

# INTELLECTUAL CAPITAL IN TURKISH PRIVATE BANKS

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Abstract: In order to keep up in today's competitive banking sector, banks need to offer more value added and more diversified services. Service quality of banks highly depends on intellectual capital. In this study, VAIC<sup>TM</sup> (Value Added Intellectual Coefficient) has been used, developed by Pulic in 1998, to compare the private banks in Turkey in terms of intellectual capital performance for the years 2002-2006. For all years except 2002, Akbank T.A.S. has the highest VAIC<sup>TM</sup> values. It also tops the list with the highest HCE and SCE scores from 2002 to 2006. Adabank A.S. has the worst scores in HCE, SCE, and VAIC<sup>TM</sup> for almost all years, while it occupies the highest places in CEE listing.

## 1 INTRODUCTION

Traditional accounting systems do not fully reflect the success of a company. Each company's unique knowledge, skills, values, and solutions can be transformed into value in the market, which may in turn affect the competitive advantage, and increase the productivity and market value (Pulic, 2002a). These intangible assets define intellectual capital (Yalama and Coskun, 2007). Intellectual capital is an 'intellectual material, knowledge, information, intellectual property, and experience that can be put to create wealth' (Stewart, 1997).

Several successful companies realize the importance of investing in intellectual capital for their business, to create high value products and services (Chang, 2007) from the company's physical assets (Wang, 2006). However, establishing an evaluation system, which also focuses on value creation and not only on cost, is a challenge for many companies (Pulic, 2000). Several methods have been developed to measure intellectual capital, such as, market capitalization approach, direct intellectual capital measurement approach, scorecard approach, economic-value added approach, and VAIC<sup>TM</sup> (Chan, 2009a). In this study, the authors have used VAIC<sup>TM</sup>, developed by Pulic in 1998, to calculate the intellectual capital performance of

private banks in Turkey. This method provides a standardized and consistent measure that can be used to compare banks (Shiu, 2006).

## 2 INTELLECTUAL CAPITAL IN BANKING SECTOR

Financial sources are essential for all sectors in a country's economy, so banking sector is indispensable for a sustainable economical growth. In order to keep up in today's competitive banking sector, banks need to offer more value added and more diversified services (Goh, 2005). As the service quality of banks highly depends on intellectual capital, banking sector provides a great research opportunity for intellectual capital studies. In addition to that, regularly declared financial reports of banks supply reliable data for these studies. (Goh, 2005; Kamath, 2007).

There is a growing body of research, which uses VAIC<sup>TM</sup> as a performance measure for the comparison of companies and as a predictor for company performance (Chan, 2009a; Chan, 2009b; Ghosh and Mondal, 2009; Kamath, 2008; Kamath, 2007; Appuhami, 2007; Tan et al., 2007; Ozturk and Demirgunes, 2007; Shiu, 2006; Yalama and Coskun,

2007; Goh, 2005; Chen et al., 2005; Mavridis, 2004; Firer and Williams, 2003).

However, only a small part of the studies have analyzed the intellectual capital performance of the banking sector. Pulic has assessed intellectual capital performance of Austrian banks (1997) in a period of 1993-1995 and Croatian banks (2002b) in a period of 1996-2000 using VAIC<sup>TM</sup>. Appuhami (2007) has investigated the impact of intellectual capital efficiency on the investors' capital gains, by collecting data from 33 banking, insurance, and finance companies in Thailand for the year 2005. Mavridis (2004) has analyzed the intellectual and physical capital of the Japanese banking sector for the financial period 1 April 2000 to 31 March 2001, and has discussed their impact on the banks' value-based performance. Goh (2005) has measured the intellectual capital performance of commercial banks in Malaysia, for the period 2001 to 2003, by using VAIC<sup>TM</sup>, and has compared domestic and foreign banks in terms of intellectual capital performances. Kamath (2007) has analyzed the intellectual and physical capital performance of the Indian banking sector by using VAIC<sup>TM</sup> for the five-year period, and has then discussed the impact of intellectual and physical capital performance on value-based performance. Yalama and Coskun (2007) have analyzed the intellectual capital performance of the quoted banks on the Stock Exchange Market in Turkey for the period 1994 to 2004 using VAIC<sup>TM</sup>.

Banking sector is one of the fastest growing sectors in Turkey. Banking sector in Turkey consists of three types of banks; deposit banks (mevduat bankaları), development and investment banks (kalkınma ve yatırım bankaları) and participation banks (katılım bankaları). In terms of balance sheet size, deposit banks constitute 94% of the sector by September 2007. By the end of 2006 there were 33 deposit banks in Turkey, where 13 of them were private banks.

