Introducing a Toolbox for IC Measurement in the Iran Insurance Industry

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Abstract: This paper reports on an empirical study, which investigates the Intellectual capital measurement and management in the Iran Insurance Industry. According to the current situation of the firms in this industry, we develop a toolbox for managers to help them to identify and evaluate ICs in this industry .in this regard we investigate intellectual capital stocks, intellectual capital processes and performance in this industry through three phases including: Identifying, Measuring, and Analyzing. Based on this toolbox, the priority of Iran Insurance industry was uncovered and the road map was discussed.

Keywords: Intellectual capital measurement, insurance Industry

1. Introduction

In the 1990s, the nature of competition changed radically because of increased global connectivity, distributed expertise, and shorter product development cycles (Turban, 2002a) and day after day, deploying knowledge management (KM) as a response to these changes, increase.

Based on a recent survey of senior executives in 158 companies Boudreau (2002, pp: 3**)** found that 80% of companies had KM efforts, 60% expected to use KM enterprise-wide within five years, 25% had a chief knowledge officer, and 21% had a KM strategy.

The importance of intellectual capital is becoming more widely recognized, and demand for the application of intellectual capital is increasing.

According to the current situation of the firms in this industry, we develop a toolbox for managers to help them to identify and evaluate ICs in this industry .in this regard we investigate intellectual capital stocks and intellectual capital processes in all the companies in this industry through these steps:

- KPIs: what are the key performance indicators in each company?
- Developing the IC Stocks impact Portfolio: which IC stocks are important in Iran Insurance Industry, regarding to the current and future impact?
- Measuring key, basic and promising IC stocks: for all 3 sections of IC stocks, what are the current situation and the potential that can be achieved by each firm?
- Developing the IC Process impact Portfolio: which IC processes are important in Iran Insurance Industry, regarding to the current and future impact?
- Measuring key, basic and promising IC activity: for all 3 sections of IC activities, what are the current situation and the potential that can be achieved by each firm?
- Conclusion: at the end, we investigate the tree main part of the Intellectual Capital measurement toolbox in each company and in the whole Insurance Industry and introduce some roadmaps for improvement.

2. Research objectives

This paper tries to introduce new approach for measuring Intellectual Capitals regarding to a holistic perspective of Intellectual capital and knowledge management. This new approach was deployed in Iranian Insurance industries. The main objectives pursued in this research are replying to these questions:

1. What are the main IC stocks and IC Processes in Iran insurance industry?
2. What is the current situation of these ICs in Iran insurance industry?
3. How much gap exists regarding to the current situation and the potential of these ICs in Iran insurance industry?
4. What is the priority of companies for cultivating and deploying ICs in Iran insurance industry?

In the rest of the paper, after reviewing the Theoretical background in briefly, we propose a toolbox for measuring intellectual capital. Then the

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Research Methodology and Results are discussed.

3. Theoretical background

In the 1980s, with emergence of SIS era (i.e. strategic information system) after data processing and MIS era (i.e. management information system), much attention was given to means by which IT might be harnessed to enable and sustain competitive advantage. (Senn, 1992, Porter and Millar, 1985, Galliers, 1999, pp: 230)

After great investment in IT, some economists such as Strassmann and Solow, concluded that there is no relationship between computer expenditures and company performance (e.g. Malhotra, 2000, pp: 5, Turban, 2002b, pp: 568). A wave of disenchantment with the ROI of IT (1980s) was faced with some responses, and the main response concluded that IT is implemented incorrectly and it relates to organizational processes, structure, and design, which were not "work friendly"! (El Sawy 2002, pp: 4) and because of some other pressures, e.g. *3Cs* by Hammer and Champy, the BPR was introduced by Hammer, Davenport, and champy. (El Sawy 2002, pp: 6)

After the high failure rate in BPR projects (Turban, 2002b, pp3703,) and raising the organizational attention to intellectual capital (Heather, 2003, pp: 4) as hidden assets (Skyrme, 2000, pp: 62) and vital role of human in e-business model innovation and distinguishing knowledge from information and data and understanding the important role of knowledge instead of information, in reaching sustainable competitive advantages in the continues changing environment (Malhotra, 2000, pp: 6.), also improved collaborative technologies and growing number of cases where better understanding and management of knowledge has brought demonstrable bottom lines benefits.(Skyrme, 2000, pp: 62) worldwide spending on knowledge management (KM) services is grow up, as Dyer in 2000 expected.(Turban, 2002a, pp347). Fig1 illustrate the history of KM emergence on the basis of literature review. (Moslehi, 2004)

