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AN EMPIRICAL INVESTIGATION THROUGH THE EFFICIENT USAGE OF KNOWLEDGE IN TURKISH BANKING SECTOR

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Abstract:

The wave of new economy that surround the whole world whilst enforcing enterprises, individuals, societies and nations to rapidly restructure and to gain global identity, the knowledge as an asset is already affirmed as an invisible source of wealth for the corporations. In today's business, managing intellectual capital and measuring knowledge became a necessity as knowledge and knowledge based assets recently define the market value of corporations. However, for the firms to perform well in knowledge management applications, they need to apply the knowledge measurement metrics.

The study aims to exhibit the importance of knowledge as an intangible asset attached by the knowledge management and to investigate the measurement of knowledge in technology-intensive banking sector. In this context, the study intends to measure the potential of knowledge to be used as a strategic tool in Turkish deposit banks. In terms of data collection, surveys collected from 253 employees in IT department of the banks were analyzed and correlations between the knowledge measurement variables are also empirically tested. The results confirm the association between the knowledge measurement and knowledge management. However, the findings show that; the banking industry is not well-informed about the measurement of knowledge-based assets and is yet to measure the intellectual assets and evaluate them in their balance sheets. Finally, the results suggest that the more effective usage of the knowledge measurement tools will lead to the efficient measurement of the knowledge.

Keywords: Intellectual Capital, Knowledge Measurement and Management, Banking Sector.

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TÜRK BANKACILIK SEKTÖRÜNDE BİLGİNİN ETKİN KULLANIMINA YÖNELİK AMPİRİK BİR ARAŞTIRMA

Öz:

Tüm dünyayı etkisi altına alan yeni ekonomi dalgası, bireyleri, toplumları, işletmeleri ve devletleri yeniden yapılanmaya, hızla kabuk değiştirmeye ve sonuçta küresel bir kimlik kazanmaya zorlarken şirketlerin günümüzdeki yeni servetinin görünmeyen kaynağının "bilgi" olduğu artık kabul edilmektedir. Günümüzün iş dünyasında entellektüel sermayenin yönetimi ve bilginin ölçülmesi, bilgi ve bilgi tabanlı varlıkların şirketlerin pazar değerini belirlemeye başlamasıyla zorunluluk arz etmeye başlamıştır. Ancak, firmaların bilgi yönetimi uygulamalarında iyi bir performans elde edebilmeleri için bilgi ölçüm tekniklerini kullanmaları gerekmektedir. Aynı şekilde bilgi ekonomisinde rekabet edebilmek için bilgi ve enformasyonun finansal kurumlarda da entelektüel birer varlık olarak kabul edilmesi son derece önemlidir. Hizmet sektöründe bilginin maddi olmayan bir duran varlık olarak kendini kabul ettirmesi, bilgi varlıklarının ölçülmesi oranında rakiplerine göre rekabet üstünlüğü kazandırabilecektir. Bu bütün sektörler için geçerli olmakla beraber ekonominin motoru olan finans sektöründe ayrı bir önem arz etmektedir. Nitekim piyasaların çok hızlı değişim gösterdiği ve teknolojik gelişmelerin hızına erişmenin mümkün olmadığı bu ortamda bankaların ayakta kalıp diğer bankalarla rekabet edebilmesinin tek rekabetçi kaynağı bilgi olmaktadır. Bilgi yoğun sektörlerin büyüme hızları ve sektörlerin dünya ticaretinden aldıkları payların sürekli artması dikkate alındığında bilgi ve iletişim teknolojileri (bilişim) sektörünün bu açıdan stratejik öneme sahip olduğu görülmektedir.

Bilgi ekonomisinin temel karakteristiği bu çalışmanın teorik altyapısını oluşturmaktadır. Bilgi ekonomisi, yeni rekabet koşulları ve yeni yönetim modellerini beraberinde getirmektedir. Bilginin temel üretim faktörü olduğu ve ekonomideki katma değerin büyük ölçüde bilgi tarafından yaratıldığı bir model olan bilgi ekonomisine geçiş, özellikle gelişmekte olan ülkelerce hedeflenmektedir. Bilgi üretimine önem veren ülkeler, ürettikleri bilgileri teknolojiye dönüştürerek teknolojik açıdan önemli bir rekabet avantajı yakalamayı amaçlamaktadırlar. BSC, SACAT, KMPI vb entelektüel varlıkların ölçümünde kullanılan yöntemlerle firmalar bilançolarında görünmeyen değerlerin de ölçülebilirliğinin farkına varmaya başlamışlardır. Buna göre, işletmeler sahip oldukları bilgi kapasitesini sermayeye dönüştürebildikleri ölçüde etkin ve başarılı olabilmektedirler. Nitekim şirketlerin piyasa değerinin yaklaşık dörtte üçü artık maddi olmayan varlıklar olarak da bilinen entelektüel sermayeden kaynaklanmaktadır. Yeni ekonominin etkilerinin en fazla görüldüğü alanlardan biri finans piyasaları olarak dikkat çekmektedir. Birçok banka finansal piyasaların küreselleşmesinden dolayı bilgi-temelli organizasyon

olma durumuna gelme yolunda ilerlemektedir. Bankalar bilginin önemini ve onun kurumsal değerini oluşturmakta oynadığı rolü anlamaya başlamışlardır. Ancak bankacılık sektöründe rekabet edebilmek ve başarılı olabilmek için, bir bankanın "bilgi" adı verilen maddi olmayan varlığını yönetmeyi bilmesi gerekmektedir.

