

ASSESSING THE MEASUREMENT OF INTANGIBLE ASSETS IN TELECOMMUNICATION SECTOR: EVIDENCE FROM TURKEY

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Abstract

Knowledge assets, became even more valuable in the phase of knowledge economy fastened by severe competition. In view of the circumstances, the firms began inevitably to invest not only in intangible assets but also in the intellectual kind of their assets. As a matter of fact, to gain a competitive advantage in the global competition era, the enterprises need to be able to measure their above named resources. Especially in the service sector, the popular methods used for measuring the performance of a company began to be unsatisfactory. Governments either began to pursue a policy of high-speed telecommunication infrastructure as a foundation to construct a “knowledge-based society. The paper presents the results of a survey that is developed within the components of intellectual capital illustrating the general attitude of staff employed in Turkish telecommunication industry.

Keywords: *intellectual capital; intangible assets; competitive advantage; telecommunication industry.*

JEL Classification: J24, L63, M12, M40, M50.

1.Introduction

The former and ongoing studies reveal that, the determination and the measurement of the enterprises' intellectual assets contribute through the illustration of the performance and the profitability of the company. In terms of competitive advantage and market power the global competition era enforces the enterprises to measure their knowledge based resources. Within the service sector, as one of the technology based and knowledge intense industries,

telecommunication organizations face even more severe and stricter competition in the global marketplace than ever before.

The popular methods used for measuring the performance of the firms began to be unsatisfactory as the corporations drifted to invest in intangible assets. To this end, the purpose of this study is to define the elements of intellectual capital in Turkish telecommunication sector and to empirically investigate the importance of intangible assets which recently became an emerging phenomenon. This paper reviews the literature pertaining to the assessment of intellectual capital. The article proceeds in the following manner. First, a brief review for the theoretical infrastructure regarding intellectual capital within the organization is presented. The related literature review concerning the studies of various determinations for intellectual capital are given. Next, the survey methodology and the data are investigated featuring the suggestions about IC.

2. Conceptual Framework

In the related literature there are various definitions of IC. Intellectual capital can be defined as a knowledge that is systemized within the enterprise. (Çetin, 2009; 13)

- *Intellectual capital represents the transition to knowledge economy which involves the restructuring organizations and intangible assets.*(Gürdal, 2004, 88-90)
- *Intellectual capital is the knowledge which can be transformed to profit as the intangible assets redefine the value of companies especially in the new economy* (Çetin, 2005; Demir et al., 2005).
- *Intellectual capital is a kind of capital that, its all components are abstract assets and it gives competitive advantage to organization as its rivals in the market.*(Topal et al, 261)

Various studies illustrate the growing value of intangible assets regarding its organizational, managerial and strategic dimensions that cover the future value of enterprises. In recent years, the increasing importance of intellectual capital has demanded the measurement and reporting of intellectual capital in firms. Traditionally, economists have examined physical and human capital as key resources for the firm that facilitate productive and economic activity. (Nahapiet & Ghoshal, 1998; 245) Tangible assets such as property, plant and equipment of the enterprises seem to be the fundamental factors of production in the economy for

goods and services. However, their importance loses the traditional value through time as the intangible and knowledge based assets have increased(Shaikh, 2004; 439). One of the main reasons is that the classic accounting methods and financial reports cannot meet users' need about intangible assets (Yıldız and Tenekecioğlu, 2004 and Erkuş et al., 2004; Uzay and Savaş et al, 2003).

In the knowledge economy, organizations' operational power in the future depends on its current intellectual assets. Generally accepted components of intellectual capital in the literature are: human capital, constitutional capital and customer capital in other words relational capital.(Çetin, 2009, 13; Topal et al, 2008, 260; Uzay and Savaş, 2003, 166; Bozbura, 2004, 357; Yereli and Gerşil, 2005,18; Çetin, 2005; 361; Erkuş, 2004,306; Shaikh, 2004, 440). Since today there have been several studies (Bozbura, 2004; Bontis, 2001; Topal et al, 2008; Bozbura and Toraman, 2004) with different determinations concerning the sub-elements of IC components. In order to fully map the prior research in the field of IC identification a systematic literature review is below categorized.

