

## The Impact of Intellectual Capital on Management Accounting Practices and organizational performance In Iranian major factories

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**Abstract:** With respect to the 1404 vision (a scenery script to develop in economic, social and political parts in iran), the development of the intellectual capital can be great aid to growth and the development of entrepreneurship and establishment of knowledge based enterprises. Present research examines the influence of intellectual capital on Management Accounting Practices and organizational performance in Shiraz factories Siemens, Fars Golsar factory; Bushehr industries cement co and Bushehr industries Polymer co. The research methodology is descriptive and survey research. In present research the library studies such as depended books, articles, journals and Questionnaires are used for gathering data in order to analyze them. The method of data analyzing is multiple regression, Anova, T-test, Donken test and Pearson correlation. The result of The research shows that two basic research hypotheses namely influence of intellectual capital on Management Accounting Practices and influence of intellectual capital on organizational performance be confirmed. Also, The result of The research shows that the influence of intellectual capital on Management Accounting Practices in Factories Siemens is more than other Factories. Also, the influence of intellectual capital on organizational performance in Bushehr Industries Polymer co is more than other Factories. The result of the research shows that the investment level in intellectual capital in Fars Golsar Factory is more than other factories. In the end of research, it offers that factories should deal with explaining importance and application of each dimension of intellectual capital to staffs, experts and managers by training on the job or by seminars and the role of internal reporting and referring it to strategic decision making should be considered as well. It should create a system also for evaluating investment project in intellectual capital which could quantify the profit of this kind of investments in these factories and The research offer that these factories should use Real Option Valuation (ROV) for evaluating strategic advantages of this kind of investments. It offered using twofold accounting in balance sheets, both traditional and intangible assets in these factories as well. [Mojtaba Tayari, Sasan Ghermezi. **The Impact of Intellectual Capital on Management Accounting Practices and organizational performance In Iranian major factories.** J Am Sci. 2012;8(5):289-303]. (ISSN: 1545-1003). <http://www.americanscience.org>. 37

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### Introduction:

Necessity to changing in Management Accounting Practices in business enterprises in order to be consistent with Knowledge Economy and modern strategic management accounting approach, must redound showing intangible assets in business enterprises' balance sheet and reporting intellectual capital and using this kind of reporting in strategic decisions management (Dzinskowski, 2000, pp.32-33), so, influence of intellectual capital \_it is kind of intangible assets on Management Accounting Practices in factories is important topic that it must be lionized. According to Necessity to changing in Management Accounting Practices in business enterprises in order to create a conceptual framework for modern strategic management accounting, Tayles and Pike (2005) focus on influence of intellectual capital on Management Accounting Practices. So, in present research, researcher focuses on influence of intellectual capital on Management Accounting

Practices that these practices are Reporting and Strategic Decisions, Performance Measurement, budgeting, Capital investment decisions, risk management. Also, researcher surveys the influence of investment level in intellectual capital on factories' corporate performance.

Necessity to changing in Management Accounting Practices in business enterprises in order to consistency with Knowledge Economy and modern strategic management accounting approach, must redound showing intangible assets in business enterprises' balance sheet and reporting intellectual capital and using this kind of reporting in strategic decisions management. The Significance of problem in this research is because of that factories in order to consistency with Knowledge Economy and attendance to incremental Significance of intangible assets in Management Accounting (must apply the influence of intangible assets like intellectual capital in their management accounting Practices. so, Iranian

factories' Management Accounting Practices must change compatible with modern strategic management accounting approach. Otherwise, factories won't apply intangible assets in their financial reporting and thereupon this problem redounds inability of factories' accountants in provision intellectual capital statement for intellectual capital reporting and Measurement in factories' management accounting. This problem redound inattention internal managers in Management Accounting Practices to intellectual capital' competitive advantages and value creation. **Thereupon, the problem of research is what does influence intellectual capital on factories' management accounting Practices and performance?**

#### **Literature review:**

After the publication of *The Relevance Lost* Kaplan and Johnson in 1987, new Management accounting techniques have been developed by academics and Accountants to provide information requirements of business managers in Technology era (simmonds, 1981:26-29). Also, initial concepts of intellectual capital introduced by Machlup in 1962 (khavandkar&motaghi, 2009:p.46). In recent years, the several researches have done about management accounting by academics and researchers in Iran and other countries. In field of management accounting, Arabmazar yazdi & baghomiyani(2006) introduce quick and easy access to operational data and information as one of main advantages of Enterprise Resource Planning (ERP). Also, they believe for these information be more useful and more proper, it is needy usage of management accounting Practices. Their research shows that despite prospects, usage of ERP system had no considerable influence on process presentation of techniques and new management accounting Practices. binti mastor (2005) observed that intellectual capital influence on business enterprises 'management accounting Practices and performance. the research is in order to exhibit a conceptual framework for modern strategic management accounting In fields of knowledge management and intellectual capital, Tayles and Pike (2005) introduce practices as intellectual capital Reporting, Performance Measurement, budgeting, , Capital investment decisions, Economic Exposure Management(risk management). Also, they observed direct influence of intellectual capital on corporate Performance.

#### **Resource based view**

This perspective stresses that, in turbulent times and in times of rapid change in technology and in customer and industry needs, sustainable competitive advantages are mainly due to company resources and capabilities. More specifically, such advantages are

related to core capabilities that, in practice, are equivalent to core competences or to core knowledge (Viedma, 2004, p.31).

#### **Knowledge based view**

The perspective of utilizing knowledge as the primary source of competitive advantage became known as the knowledge-based view (KBV), an extension of the RBV. However, the limitation of the KBV is that it conceives both tacit and explicit knowledge as an objectively definable commodity. KBV implies that knowledge is a static internal resource in organizations which can be controlled, exploited, and traded like most physical resources. As a result, information systems are often developed attempting to capture, store, retrieve and transmit knowledge between units, departments, organizations, and between individuals (Kong, 2007, p.723).

#### **Knowledge management**

KM is part of ICM<sup>1</sup> and not the same as IC. KM is a process, while IC is an entity. KM's function is to guard and grow the individual's knowledge, and transfer the asset into a form where other employees in the company can more readily share it (Brooking, 1999).

#### **Knowledge Firms**

Companies that use their knowledge as a source of competitive advantage are called

Knowledge companies. Edvinsson and Sullivan (1996) develop a model of the knowledge firm. They suggest that there are four major elements of the IC of a firm: human capital, structural capital, complementary business assets, and intellectual property.