Çalışma, maddi olmayan bir duran varlık olan ve bilgi yönetimiyle öne çıkan bilginin taşıdığı önemi göstermek ve bilginin ölçülebilirliğini, teknoloji-yoğun bir sektör olan bankacılık sektöründe ortaya koymayı amaçlamaktadır. Böylece, Türk mevduat bankalarında stratejik bir araç olan bilginin ölçülebilme potansiyelini ortaya çıkarmak arzu edilmektedir. Finansal kurumların enformasyon teknolojilerini operasyonel düzeyde en çok entegre eden sektörlerin başında gelmesi ve bilginin finansal ürünlerin elektronik ortamda dağıtılmasına ve transferine önemli katkı sağladığı düşünüldüğünde bankalarda, özellikle bilgi- teknolojileri birimlerinde, bilginin ölçülebilirliği son derece önem arz etmektedir. Bu yüzden araştırmada veri toplamaya yönelik olarak söz konusu bankaların bilgi – işlem departmanlarında çalışan 253 işgörenden elde edilen anketler analiz edilmiş ve değişkenler arasındaki korelasyon ampirik olarak test edilmiştir. Diğer yandan, iki veya daha fazla değişken grubu arasında ilişki bulunup bulunmadığını incelemede kullanılan ve çapraz tablolarda değişkenler arasında benzerlik, farklılık ve ilişkilerin yorumlanmasını kolaylaştıran "Ki-Kare Bağımsızlık Testi" kullanılmıştır. Elde edilen bulgular bilgi ölçümü ve yönetimi arasındaki ilişkiyi teyit etmektedir. Ancak bankacılık sektörünün bilgi tabanlı varlıkların ölçülebilirliğinden henüz bilgi sahibi olmadığı tespit edilmiştir. Ayrıca bilgi ölçüm araçlarının kurum bünyesinde kullanımı sağlandıkça bilginin etkin ölçülmesinin mümkün olacağı kanısına varılmıştır. Bankaların bilişim teknolojilerine yaptıkları yatırımların rekabet edebilirlikte eskiye nazaran daha etkin olmaya başlamasıyla da mevcut tekniklerin iyileştirilmesi finans sektörü için kaçınılmaz olmaktadır. Diğer yandan bankaların bilgi ölçüm tekniklerini doğru seçmelerinin sadece stratejilerine yön vermekle kalmayacağı aynı zamanda orta ve uzun vadede performanslarının iyileştirilmesi sürecinde de önemli rol oynayacağı düşünülmektedir.

Anahtar Kelimeler: Entelektüel Sermaye, Bilginin Ölçülmesi ve Bilgi Yönetimi, Bankacılık Sektörü.

INTRODUCTION

As an essential input of production, knowledge has become the main developmental leverage for global competitive advantage through its production, processing, distribution and management. This is explained with the term "knowledge economy" in today's world (Uçkan, 2006:26). Therefore many countries are seeking to shift their economies to become more knowledge-intensive. The economy is in the phase of transition to an information age that relies on intangible asset evaluation which is not depicted in financial statements (Rodgers, 2003:181, Kavida and Sivakoumar N, 2009:55). In this regard, modern enterprises started to realize the importance of intangible assets instead of evaluating capital only from the debit side (İnce and Oktay, 2006:20). Thus, these assets have become the key driver of the economic performance (Ittner, 2008:261).

This paper develops the concept of knowledge measurement as a primary part of knowledge management and empirically examines the competence of knowledge measurement in banking sector. The remainder of the paper is organized as follows. Section 2 gives a brief determination of knowledge economy elements. Section 3 reviews the literature and provides the various metrics regarding knowledge measurement. Final section concerns the research methodology in which our empirical conclusions are presented.

I) CONCEPTUAL FRAMEWORK

The concept of knowledge measurement has become a fundamental tool for the effective application of knowledge management in the service sector. The key issue in leveraging intellectual capital, as a strategic tool for the business success, lies in the measurement of intellectual capital (Kavida and Sivakoumar N, 2009:55). The identification and measurement of an organisation's IC is important (Dumay, 2009:190) because it involves off-balance sheet values and can measure the unmeasurable (Edvinsson, 1997:372). Besides, the importance of intellectual capital (IC) has increased greatly in the last two decades (Serenko and Bontis, 2004:185-198) especially in the service sector. In this study, we first analyze the basic concepts shaping the management of knowledge before dealing with knowledge measurement in financial services.