Table 1. Intellectual Components Related To Human Capital

| HUMAN CAPITAL | |
|--|---|
| <i>Qualitative</i> | <i>Quantitative</i> |
| Know- How | Average years of service with the company |
| Leadership skills of managing staff | Number of employees |
| Staffs' commitment to objectives | Number of managers |
| Participation within staff | Revenues/employee |
| Creative skills of staff | Employee turnover |
| Proactive and reactive capabilities | Number of female managers |
| Satisfaction of staff | Profits/employee. |
| Average educational level | Average age of employees |
| Eagerness to share resources | Number of exempt full-time employees |
| Ability of using initiative | Average age of full-time exempt employees |
| Ability to reveal result from knowledge | Percent of company managers with advanced degrees |
| Task management | Percent of employees with advanced degrees |
| Innovativeness | Hours spent in debriefing |
| High competence in terms of specialization | Savings from implemented employee suggestions |
| Tacit knowledge management | Empowerment index |
| Reporting and sharing the knowledge | Number of full-time or permanent employees |

| | |
|--|---|
| To be informed about organizational strategies | The cost of employing |
| Eagerness to learn | Average education time per employees |
| Intellectual capital | Percent of recruitment expenses per employees |
| IT literacy | |
| Teamwork (that leads to synergy) | |
| Entrepreneurial spirit | |

One of the most important factor of intellectual capital is the human capital. Human capital requires the qualifications of staff that has competence of problem-solving and innovating. (Erkuş, 2004, 306) The greater the human capital size the bigger the options of gathering the competitive advantage for the pricing of goods and services will be. (İşevi and Çelme, 2002, 9)

Table 2. Intellectual Components Related To Structural Capital

| STRUCTURAL (ORGANIZATIONAL) CAPITAL | |
|---|--|
| <i>Qualitative</i> | <i>Quantitative</i> |
| The increase of income from an individual worker continuously | Administrative expense/total revenues |
| Putting into practise new ideas and products | Processing time, outpayments |
| The supporting of developing idea and products | Computers/employee |
| The leader on developing idea and product) | Corporate quality performance |
| Speed and efficiency | Contracts filed without error |
| Access to rapid information | Investment in IT |
| The creativity supporting with system and means | Partner satisfaction index |
| Existance of bureaucratic system | Cycle/process times |
| Cultural supporting for workers | Percentage of business from new products |
| The access to information without precondition by everybody | Actual costs of work performed |
| Knowledge Management Tools | Time of work performed |
| Containing entire knowledge of information systems | Income /cost rate |
| Strategic definitions | The highest rate of income from an individual worker |
| Specialization | The number of access to database |
| Update of datawarehouses | Research and development expenses |
| Quality indicators | Technology investments |
| Patents | BT Investments |

| | |
|-----------------------|--|
| Copyrights | The return of investment based on innovation |
| Trademarks | |
| Management Philosophy | |
| Networking Systems | |
| Corporate Culture | |
| Image | |
| Supportive Atmosphere | |
| Knowledge Sharing | |
| Knowledge Transfer | |

This construct deals with the mechanisms and structures of the organization that can help support employees in their quest for optimum intellectual performance and therefore overall business performance. An individual can have a high level of intellect, but if the organization has poor systems and procedures, the overall intellectual capital will not reach its fullest potential. (Bontis, 1998, 66) Structural capital provides customer capital, the relations developed with key customers. Unlike human capital, structural capital can be owned and thereby traded. (Bontis, 2001, 45)

Table 3. Intellectual Components Related To Customer Capital

| CUSTOMER AND RELATION CAPITAL | |
|--|--|
| <i>Qualitative</i> | <i>Quantitative</i> |
| Customer satisfaction | Gross profit |
| Skills of problem solving | The cost of gaining customer |
| Accessibility of target markets | Market share. |
| Market share improvement | Customer rating. |
| Customer loyalty | Number of new customers/new market/leads |
| Brand | Annual sales/customer. |
| Knowledge gathering in terms of customer needs | Average customer size. |
| Distribution channels | Number of customer complaints |
| The extension of customer feedback within enterprise | Ratio of sales contacts to sales closed |
| Sustainability of relationships | Days spent visiting customers |
| Business collaborations | Average time from customer contact to sales response |
| Licensing agreements | IT literacy of customers |
| Franchising Agreements | Average lifetime of customer relations |
| Trade partnerships | |

Knowledge of marketing channels and customer relationships is the main theme of customer capital. Customer capital represents the potential of an organization has due to exfirm intangibles. These intangibles include the knowledge embedded in customers, suppliers or related industry associations.(Bontis, 1998, 67)

3.Literature Review

In today's business, development of intellectual capital becomes a necessity as it can also be the primary resource for gaining competitive advantage for the company (Karabay, 2010,4; Uzay and Savaş, 2003; Yereli and Gerşil et al., 2005) as the globalization and technological progress cause the competition among enterprises to be held more intensively (Toraman, Abdioğlu and İşgüden, 2009;91).

