

Managerial Perceptions of Intellectual Capital Indicators

Lütfiye Özdemir¹, Mehmet Onur Balkan²

¹ Inonu Universty, Faculty of Economics and Business Administration, Elazığ Road 15 th km Malatya, Tel: +90 422 377 30 00, lozdemir@inonu.edu.tr

² Doctoral Student, Institute of Social Science, Inonu Universty, Oyak Sitesi 1st Gate no:27, Çayyolu, Ankara, Tel: +90 312 249 13 83, onurbalkan@gmail.com

Abstract

The purpose of this paper is to understand the role of manager's demographical differences on perception of intellectual capital indicators (ICI) in management of intellectual capital (IC) and to empirically investigate the issue in IT firms in Turkey. To create a suitable intellectual capital indicator survey a wide literature research was made. In almost every created ICI index, elements of intellectual capital are defined in three dimensions; i.e. human capital, structural capital and relation capital. For the research, a research question is defined and according to this question five hypotheses are defined and tested. The research was directed to the senior managers, general managers, directors, assistant directors, CEO's, the main conclusions from this study are that: seniority, age and education level could effect managers' perception of ICI and gender and language does not effect manager's perception of ICI

Introduction

The aim of this study is to try to determine the level of the managers awareness of ICI and if managers demographical differences effects the perception of these indicators. When the literature of this subject is analyzed it is seen that several definitions and the models of intellectual capital revealed recently. Brooking (1997) suggest that "*intellectual capital*" is defined as the difference between the book value of the company and the amount of money someone is prepared to pay for it (p.364). Information and knowledge are the thermonuclear competitive weapons of our time. Stewart (1997) defines IC as "*The intellectual material knowledge, information, intellectual property, experience that can be put to use to create wealth.*" The rise of the "*new economy*", one principally driven by information and knowledge, is attributed to the increased prominence of IC as a business and research topic (Petty, Guthrie, 2000, p. 156). Although the names may vary, most authors talk in terms of IC consisting of human capital, customer capital and structural (sometimes organizational) capital (Leliaert, et al, 2003, p.202). Edvinsson and Malone and Stewart agree that IC is the merging of three types of capital: human capital, structural capital, and customer capital (Harris, 2000, p.23). Stewart (1997) argue that: A crucial departure from these tree-like classifications came with the observation that "*human, structural and customer capital work together*". When forming our research we used the same model for ICI.

Human Capital

Human capital refers to the acquired skills, knowledge, and abilities of human beings (Harris, 2000, p. 24). Human capital can be further sub-classified as, the employees' competence, relationship ability and values. A simple example provided by Kindred Pederson of Southern California Edison indicates that if a software package sells for \$1 million before employee modifications and \$3 million after employee modifications, then the human capital used to modify the software is \$2 million (Kannan, 2004, p. 389). Human capital has also been defined on an individual level as the combination of these four factors:

1. your genetic inheritance;
2. your education;
3. your experience; and
4. your attitudes about life and business (Bontis, 1998, p.65)

Structural Capital (Organizational Capital)

The organizational capital is the sum of all assets that make the creative ability of the organization possible. The mission of the firm, its vision, its basic values, strategies, working systems, and in-firm processes can be counted among these assets (Bozbura, 2004, p.359).

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 by which to track his or her actions, the overall IC will not reach its fullest potential (Bontis, 1998, p.66). Leif Edvinsson (1997) argues that "*human capital is much more volatile, and structural capital can be used as leverage for financing corporate growth*" (p.369).

Relational Capital (Customer Capital)

Bontis (1998) assumed that knowledge of marketing channels and customer relationships is the main theme of customer capital (p.67). According to Stewart (1997), customer capital is the most obviously valuable component to IC. Customer capital is defined as the value of its franchise, its ongoing relationships with the people or organizations to which it sells (Stewart, 1997, p. 143). McKenna (1986) states that there are three steps to establish relations with the environment:

1. to understand the market;
2. to move with it; and
3. to establish relations.

Intellectual Capital Management

The management of intellect lies at the heart of value in the current "*knowledge era*" of business (Bontis, 1998, p.73). Two of the most cited frameworks for managing IC are those of Skandia (Edvinsson, 1997) and Dow Chemical (Petraş, 1996). These organizations have followed two different strategic routes to arrive at essentially the same destination the successful management of intellectual assets to maximize their value adding potential for the organization. Both models have been very successful at creating an awareness of the need to deploy, protect and renew intellectual assets (Brennan, et al, 2000, p.224). The Dow Chemical Company developed a vision, functional systems and tools for managing its intellectual assets which have been in use since 1993.