Unfortunately, there's no universal definition of KM, just as there's no agreement as to what constitutes knowledge in the first place. For this reason, it's best to think of KM in the broadest context. Succinctly put, KM is the process through which organizations generate value from their intellectual capital and knowledge-based assets (Cio.com)

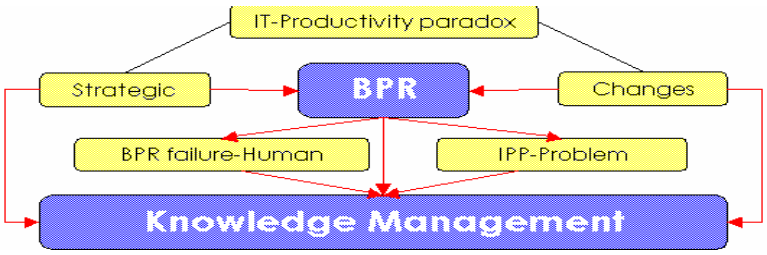

Figure 1: Illustrates the history of knowledge management emergence.

2.1 Knowledge management and intellectual capital management

Another term that used in this field is intellectual capital management. Some authors argued that there is a clear difference between intellectual capital management and KM knowledge management. ICM refer to strategic level while KM is tactical issue. (For e.g. Wiig1997, and Edvinsson, 1997)

Also, some use the concepts interchangeably (For e.g. see Van burn, 1999). But we assume ICM as a strategic notion and introduce the proposed toolbox as a part of the ICM activity.

In general, taxonomies of intellectual capital contain three primary types of capital: human capital, structural capital, and customer capital. Despite their differences, intellectual capital conceptualizations have in common a focus on the intangible assets of an organization. As intangible, these assets are distinct from the tangible assets that make up the forms of capital, physical and financial, upon which organizations have traditionally competed. As assets, they are viewed not as costs to an organization, but as sources of future economic value.

4. Proposing a toolbox for measuring intellectual capital

At present, measuring a company's intellectual capital (IC) is quite common. According to a Nordic survey, two thirds of Finnish companies measure their intellectual capital regularly.

Although different measurement systems for measuring intellectual capital have been developed, none of them has been accepted for common use.

In our point of view, for measuring the intellectual capital first we should ask 3 key questions, include why, what and how's of measuring:

2.2 Why companies try to measure their intellectual capital, up to now? And why should they measure their intellectual capital?

In order to analyze the motives and methods of influential authors, a literature review was undertaken. During this research process, the existing motives for IC measurement are recognized. (Skyrme, 1998, Marr, et al. 2003, Gopika Kannan, 2004 and Andersson, 2004.

It seem that we can define the motives for all partners view such as managers, personnel, suppliers, customers, investors, government agency and all of the parties which can relate to the companies. At the end based on the Andersson, (2004) we can classify all of them into 4 categories:

1. Improving internal management
2. Improving external reporting,
3. Statutory and transactional motives
4. Accuracy and reliability of national accounts

For the purpose of this research we just focus on the first two motives.

2.3 What is measured up to now and what should be measured?

It is generally agreed on by academics that intellectual capital consists of at least three separate forms of organizational assets (Stewart, 1997):

- Human capital – the skills, tacit knowledge, talents and capabilities of the individuals associated with an organization.
- Structural capital – the processes and packages that allow human capital to be used effectively to create value. This includes the information systems and the management competencies, which leverage human capital.
- Customer capital – the value of an organization's relationships with the people with whom it does business. Some people broaden this concept to include all of the firms with which a company does business and call it relationship capital (Vanburen, 1999)

Based on the some research such as Danish project (2001), Meritum Project (2001), we define a framework for measuring 3 things. These are IC Stocks, IC Process and IC Performance. (See fig2)

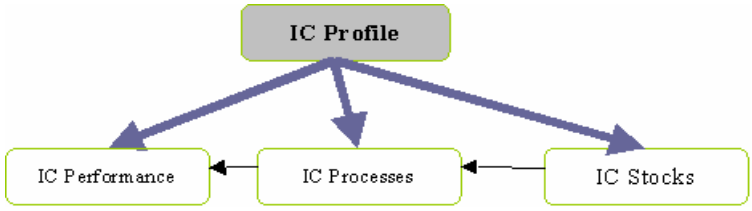

Figure 2: Illustrates the 3 main aspects in measuring intellectual capita

2.4 How companies measure their intellectual capital, up to now? And how should they measure their intellectual capital?

According to Sveiby (2001), the approaches for measuring intellectual capital fall into four categories: Scorecard methods in particular have been developed as a tool for management and therefore the proposed toolbox that presented in this paper is based on some of these methods. Some question such as when, with whom, also can be considerable, that companies should define them in practice.