The aim of this study is to analyze how well the private banks in Turkey take advantage of their intellectual capital during the period 2002 to 2006.

### 3 METODOLOGY

In this study VAIC<sup>TM</sup> was used to calculate the intellectual capital performances of the private banks in Turkey.

VAIC<sup>TM</sup> measures the 'efficiency of physical capital and intellectual potential' (Pulic, 1998), and indicates 'corporate value creation efficiency of

tangible and intangible assets within a company during operations' (Pulic 2000; Tan et al., 2007). Ease of data acquisition and conducting data analysis on other data sources are some of the advantages of the Pulic's method. Data needed to derive the components of VAIC<sup>TM</sup> are standard financial numbers derived from audited financial reports of companies (Tan et al., 2007).

The Pulic's method suggests that human capital efficiency (HCE), structural capital efficiency (SCE), and capital employed efficiency (CEE) are the components of VAIC<sup>TM</sup>. Therefore, VAIC<sup>TM</sup> is calculated by the sum of these components and defined as (1):

$$VAIC^{TM} = HCE_i + SCE_i + CEE_i \quad (1)$$

where,  $VAIC^{TM}$  = the sum of value added for the company  $i$ ,  $HCE_i$  = human capital efficiency of the company  $i$ ,  $SCE_i$  = structural capital efficiency of the company  $i$ ,  $CEE_i$  = capital employed efficiency of the company  $i$ .

To calculate these components, first one has to find out 'how competent a company is to create Value Added (VA)'. The aim is to 'create as much value added as possible with a given amount of financial and intellectual capital' (Pulic, 2000). The calculation of  $VA_i$  (the sum of value added for company  $i$ ) is defined as follows (Yalama and Coskun, 2007) (2):

$$VA_i = I_i + DP_i + D_i + T_i + M_i + R_i + WS_i \quad (2)$$

Where,  $I_i$  = interest expenses for company  $i$ ,  $DP_i$  = depreciation expenses for company  $i$ ,  $D_i$  = dividends for company  $i$ ,  $T_i$  = corporate taxes for company  $i$ ,  $M_i$  = equity of minority shareholders in net income of subsidiaries for company  $i$ ,  $R_i$  = profits retained for company  $i$ ,  $WS_i$  = the sum of wages and salaries for company  $i$ .

In this formula, employees are not taken as costs, but taken as an investment for companies (Pulic, 2002a).

$CEE$  is the ratio of total  $VA$  divided by the total amount of capital employed ( $CE$ ).  $CEE$  is defined as (3):

$$CEE_i = VA_i / CE_i \quad (3)$$

where,  $CEE_i$  = capital employed efficiency of the company  $i$ ,  $VA_i$  = the sum of value added for the company  $i$ ,  $CE_i$  = book value of net assets for the firm  $i$ .

$HCE$  is the ratio of total  $VA$  divided by the total salary and wages spent by the firm on its employees.

$HCE$  shows how much  $VA$  created by a unit of money is spent on employees (Tan et al., 2007).  $HCE$  is defined as (4):

$$HCE_i = VA_i / HC_i \quad (4)$$

where,  $HCE_i$  = human capital efficiency of the company  $i$ ,  $VA_i$  = the sum of value added for the company  $i$ ,  $HC_i$  = total salary and wage expenditure of the company  $i$ .

$SCE$  is the ratio of structural capital ( $SC$ ) divided by total  $VA$ . The structural capital includes proprietary software systems, distribution networks, supply chains, brand, organization management process, and customer loyalty (Tan et al., 2008; Goh, 2005). The structural capital is the difference between a company's total value added and its human capital. The calculation of  $SC_i$  and  $SCE_i$  can be defined as follows (5-6):

$$SC_i = VA_i - HC_i \quad (5)$$

$$SCE_i = SC_i / VA_i \quad (6)$$

where,  $SC_i$  = structural capital of the company  $i$ ,  $HC_i$  = the total salary and wage expenditure of the company  $i$ ,  $SCE_i$  = structural capital efficiency of the company  $i$ ,  $VA_i$  = the sum of value added for company  $i$ . The abbreviations for the formulas can be seen in Table 1.

Table 1: Abbreviations and their description.

Abbreviation	Description
$HCE_i$	Human capital efficiency for company $i$
$SCE_i$	Structural capital efficiency for company $i$
$CEE_i$	Capital employed efficiency for company $i$
$VA_i$	The sum of value added for company $i$
$I_i$	Interest expenses for company $i$
$DP_i$	Depreciation expenses for company $i$
$D_i$	Dividends for company $i$
$T_i$	Corporate taxes for company $i$
$M_i$	Equity of minority shareholders in net income of subsidiaries for company $i$
$R_i$	Profits retained for company $i$
$WS_i$	The sum of wages and salaries for company $i$
$CE_i$	Book value of net assets for firm $i$
$HC_i$	Total salary and wage expenditure for company $i$
$SC_i$	Structural capital for company $i$

Table 2: VAIC<sup>TM</sup> values of the Turkish private banks.