"*To measure is to know*"; but first one must decide what to do with such measurement information, before one can decide what to measure and how . Once a manager understands how

certain actions will affect the company's IC and what may be done to alter its IC, he/she will be able to react and steer. IC calculation (ICC) is thus the first step in understanding how to manage the intangible assets of an organization (Leliaert, et al, 2003, 207). Most commonly there are two measurement techniques in use: financial and non financial measurement techniques. Financial techniques are well known such as market value, book value etc.. Non financial measurement techniques are: knowledge production function (Machlup, 1962); the intangible asset monitor (Sveiby, 1997, 1998; Celemi, 1999); the balanced scorecard (Kaplan and Norton, 1992, 1996); the skandia value scheme (Edvinsson and Malone, 1997); the IC accounts (DATI, 1998); and the knowledge capital scorecard (Lev, 2000).

Many authors agree that first step of the IC management starts with identifying intangible assets (Bontis 1998, Ross 1997, Brennan 2000, Edvinsson 1997) . Managers must know what will be managed. We focused on the first step of IC management: Identifying intangible assets.

We use IC indicators to identify managers awareness of IC. There are many capital indicators, which have been used by researchers. See for example the articles by Edvinsson and Malone (1997), Roos et al. (1997), Brooking (1999), ICM Group(1998), Sullivan (1998), Canadian Management Accounting (1999), Allee (2000), Gross et al. (2000).

The aim of this research is, to determine if the manager's demographical differences effects the perception of ICI. For this reason a survey was conducted to 100 managers in 50 firms. Totally 71 survey received. For data analysis Bivariate correlation for item-total scale correlation, Cronbach's alpha test for reliability, Descriptive Factor analysis with varimax rotation, and T-test and One Way ANOVA test applied by using the SPSS Version 17.0 separately.

Discussion and hypothesis

The number of knowledge workers and new knowledge-based opportunities is expected to increase dramatically in the next few years. This new demand will force the employers to further develop employees' competencies (Bontis et al 2000, p.90). In Turkey the rise of the new economy led the managers take some precautions to managing the knowledge workers especially in IT firms.

Managing IC is a long path. During this way managers must follow many conceptual procedures. But every manager could follow a different way to fulfill his or her mission. Although the management techniques defined and tested, personal differences may affect the whole procedure. As mentioned before, the process of management of IC starts with to find out "*What will be managed?*" When the literature was searched, it is seemed that some ICI scale was developed. The aim of this study is to try to find out "*if managers' demographical differences affects the way of management of ICI or not*".

For this reason a research question is created.

RQ: Does managers' demographical differences effect ICI perception?

To explain this question hypothesis was developed

In recent years, there has been extensive interest in the study of gender and leadership behavior. Despite the large number of gender and leadership studies, most have suffered from methodological limitations that seriously impair their usefulness or generalizability (Kabacoff, 1998, p.1). In the most recent researches it was founded that man and woman have different capabilities in leadership issues. But there are no specific findings about the gender differences positively or negatively affect all leadership behaviors. Depending on that idea (H1) was developed.

(H1). The gender of the managers does not effect the perception of ICI.

The age period, effects humans perception, desire, expectations about their life and job. Younger ones are lack of experience and at the beginning of the learning curve. The elder people resist the change and are not familiar with the new technologies but more patient and more experienced (Guvén et.al., 2005, p. 132). Depending on that idea (H2) was developed.

(H2). The age of the managers effects the perception of ICI.

In the age of globalization it is nearly impossible to avoid technology and communication. Especially in IT firm's managers must know foreign language at least one, preferably more. In order to cope with high speed technology and to reach competitive storm managers must be familiar with linguistic features. Depending on that idea (H3) was developed.

(H3). The foreign language capabilities of the managers do not effect the perception of ICI.

Education level is one of the most important criteria which effect the people's perception of understanding of business and life style. The higher education level shows strong correlation with life and job expectations and meaning of life. Because of that reason, under the social and economic circumstances people try to continues his/her education. A person who has higher education has wide perspective than lower ones (Guvén et.al., 2005, p. 133). Depending on that idea (H4) was developed.

(H4). The education level of the managers effects the perception of ICI.

Seniority is defined as the length of service by an employee in a continuing or temporary job or position (www.answers.com). Senior managers are familiar with the whole corporation and know all the key elements and factors about the system. They are aware of formal or informal ways of management. The respectively new managers have disadvantages' of being "rookie". Senior managers have larger perspective of firm and ability to easily adopt the changes. New managers are dynamic and compatible with new technology and ideas. Depending on that idea (H5) was developed.

(H5). The seniority of the managers effects the perception of ICI.