The conceptual framework for intellectual capital measurement in our toolbox was illustrated in Figure 3.

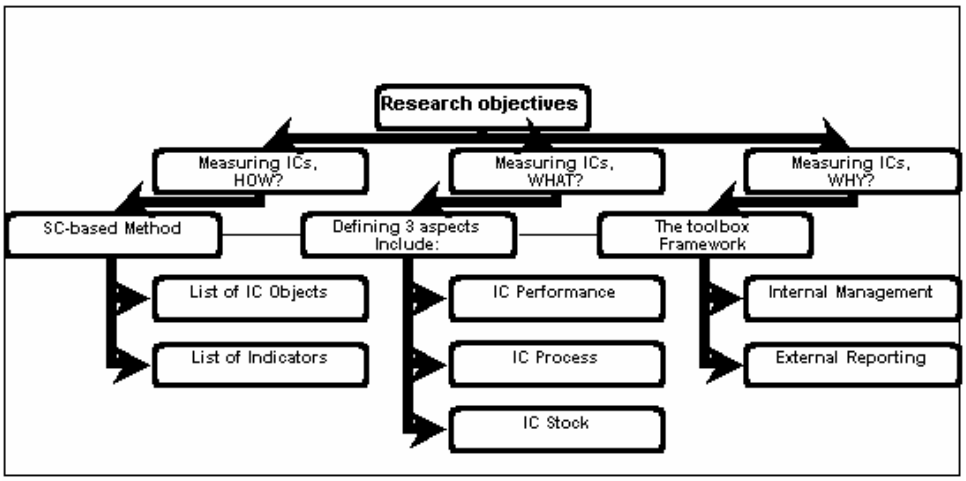

Figure 3: Illustrates the conceptual framework for intellectual capital measurement

5. Methodology

Since the level of intellectual capital of knowledge intensive industries may higher than others or the importance of intellectual capital in these industries may be higher (Read, et al. 2001), this research selected relatively representative Insurance firms in Iran. In the end we had a total of 139 complete questionnaires in 6 main insurance firms replies covering almost 99% of Iran insurance market. Four Companies are public companies and they are leading firms in different products or market segmentations. And other two companies are the greatest private companies in Iran.

To construct a measurement toolbox and explore the intellectual capital profile of Iran Insurance industry, this study has conducted a tree-stage survey. The first stage is a general survey on intellectual capital indicators. The questionnaire was designed to tap into the IC constructs in Iran Insurance industry.

We first selected 264 indicators through a thorough literature review of intellectual capital measurement indexes. Question items were revised according to the feedback of the pilot-test on 15 participants. A questionnaire of these 264 indicators with a 5-point scale from "very low important" to "very important" was distributed to the Iranian insurance experts such as insurance management university masters, people graduated in insurance management discipline and researches and expert which work in R&D department in Central Insurance of Iran. For the purpose of regulating, expanding and guiding Insurance Industry in Iran, central Insurance of Iran (Bimeh Markazi Iran) was established in 1971 by the Act of Parliament. Bimeh Markazi Iran plays an active role in the Industry by promoting, regulating and supervising insurance activities within the market and also by providing national and international reinsurance services.

Based on the first stage survey, we select and revised 110 indicators in tree aspects of our toolbox include 55 indicators for measuring IC-Stock, 38 indicators for measuring IC-Process and 17 indicators for measuring the Performance of companies. These indicators are used in the next stages for further analyses. (See table 1)

Table 1: Introduces the indicators in tree intellectual aspects that used in the proposed toolbox in this research

Intellectual Aspect	IC-Stock	IC-Process	IC-Performance
Indicators	**55 indicators include: Human, Customer and Structure capital**	**38 indicators include: 10 main intellectual capital processes**	**17 indicators in tree aspect of performance include: Stability, Productivity and Growth of 3 main ICs (i.e. Human, Customer and Structural capital)**

In the second stage, the toolbox used for 3 purposes:

1. KPIs: what are the key performance indicators in each company?
2. Developing the IC Stocks impact Portfolio: which IC stocks are important in Iran

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Insurance Industry, regarding to the current and future impact?

3. Developing the IC Process impact Portfolio: which IC processes are important in Iran Insurance Industry, regarding to the current and future impact?