In traditional business approach, factors which define the market value of business enterprises are renamed as intellectual capital. (Demir, 2005; 77) Hence, the intangible assets represent the 3/4 of market value of firms (Karabay, 2010, 4). This reveals that the competitive advantage depends mostly on the know-how accumulation of human capital in an organization. (Perez and Pablos, 2003, 82) Also organization culture has to reinforce intellectual capital and managing strategies has to aim increasing assets of intellectual capital.(Topal et al, 260)

The measurement of the intangible assets, mentioned above, is quite hard for the companies (Yereli and Gerşil, 2005, 17). The techniques are inadequate to measure and report the intellectual properties (Erkuş, 2004). The firms need to measure their intellectual capital for the reasons of first of all, to help organizations formulate their strategy; assess strategy execution; assist in diversification and expansion decisions; use these as a basis for compensation; and finally to communicate measures to external stakeholders.(Marr et al, 2003,443) The essential suggestion in terms of measuring IC in firms is the questionnaire method. (Bontis, 1998; Bozbura and Toraman, 2004, 58) The measurement of the IC is generally observed within internal and external measurement of the enterprises (Shaikh, 2004, 441-442).

As for the external measures the common used indicators are market to book value ratio, Tobin's q oranı (Joia, 2000, 70; Yereli and Gerşil, 2005, 22-23; Bozbura and Toraman, 2004, 58; Uzay and Savaş, 2003,167; Demir, 2005,79; Çetin, 2005, 363-365), and for the internal measures; calculated intangible value method (Uzay and Savaş, 2003, 168), knowledge capital score card method,

intellectual capital index (Çetin, 2005, 364-374) balance score- card (Erkuş, 2004, 319; Shaikh, 2004, 441) are the widely used metrics to measure the firm's intellectual capital. The measurement of intellectual capital is utmost crucial for the service sector not only for the reason that they become knowledge based but also they compete for their knowledge -based assets. Knowledge-based business services are often considered to be one of the hallmarks of the knowledge-based economy. The sector consists of firms that have emerged to help other organizations deal with problems for which external sources of knowledge are required.(Prasad,2008,4)

The value of IC, on the other hand, seems to have had a major impact on the market value of the mobile telecommunications companies.(Han and Han, 2004, 519) Turkish telecommunication sector is one of the leading knowledge - based and technology-intense sectors similar to banking and insurance. Within the literature there are several studies concerning IC in the same sector are mentioned which also enlightened this study in scope.

Gerpott, Thomas and Hoffmann (2008) investigated intangible disclosure quality in an international sample of stock-quoted telecommunications network operators in their study.

Han ve Han (2004) proposed a decision model based application of the analytic hierarchy to investigate the relevance, reliability, comparability, representational quality and the risk based IC in Korean industry.

The investigation of IC in telecommunication sector as most researches in this industry seems exploratory in nature, there is little evidence for this sector and mostly are not empirical. To fill this gap, this paper reports on the results of a systematic investigation of telecommunication firms and existing empirical evidence that helps to prove that the measurement of IC is really worthwhile.

4. Survey Methodology

The purpose of the questionnaire tests the behaviors of the staff related to intellectual capital assets and the level of their perception and whether there is a difference or not between staff and directors. At the same time, with this questionnaire intellectual capital assets of the Turkish telecommunication sector are evaluated.

4.1.Datas

Data is collected through a questionnaire form that is applied on the staff employed in Turkish GSM operating units of telecommunication industry. The purpose of the questionnaire aims to test the importance of the intellectual capital the level of their perception. A survey sheet, which is composed of 52 questions concerning demographic information, 15 questions measuring human capital, 15 questions measuring organizational capital and 15 questions measuring relational capital, has been prepared to ask corporate managers composing this sample. 5-point likert scale in the form (1= very high ; 3= medium; 5= very low) has been used in total 37 questions. While the majority of the questions were based on likert the less were dichotomous yes-no questions. The items included in the survey were developed from concepts that were accentuated during the literature review phase of the study.

4.2. Tests and Statistics

The results were coded in SPSS for Windows. The following items were reversecoded: human capital, customer capital and structural capital. Besides Cronbach's alpha test for reliability (**0,9530**) the analysis of the frequencies and the descriptives for the overall view of industry are also investigated.

4.3. Research Constraints

Any research study encounter some basic limitations. This was also valid for this study. One of the main constraint of the study was the lack of participation of the staff for the survey. This reduced the choices of conducting the core analysis of the unit and gathering more healthy empirical findings. On the other hand, it can be assumed that the nonattendance of the firms can demonstrate that they value their intangibles but they abstain from sharing it and prefer to keep it rather as an explicit knowledge.