#### **Intangible assets**

The interest in intangibles has grown rapidly in numerous fields, including economics,

Accounting, and strategic management. It is difficult for managers to understand intangibles because there is a general lack of information on them, and there is still a heavy reliance on financial information (Johannson *et al.*, 2001b). In accounting, intangible assets are assets that do not have physical form, such as goodwill, copyrights, brands and trademarks. Academics in the policy and accounting areas have traditionally been very eager on knowing how intangible assets reflect on the performance of the firms (Bontis *et al.*, 2000).

#### **Intellectual Capital**

Stewart (1991), Edvinsson and Sullivan (1996), Edvinsson and Malone (1997), Roos *et al.* (1997), Stewart (1997), Bontis (1998), and Lynn

<sup>1</sup> -Intellectual capital Management

(1998) unanimous that IC can be divided into human capital, structural capital and relational capital (Bintimastor, 2005, p.34)

Tayles *et al.* (2002) suggest that IC could be considered as the total stock of human capital or Knowledge-based equity that a company possesses.

One of the most workable definitions of intellectual capital that offered by the Organization for Economic Co-operation and Development (OECD) which describes intellectual capital as "the economic value of two categories of intangible assets of a company:

- (1) Organizational ("structural") capital; and
- (2) Human capital (Petty and Guthrie, 2000, p.158).

All the models have at least the following:

- Knowledge and experience embodied in individuals, either in tacit or explicit forms,
- Organizational systems and processes such as internal processes, procedures and

Administrative systems,

- innovation and technology,
- business relationships with customers, suppliers, and strategic partners (Meer-Kooistra and Zijlstra, 2001).

Lonnqvist & Mettanen (2002) categorized the components of intellectual capital that it includes the capital of relating to external beneficiaries, the capital of relating to staff and the capital of relating to internal structure organization (Khavandkar & Motaghi, 2009, p.53). Gratton & Ghoshal (2003) suggested that intellectual capital is direct consequence of development in human capital that (Khavandkar & Motaghi, 2009, p.57). Kaimenakis & Cohen (2007) considered human capital and structural capital as the components of intellectual capital. Also, structural capital includes organizational capital and relational capital (Zanjirdar *et al.*, 2008, p.12).

Finally, researcher focused on the work of Stewart (1991), Edvinsson and Sullivan (1996), Edvinsson and Malone (1997), Roos *et al.* (1997), Stewart (1997), Bontis (1998), and Lynn (1998) about IC. Human capital is people or human resources, which are important because of their knowledge, Experience, professional skill, and experience, as well as their innovation and creativity. Structural capital consists of innovation capital and process capital (organizational procedures and processes). Examples of intellectual assets are patents, trademarks and trade secrets. Relational capital is the knowledge of market channels, customer and supplier relationships, as well as a sound understanding of governmental and strategic industry alliance.

### IC Measurement

IC can be created internally or externally. Internally-created IC is work procedures and processes, which

are generated by company procedures and administrative systems, employees' innovation, and organizations' technology. Some examples of externally-generated IC are the value added through business relationships with customers, suppliers and strategic partners, such as prestige and

Image, customer loyalty, and coordination procedures with suppliers (Meer-Kooistra and Zijlstra, 2001). Roslender and Fincham (2001) suggest that it is not easy to incorporate IC into the

Traditional accounting framework because the principle of objectivity will be infract. IC is intangible, and due to this nature, it is very subjective to measure, for example, how does company value know-how, employee qualifications, customer data, and distribution channel? Johannsson *et al.* (2001) suggest that there are many concepts and measurement models that have been suggested to measure intangibles, such as Human Resource Accounting for human resource in the 1960s, and Balanced Scorecard (Kaplan and Norton, 1992), IC, and Intellectual Asset Monitor in the 1990s

(Sveiby, 1997).

### Intellectual Capital Management (ICM)

According To MAG<sup>1</sup> that published by AICPA<sup>2</sup> (2008), profit growth and sustainable competitive advantages is not due to tangible and objective investments such as factories, offices or equipments.

It is due to intellectual capital management and investment. Success of Progressive firms such as Amazon, Google, Microsoft and Wal-Mart is due to their intellectual capital. Wig (1997) suggest that intellectual capital management focus on renew and maximize firm's intangible assets value.

### Management accounting

Birket (1995) notes that management accounting is historically grounded in manufacturing accounting, budgeting, and cost accounting. After the publication of *The Relevance Lost* (Kaplan and Johnson, 1987), new management accounting techniques have been developed by academics and accountants to meet the information requirements of business managers in today's era, technology-driven world; advanced in a way unbelievable by Johnson and Kaplan when their book was written. CIMA's December 2001 *Management Accounting Research* has a special topic on management accounting change. In fact, the editors suggest management accounting should change with the change in the economy. The 'New Economy' is characterized by innovations, a fast pace of operations, and informal practices, as well as

<sup>1</sup> -Management Accounting Guide

<sup>2</sup> - American Institute of Certified Public Accountants

by an entrepreneurial risky investment in novel ventures (Hrisak, 1996; Siegel and Kulesza, 1996). Birkett (1995) suggests that nowadays organizations focus on relationships between strategy formation, change management and resource management, which can be referred to as strategic resource management (SRM). SMA is defined as “the provision and analysis of management accounting data about a business and its competitors for use in developing and monitoring the business strategy” (Simmonds, 1981). Also, Birkett (1995) suggests that SRM leads to creation of new management accounting.

According to Tayles *et al* (2002), real strategic value will become measure to explain and quantify the role and impact of intellectual capital that it is within the internal management figures. In modern companies, it becomes of even greater significance to embrace an effective and relevant treatment of intellectual capital within the management accounting function. In fact, The emphasis has shifted from ‘what we own’ to ‘what we know’, and the attempt to quantify this intangible asset is a strategic challenge and a value adding activity. There is a real danger that the value of intellectual assets may become a ‘hidden’ value. Inability of accountants to adopt a SMA approach, and focus on its evaluation, appraisal and measurement, will also result in the neglect of what may consider As the service organization’s most valuable resource (Tayles *et al.*, 2002).