In this regards a questionnaire of these 3 aspects-mentioned before in table 1, designed to evaluate which IC stocks are important in Iran Insurance Industry, according to the current and future impact, with a 5-point scale from "very low important" to "very important". Regarding to support of Central Insurance of Iran this questionnaire was distributed to 60 Iranian insurance top managers were selected not randomly but based on their experience and ability to answer the questions. At the end 37 managers filled our questionnaire through structured interview.

Then, after introducing the main IC Stocks and processes, which are the basic, Promising and key IC stocks and Processes, based on the knowledge strategy process (Van der spek, et al. 2002), in the last stages, the toolbox used for measuring these ICs. In this stage we have two aims:

- Measuring key, basic and promising IC stocks: for all 3 sections of IC stocks.
- Measuring key, basic and promising IC process: for all 10 sections of IC process

Nevertheless in each question, tree things are evaluated:

1. The importance of each measure in his or her company.
2. The current situation and
3. The potential that can be achieved by each firm.

For the third questionnaire, we have been able to ask 150 Iranian insurance middle managers and supervisors to respond to our questionnaire. In this stage, they were still selected not randomly but based on their experience and ability to answer the questions. At the end, 102 managers filled our questionnaire through structured interview.

Cronbach's Alfa is used for examining the reliability of the instruments. The reliabilities for all constructs calculated and presented in table 2. As it is shown, all reliabilities were adequate since the Cronbach Alfa values for each were significantly greater than the prescribed 0.7 thresholds. The values varied from 0.7379 (Customer to Customer, intellectual capital process) to 0.9476 (intellectual capital process) showing that our instruments are sufficiently reliable.

Table 2: Statistics for reliability Test

Measure	No of Items	Mean	S.D.	Reliability-Cronbach Alfa coefficient
Human Capital	4	3.153846	0.307692	0.93
Attitude	8	3.307692	0.397436	0.86
Competency	7	2.923077	1.076923	0.80
Communication-Skill	4	2.846154	1.141026	0.76
Creativity	3	2.923077	0.74359	0.71
Customer Capital	4	3.846154	0.474359	0.89
Customer support	3	3.846154	0.474359	0.71
Collaboration	2	2.461538	0.769231	0.72
Networking	2	2.076923	1.910256	0.78
Customer relationships	8	3.230769	0.192308	0.84
Structure Capital	5	2.230769	0.192308	0.90
IT application	5	2.307692	0.230769	0.75
Core Process	4	2.538462	0.769231	0.89
Intellectual Property	2	2.307692	0.730769	0.90
Innovation	2	2.615385	0.75641	0.72
Culture	5	2.384615	0.423077	0.77
IC Process	10	2.394487	0.301799	0.95
H2H	5	2.523077	0.72359	0.83
H2S	4	2.211538	1.206731	0.86
S2H	2	2.076923	0.410256	0.79
H2C	3	2.282051	0.904558	0.72
C2H	3	2.128205	0.139601	0.78
C2C	4	3.115385	0.620994	0.74
C2S	2	2.384615	0.839744	0.74
S2C	2	2.576923	0.535256	0.74
S2S	3	2.538462	0.139601	0.75

General	10	2.107692	0.469103	0.88

6. Results

6.1 Identifying

Based on the conceptual framework of proposed toolbox, we have 3 aspects for measuring and exploring the intellectual capital profile, include, IC Stocks, IC Processes and Performance. Fig4, 5 and 6 show the final IC Stocks, IC Processes and performance, based on the first stage survey. As fig 3 shows, the IC Stocks include 3 elements: Human stocks, Customer stocks and Structural stocks. And Human stocks for example include 4 objects, include: Competency, Attitude, Communication-Skill and Creativity on experts work for insurance company. The number shows in front of each IC, is the number of measure that finally used for measurement

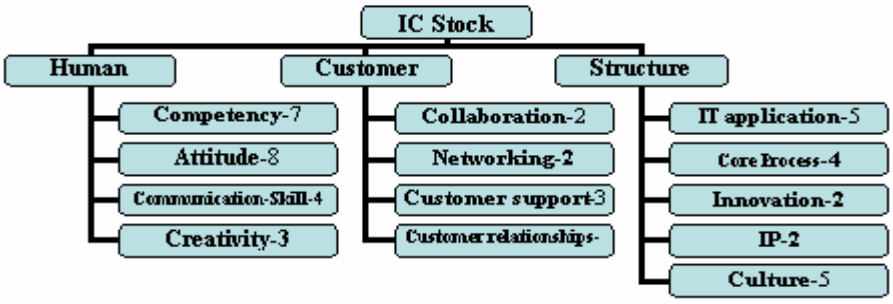

Figure 4: Illustrates the conceptual framework for intellectual capital stock

And as showed in fig 4, we design 10 typical IC Processes, which introduced by Sveiby et al, (2002), and we use also some indicators from Rajan et al. (1999).