A) Knowledge

Knowledge is an information with a process applied to it to give value-added (Liebowitz, 1999:99). Widely known as the hardest sort of information, knowledge is idiosyncratic (Robert, 2005:21) and is defined as transforming both information and data to useful applications that will bring economic growth to enterprises (Oort and Raspe, 2005:5). Knowledge besides asserts that it has an higher perception level than information as it covers information just as information covers data (Fitchett, 1998:58).

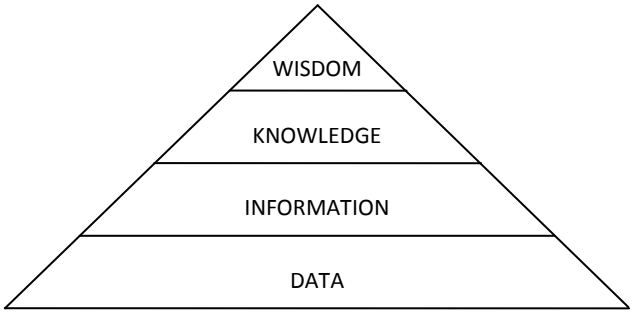

Figure:1

DIKW Hierarchy

Russell L. Ackoff.(1989), "From Data to Wisdom," Journal of Applied Systems Analysis, Vol. 16, pp. 3-9.

The DIKW hierarchy, above in Figure: 1, (also known as the knowledge pyramid) was first expressed by Russell Ackoff(1989).The pyramid later was reexpressed in the studies of Bellinger, Castro & Mills (2004), Faucher, Everett and Lawson (2008), Hicks, Dattero and Galup(2006).

B) Knowledge Management

Since, knowledge management began to attract firms' attention, a large number of firms intend to conduct the knowledge management initiatives in order to increase their strategic competence. During this process, however, the first challenge a firm inevitably face up is how to identify the firm's knowledge assets (Li and Tsai, 2009:284). To this end, a variety of taxonomies for classifying knowledge assets have been proposed in the literature.

Table: 1

Knowledge Management

Taxonomy	**Scholars**
A deliberate strategy to convey correct information to correct people in a timely manner and represents the transformation from the old and national economies to the global knowledge economy growing with various industry structures.	Gürdal, 2004:88-90; Halawi, 2005:75
Includes knowledge acquisition, processing and transformation processes as well as knowledge management, information and competitive intelligence acquisition and the analysis of the relevant data.	Erdoğan, 2004:2, Asa Du Toit, 2003:115
Associated with new communication and information distribution technologies and used synonymously with "information technology revolution", "digital economy" and "information economy".	Barışık & Yirmibeşçik, 2006:40

II) KNOWLEDGE MEASUREMENT

Traditionally knowledge measurement and intellectual capital measurement has been driven by the need for a company to add a financial value to the intangible assets of a company. There is considerable evidence which shows that measurement of knowledge, over time, became an essential tool for assisting harvest new knowledge. Basically to measure something refers to assign a number to a characteristic (knowledge) of an object or event according to a set of rules (Hunt, 2003:105). In the knowledge economy the measurement of knowledge can be handled in micro or macroeconomic dimensions (OECD, 2004:2-3).

Countries such as the United States, Finland and Ireland are recognized as having successfully transformed to a knowledge economy, considerably increasing their productivity, global competitiveness and over the longer term, improving the well-being of their citizens. This first rank of countries is followed by a second tier of countries, including Turkey, that are competing to develop their own knowledge economy. Turkey in particular is at a similar stage of development to the EU accession countries (Worldbank, 2004:13). In institutional perspective, measurement of knowledge is of great importance for companies to reach their objectives. The need for measuring the knowledge arises out of the fact that first of all;

(1) The intellectual capital of an organization includes the know-how of its employees, processes and customer details (Choi and Commuri, 2005:18),

(2) Another fact is that, knowledge measurement significantly identifies, tests and enhances the ties between knowledge and competitive edge (Boudreau, 2002:2-3).

In enterprise level, most of the metrics and methods of knowledge measurement, have concentrated on measuring the knowledge within the organization. Nevermore in this hypercompetitive environment, the contributions of a performance measurement method will be limited without comparing with major rivals from competitive perspective (Chen, Huang and Cheng, 2009:8449). By measuring a knowledge asset via appropriate system of indicators, it will be possible to get management insights about how to develop and manage organizational knowledge resources. Hence it is crucially important to measure not only the efficient use of knowledge but also the knowledge quality and the financial effect of knowledge while quantifying the intellectual assets of enterprises (Parsons, 2004:18).