VAIC						
NO	BANK	2002	2003	2004	2005	2006
1	ADABANK A.S.	6.57608	8.17608	1.98888	1.55635	
2	AKBANK T.A.S.	14.36063	13.33390	11.86615	10.64885	12.04226
3	ALTERNATIFBANK A.S.	15.78902	11.94690	9.77288	5.56341	6.22177
4	ANADOLUBANK A.S.	10.80064	8.86060	7.66239	7.88099	6.52726
5	MNG BANK A.S.	12.85155	12.57087	4.89853	5.55873	6.86297
6	OYAK BANK A.S.	10.76219	7.65612	7.78786	7.52085	7.64483
7	SEKERBANK T.A.S.	9.89656	6.63093	5.47541	4.98635	4.97277
8	T. GARANTI BANKASI A.S.	11.76125	8.88014	7.48040	6.38952	9.12381
9	T. IS BANKASI A.S.	7.55180	7.70525	7.34699	7.78852	9.53076
10	TEKFEN BANK A.S.	8.25140	6.76674	4.87986	4.68063	6.25141
11	TEKSTIL BANKASI A.S.	10.58796	7.28017	5.48923	5.02603	5.86201
12	TURKISH BANK A.S.	10.77600	7.69831	6.67624	4.73161	6.14035
13	TURK EKONOMI BANKASI A.S.	7.19309	6.14880	6.20658	5.75834	6.71005
14	YAPI VE KREDI BANKASI A.S.	11.75939	9.77727	6.69509	6.89167	7.20736

Table 3: HCE values of the Turkish private banks.

HCE						
NO	BANK	2002	2003	2004	2005	2006
1	ADABANK A.S.	5.64268	6.94791	1.48118	1.22447	
2	AKBANK T.A.S.	13.32574	12.30015	10.84868	9.67121	11.02650
3	ALTERNATIFBANK A.S.	14.58338	10.84642	8.70406	4.68921	5.31548
4	ANADOLUBANK A.S.	9.73185	7.87536	6.69373	6.90216	5.59711
5	MNG BANK A.S.	11.46296	11.30450	4.04338	4.65471	5.91602
6	OYAK BANK A.S.	9.62871	6.64196	6.78765	6.54889	6.68259
7	SEKERBANK T.A.S.	8.78046	5.63843	4.54222	4.06942	4.07210
8	T. GARANTI BANKASI A.S.	10.72169	7.89981	6.53605	5.49830	8.15453
9	T. IS BANKASI A.S.	6.56157	6.71757	6.38119	6.84291	8.53947
10	TEKFEN BANK A.S.	7.15417	5.75020	3.99438	3.83630	5.33717
11	TEKSTIL BANKASI A.S.	9.49741	6.30716	4.60705	4.18854	4.97560
12	TURKISH BANK A.S.	9.68000	6.71656	5.73019	3.90239	5.23870
13	TURK EKONOMI BANKASI A.S.	6.25504	5.25085	5.29197	4.87850	5.78415
14	YAPI VE KREDI BANKASI A.S.	10.68079	8.74039	5.76511	5.95025	6.27535

Table 4: SCE values of the Turkish private banks.

SCE						
NO	BANK	2002	2003	2004	2005	2006
1	ADABANK A.S.	0.82278	0.85607	0.32486	0.18332	
2	AKBANK T.A.S.	0.92496	0.91870	0.90782	0.89660	0.90931
3	ALTERNATIFBANK A.S.	0.93143	0.90780	0.88511	0.78674	0.81187
4	ANADOLUBANK A.S.	0.89724	0.87302	0.85061	0.85512	0.82134
5	MNG BANK A.S.	0.91276	0.91154	0.75268	0.78516	0.83097
6	OYAK BANK A.S.	0.89614	0.84944	0.85267	0.84730	0.85036
7	SEKERBANK T.A.S.	0.88611	0.82265	0.77984	0.75426	0.75443
8	T. GARANTI BANKASI A.S.	0.90673	0.87341	0.84700	0.81813	0.87737
9	T. IS BANKASI A.S.	0.84760	0.85114	0.84329	0.85386	0.88290
10	TEKFEN BANK A.S.	0.86022	0.82609	0.74965	0.73933	0.81263
11	TEKSTIL BANKASI A.S.	0.89471	0.84145	0.78294	0.76125	0.79902
12	TURKISH BANK A.S.	0.89669	0.85111	0.82549	0.74375	0.80911
13	TURK EKONOMI BANKASI A.S.	0.84013	0.80955	0.81103	0.79502	0.82711
14	YAPI VE KREDI BANKASI A.S.	0.90637	0.88559	0.82654	0.83194	0.84065

Table 5: CEE values of the Turkish private banks.