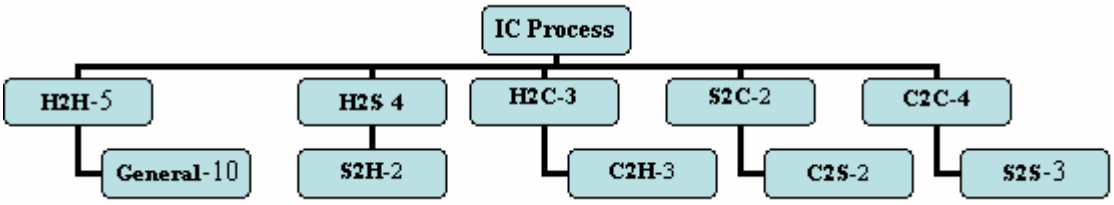

Figure 5: Illustrates the conceptual framework for intellectual capital process.

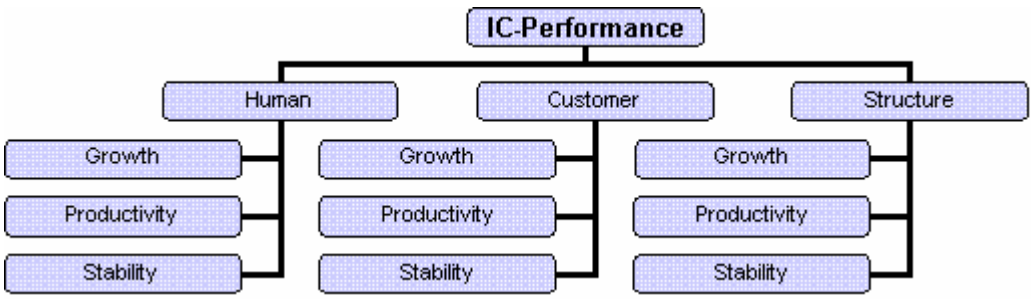

Figure 6: Illustrates the conceptual framework for intellectual capital performance

2.4.1 IC stock and IC process portfolio

According to knowledge strategy process (Van der spek, et al. 2002), this portfolio can be defined based on the impact of each ICs on companies at present and in future. If each IC has not considerable impact on insurance companies, like IC number 5 in Fig7, it maps on the"not-Relevant" position.

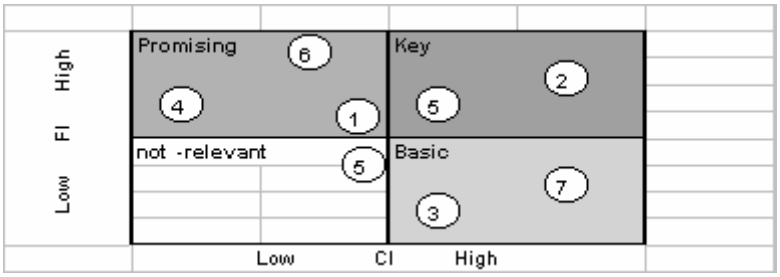

Figure 7: Illustrates the concept of impact portfolio

If at present, each IC has considerable impact on insurance companies but it lose the impact in the future, like IC number 3 and 7 in Fig7, then it maps on the ”Basic” position and so on.

The figs 8 and 9 show the result of survey among the top management of Iranian insurance industry. As you can see in the fig 8, none of the IC stocks are mapped in ”not-relevant” and “Basic” position the same as IC Process, which is illustrated in fig9

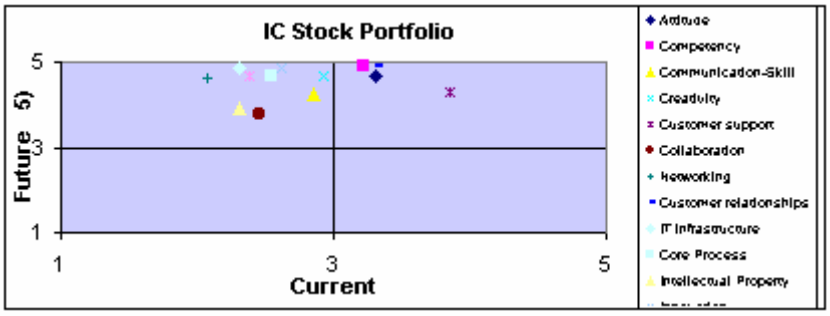

Figure 8: Illustrates IC stock impact portfolio in Iran insurance industry

As it is showed in fig 8, based on the opinion of Iranian insurance top managers in the 2nd stage survey, competency, attitude of companies' expert and customer relationships and customer support are the key IC stocks and other IC stocks such as creativity of expert and IT infrastructure are the promising ICs. It means that these ICs may have a considerable impact on insurance industry in the next 5 years