### **Management accounting Practices**

#### **IC Reporting**

Meer-Kooistra and Zijlstra (2001) cited the basic assumptions behind IC reporting to be managerial perspective required, information on value creation capacity must be revealed, and model should allow incorporating flow and effect information.

Some organizations believe that intangible assets reporting are unnecessary. In fact, these kind of assets must manage efficiently. Microsoft Corporation is Example of these organizations. Microsoft corporation doesn’t spot intellectual capital in its balance sheet. In fact, Microsoft’s managers believe that difference between the book value and the market value doesn’t create specific problems (khavandkar & motaghi, 2009, pp.170-171).

#### **Performance Measurement**

Parker (2000) identifies some reasons for measuring performance as identifying success or failure, identifying whether customers are satisfied or not, helping understand processes, i.e. what is already known and what is to be known, identifying where problems are, acting as a source of information to base decisions on, and finding out whether actual results are obtained as planned. Three financial performance

measure approaches normally used to measure organizational performance are accounting-based measures, stock market-based measures, and hybrid measures (Lovero, 2000). These are considered to be the traditional performance measures that are derived from costing and accounting systems (Usoff *et al.*, 2002). Some examples of the accounting-based measures are Return on Assets (ROA), Return on Equity (ROE), Return on Investment (ROI), Residual Income (RI), Discounted Cash Flow (DCF) and Economic Value Added (EVA). Also, Kaplan and Norton developed the BSC in 1992 to complement the traditional financial performance measurement (Kaplan and Norton, 1996). It is also considered as one of the answers to necessity for non-financial ‘strategic control’ measures to be included in management accounting so as to sustain its relevance (Vaivio, 1999).

The traditional performance measures fail to measure and monitor multiple dimensions of performance; they concentrate almost only on financial aspects of the organizations. IC such gives rise to benefits that are hard to quantify, such as management, customer retention, R&D, and innovation. This suggests that traditional financial measures are not adequate for the current information age, which encompasses new business environment and realities (Amaratunga *et al.*, 2001).

Drucker (1992) suggested that a traditional measure is not adequate for business evaluation. A primary reason why traditional measures fail to meet new business is that most measures are lagging indicators. Also, Global markets have shifted from capital-intensive industries to knowledge-based industries, which have much more intangible resources. Traditional financial measures fail to assess the performance of such companies with high intangible resources. The long-run value, which the companies such as Microsoft are based on, is their IC resources and their continuous innovativeness (Barsky and Bremser, 1999). Finally, Since the BSC is a comprehensive measure of performance, which measures both the financial and non-financial aspects of the business, it seems to be the most suitable for measuring IC performance.

#### **Budgeting and Budgetary Control**

Managers are extremely motivated to find ways of improving the process of budgetary planning and control in order to improve competitiveness. One of the ways is enhancing budget team dynamics or budget participation (Poon *et al.*, 2001). Several suggestions have been exhibited to improve budgeting. Some of the improvements are innovations such as zero-based budgeting, priority-based budgeting, activity-based budgeting, and regular

forecasting (Fanning, 2000). Hope and Fraser (1997) suggest that Budgeting is just 'out of sync' with the information age. also, Beyond Budgeting Round Table (BBRT), a research board manage by CAM-I, a US-based organization, has studied new approaches to budgeting that be applicable in today's information age (Hope and Fraser,1997, 1999). Fanning (2000) points out that the beyond budgeting model consists of separating target setting from financial planning, more frequent financial forecasting, and change in organizational culture(binti mastor, 2005,p.63).

### Capital Investment Decisions

Capital investment decision-making is a collection of tools and ideas that planners use

to evaluate whether it is economic or not to purchase a certain long-term asset. The main issue in Capital investment appraisal is whether the future benefits of the long-term assets justify the initial cost (Atkinson *et al.*, 1995).

Irani *et al.* (1998) suggest that the use of traditional appraisal techniques is no appropriate for investments in IT because of their non-financial and intangible benefits, as well as the complexity of their direct and indirect costs. Thereupon, these techniques are inadequate in aiding informed budget decisions on capital investments. Mouck (2000) suggest that "The traditional capital budgeting model is virtually useless for the high-tech, knowledge-based, increasing returns sectors of the economy.

Managers have to justify the costs and benefits of their capital investments and the traditional appraisal techniques such as NPV, IRR, payback, only examine the investments' financial cost and benefits, and disregard the strategic aspects. Thereupon, managers are unable to justify their IT investments, as some of the costs and benefits are very difficult to be justified quantitatively (Irani *et al.*, 1998).

High IC firms that have invested highly in innovation will be in a better position to utilize future opportunities, as yet unidentified. Such investments have non-quantifiable benefits that, according to Pike and Neale (2002), "could open up the possibility of further wealth-creating opportunities". They nominate these *strategic options*, and the following are examples of opportunities included in them, i.e.

going in new markets, development of follow-up products, improvement of existing practices, and development of brand extension(binti mastor,2005,p.67).

Real Option Valuation (ROV) is a new standard system to evaluate, select and manage strategic investments (Standard and Poor, 2000). Standard and Poor (2000) cited that ROV improves the traditional

techniques by providing a better evaluation of the strategic investments' value, and communication of the rationale behind the value in a better manner and a clear program to attain the maximum value from a strategic investment.

### Risk management

According to InvestorWorld.com, "Risk management is the process of analyzing exposure to risk and determining how to best handle such exposure" (InvestorWorld.com, 14 Nov. 2002). IC should not be influenced by asset book value. IC has an impact on market value, and thus must be prefer both to market value and book value (Mouritsen *et al.*, 2001). Can IC help management cope with profitability and market uncertainties? (Saigol, 2002; Wall *et al.*, 2004). How should IC be managed in this situation? The argument is that firms with high levels of human, structural, and relational IC have the protection (e.g. patents, brands, and customer relationships), flexibility, and Inventiveness that should enable them to better withstand unanticipated economic downturns (binti mastor, 2005).

### Theoretical framework and conceptual model and research question:

In present research, dependent variables consist of management accounting practices and corporate performance. Also, independent variable is consisting of intellectual capital that explains the variance of management accounting practices and corporate performance. In present research, researcher has relied on opinions of Tayles and Pike (2005) and binti mastor(2005)about strategic management accounting and influence of intellectual capital on management accounting practices. Therefore, In research model, management accounting practices consist of financial reporting and Strategic Decisions, Performance Measurement, budgeting, Capital investment decisions, Economic Exposure Management (risk management). Whereas, factories or business enterprises use financial and nonfinancial indicators for comparison of their corporate performance with competitors and whereas intellectual capital can be influence in selection of indexes performance, Thereupon, in present research, researcher has considered corporate performance as dependent variable.