Although the measurement of knowledge as an intangible asset is important, the measurement of knowledge-based assets imply certain difficulties. The literature provides evidence about these adversities. First and foremost, considering the strategic importance, the value of intellectual assets are generally hidden as they do not appear on the financial statement (Jordan, 1997:80-381). Secondly; certain criteria are required to more effectively convince the management and stakeholders for realizing knowledge management initiatives (Liebowitz and Suen, 2000:54). Another contributing factor is that, knowledge has no systematic price system serving to integrate its original bits and pieces of information (Kriščiūna and Daugėlienė, 2006:39). Additionally, measuring knowledge management is not simple (Lopez, 2001:1) and assessing the effectiveness of knowledge measurement operations is another important issue. The measures that are available to evaluate the effectiveness of knowledge measurement are generally unsatisfactory as there are no generally approved models for measuring intellectual capital in organizations (Wen, 2009:363, Palacios and Galva´n, 2007:192, Lee et al, 2005:470, Lim and Dallimore, 2004:181, Chen, Zhu and Xie, 2004:201).

A) Emerging Knowledge Measurement Metrics

The evaluation of knowledge is critical because poorly undertaken measurement can lead to incorrect knowledge and less precise knowledge, possibly causing misinformation or even negative knowledge (Sydenham, 2003:9-11). Methods to measure intellectual capital differs in the related literature. "Intellectual Property Model" developed by Bontis and "Intellectual Capital Index(ICI)" created by Roos and Balanced Score Card developed by Kaplan and Norton (1992, 2001, 2007)stand out amongst other methods.

There are several studies on the literature associating knowledge measurement with the types of knowledge stating that tacit knowledge may be acquired by means of verbal reports used to measure knowledge. Accordingly, *performance-based measurement approaches* are often more convenient in terms of acquiring tacit knowledge compared to approaches measuring knowledge directly. Methods like *questionnaires* and *verbal protocols* also prove to be useful at this stage (Argote and Ingram, 2000:152). Boudreau in his study reveals 3 indicators for the measurement of knowledge like *knowledge stocks*, *flows* and *providers* (Boudreau, 2002:4-13). *Stock values* and *price-earnings ratio* is also taken as an other metric in knowledge measurement (Toit, 2003:112).

Table: 2

Knowledge Based Measurement Methods

Researcher	**Measurement Tool**	**Scope**
Chen, Huang& Cheng (1999)	Analytical Network Process (ANP)	Proposes a methodology of comparing an organization's knowledge management performance to provide clear direction of how to obtain a competitive advantage.
Lopez(2001)	Bell Curve	Examines the different stages of KM implementations and metrics for evaluating an initiative's progress. Offers case examples of organizations' ongoing assessment techniques.
Hunt (2003)	SACAT (Self assessment computer analyzed testing)	Uses an epistemetric method called for the measurement of individuals' knowledge.
Lee C., Lee S. and Kang (2004)	Knowledge Management Performance Index (KMPI)	Provides a new metric, for assessing the performance of a firm in its knowledge management applications.
Lim & Dallimore (2004)	IC Indicators	Investigates the relationship between the perception of the importance of measuring intellectual capital indicators and the level of understanding of these indicators concerning the service sector in Australia.
Oliver and Porta (2005)	Cluster	Provides a strategic framework and tool to measure and value intellectual capital (IC) in regional clusters.
Shapira, Youtie, Yogeesvaran, Jaafar (2006)	Content Measures	Proposes to build on a conceptual model of knowledge content, concerning the methodology and results of a project to develop sectoral knowledge content measures in Malaysia.
Nazari and Herremans (2007)	Value Added Intellectual Coefficient (Extended VAIC)	Reveals a model for measuring intellectual capital as study aims to offer a model to explore and recognize the relationship between components of IC and organizational financial success.
Kamath (2007)	VAIC	Measures the value-based performance of the Indian banking sector.

Recent studies in strategic management have increased attention to both theoretical and empirical convergences of knowledge measurement as more companies are reluctant to information technologies ever than before (McDermott, 1999:114) as information technology is essential in acquiring and accumulating core knowledge.

Knowledge management systems refer to a class of information systems (IS) applied to managing organization knowledge, which is an IT-based system that supports the organizational knowledge management behavior (Alavi and Leidner, 2001:107-16). Therefore, apart from various tools and approaches, knowledge measurement is highly associated with information technologies. KM emphasizes the importance of integrating organizational core knowledge, both tacit and explicit, with adequate IT infrastructure. With an effective IT infrastructure, the knowledge measurement can maximize the return on organizational knowledge through continuously creating, accumulating, and sharing it (Sher& Lee, 2004:935).