Procedures for collecting data

In this context, it is natural to use the qualitative research results for quantitative analysis. For the research method, five Likert-type scales are used. Moreover, in order to support the survey study, interview and focus group meeting are also suggested. For this reason, in our research as regards to measuring the human, relation and organizational capital, applying survey and interview techniques that depend on the five Likert-type scale, is determined, 1: Strongly disagree, 5: Strongly agree. As appropriate to the aim of the research study, a preliminary work is made to find which IC indicators are effective in the success of firms that operate in IT firms in Turkey. Therefore, in order to determine the ICI a literature research is made and two criteria are defined:

1. The indicators must be used in at least in ten studies,
2. Indicators are appropriate for industry.

The aim of the general IC survey is to find out the ICI that play an effective role in the firms in Turkey. Therefore, from the firms that operate in Turkey, people like the founders of firms, CEOs, presidents, and top-level executives, general managers, directors, are chosen as the target audience.

We sent 80 surveys to firms. A total of 50 valid surveys evaluated. The second step in the statistical analysis is to make a study on the reliability of the questions. Nunnally (1978) suggests Cronbach's a test for the development and simplification of the survey that is to say that for

determining, the valuables that do not represent the common value that is to be measured (Bontis, 1998). Nunnally (1978) advises a coefficient to be .70 or higher. Cronbach's test is applied by using the SPSS Version 17.0 separately to the human capital, relation capital and organizational capital criteria in our survey results. As a consequence of Cronbach's test, the alpha coefficient for human capital is found as .8354, the A coefficient for organizational capital is .8412 and the A coefficient for the relation capital is found as .8273. As all these three rates are over the critical point of .70; the last status of the survey's reliability is accepted. Unusable and misunderstand questions were excluded from survey and private IC survey designed.

The aim of the private IC survey is to detect the If manager's demographical differences effects or not, the IC criteria that are determined according to the results of the general IC survey, in firms IT firms in Turkey. A total of 64 items, designed to tap into three constructs (three constructs relating to IC), were included in the questionnaire. The items included in the survey were developed from concepts that were accentuated during the literature review phase of the study. Totally 50 organizations and 100 managers were surveyed. A total of 71 usable responses were received. The results were coded in SPSS 17 for Windows.

The following statistical tests were executed:

- Bivariate correlation for item-total scale correlation,
- Cronbach's alpha test for reliability,
- Descriptive Factor analysis with varimax rotation, and
- T-test and One Way ANOVA test.

Results

The results of this study were examined by three categories:

1. Human capital,
2. Structural capital, and
3. Relational Capital (Customer Capital)

Human Capital

At first, data were tested with Kaiser-Meyer-Olkin (KMO) and Bartlett Sphericity test for validity to factor analysis. For Human Capital criteria, KMO(.650) and Bartlett's Test of Sphericity ($X^2=518.959$, $Sd=253$, $p<.00$) were found sufficient to made factor analyses.

Factor analysis is a multivariate statistical method whose primary purpose is data reduction and summarization. By using factor analysis, a factor loading for each item and its corresponding construct was determined. In order to verify that the items tapped into their stipulated constructs, a principal component analysis with a varimax rotation was executed (Bontis, 1998, p. 68). The varimax rotation was used because it centers on simplifying the columns of the factor matrix. With the varimax rotational approach, there tends to be some high loadings (i.e. closer to 1) and some loadings near 0 in each column of the matrix. The logic is that interpretation is easiest when the variable- factor correlations are either closer to 1, thus indicating a clear association between the variable and the factor, or 0 indicating a clear lack of association (Bontis, 1998, p.68).

Only the items that loaded on their corresponding factors at levels of .5 or greater were retained for the rest of the analysis. These items are highlighted in the last column. Items were not retained because they

- Did not load on any factor with a value of .5 or greater;
- Loaded on the wrong factor; or

- Had cross-loadings on two factors.

After that process these two factors tested for reliability with Cronbach’s alpha test. Nunnally advises a coefficient to be .70 or higher. Factors as a consequence of Cronbach’s a test, the alpha coefficient for human capital is found over the critical point of .70; the last status of the survey’s reliability is accepted. As a result of the factor analysis two different factors are defined in the human capital.

As a result of these analysis, these two factors loadings were above .50, no cross-loadings and alfa coefficient was higher than .70. The factors related to human capital and total-item correlations were demonstrated in Table 1.