### Methodology research:

The research methodology is descriptive and survey research .most primal research on intellectual capital has employed questionnaire surveys only in data collection (e.g. Bontis, 1998; Dooley, 2000; Lovero, 2000; Reeds, 2000; Usoff *et al.*, 2002). This research uses both library studies such as using books, articles and journals and Questionnaire for gathering data in

order to data analyzing. The research was conducted in Iran. The companies were randomly selected. data was collected, during 2009, through a Questionnaire survey conducted with both accounting and non-accounting executives in selected companies. This research was conducted with earlier Questionnaires that were used to explore influence of intellectual capital on management accounting practices (Tayles and Pike,2005;binti mastor,2005). Questionnaires were distributed to accounting and non-accounting executives in 4 companies .the questionnaire asked respondents to indicate their agreement to 25 questions(on a 1-7 scale)on a range of questions relating to their company's emphasis on intellectual capital. This formed the basis on which level and shape of intellectual capital was established. These questions were adopted from earlier work that was used to explore the nature of intellectual capital(bontis, 1998; reeds, 2000; usoff et al., 2002). These questions have been tested in terms of reliability in the earlier edited researches(Tayles and Pike,2005).responses were used to construct variables for human intellectual capital (HIC),structural intellectual capital (SIC), and relational intellectual capital(RIC).The Questionnaire then required responses to 63 other items covering management accounting practices and performance .these questions were adopted from earlier work of Bontis(1998), reeds (2000), Usoff et al.(2002), Hopwood (1973), Hope and Fraser (1997), Irani et al.(1998), seglod (1998,2000), and Fanning(2000).the questionnaire asked respondents to specify the degree of importance, the nature and use(1-7 scale)of a range of management accounting practices in their factories. In these research have used methods of data analyzing as multiple regression, ANOVA, T-test, Donken test and Pearson correlation. Numbers of accounting and non-accounting executives in selected factories were 150 persons. 114 of Questionnaires were distributed to selected companies. Thereupon, 107 of perfect Questionnaires were received .Also, Cronbach alpha scores are used in order to estimate the reliability of questions and variables of Questionnaire.

Dimensions and indicators of Intellectual capital are shown in Table2. Also, Cronbach alpha scores are used in order to estimate the reliability of dimensions of IC (see Table 2). Table 2 summarizes the descriptive statistics for questions of Questionnaire (indicators) (see the items of **Response rate, range, mean**). Also, Dimensions and indicators of management accounting practices are shown in Tables3, 4, 5& 6 .Also, Cronbach alpha scores are used in order to estimate the reliability of dimensions of management accounting (see columns of **Cronbach alpha** in Tables3, 4, 5& 6).Tables 3, 4, 5& 6 summarize the descriptive statistics for questions of

Questionnaire (indicators) (see the items of **Response rate, range, mean**).

#### **Findings and discussion**

Main Hypothesizes and Adjunct Hypothesizes (as from 1 till 6) are analyzed by Pearson correlation test (see Table 9).the Confirmation of Hypothesizes and their significant relationships

depend on p-value less than 0.05 (p-value<0.05). Also, the Findings of Adjunct Hypothesizes as from 1 till 6 are representative of the influence of dimensions of intellectual capital on their Management accounting practices and organizational performance (see Table 9).

Also, the Findings of Adjunct Hypothesizes as from7 till 8 are representative of the influence of factories' intellectual capital on dimensions of Management accounting practices and the influence of factories' intellectual capital on their financial and non-financial dimensions of organizational performance (Table 10). Also, the Findings of Adjunct Hypothesize of 9 that is the influence of factories' intellectual capital on components of Management accounting practices is shown in Table 11.

The Findings of Adjunct Hypothesizes of 10 and 11 that is the comparison of aforesaid factories in regard to the influence of intellectual capital on Management accounting practices and organizational performance are shown in Table 12.also, aforesaid factories 'the influence of intellectual capital on Management accounting practices and organizational performance by different coefficient of correlation is shown in this same Table. Thereupon, aforesaid factories 'the influence of intellectual capital on Management accounting practices and organizational performance are confirmed based on p-value less than 0.05(p-value<0.05).for example, the influence of intellectual capital investments on Shiraz Siemens Factories' Management accounting practices is more than other factories'(see part4 in Table 12).also, the Polymer factory's the influence of intellectual capital on organizational performance is more than other factories'(see part7 in Table 12).

by Analysis Of Variance (ANOVA)and Donken test, aforesaid factories in regard to intellectual capital investment level are compared together(see Tables 13 and 14).the value of "F" in Analysis Of Variance indicates that the test is significant(see Table13). Thereupon, the average values of aforesaid factories 'intellectual capital , based on ANOVA, have significant difference together(see Table13).then, the average grades of aforesaid factories 'intellectual capital are indicated by Donken test in Table 14.for example the average value of Fars Golsar Factory's intellectual capital is more than other factories'(see table 14). Also, the average value of Dashtestan

factory's intellectual capital is less than other factories' (see table 14).

This part of research is analyzed by stepwise regression, ANOVA of regression and multiple regression .at first by stepwise regression, Intellectual capital variables such as HIC, SIC and RIC are entered in model (regression equation) gradually. Thereupon, some of these variables are eliminated from regression equation by stepwise regression, ANOVA of regression and multiple regressions. Part 1 in Table 15 indicates that the value of coefficient of multiple correlations have increased due to presence of Human Intellectual Capital (HIC) in model. Whereas, the value of coefficient of multiple correlations have not changed about other variables (RIC and SIC).thereupon, these variables (RIC and SIC) are eliminated from regression equation. Part 2 in Table 15 indicates that the value of coefficient of multiple correlations has changed just for relational Intellectual capital (RIC) variable. Thereupon, Intellectual capital (RIC) variable is entered in regression equation therefore, HIC and SIC variables are eliminated from regression equation.