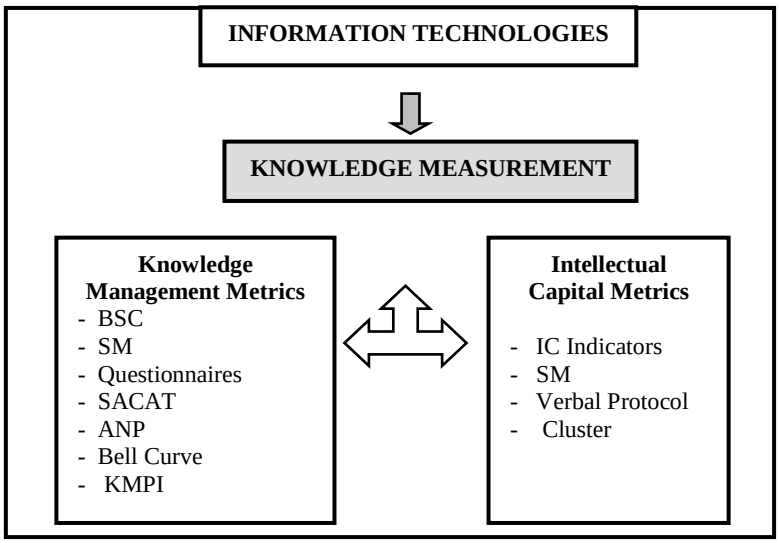

Figure: 2

Knowledge Measurement Framework

B) Importance of Knowledge in Financial Sector

Transition to the knowledge economy continues to influence all sectors and all industries (Havens and Knapp, 1999:4-9). Service sectors play a dominant, important role in the growth of economies, and on the other, these economies are getting highly liberalized and globalized (Kamath, 2007:97). The need for knowledge management in the banking sector began at the twenty first century Meanwhile, the banking industry as an engine of the economy is highly regulated in its operations. (Chiran, 2008:73-78).Combined with fierce competition, high uncertainties and global crises, banks should not only more efficiently integrate their financial assets, and other tangible assets, but also enhance their competence in the management of intellectual capital to achieve operational advantage. Therefore, for the banking industry, it is vital to use techniques in knowledge management to accumulate IC to cope with an increasingly evolving environment (Shih, Chang and Lin, 2010:75).

Within the framework of such a knowledge management, banks will obtain benefits like;(i): an increase in the competitiveness of the bank with the simultaneous operation of new methods and models, (ii): new ways to offer the products to the customers through the transformation of banking services linked to rapid developments in information and communication technologies, (iii): the appreciation and the efficient use of intellectual assets (Kridan and Goulding, 2006:214).

Currently the literature points out several studies in terms of knowledge management applications concerning the banking services global wide as they identify the corporate implementation frequency of knowledge management in banks (Grant and Grant, 2005; Chatzoglou, Vanezis and Christoforidis, 2005; Curado, 2008; Karkoulian, Halawi and McCharty, 2008; Kridan and Goulding, 2006; Klimikova, 2006; Lenga and Nasaruddin, 2008; Boom, 2005 and Chiran, 2008).

III) DATA METHODOLOGY

According to the basic assumption in this study, knowledge management practices should be measured in banks and dealt within a corporate scope as the efficient measurement of knowledge will contribute to the com-

petitive power of the banks. The study aims to reflect the current knowledge management practices of Turkish deposit banks. The research adopts an exploratory model and an online data collection was preferred in order to facilitate recycling. The scales in the survey are created as a result of a broad literature review. Mainly 5-point Likert scale(1- Strongly agree,5- Strongly disagree) was used in the survey, and dichotomous scale was utilized in some questions. The findings obtained from the survey results regarding Turkish commercial banks are based on the classification of TBB (The Bank Association of Turkey) in terms of capital ownership.

A) Data Sources

The research sample of questionnaire consists of staff employed in the IT departments of 19 deposit bank general directorates. 273 available surveys were taken to the sample for data analyses. The data, observed within the sample, represents the white-collar employees that work in the department of information technology (IT) of the deposit banks.

B) Empirical Analysis

In this study, first we calculate the reliability coefficients of the scales using Cronbachs. Cronbach's alpha reliability coefficient normally ranges between 0 and 1. However, there is actually no lower limit to the coefficient. The closer Cronbach's alpha coefficient is to 1.0 the greater the internal consistency of the items in the scale (Gliem & Gliem, 2003:87).

"Chi-Square Independence Test", which is used to find out whether there is a relationship between two or more variable groups regarding the interpretations on the similarities, differences and relationships between variables in cross tables (Uzgören and Uzgören, 2007:181) is selected to perform this measurement. Chi-Square distribution is typically used for testing two independent qualitative criteria. Null hypothesis (H0) means the two criteria are independent, and research hypothesis (Ha) expresses a relation between the two criteria. Chi-Square test is based on the statistical significance of the difference between the observed frequencies (O) and expected frequencies (E). If there is a small difference between O and E, the calculated chi-square value will be small too and H_0 cannot be rejected. That is; if $P < .05$ H_0 may be rejected (that means, it is possible to reject null hypothesis according to 0.05 significance level); if $P < 0.01$ H_0 may be rejected; if P

<0.001 H_0 may be rejected. Therefore, if there are big differences, H_0, which expresses the independence between the criteria, will be rejected. The calculated chi-square value (χ^2_{hes}) is compared to the chi-square value (χ^2_{tab}) in the chi-square table in the related sd. When,

$$\chi^2_{hes} \geq \chi^2_{tab} \quad (1),$$

H_0 will be rejected. Otherwise, H_0 will be accepted. χ^2_{tab} value is acquired from chi-square tables according to the identified probability of error (α) and sd. Here, χ^2_{hes} ,

$$\chi^2_{hes} = \sum_{j=1}^{c}\sum_{i=1}^{r}\frac{(G_{ij}-B_{ij})^2}{B_{ij}} = \sum_{j=1}^{c}\sum_{i=1}^{r}\frac{G_{ij}^2}{B_{ij}} - n \quad (2)$$

and sd, sd = (r-1)(c-1) (3)

equations are provided (Güngör and Bulut, 2008:84).