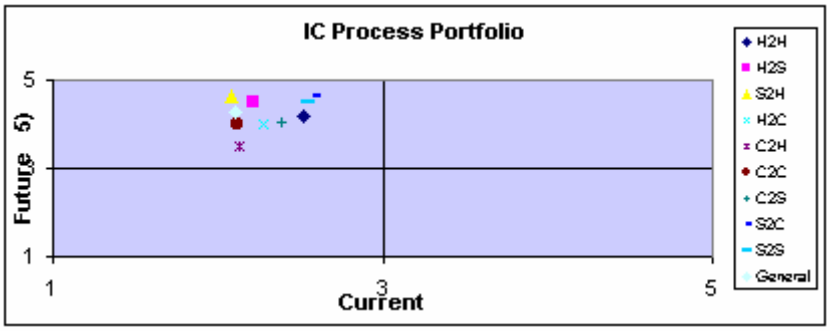

Figure 9: Illustrates IC process impact portfolio in Iran insurance industry

And as it is showed in fig 9, based on the opinion of Iranian insurance top managers, all the IC Process are the promising ICs. It means that these ICs may have a considerable impact on insurance industry in the next 5 years.

These figures show that in spite of the knowledge economy emergence, there is no considerable and programmed attention for cultivating and deploying ICs in Iranian Insurance industry, but these top managers are going to pay much attention to these ICs in the next 5 years. In this regards, these IC portfolio can help them to

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communicate more effective with each other, based on the classification of ICs, to identify them. It is the first step for helping companies to develop and deploy them in regarding to the companies top goals and strategies.

6.2 Measuring

As described before, we select and revised 110 indicators in tree aspects of our toolbox include 55 indicators for measuring IC-Stock, 38 indicators for measuring IC-Process and 17 indicators for measuring the Performance of companies by 3rd questionnaire.

2.4.2 KPI

What are the key performance indicators in each company and in the whole industry? This is the main question that can help managers to broadly assess all the key aspects of their companies. In this regard understanding the need for new performance indicator is viable. Nevertheless the characteristics of new performance system such as intangibility, difficulty to trade & assess, are the considerable challenge for these managers. For the purpose of this research we introduce the following framework to Insurance managers see fig 5. According to the Intangible Asset Monitor developed by Sveiby, our conceptual framework for intellectual capital Performance is shown in fig6. Fig 10 shows some reports on performance of intellectual capital in whole insurance industry, which calculated by 17 proposed indicators answered by top managers include financial managers. In this figure part 1 shows the current situation of IC performance vs. part 2 that shows the potential of the IC Performance in each aspects include: Human capital, Structural capital, and Customer capital performance.

2.4.3 IC stock

After identifying the key ICs, the next step for managers is understanding the current and also potential situation of them. The potential situation is pointing at the desirable and also achievable situation so our toolbox tries to help them in this regard by providing valid indicators for measuring each IC.

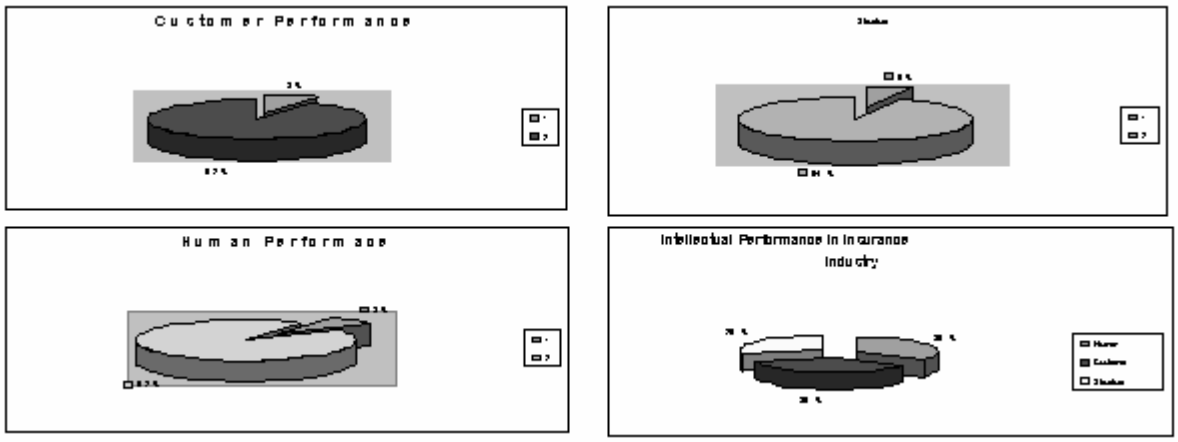

Figure 10: Illustrates a report on performance of intellectual capital in insurance industry