Table 1 Human Capital Factors

Factors	Indicators	Alpha	I. Factor	II. Factor	Item-Total Correlation
Employee voice	(A3) Employees cooperate in teams,	.80	.66	.26	.73
	(A13) Employees voice opinions,		.74	.29	.64
	(A19) Successfull human resource management,		.67	.33	.70
	(A22) Managers can take risks if they have to,		.78	.32	.75
	(A23) Authority turnover,		.55	.27	.73
Employee skills	(A5) Come up with new ideas,	.73	.21	.75	.68
	(A6) Employees are bright,		.11	.76	.52
	(A7) Employees are satisfied,		.39	.63	.65
	(A8) Employees perform their best.		.29	.67	.64
Total variance: 60.65 Factor 1 variance : 25.29 Factor 2 variance : 35.36 Factor 1 eigenvalues: 4.4547. Factor 2 eigenvalues: 2.147					

As consequences of analysis two factors were defined which eigenvalues greater than 1, shown in Table 1. These two factors explained 60.65 of total variance. Factor 1 explained 25.29% factor 2 35.36% of total variance. Loadings changed between .55 and .78 for factor 1 and .63 and .76 for factor 2. Item-total correlation differs between .52 and .75. It is expected that item-total correlation must be positive and above .20. The items that can not fulfill these criteria should be excluded from scale. After this analysis it is founded that item-total correlations were positive and above .20. As a result of varimax rotation first factor consisted of five indicators (A3, A13, A19, A22, A23), second factor four indicator (A5, A6, A7, A8). First factor named “Employee Voice”, second factor named “Employee Skills”. For reliability of these two factors Cronbach alpha test applied. As a consequence of Cronbach’s a test, the alpha coefficient for factor 1 is found as .80, the a coefficient for factor 2 is .73. As all these two rates are over the critical point of .70; the last status of the factor’s reliability is accepted.

Structural Capital

At first, data were tested with Kaiser-Meyer-Olkin (KMO) and Barlett Sphericity test for validity to factor analysis. For Structural Capital criteria, KMO(.701) and Bartlett's Test of

Sphericity ($X^2=591.084$, $Sd=210$, $p<.00$) were found sufficient to made factor analyses. As a result of these analysis, these two factors loadings were above .50, no cross-loadings and Alfa coefficient was higher than .70. The factors related to structural capital and item-total correlations were demonstrated in Table 2.

Table 2 Structural Capital

Factors	Indicators	Alpha	I. Factor	II. Factor	III. Factor	Item-Total Correlation
Firm Structure	(B7) Firm is efficient,	.85	.60	-.14	.01	.70
	(B8) Systems allow easy info access,		.76	-.06	.12	.71
	(B13) High brand capital,		.60	.04	.20	.60
	(B16) Good database,		.70	.03	.20	.78
	(B17) High usage of IT,		.75	.03	-.10	.76
	(B18) Good management processes,		.68	.02	.42	.52
Firm innovation	(B3) transaction time is best,	.80	-.02	.70	-.19	.61
	(B4) implement new ideas,		.003	.90	-.19	.64
	(B5) supports development of ideas.		-.04	.90	-.19	.62
Internal processes	(B6) develops most ideas in industry,	.70	.18	-.28	.60	.55
	(B14) Firms capacity value is high,		.18	-.25	.80	.53
	(B15) Good internal culture.		.18	-.36	.63	.66
Total variance: 49.44 Factor 1 variance : 19.00 Factor 2 variance : 17.36 Factor 3 variance:13.08 Factor 1 eigenvalues: 6.4547 Factor 2 eigenvalues: 1.147 Factor 3 eigenvalues: 1.161						

As consequences of analysis tree factors were defined which eigenvalues greater than 1, shown in Table 2. These two factors explained 49.44 of total variance. Factor 1 explained 19.00%, factor 2: 17.36%, factor 3: 13.08% of total variance. Loadings changed between .60 and .76 for factor 1 and .70 and .90 for factor 2, .60 and .80 for factor 3. Item-total correlation differs between .52 and .78. It is expected that item-total correlation must be positive and above .20. The items that can not fulfill these criteria should be excluded from scale. After this analysis it is founded that item-total correlations were positive and above .20. As a result of varimax rotation first factor consisted of six indicators (B7, B8, B13, B16, B17, and B18), second factor tree indicator (B3, B4, B5) and the third factor tree indicator (B6, B14, B15). First factor named “*Firm Structure*”, second factor named “*Firm Innovation*” and third factor “*Internal Processes*”. For reliability of these two factors Cronbach alpha test applied. As a consequence of Cronbach’s a test, the alpha coefficient for factor 1 is found as .85, the a coefficient for factor 2 is .80, the a coefficient for factor 3 is .70. As these entire rates are over the critical point of .70; the last status of the factor’s reliability is accepted.

Relational Capital (Customer)

At first, data were tested with Kaiser-Meyer-Olkin (KMO) and Barlett Sphericity test for validity to factor analysis. For Relational Capital criteria, KMO(.738) and Bartlett's Test of Sphericity ($X^2=521.795$, $Sd=190$, $p<.00$) were found sufficient to made factor analyses. As a result of these analysis, these two factors loadings were above .50, no cross-loadings and alfa coefficient was higher than .70. The factors related to relational capital and item-total correlations were demonstrated in Table 3.