As an other investigation, the data are analyzed via Spearman Correlation Matrix. This analysis is carried out to determine the degree (degree-intensity-power) and the direction of the relation between the two variables. Correlation coefficient is signified with the letter "r" and takes a value between -1 and +1 ($-1 \leq r \leq +1$). Here, the level of the relation between the variables depends on the absolute magnitude of figures while the direction is determined by the sign of the figures (minus and plus signs) (Yılmaz, 2006: 3).

C) Survey Results

According to SPSS results; based on the score of 86,61% alpha coefficient, we are able to claim that it is over the acceptable 0,70 Cronbach Alpha level.

Table: 3

Spearman Correlations of Knowledge Measurement Variables

		Effi-cient Usag e (Y)	*IC(*X1)	*Knowledge Quality* (X2)	*Finan-cial Effect* (X3)	*BSC*(X4)	*ICI* X X5)
Y	Pearson Correlation	1					
	Sig. (2-tailed)	.					
X1	Pearson Correlation	,300(**)	1				
	Sig. (2-tailed)	,000	.				
X2	Pearson Correlation	**,687(**)**	,154	1			
	Sig. (2-tailed)	,000	,057	.			
X3	Pearson Correlation	,466(**)	,374(**)	**,497(**)**	1		
	Sig. (2-tailed)	,000	,000	,000	.		
X4	Pearson Correlation	,455(**)	,175(*)	,357(**)	,385(**)	1	
	Sig. (2-tailed)	,000	,030	,000	,000	.	
X5	Pearson Correlation	,278(**)	,289(**)	,271(**)	,408(**)	**,493(**)**	1
	Sig. (2-tailed)	,000	,000	,001	,000	,000	.

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed). a Listwise N=153

[The variables involved in the correlation matrices is defined as: Y; measurement of the efficient usage of knowledge in the bank, X1; The mea-

surement of the intellectual capital, X2; The measurement of the quality of knowledge, X3; The financial effect of knowledge, X4; BSC usage regarding the measurement of intangible assets of the bank, X5; Intellectual Capital Index usage for the measurement of intangible assets of the bank)

Spearman correlations among the strategy and value driver measures are shown in Table: 3. Correlations between the knowledge measurement variables and individual knowledge measurement drivers are empirically tested. According to the results; the highest correlation between the variables in the 1% - 5% significance level is the relationship between the efficient use of knowledge in banks and the measurement of knowledge quality with a 69% value. In other words, there is a positive and powerful relation between the efficient use and quality measurement of knowledge of banks. This will increase the value contributed by knowledge measurement to the bank taking its operations difficulties into account.

Another finding is also about the correlation between the financial influence of knowledge (ROI) and knowledge quality measurement with 50% Pearson coefficient in 1% - 5% significance level. As the investment on knowledge is both important in terms of its strategic contribution to achieve the objectives and also of decision making, ROI is highly significant.

On the other hand, since quality is a relative term, the ability to perform a quantitative measurement of it as much as possible will also enable knowledge measurability in organizational terms. Another finding shows a strong positive relation between the use of Balance Score Card and the use of Intellectual Capital Index Technique an important performance indicator used in the measurement of intangible assets of banks. In addition to the sector data, intellectual capital covers a great deal of information on employees. And this proves the efficiency of using such tools in knowledge measurement. For example, the evidence suggests that measuring a banks' overall knowledge without considering its chosen value drivers provides an incomplete representation of strategic attributes.

Overall, the relatively small correlations in Table: 3 suggest that the tools used for measuring its knowledge are not synonymous with the knowledge measurement priorities.

Table: 4

The Relation Between The Measurement Of Efficient Use Of Knowledge In Banks And The Measurement Of Intellectual Capital

		Intellectual Capital Measurement					Total
		Very Important	Considerably Important	Important	Least Important	Not Important at All	
The efficient usage of knowledge is measured in the bank.	Yes	21	27	60	19	1	128
	No	15	11	36	32	11	105
Total		36	38	96	51	12	233
Chi-Square Tests		Value		Df		Signif.	
Pearson Chi-Square		23,341		4		0,000	

Ho: The measurement of efficient use of knowledge and the measurement of intellectual capital are independent.