Also, Table 16 shows ANOVA of regression about most influence IC variables on factories' Management accounting practices and organizational performance .part 1 in this Table indicates that the F statistic's high value(F= 75.28)makes high meaningful about influence HIC independent variable on management accounting practices. Thereupon, this dimension of IC stays in regression equation .also, p-value is less than 0.05(see part 1inTable 16).also, Part 2 inTable16 indicates that the F statistic's high value (F=388. 635) makes high meaningful about influence RIC independent variable on organizational performance. Thereupon, Relational Intellectual Capital stay in regression equation .also, p-value is less than 0.05(see part 2 in Table 16).

Also, part 1 in Table 17 indicates that p-value (p=0.001) less than 0.05 makes high meaningful about influence of HIC independent variable on management accounting practices dependent variable. In part 1, SIC independent variable have not significantly influenced on management accounting practices dependent variable (see p-value=0.130 in part1).also, RIC variable have not significantly influenced on management accounting practices dependent variable (see p-value=0.130 in part1).thereupon, between IC independent variables in part 1, HIC independent variable has most influence on management accounting practices According to beta weights in table 17. In fact, variation of one standard deviation in HIC variable leads to variation of 0.433standard deviation. Whereas, variation of one standard deviation in RIC variable lead to variation of 0.037 standard deviation (see column of Beta weights

in part 1).Finally, SIC and RIC variables are eliminated regression equation.

Also, regression equation requires to number with a fixed value (constant=49.214) (see column of coefficients of regression in part1).Thereupon, regression equation about most influence IC variables on management accounting practices is:

$$E(Y|x) = 1/364 (HIC) + 49/214$$

Also, part 2 in Table 17 indicates that p-value (p=0.000) less than 0.05 makes high meaningful about influence of RIC independent variable on organizational performance dependent variable. In part 2 SIC independent variable have not significantly influenced on organizational performance dependent variable (see p-value=0.312 in part2).also, HIC independent variable have not significantly influenced on organizational performance dependent variable (see p-value=0.853 in part2). Thereupon, between IC independent variables in part 2, RIC independent variable has most influence on organizational performance dependent variable According to beta weights in table 17. In fact, variation of one standard deviation in RIC independent variable leads to variation of 0.91standard deviation. Whereas, variation of one standard deviation in HIC independent variable leads to variation of 0.037standard deviation (see column of Beta weights in part 2). Finally, HIC and SIC variables are eliminated regression equation. Also, regression equation requires to number with a fixed value (constant=8.263) (see column of coefficients of regression in part2).Thereupon, regression equation about most influence IC variables on organizational performance is:

$$E(Y|x) = 0 /953(RIC) + 8/263$$

the findings of main Hypothesizes indicate that aforesaid factories 'intellectual capital have significant relationship with their Management accounting practices and organizational performance, based on present research 'intellectual capital model (Bontis , 1998; Edvinsson and Sullivan ,1996 ; Edvinsson and Malone, 1997; Lynn , 1998; Stewart ,1991; Roos *et al.* (1997); and Stewart, 1997) and based on opinions of Tayles *et al.* (2005)about the influence of IC on Management accounting practices and organizational performance. Thereupon ,the components of human intellectual capital (such as staff's innovation and creativity, knowledge sharing and experience and professional skill), the components of structural intellectual capital consists of innovation capital(patents, trademarks and trade secrets) and process capital (databases, learning Structure, high level of IT)and the components of Relational intellectual capital (such as the knowledge of market channels and Target market ,customer and supplier relationships)influence on Management accounting

techniques and organizational performance's financial and non-financial indicators that factories use.

The findings of Adjunct Hypothesize 7 (the test of influence IC on dimensions of Management accounting practices) indicates that intellectual capital have high correlation with aforesaid factories' practices of IC reporting, performance Measurement, Budgeting and Budgetary control, Capital Investment Decisions and Economic Exposure (Risk Management) and thereupon, it influences on usage of these practices. In fact, usage of these practices are influenced by aforesaid factories' intellectual capital investments (investment in Human IC, Structural IC and Relational IC). Also, the influence intellectual capital on all of Management accounting practices is confirmed in researches' Binti Mastor (2005) and Tayles et al. (2005). Also, the findings of Hypothesize 8 indicate that emphasis aforesaid factories on performance's financial indicators (such as After-tax return on assets, Profit, Sales growth, etc) and performance's non-financial indicators (such as Industry leadership, Future outlook, Success rate in new product launches, etc) in order to compare their performance with key competitors are influenced by aforesaid factories' intellectual capital investments.

The Adjunct Hypothesize 9 examines the influence of intellectual capital on components of Management accounting practices (see Table 11). The findings of Adjunct Hypothesize of 9 indicate that aforesaid factories must attend to annual and internal reporting of IC and referring to IC in balance sheet (in order to, (1) IC management and effects of its economic in value creation whereupon the value of IC be considered in balance sheet; (2) having IC information system so that factories' profitability of intellectual capital be appraised and (3) the investment cost reduction) and finally referring to IC in strategic decisions (see parts 1 & 2 in Table 11). Also, these findings have consistency with the findings of Binti Mastor (2005) and Tayles et al. (2005) about Management accounting practices.

Also, emphasis on intellectual capital leads to more tendency aforesaid factories in use of Value-based measures (such as Shareholder value, EVA, target profit, etc) and P&L<sup>1</sup> accounts-based measures such as sales, profitability (significant relationship and strong correlation of IC with these measures) (see parts 3 & 4 in Table 11). Whereas, aforesaid factories have no tendency in use of Scorecard performance measures (BSC<sup>2</sup>, Intangible asset monitor, Skandia Navigator, Performance Prism) in performance measurement practice (see part 5 in Table 11). Whereas BSC is

representative a strategic, financial and non-financial approach, it must be strengthened in aforesaid factories. Also, emphasis on intellectual capital lead to more tendency aforesaid factories in use of Business emphasis techniques (such as Concern with general effectiveness, Concern with cost, Concern with quality, etc) (see part 7 in Table 11). Also, emphasis on intellectual capital lead to more tendency aforesaid factories in use of budget emphasis techniques (such as budget emphasis, Concern with ability to meet budget) (see part 8 in Table 11). However, tendency of aforesaid factories in use of Business emphasis techniques is more than tendency in use of budget emphasis (compare coefficient of correlations in parts 7 & 8 in Table 11).