Table 3 Relational Capital

Factors	Indicators	Alpha	I. Factor	II. Factor	Item-Total Correlation
Environmental relations	(C4) Longevity of relationships,	.80	.80	.26	.66
	(C15) High enviroment sensivity,		.63	.29	.69
	(C16) Firms name is good in market,		.56	.33	.75
	(C18) Good relations with suppliers,		.78	.32	.67
Customer relations	(C5) Customers are loyal,	.70	.21	.79	.68
	(C13) Confident of future with customer,		.11	.89	.67
	(C14) Feedback with customer.		.39	.60	.65
Total variance: 33.534 Factor 1 variance : 18.426 Factor 2 variance : 15.108 Factor 1 eigenvalues: 6.250. Factor 2 eigenvalues: 1.674					

As consequences of analysis two factors were defined which eigenvalues greater than 1, shown in Table 1. These two factors explained 33.534 of total variance. Factor 1 explained 18.426% factor 2: 15.108% of total variance. Loadings changed between .56 and .80 for factor 1 and .60 and .89 for factor 2. Item-total correlation differs between .65 and .75. It is expected that item-total correlation must be positive and above .20. The items that can not fulfill these criteria should be excluded from scale. After this analysis it is founded that item-total correlations were positive and above .20. As a result of varimax rotation first factor consisted of four indicators (C4, C15, C16, C18), second factor tree indicator (C5, C13, C14). First factor named “*Environmental Relations*”, second factor named “*Costumer Relations*”. For reliability of these two factors Cronbach alpha test applied. As a consequence of Cronbach’s a test, the alpha coefficient for factor 1 is found as .80, the a coefficient for factor 2 is .70. As all these two rates are over the critical point of .70; the last status of the factor’s reliability is accepted

Managers’ demographical qualifications

Manager’s demographical qualifications, who participate to this survey, are demonstrated in Table 4.

Table 4 Managers Demographical Qualifications

Demographic Qualifications	s	%	Demographic Qualifications	s	%
Gender:			Age:		
Male	63	88.7	31-40	4	5.6
Female	8	11.3	41-50	50	70.4
Total	71	100	51-60	17	23.9
Education:			Total	71	100
University	41	57.7	Seniority:		
Master degree	22	31	1-5	11	15.5
Doctoral	8	11.3	6-10	9	12.7
Total	71	100	11-15	6	8.5
Language:			16-20	28	39.4
English	60	85.5	21+	17	23.9
English and another	11	15.5	Total	71	100
Total	71	100			

As shown in Table 4, it was found that, male participants were much more than females. In age section most of the participants gathered in 41–50 (70%), minority in 31–40 (5.4%). In education section most of the participants gathered in University group (57.7%), rarely in Doctoral group (11.3%). In language section, most of the participants knows English (85.5%) and a few participants knows English and an additional language (15.5%). For seniority section, large portion of participants gathered in 16–20 years (39.4), a fewer ones gathered in 11–15 years (8.5).

Hypothesis tests

Each of the four hypotheses was tested by means of one way ANOVA. Significant factors were identified from each ANOVA between different groups of managers in order to gain better understanding of managers' perception of ICI. Only (H1) was tested with T-test because it has only two groups.

Hypothesis 1 (H1)

The purpose of H1 was to prove that gender of manager does not effect perception of ICI. T-test is used to prove this hypothesis. There is not a significant mean differences ($t=1.531$, $p>.05$) between male and female at “*Employee Voice*” (Male, $M=3.73$, $SD=.49$; female, $M=3.4$; $SD=.90$). There is not a significant mean differences ($t=.860$, $p>.05$) between male and female at “*Employee Skills*” (Male, $M=3.90$, $SD=.52$; female, $M=3.754$; $SD=.35$) There is not a significant mean differences ($t=.427$, $p>.05$) between male and female at “*Firm Structure*” (Male, $M=3.39$, $SD=.52$; female, $M=3.91$; $SD=.64$) There is not a significant mean differences ($t=-.704$, $p>.05$) between male and female at “*Firm Innovation*” (Male, $M=3.65$, $SD=.67$; female, $M=3.83$; $SD=.56$) There is not a significant mean differences ($t=-1.671$, $p>.05$) between male and female at “*Internal Processes*” (Male, $M=3.94$, $SD=.48$; female, $M=4.25$; $SD=.42$) There is not a significant mean differences ($t=-.971$, $p>.05$) between male and female at “*Environmental Relations*” (Male, $M=4.20$, $SD=.48$; female, $M=4.3$; $SD=.35$). There is not a significant mean differences ($t=.637$, $p>.05$) between male and female at “*Costumer Relations*” (Male, $M=3.90$,

SD= .53; female, M=3.76; SD=.76) According to report the result of the T-test, gender does not effect perception of ICI. According to test results H1 accepted.