4.4. Findings

Below the frequency distribution of the unit of analysis is highlighted.

Table 4. Gender

| | Frequency | Percent | Cumulative Percent |
|--------|-----------|---------|-----------------------|
| Male | 22 | 52,4 | 52,4 |
| Female | 20 | 47,6 | 100,0 |
| Total | 42 | 100,0 | |

As seen in Table 4, the percentage of male respondents has been %52 whilst the female respondents is utmost represent the similar level of participation within the sample size.

Table 5. Age

| | Frequency | Percent | Cumulative Percent |
|-----------------|-----------|---------|-----------------------|
| 18-30 | 9 | 21,4 | 21,4 |
| 31 - 40 | 15 | 35,7 | 57,1 |
| 41 - 50 | 11 | 26,2 | 83,3 |
| 51 - 60 | 6 | 14,3 | 97,6 |
| 61 and above | 1 | 2,4 | 100,0 |
| Total | 42 | 100,0 | |

When the age of the sample size is considered the respondents within the age between 31-40 represent the majority population of the sample size. Furthermore, it can be asserted that the younger population in Turkish GSM enterprises exist.

Table 6. Education

| | Frequency | Percent | Cumulative Percent |
|-----------------|-----------|---------|-----------------------|
| High School | 4 | 9,5 | 9,5 |
| Pre-graduate | 3 | 7,1 | 16,7 |
| Undergraduate | 25 | 59,5 | 76,2 |
| Graduate | 8 | 19,0 | 95,2 |
| Ph.d. and above | 2 | 4,8 | 100,0 |
| Total | 42 | 100,0 | |

As figured in Table 6, when the educational background is considered, the respondents employed in the sector have predominantly undergraduate degree.

Table 7. Business Experience in Company

| | Frequency | Percent | Cumulative Percent |
|--------------------|-----------|---------|-----------------------|
| 0 - 5 years | 14 | 33,3 | 33,3 |
| 6 - 10 years | 11 | 26,2 | 59,5 |
| 11 - 15 years | 8 | 19,0 | 78,6 |
| 16 - 20 years | 4 | 9,5 | 88,1 |
| 21 years and above | 5 | 11,9 | 100,0 |
| Total | 42 | 100,0 | |

Table 7 demonstrates that, the staff are mostly the newly employed human capital in GSM enterprises and have a job experience of average 10 years.

Table 8. Business Experience in Industry

| | Frequency | Percent | Cumulative Percent |
|--------------------|-----------|---------|-----------------------|
| 0 - 5 years | 9 | 21,4 | 21,4 |
| 6 - 10 years | 11 | 26,2 | 47,6 |
| 11 - 15 years | 11 | 26,2 | 73,8 |
| 16 - 20 years | 2 | 4,8 | 78,6 |
| 21 years and above | 9 | 21,4 | 100,0 |
| Total | 42 | 100,0 | |

When Table 8 is interpreted, the staff that are permanently employed in the company probably has the similar amount of experience in the sector.

Table 9. Department

| | Frequency | Percent | Cumulative Percent |
|--------------------------|-----------|---------|-----------------------|
| Marketing | 5 | 11,9 | 11,9 |
| Sales | 7 | 16,7 | 28,6 |
| HR | 5 | 11,9 | 40,5 |
| Research and Development | 2 | 4,8 | 45,2 |
| Accounting and Finance | 7 | 16,7 | 61,9 |
| Information Technologies | 7 | 16,7 | 78,6 |
| Other | 9 | 21,4 | 100,0 |
| Total | 42 | 100,0 | |

As figured in Table 9, the average of departments that participated within survey represent an identical distribution.

4. Conclusion

As the transition phase to knowledge economy has fastened, the rising demand of enterprises for measuring their intangible assets began to influence the fundamental approaches of traditional market of competition. The intellectual capital covers the value provided to an organisation by the employees, the processes and products that support the organisation the human capital, structural capital, and relationship capital has to be measured respectively in an organization. The involvement of complex technologies and being subject to high rates of technological change, the growing market concentration in recent years have been the motives for choosing the telecommunication industry for the field research.

In this context, the study aims to assess the values of firms' intangible assets and the level of importance regarding intellectual capital of Turkish telecommunication sector which is highly knowledge-technology based. The study combines the comprehensive literature about the intellectual capital both in theory and in the measurement context. Provided that the outnumbered participation of staff from the sector caused analysis to be inefficient in size and scope. On the other hand, the data collection experience during the field research demonstrated that the telecommunication sector consider their intangible assets but abstain from sharing them out as a part of their corporate policy.

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