-/290	/255	-/129	56	/898
The fifth pair	15 with 18	-/035	/999	-/300	/230	-/265	56	/792
The sixth pair	15 with 19	/000	/926	-/246	/246	/000	56	1/000

Based on table 9, in all cases the significance levels of the pairs are bigger than 0/05 which depicts the fact that there is no significant difference between the factor of harmony between accounting system and operational systems of the organization in one hand and the other related factors to the third hypothesis on the other hand. That is, the factor of harmony between accounting system and operational systems of the organization isn't more important than the other structural requirements. So the third sub-hypothesis is rejected.

Sample and Scope of the research:

Statistical population of this research included 487 companies whose capitals were more than 50000 dollars and had departments of industrial accounting and management accounting. The number of qualified companies was 102 companies which were classified in 8 groups as follows:

Table 10: Statistical population distribution

Rows	Product group	number	Qualified
1	Foods and drinks	136	32
2	Textiles	26	6
3	Non-metal minerals	95	10
4	Metal industries	91	18
5	Electrical machineries	11	6
6	Paper and Paper products	22	6
7	Chemicals	59	15
8	Robber and Plastic	47	9
	Total	487	102

From the total of 102 companies, by systematic sampling method, 80 companies were chosen. Questionnaires were distributed among financial managers and experts of studied sample companies and as a result their comments were collected. Totally, 68 responses were received but 57 of them were qualified and useable. Sampling of this research is limited to without-substitution sampling in society. After determining the total sampling volume, $n=80$, the next step is to determine the sampling volume of each class. The sampling volume for each class, shown in table 11, is acquired by making use of classification method and proper allotment method.

Table 11: the manner of distributing statistical samples

Row	Product groups	Population volume	Sampling volume
1	Foods and drinks	136	22
2	textiles	26	4
3	Non-metal mineral	95	16
4	Metal industries	91	15
5	Electrical machineries	11	2
6	Paper and paper products	22	4
7	chemicals	59	9
8	Robber and plastics	47	8
	total	487	80

Source of Data:

The applied methods in this research are of measuring kind in which questionnaire, as the most commonly used way of collecting data, has been used. The applied questionnaire was Liker's 5-choice questionnaire whose consistency was calculated by Koronbokh alpha coefficient and it was %77. So, regarding its high consistency coefficient, it is a suitable tool.

*The Results of Hypotheses Testing:**Results of Testing H1:*

From viewpoints of the managers of the industrial companies in Iran, environmental requirements are important variables in applying management accounting techniques.

T-Test has been used to examine this hypothesis. The test statistic has been calculated, $T=46/378$, which, comparing with the critical amount, is in critical point. So the reliability level of %95 has been rejected and the research hypothesis indicating that environmental requirements are important variables in applying management accounting techniques has been verified.

The Results of Testing H2:

From viewpoints of the managers of the industrial companies in Iran, technical-humanistic requirements are important variables in applying management accounting techniques. T-Test has been used to examine this hypothesis and the test statistic has been calculated as; $T=32/672$ which, comparing with the critical amount, is at critical point. So the reliability level of %95 has been rejected and the research hypothesis indicating that technical-humanistic requirements are important variables in applying management accounting techniques has been verified.

The Results of Testing H3:

From viewpoints of the managers of the industrial companies in Iran, structural requirements are important variables in applying management accounting techniques. T-Test has been used to examine this hypothesis and test statistic has been calculated as; $T=29/369$ which, comparing with the critical amount, is at the critical point. So the reliability level of %95 has been rejected and the research hypothesis indicating that structural requirements are important variables in applying management accounting techniques has been verified.

The Results of Testing H4:

Structural requirements are the most important requirements among the triple variables. Freedman, Tukey and pair sample T tests have been used to examine this hypothesis. But, at the end, the test statistic, $T=8/215$, has been calculated by T-Test. T size, comparing with the critical size, is at the critical point. So the reliability level of %95 has been rejected and the research hypothesis indicating that structural requirements are the most important requirements among the triple requirements has been rejected.

The Results of Testing H5:

Rule and regulation consistency factor is the most important variable among environmental requirements. The pair T-Test has been used to examine this sub-hypothesis. Since significance level for all levels has been bigger than 0/05, it is depicted that there is no significant difference between rule and regulation consistency factor in one hand, and the other related factors to the first hypothesis on the other hand. Consequently, the research hypothesis indicating that the rule and regulation consistency factor is the most important variable among environmental requirements has been rejected.

The Results of Testing H6:

The factor of using accounting reports is the most important requirement among technical-humanistic requirements. Pair T-Test has been used to examine this sub-hypothesis. Since significance level for all levels is bigger than 0/05, it is revealed that there is no significant difference between the factors of the existence of management accounting knowledge and managers' knowledge of understanding accounting

information in one hand, and the other related factors to the second hypothesis on the other hand. Consequently, the research hypothesis indicating that the factor of using accounting reports is the most important requirement among technical-humanistic requirements has been rejected.

The Results of Testing H7:

The factor of harmony between accounting system and operational systems of the organization is the most important variable among structural requirements. Pair T-Test has been used to examine this sub-hypothesis. Since significance level for all levels is bigger than 0/05, it is revealed that there is no significant difference between the factor of harmony between accounting system and operational systems of the organization in one hand and the other related factors to the third hypothesis on the other hand. Consequently, the research hypothesis indicating that the factor of harmony between accounting system and operational systems of the organizations is the most important requirement among structural requirements has been rejected.

Conclusion:

In this research we have investigated the requirements of applying management accounting in industrial companies in Kermanshah province and, after collecting, categorizing and summarizing questionnaire data by SPSS software, hypotheses were examined. The obtained results have been summarized in table 12 as follows:

Row	Hypothesis title	Verified	Rejected
1	From viewpoints of the managers of industrial companies in Iran, environmental requirements are important requirements in applying management accounting techniques.	✓	
2	From viewpoints of the managers of industrial companies in Iran, technical -humanistic requirements are important requirements in applying management accounting techniques.	✓	
3	From viewpoints of the managers of industrial companies in Iran, structural requirements are important requirements in applying management accounting techniques.	✓	
4	Structural requirements are the most important requirement among triple requirements		✓
5	Rule and regulation consistency factor is the most important requirement among environmental requirements		✓
6	The factor of using accounting reports is the most important requirement among technical-humanistic requirements.		✓
7	The factor of harmony between accounting system and operational systems of the organization is the most important requirement of structural requirements		✓

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