Hypothesis 2 (H2)

The purpose of H2 was to prove that the age of the managers effects the perception of ICI. One way ANOVA test is used to prove this hypothesis. There is not a significant mean differences (F (2, 68) =.386, $p > .05$) among age groups at “*Employee Voice*” (31-40 age group, M=3.90, SD=.38; 41-50 age group, M=3.69, SD=.598 and 51-60 age group, M=3.79, SD=.46). There is not a significant mean differences (F(2, 68)=.520, $p > .05$) among age groups at “*Employee Skills*” (31-40 age group, M=4.06, SD=.31, 41-50 age group, M=3.89, SD=.50 and 51-60 age group, M=3.80, SD=.37). There is not a significant mean differences (F(2, 68)=.22, $p > .05$) among age groups at “*Firm Structure*” (31-40 age group, M=4.00, SD=.13; 41-50 age group, M=3.98, SD=.56 and 51-60 age group, M=4.201, SD=.52) There is not a significant mean differences (F(2, 68)=2.206, $p > .05$) among age groups at “*Firm Innovation*” (31-40 age group, M=4.33, SD=.60; 41-50 age group, M=3.62, SD=.70 and 51-60 age group, M=3.67, SD=.43) There is not a significant mean differences (F(2, 68)=1.156, $p > .05$) among age groups at “*Internal Processes*” (31-40 age group, M=3.66, SD=.47; 41-50 age group, M=4.02, SD=.47 and 51-60 age group, M=3.93, SD=.52) There is not a significant mean differences (F(2, 68)=.182, $p > .05$) among age groups at “*Environmental Relations*” (31-40 age group, M=4.12, SD=.14; 41-50 age group, M=4.24, SD=.49 and 51-60 age group, M=4.18, SD=.46). There is not a significant mean differences (F (2, 68) =.138, $p > .05$) among age groups at “*Costumer Relations*” (31-40 age group, M=3.75, SD=.83; 41-50 age group, M=3.89, SD=.55 and 51-60 age group, M=3.91, SD=.50). According to report the result of the ANOVA, age does not effect perception of ICI. According to test results H2 rejected.

Hypothesis 3 (H3)

The purpose of H3 was to prove that the foreign language capability of the managers does not effect the perception of IC. One way ANOVA test is used to prove this hypothesis. There is not a significant mean differences (F (1, 69)=.67, $p > .05$) among age groups at “*Employee Voice*” (English group, M=3.78, SD=.58; English and other language group, M=3.69, SD=.403). There is not a significant mean differences (F(1, 69)=.296, $p > .05$) among age groups at “*Employee Skills*” (English group, M=3.87, SD=.45; English and other language group, M=3.95, SD=.534) There is not a significant mean differences (F(1, 69)=1.378, $p > .05$) among age groups at “*Firm Structure*” (English group, M=4.02, SD=.59; English and other language group, M=3.81, SD=.508) There is not a significant mean differences (F(1, 69)=.431, $p > .05$) among age groups at “*Firm Innovation*” (English group, M=3.70, SD=.62; English and other language group, M=3.56, SD=.650) There is not a significant mean differences (F(1, 69)=2.156, $p > .05$) among age groups at “*Internal Processes*” (English group, M=4.01, SD=.50; English and other language group, M=3.78, SD=.269) There is not a significant mean differences (F(1, 69)=1.030, $p > .05$) among age groups at “*Environmental Relations*” (English group, M=4.24, SD=.49; English and other language group, M=4.09, SD=.305). There is not a significant mean differences (F (1, 69) =1.262, $p > .05$) among age groups at “*Costumer Relations*” (English group, M=3.85, SD=.56; English and other language group, M=4.06, SD=.49).). According to report the result of the ANOVA, foreign language does not effect perception of ICI. According to test results H3 accepted.

Hypothesis 4 (H4)