Ha: The measurement of efficient use of knowledge and the measurement of intellectual capital are not independent.

As summarized in Table 4, X^2 test value has the degree of freedom value Df =9 P(X^2 hes =85,335 > X^2 table = 16,919) and 0,000< 0,05. Accordingly, it is concluded that; the variables are not independent since Ho hypothesis is rejected in 5% significance level.

Table: 5

The Relation Between The Measurement Of Efficient Use Of Knowledge In Banks And The Measurement Of Knowledge Quality

		The Quality Of Knowledge Is Measured.		Total
		Yes	No	
The efficient usage of knowledge is measured in the bank.	Yes	118	10	128
	No	26	78	104
Total		144	88	232
Chi-Square Tests		Value	Df	Signif.
Pearson Chi-Square		110,018	1	0,000

Ho: The measurement of efficient use of knowledge and the measurement of knowledge quality are independent.

Ha: The measurement of efficient use of knowledge and the measurement of knowledge quality are independent.

As summarized in Table 5, X^2 test value has the degree of freedom value Df =9 P(X^2 hes =85,335 > X^2 table = 16,919) and 0,000< 0,05. Accordingly, it is concluded that; the variables are not independent since Ho hypothesis is rejected in 5% significance level.

Table: 6

The Relation Between The Measurement Of Efficient Use Of Knowledge In Banks And The Measurement Of The Financial Impact Of Knowledge

		The financial impact of knowledge is measured		Total
		Yes	No	
The efficient usage of knowledge is measured in the bank.	Yes	93	30	123
	No	27	77	104
Total		120	107	227
Chi-Square Tests		Value	Df	Signif.
Pearson Chi-Square		55,745	1	0,000

Ho: The measurement of efficient use of knowledge and the measurement of the financial impact of knowledge are independent.

Ha: The measurement of efficient use of knowledge and the measurement of the financial impact of knowledge are not independent.

As summarized in Table 6, X^2 test value has the degree of freedom value Df =9 P(X^2 hes =85,335 > X^2 table = 16,919) and 0,000< 0,05. Accordingly, it is concluded that; the variables are not independent since Ho hypothesis is rejected in 5% significance level.

Table: 7

The Relation Between The Measurement Of The Efficient Use Of Knowledge In Banks And The Use Of Balance Scorecards Method

		BSC method is used for the measurement of intangible assets		Total
		Yes	No	
The efficient usage of knowledge is measured in the bank.	Yes	68	29	97
	No	26	65	91
Total		94	94	188
Chi-Square Tests		Value	Df	Signif.
Pearson Chi-Square		32,395	1	0,000

Ho: The measurement of efficient use of knowledge and the use of Balance Scorecards method in the measurement of intangible assets are independent.

Ha: The measurement of efficient use of knowledge and the use of Balance Scorecards method in the measurement of intangible assets are not independent.

As summarized in Table 7, X^2 test value has the degree of freedom value Df =9 P(X^2 hes =85,335 > X^2 table = 16,919) and 0,000< 0,05. Accordingly, it is concluded that; the variables are not independent since Ho hypothesis is rejected in 5% significance level.

Table: 8

The Relation Between The Measurement Of The Efficient Use Of Knowledge In Banks And The Use Of Intellectual Capital Index Method

		Intelectual Capital Index used for the measurement of intangible assets		Total
		Yes	No	
The efficient usage of knowledge is measured in the bank.	Yes	28	56	84
	No	7	76	83
Total		35	132	167
Chi-Square Tests		Value	Df	Signif.
Pearson Chi-Square		15,625	1	0,000

Ho: The measurement of efficient use of knowledge and the use of Intellectual Capital Index method in the measurement of intangible assets are independent.

Ha: The measurement of efficient use of knowledge and the use of Intellectual Capital Index method in the measurement of intangible assets are not independent.

As summarized in Table 8, X^2 test value has the degree of freedom value Df =9 P(X^2 hes =85,335 > X^2 table = 16,919) and 0,000< 0,05. Accordingly, it is concluded that; the variables are not independent since Ho hypothesis is rejected in 5% significance level.

CONCLUSION

The transition phase from traditional economy to knowledge economy reshapes the entire economic system with the recent developments in economy towards a more knowledge-based approach as knowledge has become one of the main components of enterprises. The most important reason for this, is the need for knowledge in all sorts of activities. While knowledge and knowledge management has gained a considerable strategic importance, most of the enterprises have difficulties in revealing the corporate knowledge they possess and managing such knowledge efficiently. Imperfect definition of knowledge in the organization and the inability to measure the intellectual assets lie at the heart of such difficulties.

Several studies on measurement of knowledge all point at different measurement methods. As a matter of fact, knowledge measurement has become critically important for corporations especially in knowledge-driven financial sector. As one of these sectors, Turkish banking system is quite susceptible to the general structure of economy while also considerably influencing this structure. It is observed that; Turkish banking system has abandoned the traditional banking principles and adopted the new economic order rules. Hence, the sector has also got free of the traditional approach as the driving power of economy and turned its face towards knowledge-based competition.