Also, it can be construed that aforesaid factories have no tendency in use of forecasting (Beyond budgeting) approach (such as Regular re-forecasting, Uses rolling forecasts, Separates target setting from financial planning) in budgetary control practice (see part 9 in Table 11). However, forecasting (Beyond budgeting) approach (focus on entrepreneurship, innovation, BSC, BPR<sup>3</sup>) in aforesaid factories must be strengthened instead of conventional budget approach simultaneous with information era. Also, the findings of part 10 in Table 11 indicate that emphasis aforesaid factories on IC investment lead to less tendency in use of Non-conventional budget (such as Zero-based budgeting, Priority-based budgeting) as compared with tendency in use of Business emphasis techniques and budget emphasis techniques (compare coefficient of correlations parts 7, 8 & 10 in Table 11).

emphasis on intellectual capital investment lead to more tendency aforesaid factories in use of Financial Methods of capital budgeting (such as IRR<sup>4</sup>, NPV<sup>5</sup>, ROCE, Profitability Index, etc) in factories' Capital Investment Decisions practice (see part 11 in Table 11). Also, emphasis on intellectual capital investment don't lead to tendency aforesaid factories in use of Assessing intangible investments (such as Acceptance of negative NPV in intangible investment appraisals, use of Real option analyzing) in aforesaid factories' Capital Investment Decisions practice (see part 12 in Table 11). The findings of part 13 in Table 11 indicate that emphasis on intellectual capital investment (for example human or relational IC investments) in aforesaid factories can increase their capability to respond to economic uncertainties. Whereas, emphasis on intellectual capital investments in aforesaid factories have no influence on the influence intensity

<sup>1</sup> - Profit and loss

<sup>2</sup> - Balanced Score Card

<sup>3</sup> - Business Process Reengineering

<sup>4</sup> - Internal Rate of Return

<sup>5</sup> - Net Present Value



of stock market on factories and factories' responding to these kind of influences (see part 14 in Table 11). The findings of Adjunct Hypothesize 10 (parts 1, 2, 3&4 in Table 12) indicate that influence of Shiraz Siemens factories 'intellectual capital investments on its Management accounting practices is more than other factories (compare coefficients of correlation in parts 1, 2, 3&4 in Table 12). whereas, influence of Dashtestan cement factory's intellectual capital investments on its Management accounting practices is less than other factories. Thereupon, it can be construed that Shiraz Siemens factories 'investments in intellectual capital on its Management accounting practices have more influence as compared with other factories' IC investments. Thus, it sounds that this factory considers intellectual capital and values the creation of these kind of intangible assets in Management accounting practices more than other factories. Also, The findings of Adjunct Hypothesize 11 (parts 5,6,7&8 in Table 12) indicate that influence of Bushehr polymer factory 's intellectual capital investments on its organizational performance is more than other factories (compare coefficients of correlation in parts 5,6,7&8 in Table 12). Whereas, influence of Fars Golsar factory's intellectual capital investments on its organizational performance is less than other factories (see part 6 in Table 12). Thereupon, it can be construed that Bushehr polymer and Shiraz Siemens factories 'investments in intellectual capital on their organizational performance have more influence as compared with other factories' investments (see parts 7&8 in Table 12). these couple of factories consider intellectual capital and its value creation in their performance appraisal as compared with their competitors. The findings of Adjunct Hypothesize 12 show that level of intellectual capital investments in Fars Golsar factory is more than other factories .thereupon, Fars Golsar factory is pioneered in Human IC investments (such as investments in knowledge sharing, innovation , creativity ,etc) and Relational IC investments (such as investments in raising of knowledge and cognition of market channels, customer , supplier relationships, and sound understanding of governmental and strategic industry alliance). Whereas, level of intellectual capital investments in Dashtestan cement factory is less than other factories (see Table 13&14). According to the findings of part1 in Table 17, HIC indicators such as knowledge sharing, expertise and professional skill, creativity and innovation are considered in internal and annual reporting and referred them to strategic decision making in aforesaid factories. Also, staff & managers 'creativity and innovation are main indicators in respond to economic uncertainties and ensures long-term survival.

According to the findings of Table 17, HIC plays a fundamental role in use of management accounting practices in aforesaid factories. Also, the findings of part2 in Table 17 indicates that RIC indicators such as knowledge of market channels, customer and supplier relationships, a sound understanding of governmental and strategic industry alliance are considered as main indicators in aforesaid factories' organizational performance appraisal process as compared to competitors' organizational performance.

### Conclusion:

According to researcher's opinion, deficiency in reporting and disclosure of intellectual capital information, perhaps it leads to the following results:

1. Increase in Costs of capital (Costs of capital is required minimum rate of return on capital that project or plan must be have until investors stimulate to investment in business enterprises)
2. Retouching financial reporting figures, unreal assessing of statements of revenues and balance sheet, illegal using of company's enormous profit and revenue, and the escape of tax.

Thereupon, aforesaid factories in order to solution of these problems for recognition of IC and intellectual capital reporting must consider the following recommendations:

1. Employ to twofold accounting in balance sheet. The main balance sheet includes organization's traditional assets. Also, secondary balance sheet include intangible resources such as intellectual property , brand ,etc. despite traditional accounting, it sounds important to develop complementary models that measure intellectual capital and Exposure intellectual capital statements.
2. Whereas, measurement performance's financial measures are unable in exhibition intellectual capital's quantitative profits, it sounds important to use Scorecard performance measures such as BSC (BSC simultaneous considers both financial and non-financial measures) .also, BSC can improve factories' strategic decisions.
3. Whereas, Financial Methods of capital budgeting are unable in exhibition intangible investments' quantitative profits such as IC<sup>1</sup> investments, researcher suggests that aforesaid factories must use ROV<sup>2</sup> approach and strategic analysis in order to intangible investments appraisal. In fact, factories can evaluate strategic advantages of intangible investments by ROV<sup>3</sup> approach.