The purpose of H4 was to prove that education level of the managers effects the perception of ICI. One way ANOVA test is used to prove this hypothesis. There is not a significant mean differences ($F(2, 68) = .579, p > .05$) among education groups at “*Employee Voice*” (University group, $M=3.78, SD=.61$; Master degree group, $M=3.68, SD=.51$ and Doctoral group, $M=3.57, SD=.36$). There is not a significant mean differences ($F(2, 68) = .070, p > .05$) among education groups at “*Employee Skills*” (University group, $M=3.86, SD=.49$; Master degree group, $M=3.90, SD=.49$ and Doctoral group, $M=3.90, SD=.22$). There is a significant mean differences ($F(2, 68) = 4.078, p < .05$) among education groups at “*Firm Structure*” (University group, $M=4.13, SD=.49$; Master degree group, $M=3.83, SD=.54$ and Doctoral group, $M=3.67, SD=.52$) There is not a significant mean differences ($F(2, 68) = .427, p > .05$) among education groups at “*Firm Innovation*” (University group, $M=3.73, SD=.72$; Master degree group, $M=3.58, SD=.51$ and Doctoral group, $M=3.62, SD=.72$) There is a significant mean differences ($F(2, 68) = 4.634, p < .05$) among education groups at “*Internal processes*” (University group, $M=4.09, SD=.46$; Master degree group, $M=3.73, SD=.45$ and Doctoral group, $M=4.08, SD=.49$) There is not a significant mean differences ($F(2, 68) = 2.104, p > .05$) among education groups at “*Environmental Relations*” (University group, $M=4.29, SD=.50$; Master degree group, $M=4.18, SD=.41$ and Doctoral group, $M=3.93, SD=.37$). There is not a significant mean differences ($F(2, 68) = .627, p > .05$) among education groups at “*Costumer Relations*” (University group, $M=3.92, SD=.51$; Master degree group, $M=3.88, SD=.58$ and Doctoral group, $M=3.68, SD=.68$) According to report the result of the ANOVA, education effects “*Firm Structure*” and “*Internal Processes*”. According to test results H4 can be accepted by means of two factors.

Hypothesis 5 (H5)

The purpose of H5 was to prove that seniority of the managers effects the perception of ICI. One way ANOVA test is used to prove this hypothesis There is a significant mean differences ($F(4, 66) = 3.366, p < .05$) among age groups at “*Employee Voice*” (1-5 years group, $M=3.99, SD=.43$; 6-10 years group, $M=3.84, SD=.71$ and 11-15 years group, $M=4.06, SD=.45$, 16-20 years group $M=3.46, SD=.58$ and 21+ years group $M=3.82, SD=.32$). There is not a significant mean differences ($F(4, 66) = 2.052, p > .05$) among age groups at “*Employee Skills*” (1-5 years group, $M=3.86, SD=.34$; 6-10 years group, $M=4.16, SD=.62$ and 11-15 years group, $M=4.04, SD=.29$, 16-20 years group $M=3.72, SD=.49$ and 21+ years group $M=3.95, SD=.36$) There is not a significant mean differences ($F(4, 66) = .77, p > .05$) among age groups at “*Firm Structure*” (1-5 years group, $M=4.14, SD=.346$; 6-10 years group, $M=3.87, SD=.70$ and 11-15 years group, $M=3.97, SD=.78$, 16-20 years group $M=3.89, SD=.53$ and 21+ years group $M=4.11, SD=.37$) There is not a significant mean differences ($F(4, 66) = 1.335, p > .05$) among age groups at “*Firm Innovation*” (1-5 years group, $M=3.74, SD=.58$; 6-10 years group, $M=4.03, SD=.87$ and 11-15 years group, $M=3.72, SD=.68$, 16-20 years group $M=3.48, SD=.66$ and 21+ years group $M=3.74, SD=.50$) There is not a significant mean differences ($F(4, 66) = 1.580, p > .05$) among age groups at “*Internal Processes*” (1-5 years group, $M=3.92, SD=.52$; 6-10 years group, $M=3.85, SD=.58$ and 11-15 years group, $M=4.05, SD=.53$, 16-20 years group $M=3.95, SD=.46$ and 21+ years group $M=4.11, SD=.45$) There is not a significant mean differences ($F(4, 66) = .946, p > .05$) among age groups at “*Environmental Relations*” (1-5 years group, $M=4.37, SD=.47$; 6-10 years group, $M=4.22, SD=.59$ and 11-15 years group, $M=3.98, SD=.57$, 16-20 years group $M=4.16, SD=.38$ and 21+ years group $M=4.30, SD=.49$). There is a significant mean differences ($F(4, 66) = 2.365, p < .05$) among age groups at “*Costumer Relations*” (1-5 years group, $M=4.15, SD=.54$; 6-10 years group, $M=3.77, SD=.57$ and 11-15 years group, $M=4.02, SD=.26$, 16-20

years group $M=3.67$, $SD=.59$ and 21+ years group $M=4.05$, $SD=.46$) According to report the result of the ANOVA, seniority effects “*Employee voice*” and “*Costumer Relations*” According to test results H5 can be accepted by means of two factors.

Conclusions

IC is of substantial and growing importance in innovation, productivity, growth, enterprise competitiveness, and economic performance. The unpredictability and volatility of the business environment should require companies to look into their intangible assets, including their management know-how and marketing know-how. The purpose of setting standards for indicators of these assets is to ensure that non-financial information is presented in a way that enables decision-makers to make informed judgment based on a comparative standard (Dallimore et al, 2004, p.169).