CEE						
NO	BANK	2002	2003	2004	2005	2006
1	ADABANK A.S.	0.11062	0.37210	0.18284	0.14856	
2	AKBANK T.A.S.	0.10993	0.11504	0.10965	0.08103	0.10646
3	ALTERNATIFBANK A.S.	0.27422	0.19267	0.18371	0.08746	0.09442
4	ANADOLUBANK A.S.	0.17155	0.11221	0.11806	0.12371	0.10881
5	MNG BANK A.S.	0.47582	0.35483	0.10247	0.11886	0.11598
6	OYAK BANK A.S.	0.23734	0.16471	0.14753	0.12466	0.11188
7	SEKERBANK T.A.S.	0.22999	0.16985	0.15334	0.16266	0.14625
8	T. GARANTI BANKASI A.S.	0.13283	0.10692	0.09734	0.07310	0.09191
9	T. IS BANKASI A.S.	0.14264	0.13654	0.12251	0.09175	0.10839
10	TEKFEN BANK A.S.	0.23701	0.19045	0.13583	0.10500	0.10160
11	TEKSTIL BANKASI A.S.	0.19585	0.13155	0.09924	0.07624	0.08739
12	TURKISH BANK A.S.	0.19931	0.13063	0.12056	0.08547	0.09253
13	TURK EKONOMI BANKASI A.S.	0.09791	0.08840	0.10358	0.08483	0.09878
14	YAPI VE KREDI BANKASI A.S.	0.17222	0.15129	0.10344	0.10948	0.09137

#### 4 RESULTS

Table 2 shows the performances of companies in terms of VAIC<sup>TM</sup> values. For the first bank on the list, Adabank A.S., the VAIC<sup>TM</sup> value for the year 2006 was not calculated because this bank was a private bank until 2005 and in 2005 it was transferred to TMSF (Saving deposits insurance fund). Also the HCE, SCE and CEE scores of this bank for the year 2006 were not calculated for the same reason.

For all years except 2002 Akbank T.A.S. has the highest VAIC<sup>TM</sup> values. In contrast to that finding, second place is occupied by different banks in every year. In 2002 Alternatifbank A.S. is the first bank in terms of VAIC<sup>TM</sup> values, while Akbank T.A.S. has the second place. In terms of human capital performance, all banks have relatively higher human capital efficiency than structural capital and capital employed efficiencies. Among the banks, Akbank T.A.S. tops the list with the highest HCE scores from 2003 to 2006 (Table 3). In 2002 it has the second place following again Alternatifbank A.S.. The same situation repeats for structural capital efficiency; although Alternatifbank A.S. is the number one bank in terms of SCE in 2002, Akbank T.A.S. has the best performance for SCE in the last 4 years evaluated (Table 4). This approves that Akbank T.A.S. emerged stronger from the

economical crises of 2001 which affected the Turkish banking sector very gravely. In contrast to this results, in terms of CEE scores, Akbank T.A.S. occupies much lower places in the list for the years evaluated, which means that Akbank T.A.S. creates a high level of value added with its personnel, but compared to its net assets, value added it has created is relatively small.

Adabank A.S. has the worst scores almost for all types of efficiencies and VAIC<sup>TM</sup> except CEE, for almost all years except 2003. Especially in the last two years (meaning 2004 and 2005) of its existence as a private bank it has very low values for SCE, HCE and VAIC<sup>TM</sup>, on the other hand it occupies one of the top two places in the CEE score list. This shows, in contrast to Akbank T.A.S., Adabank A.S. creates a good amount of value added with its net assets, but personnel wages it has discharged are relatively high for the value added it has created.

The results show that HCE and SCE scores, which are related to personal wages and salaries that banks discharge, have higher impacts than CEE on VAIC<sup>TM</sup> values of the Turkish private banks. As a result of that HCE, SCE and VAIC<sup>TM</sup> listings show similar results, while CEE listing gives a totally different order.

Generally it can be said that for most of the private banks examined there is a decreasing trend for all type of efficiencies and VAIC<sup>TM</sup> beginning

mostly in 2002. This decreasing trend began to go slightly upward again in years 2005 and 2006, especially for HCE, SCE and VAIC<sup>TM</sup>. It can be concluded that the Turkish private banks got over the negative effects of the economical crises of 2001 and began to gather strength.

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