<sup>1</sup> -Intellectual Capital

<sup>2</sup> - Real Option Value

<sup>3</sup> - Real Option Value

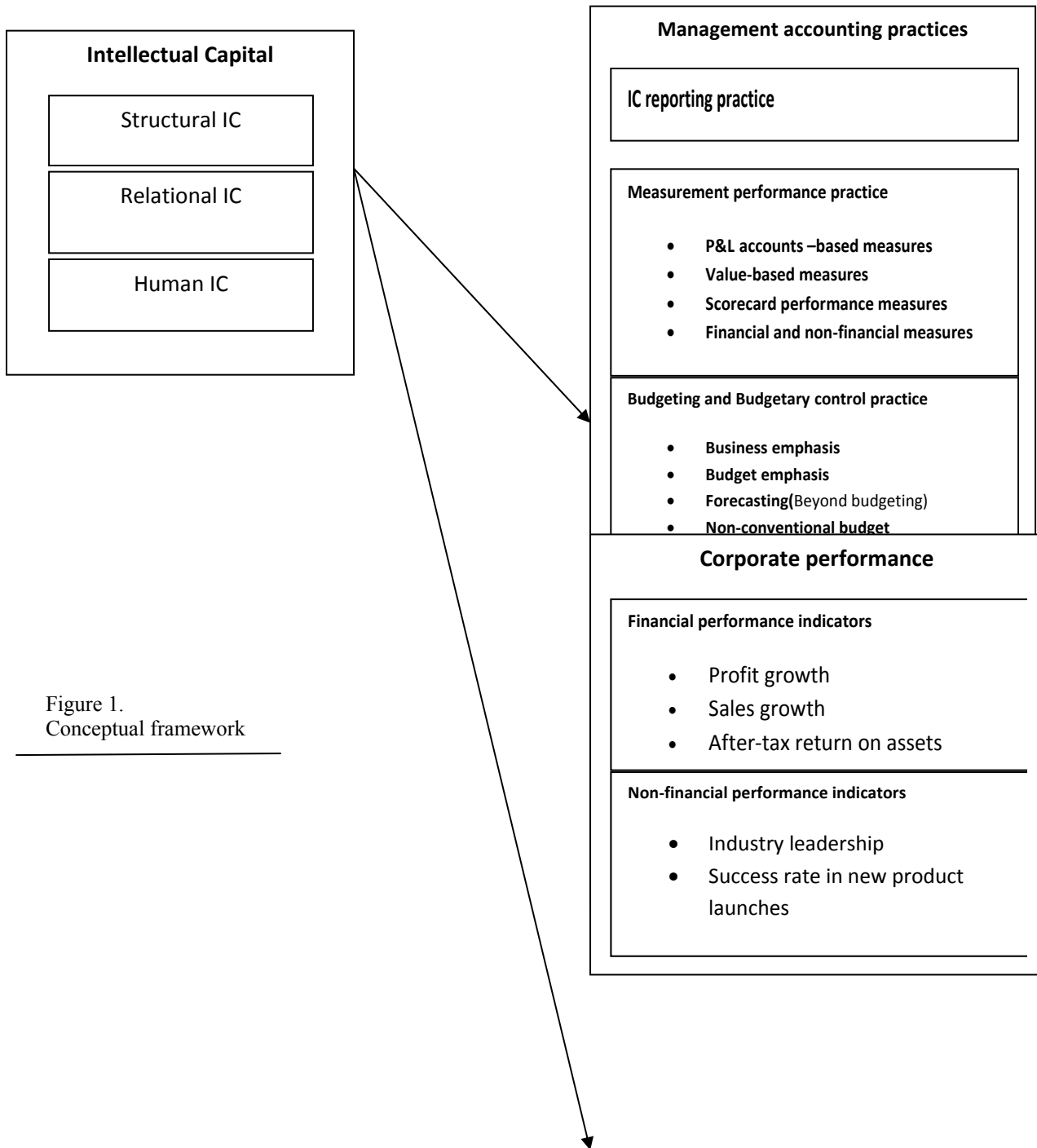


Figure 1.  
Conceptual framework

Table 1. Main and adjunct hypothesis in research

<b>MH<sup>1</sup></b>	<b>1</b>	Level of IC aforesaid factories influence on their Management accounting practices
<b>MH</b>	<b>2</b>	Level of IC aforesaid factories influence on their organizational performance
<b>AH<sup>2</sup></b>	<b>1</b>	Human intellectual capital factories influence on their Management accounting practices
<b>AH</b>	<b>2</b>	Structural intellectual capital factories influence on their Management accounting practices
<b>AH</b>	<b>3</b>	Relational intellectual capital factories influence on their Management accounting practices
<b>AH</b>	<b>4</b>	Human intellectual capital factories influence on their organizational performance
<b>AH</b>	<b>5</b>	Structural intellectual capital factories influence on their organizational performance
<b>AH</b>	<b>6</b>	Relational intellectual capital factories influence on their organizational performance
<b>AH</b>	<b>7</b>	Level of IC aforesaid factories influence on their dimensions of Management accounting practices
<b>AH</b>	<b>8</b>	Level of IC aforesaid factories influence on financial and non-financial performance
<b>AH</b>	<b>9</b>	Level of IC aforesaid factories influence on components of Management accounting practices
<b>AH</b>	<b>10</b>	aforesaid factories in regard to the influence intellectual of capital on Management accounting practices have meaningful difference together
<b>AH</b>	<b>11</b>	aforesaid factories in regard to the influence of intellectual capital on organizational performance have meaningful difference together
<b>AH</b>	<b>12</b>	aforesaid factories in regard to investment level in intellectual capital have meaningful difference together
<b>Question</b>		Which dimensions of intellectual capital are most influence on aforesaid factories' Management accounting practices and organizational performance?

Table 2. Dimensions and indicators of IC and descriptive statistics of IC

Variables	Response rate	range	mean	Cronbach alpha
<b>HIC<sup>3</sup></b>				.795
1-Selects managers and staff according to brightness and creativity	96	1-7	4.22	
2- able to develop new ideas and knowledge	96	1-7	4.94	
3-requires knowledge sharing among managers and staff	96	1-7	4.96	
4-experts in their particular jobs	92	1-7	4.84	
5-able to focus on the quality of service provided	94	1-7	5.22	
<b>SIC<sup>4</sup></b>				.945
1-High investment in innovation	96	1-7	4.57	
2-Sharing excellent idea among staff	96	1-7	5.26	
3-develop most ideas and product in industry	96	1-7	4.71	
4-employ intellectual assets as patents and trademarks	94	1-7	5.13	
5- Procedures and systems support innovation	96	1-7	5.35	
6- High information technology Allocation	91	1-7	4.49	
7- Documents knowledge in Databases	94	1-7	4.66	