In this research it is shown that the research model is valuable in the Turkish IT industry. H1, H3, accepted and H4 partially accepted by means of two factors: “*Firm Structure*” and “*Internal Processes*”, H5 partially accepted by means of two factors “*Employee voice*” and “*Costumer Relations*”, H2 rejected. The main conclusions from this study are that: seniority, age and education level could effect managers’ perception of ICI and gender and language does not effect manager’s perception of ICI.

References

- Allee, V. (2000), “The value evolution: addressing larger implications of an intellectual capital and intangibles perspective”, *Journal of Intellectual Capital*, 1(1), 17-31.
- Bontis, Nick, (1998), Intellectual Capital: An Exploratory Study That Develops Measures and Models, *Management Decision* 36(2), 63–76
- Bozbura, T, (2004), Measurement and application of intellectual capital in Turkey, *The Learning Organization*, 11 (4/5), 357-367,
- Brennan, Niamh, Connell Brenda, (2000), Intellectual Capital: Current Issues and Policy Implications, *Journal of Intellectual Capital*, 1(3), 206-240
- Brooking, A. Motta (1997), The Management of Intellectual Capital, *Long Range Planning*, 30(3), 364–365.
- Canadian Management Accounting (1999), “Canadian Management Accounting Focus Group Draft: measuring knowledge assets” Canadian Management Accounting, 16 April
- Celemi (1999), Growing A Knowledge Company, available at: www.celemi.com, site includes celemi intangible assets monitor.
- DATI – Danish Agency for Trade and Industry (1998), Intellectual Capital: A New Tool for Companies, DTI council, Copenhagen.
- Edvinsson, L. and Malone, M. (1997), Intellectual Capital: The Proven Way to Establish Your Company's Real Value by Measuring Its Hidden Brain Power, Piatkus, London
- Edvinsson, Leif, (1997), Developing Intellectual Capital at Skandia, *Long Range Planning*, 30(3), 366-373
- Guthrie, James, Richad Petty, Ulf Johanson, (2001), Sunrise in the Knowledge Economy, Managing, Measuring and Reportng Intellectual Capital, *Journal of Knowledge Management*, 14(4),155–176

- Güven, Mehmet, İsmail Bakan, Salih Yeşil, (2005), Çalışanların İş ve Ücret Tatmini Boyutlarıyla Demografik Özellikler Arasındaki İlişkiler: Bir Alan Çalışması, *Yönetim ve Ekonomi*, 12(1), 127–151
- Harris, Louise, (2000), A Theory of Intellectual Capital, *Advances in Developing Human Resources*, 2(22), 22–37
- ICM Group (1998), “What are the companies currently measuring?”, available at: www.icmgroup.com/presentpub/LES_MEASUREMENT.
- Kabacoff, Robert I., (1998), Gender Differences In Organizational Leadership :A Large Sample Study, Management Research Group, Portland Maine USA, 1-22
- Kannan, Gopika, Wilfried G. Aulbur, (2004), Intellectual Capital Measurement Effectiveness, *Journal of Intellectual Capital*, 5(3),389–413
- Kaplan, R.S. and Norton, D.P. (1992), “The balanced scorecard ± measures that drives performance”, *Harvard Business Review*, 70(1), pp. 71-9
- Kaplan, R.S. and Norton, D.P. (1999), Balanced Scorecard; şirket stratejisini eyleme dönüştürmek, Sistem Yayıncılık, İstanbul.
- Lelhaert, J.C. Philippe, Wim Candries, Rob Tilmans, (2003), Identifying and Managing IC: A New Classification, *Journal of Intellectual Capital*, 4(2), 202–214
- Machlup, F. (1962), The Production and Distribution of Knowledge in the United States, Princeton, NJ: Princeton University Press
- McKenna, R. (1986), The Regis Touch, Addison-Wesley, Reading, MA.
- Nunnally, J.C. (1978), Psychometric Theory, 2nd ed., McGraw-Hill, New York, NY.
- Özdemir, L. (2009), Yönetimde Bilişim Teknolojisi Etkinlik Sistemi, Detay Yayıncılık, Ankara.
- Petrash, G. (1996), “Dow's journey to a knowledge value management culture”, *European Management Journal*, 14(8) pp. 365-73.
- Ross, Göran, Ross Johan, (1997), Measuring Your Company’s Intellectual Performance, *Long Range Planning*, 30(3), 413-426.
- Stewart, T.A. (1997), Entelektüel Sermaye, Kontent Kitap, İstanbul.
- Sullivan, P.H. (1998), Profiting from Intellectual Capital – Extracting Value from Innovation, John Wiley & Sons, New York, NY.