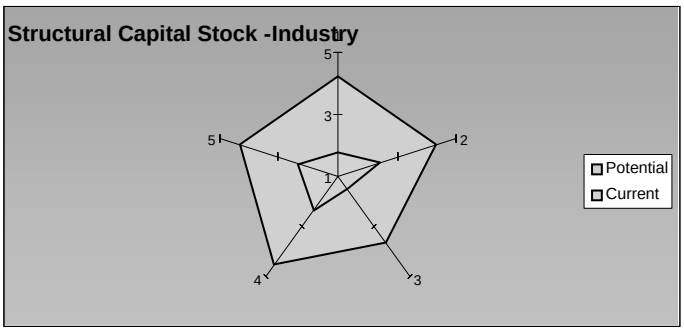

Figure 11: Illustrates the Structural capital current state vs. the potential in all 5 aspects of Iran insurance industry

Based on these 55 indicators we measure IC stock capital including, human, structural and customer capitals, and also IC Process in each company and then calculated the current stat of industry. For example fig 11 shows the structural capital current state vs. the potential in all 5

aspects in Iran insurance industry and fig12 illustrate the current state vs. the potential of all IC stock aspects in Iran insurance industry.

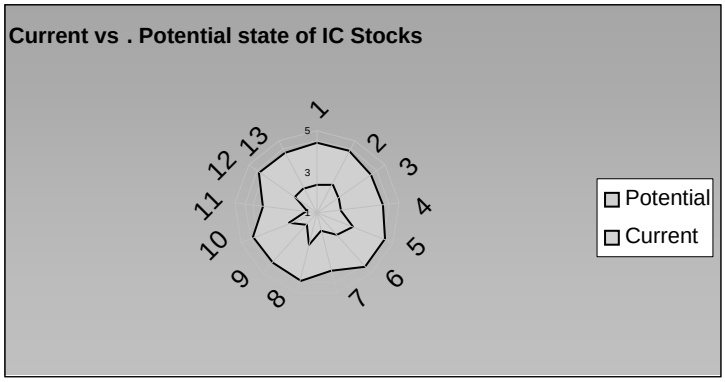

Figure 12: Illustrates the current state vs. the potential of all IC stock aspects in the Iran insurance industry

2.4.4 IC process

The next step is measuring the IC processes. Based on the 38 indicators we measure 10 typical processes in each company and then calculated the current stat of industry. Based on the Figure 12 the current vs. the potential state of all IC processes are too weak in Iran insurance industry.

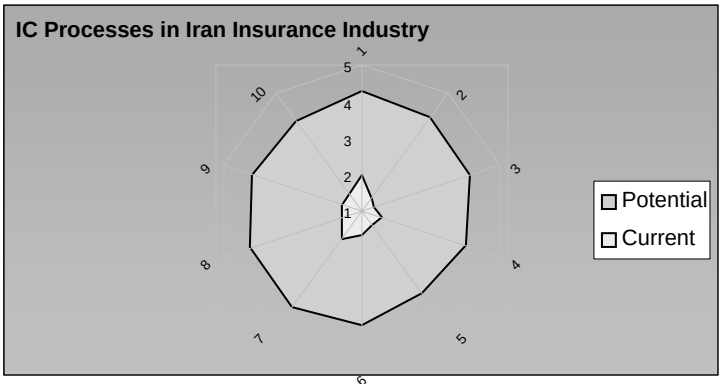

Figure 13: Illustrates the current state vs. the potential of all IC process aspects in the Iran insurance industry

6.3 Analysing

2.4.5 IC stock

At the top level, managers need to prioritize their decisions; in this regard two things seem important:

- Type of ICs (i.e. Key, Promising and Basic intellectual capitals), which reported in section 6.1. It is reasonable that the priority of key ICs should be higher than Promising and Basic intellectual capitals and the priority of Promising ICs should be higher than the Basic intellectual capitals. For the purpose of this research, we consider the current and future importance of each intellectual capital.
- The gap between the potential and the current situation of each IC. It is reasonable that the more the gap between the potential and the current situation of each IC the more priority it should be has.