<sup>1</sup> - Main Hypothesis<sup>2</sup> - Adjunct Hypothesis<sup>3</sup> -Human Intellectual Capital<sup>4</sup> -Structural intellectual capital

8- easy access information via information systems	94	1-7	5.16	.974
9- Protects vital knowledge	94	1-7	4.35	
<b>RIC<sup>1</sup></b>				
1-having loyal customers to product	94	1-7	5.18	
2- Good relationships with suppliers	94	1-7	4.88	
3- Understands targeted market	95	1-7	4.77	
4- Market-oriented/customer-focused	94	1-7	5.38	
5- Gets potent feedback from customers	92	1-7	4.96	
6- continuous visit with customers	90	1-7	4.80	
7-good Listening and responding to customer complaint	89	1-7	4.93	
8- allocate considerable time to select suppliers	94	1-7	4.90	
9- Maintain long-standing relationships with supplier	90	1-7	4.92	
10- Efficient in satisfying requests of customers	94	1-7	5.22	

Table3. Descriptive statistic of dimensions and components of IC reporting

	Response rate	range	mean	Cronbach alpha
<b>variables</b>	<b>IC reporting practice</b>			.853
1-annual reporting of IC	88	1-7	3.81	
2- internal reporting of IC	88	1-7	3.92	
3- referring to IC in strategic decisions	92	1-7	4.5	

Table 4. Descriptive statistic of dimensions and components of performance Measurement

	Response rate	range	mean	Cronbach alpha
<b>variables</b>	<b>performance Measurement practice</b>			.96
<b>P&amp;L<sup>2</sup>accounts –based measures</b>	-			
1- Sales	88	1-7	5.61	
2- Profitability	87	1-7	5.34	
<b>Value-based measures</b>	-			
1- EVA	88	1-7	5.19	
2- Target profit	84	1-7	5.35	
3- Shareholder value	85	1-7	5.09	
4- Incentive structure based on value creation	84	1-7	4.85	
5- account for all ways of value Creation	90	1-7	4.83	
<b>Scorecard performance measures</b>	-			
1-BSC <sup>3</sup>	83	1-7	5.08	
2- Intangible asset monitor	67	1-7	4.46	
3- Tableau de Bord	69	2-7	4.41	
4-Skandia Navigator	67	1-7	3.90	
5- Performance Prism	69	2-7	4.20	
<b>Financial and non-financial measures</b>	-			
1- IC measured in both financial and non- financial Terms(e.g. KPIs)	94	1-7	5.29	
2- IC contribution captured in performance measurement	92	1-7	4.66	
3- Focus on future success	92	1-7	5.07	
4- Focus on past performance	94	1-7	4.50	
5- Financial focus	88	1-7	4.56	

<sup>1</sup> -Relational Intellectual Capital<sup>2</sup> - Profit and loss<sup>3</sup> - Balanced Score Card

Table 5. Descriptive statistic of dimensions and components of budgetary control

	Response rate	range	mean	Cronbach alpha
<b>variables</b>	<b>Budgeting and Budgetary control practice</b>			.876
<b>Business emphasis</b>	-			
1-Concern with cost	88	2-7	5.30	
2-Concern with general effectiveness	86	1-7	5.36	
3-Concern with quality	90	2-7	5.41	
4-Concern with ability to handle subordinate	90	1-7	5.07	
5-Concern with job effort	87	1-7	5.01	
<b>Budget emphasis</b>	-			
1-Budget emphasis	88	1-7	5.84	
2-Concern with ability to meet budget	90	1-7	5.16	
<b>Forecasting(Beyond budgeting)</b>				
1-Regular re-forecasting	80	1-7	3.94	
2-Separates target setting from financial planning	78	1-7	3.58	
3-Uses rolling forecasts	79	1-7	4.11	
<b>Non-conventional budget</b>	-			
1- Zero-based budgeting	82	1-7	3.70	
2- Priority-based budgeting	83	1-7	4.28	
3-activity- based budgeting	78	1-7	4.1	

Table 6. Descriptive statistic of dimensions and components of Investment Decisions

	Response rate	range	mean	Cronbach alpha
<b>variables</b>	<b>Capital Investment Decisions practice</b>			.868
<b>Financial Methods of capital budgeting</b>	-			
1-IRR <sup>1</sup>	71	1-7	4.55	
2-NPV <sup>2</sup>	66	1-7	4.62	
3- ROCE/ARR <sup>3</sup>	63	1-7	3.99	
4- Payback period	73	1-7	5.26	
5- Profitability Index	75	2-7	5.27	
<b>Assessing intangible investments</b>	-			
1- Real option value	75	1-7	4.89	
2- Finance methods unable to capture IC costs /benefits	85	1-7	3.73	
3- system for defining/reviewing intangible projects	81	1-7	3.89	
4- Acceptance of negative NPV in investment appraisals	70	1-7	3.51	

<sup>1</sup> -Internal Rate of Return<sup>2</sup> -Net Present Value<sup>3</sup> - Return on Capital Employed/ Accounting Rate of Return

Table 7. Descriptive statistic of dimensions and components of Economic Exposure

	Response rate	range	mean	Cronbach alpha
<b>variables</b>	<b>Economic Exposure(Risk Management)practice</b>			.714
<b>Stock market influence</b>	-			
1- Firm is less affected by fall in stock market	89	1-7	4.67	
2- Firms will not overreact to fall in stock market	83	1-7	4.24	
<b>Ability to respond to economic uncertainties</b>	-			
1- Managers& Staff creativity/innovation ensures long-term survival	87	1-7	4.61	
2- IC acts as hedge against unanticipated economic change	89	1-7	4.20	

Table 8. Descriptive statistic of dimensions of corporate performance

variable	Response rate	range	mean	Cronbach alpha
	<b>Corporate performance</b>			
<b>Financial performance indicators</b>				.976
1-After-tax return on assets	75	1-7	4.92	
2-After-tax return on sales	81	1-7	5.00	
3-Profit growth	89	1-7	5.33	
4-Sales growth	89	1-7	5.26	
5-Profit	81	1-7	5.37	
<b>Non-financial performance indicators</b>				.965
1-Industry leadership	89	1-7	5.26	
2-Success rate in new product launches	83	1-7	4.98	
3-Future outlook	87	1-7	5.25	
4-Overall response to competition	79	1-7	4.92	
5-Overall business performance	83	1-7	5.30	

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