Our study addresses the issue of the acceptance of knowledge by banks as an integral part of intellectual capital in order to use it as a strategic tool of competition. The recognition of knowledge as an intangible fixed asset by banks will provide competitive edge in terms of measurement of intellectual assets.

When we take a look at the findings, this attitude is mostly adopted by the employees of deposit money banks included in the research. However, the results show that; the banking industry is not well-informed about the *measurement of knowledge-based assets*, and is yet to measure the intellectual assets and include intellectual capital in the balance sheets. On the other hand, the importance attached by banks to the measurement of financial impact of knowledge is also quite little. And this implies that; the existing tools in the industry should be more commonly used. Banks can only meas-

ure the knowledge in their entire operations efficiently by selection of the right metrics. In terms of supporting the organizational productivity and competitive power, such methods shall enable banks to measure knowledge taking them a step further than their competitors. Therefore, our study claims that; establishing knowledge management departments in banks will be useful in clarifying the difference between information and knowledge on a corporate scale and facilitate processes like intellectual capital measurement in banks.

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APPENDIX- QUESTIONNAIRE

1-Cinsiyet	1)Kadın 2) Erkek
2- Yaş	1) 20 – 30 2) 31 – 40 3) 41 – 50 4) 51 – 60 5) 61 ve üstü
3- Eğitim Durumu	1) Lise 2) Önlisans 3) Lisans 4) Yüksek Lisans 5) Doktora ve üstü
4-Üniversiteden Mezun Olunan Bölüm	1) Sosyal Bilimler 2) Fen Bilimleri 3) Eğitim Bilimleri 4) Mühendislik Fakültesi 5) Bankacılık 6) Sigortacılık 7) Finansal Bilimler 8) Sermaye Piyasası ve Borsa 9) Diğer…….
5-Çalışılan Banka İsmi	…….
6- Banka İçindeki Pozisyon	1) BT Direktörü 2) BT Yöneticisi 3) BT Takım Lideri 4) BT Çalışanı 5) Diğer……
7-Şu An Çalışılan Bankadaki Çalışma Süresi	1) 0 - 5 yıl 2) 6 - 10 yıl 3) 11 - 15 yıl 4) 16 yıl ve üstü
8-Sektörde Toplam Çalışılan Süre	1) 0 - 5 yıl 2) 6 - 10 yıl 3) 11 - 15 yıl 4) 16 yıl ve üstü

BÖLÜM I. Aşağıdaki sorular bankanızdaki "BİLGİ YÖNETİMİ UYGULAMALARI"nı kapsamaktadır.					
	Kesinlikle Katılıyorum	**Oldukça Katılıyorum**	**Orta Düzeyde Katılıyorum**	**Pek Katılmıyorum**	**Kesinlikle Katılmıyorum**
Bilgi yönetiminde amaç hizmet kalitesinin iyileştirilmesidir.	1	2	3	4	5
Bilgi yönetiminde amaç bilgi kullanımının arttırılmasıdır.	1	2	3	4	5
Bilgi yönetiminde amaç müşteri sadakatinin sağlanmasıdır.	1	2	3	4	5
Bilgi yönetiminde amaç rekabet avantajı elde etmektir.	1	2	3	4	5
Bilgi yönetimi araştırma kaynaklarına erişmeyi sağlamaktadır.	1	2	3	4	5
Bilgi yönetim programı bankamızın rekabet stratejilerini desteklemektedir.	1	2	3	4	5
Bankamızdaki bilgi paylaşımına karşı direnç söz konusudur.	1	2	3	4	5

Aşağıdaki soruları bankanızdaki "BİLGİ SİSTEM VE TEKNOLOJİLERİ"nin kullanım alanlarını ölçmeye yönelik olarak değerlendiriniz.

Rekabet üstünlüğü kazanmak	Evet	Hayır
Verimliliği ve performansı arttırmak	Evet	Hayır
Yönetim ve organizasyonda yeni yöntemler geliştirmek	Evet	Hayır
Yeni iş alanları yaratmak	Evet	Hayır

BÖLÜM II. Aşağıdaki sorular bankanızda "BİLGİ TABANLI VARLIKLARIN' ÖLÇÜLMESİNİ" içermektedir.

Bankamızda bilginin etkin kullanımı ölçülmektedir.	Evet	Hayır
Bankamızda bilginin kalitesi ölçülmektedir.	Evet	Hayır
Bankamızda bilginin finansal etkisi (ROI veya kar artışı) ölçülmektedir.	Evet	Hayır
Bankamızda maddi olmayan varlıkların ölçümünde Balance Scorecards(Firma Karnesi) yöntemi kullanılmaktadır.	Evet	Hayır
Bankamızda maddi olmayan varlıkların ölçümünde Skandia Ölçüm Modeli kullanılmaktadır.		