So as it is presented at table 3, the priority score calculated by multiplying the “CI” column, that is the current importance, into ”FI” column that is the future importance into “gap” column. We also prioritize the indicators of each IC Stock for clearing the detail method of improvement.

Table 3: Prioritising of IC stocks regarding to their gap and their type.

Rank	IC Stocks	Gap	CI	FI	Priority Score
1	Competency	1.98	0.64	0.98	1.26
2	Attitude	1.97	0.66	0.94	1.22
3	Creativity	2.18	0.58	0.94	1.20
4	Customer relationships	1.80	0.66	0.98	1.17
5	Customer support	1.66	0.77	0.86	1.10
6	Innovation	2.10	0.52	0.97	1.06
7	IT Application	2.34	0.46	0.97	1.05
8	Culture	2.08	0.48	0.94	0.93
9	Core Process	1.90	0.51	0.94	0.91
10	Collaboration	2.29	0.49	0.75	0.85
11	Networking	2.08	0.42	0.92	0.80
12	Intellectual Property	2.11	0.46	0.78	0.77
13	Communication-Skill	1.04	0.57	0.85	0.50

2.4.5 IC process

For improving this situation to the potential state, first managers should prioritize the IC process, like the actions done for prioritize the IC Stocks, which described before. Table4 shows the detail data. We also prioritize the indicators of each IC Process for clearing the detail method of improvement.

Table 4: Prioritising of IC process regarding to their gap and their type

Rank	IC Process	Gap	CI	FI	Priority Score
1	S2C	2.81	0.52	0.92	1.34
2	S2S	2.80	0.51	0.90	1.28
3	S2H	2.86	0.42	0.93	1.11
4	H2S	2.72	0.44	0.90	1.08
5	H2H	2.33	0.50	0.84	0.99
6	C2S	2.38	0.48	0.81	0.92
7	General	2.54	0.42	0.85	0.91
8	H2C	2.40	0.46	0.80	0.88
9	C2C	2.38	0.42	0.80	0.81
10	C2H	2.33	0.43	0.70	0.70

At the end based on the top management survey, we ask them to define their opinion about this proposed toolbox, in two sections include: the role if this toolbox for helping managers to improve the internal management in insurance companies and second for helping managers to improve the external reporting. Table 5 illustrated the extent of top management agreement with these two general benefits in some detail

Table 5: Iranian top insurance managers' opinion about the proposing toolbox

Helping managers to improve Internal management	Agreement. Avg from 100
Diagnosis	87
Resource Allocation	80
Holistic View	81
Measurement Standard	86
Common Language	74
Future Focus	83
Extent to agree that, this toolbox can improve Internal management?	87
Helping managers to improve the reporting to external partners	Agreement. Avg from 100
Transparency	86
International Reporting Standard	82
Benchmarking	86
Extent to agree that, this toolbox can improve the reporting to external partners?	81

7. Conclusion

As the business environment continues to shift into more knowledge-based services, companies who are recognizing the true importance of intellectual capital are going to be more successful. It is the intellectual capital that is becoming the primary source of competitive advantage within many industries, particularly in knowledge intensive industries such as Insurance industry.

So for the first time in Iran, based on the context of Iran insurance industry we select 110 indicators for measuring ICs in Iran insurance companies.

Based on the literature review, we can conclude that the IC toolbox does not disclose the value of the firm's intellectual resources rather, they disclose 3 aspects of the firm's, including IC stocks, knowledge-management Processes or IC Processes and IC performances. In this regard we develop a toolbox, hopefully could help managers in 5 steps methodology to:

- Introducing the main ICs (i.e. the key, potential and basic intellectual capitals) in his or her company and in whole Iran insurance industry. (Identifying phase)
- Measuring the current position. (Measuring phase)
- Realizing the existing gap between potential and current position and prioritizing the next step for cultivating and deploying ICs in Iran insurance industry. (Analyzing phase)

Nevertheless based on the top management survey, we conclude that the proposed toolbox can help managers to improve the internal management in insurance companies (87% agreement) and also can help managers to improve the external reporting (81% agreement) see table 5.

Based on the result of this toolbox, it can be learned that the potential of intellectual capital is so considerable but up to now, in spit of the importance of these capitals, the insurance industry ignores them. This may cause by the monopoly of the public companies. At the end this toolbox tries to give organizations the opportunity to better understand the intangible aspect and casual relations within the organization. In this regards the longitudinal research seems to be necessary.

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