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Full Length Research Paper

Development and testing of a business process orientation model to improve employee and organizational performance

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This study developed and tested a business process orientation model to improve employee and organizational performance. The research team developed the model on the basis of theoretical background. Factor analysis and structural equation modeling techniques were used to test the model. The research team used a structured questionnaire to collect data from employees of private sector banks in Pakistan using the stratified sampling method. The sample size of the study was 350, with a response rate of 17%. The research team used SPSS 15.0 to check the one-to-one relationship between the variables in the model using the simple linear regression method. Furthermore, the research team used virtual partial least squares (VPLS) 1.04 to test the model on a single run. The findings validated the proposed relationships between the variables in the model. The conclusion of the study was that business process orientation had a significant impact on employee and organizational performance. Thus, a process orientation in business, eliminating inefficiencies and supplementing innovation, was strongly recommended.

Key words: Business process orientation, business process innovation, business process efficiency, employee performance, organizational performance.

INTRODUCTION

In recent organizational developments, a paradigm shift toward a process focus meant to enhance competitiveness and performance has been visible. The traditional functional approach to management does not prioritize efficiency. This bureaucratic style gives privileges to the status quo over innovation. It has therefore become strategically important for businesses to be process-oriented to cope with intense competition and to better serve an ever-demanding pool of customers.

Researchers have explored various modes of improving business processes within an organization, such as business process re-engineering, business process management, business process analysis, business process efficiency, business process mapping and business process orientation (Fields, 2007; Lockamy and McCormack, 2004; McCormack and Rauseo, 2005; McCormack, 1999; Hammer and Champy, 1993; Tenner and Detoro, 2000).

These strategic modes are equally essential to businesses in developing countries. In Pakistan, the banking sector has made revolutionary changes to improve performance during the last decade. Private sector banks in particular have shown radical improvements in enhancing performance and serving customers. The computerization and automation of banking processes greatly enhances customer service. Most of the public sector organizations in Pakistan, including banking enterprises, retain a traditional functional management style and thereby are not fully enjoying the benefits of process orientation.

The literature lacks empirical studies on business process orientation and their impact on performance (McCormack, 1999; Skringar et al., 2008), especially in

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developing countries like Pakistan. This paper develops and tests the business process orientation model to improve individual and organizational performance in the banking industry in Pakistan.

LITERATURE REVIEW

Business processes are comprised of interconnected activities that transform particular inputs into customer-focused outputs working across departments (Schutta, 2006; Hammer and Champy, 1993; McCormack and Johnson, 2001; Sethi and King, 2003; Field, 2007). This study focuses on three performance parameters of business processes: orientation, efficiency and innovation.

Business process orientation (BPO)

The business process orientation approach uses a process lens to perform activities within the organization instead of focusing on functional hierarchies, structures and divisions (McCormack and Rauseo, 2005; McCormack, 1999, 2001a; McCormack and Johnson, 2001; Davenport, 1993; Nenadal, 2008).

The process orientation emphasizes delivering value to customers by streamlining and accelerating work patterns (Schutta, 2006; McCormack and Johnson, 2001; Davenport, 1993). Interdepartmental coordination and technology play critical roles in implementing the process orientation approach in an organization (McCormack and Johnson, 2001). These elements help to improve both efficiency and effective-ness by reducing the cost of doing business and enhancing customer satisfaction (Schutta, 2006; Garvin, 1995).

The business process orientation consists of five important concepts and variables: the process view, process structures, process jobs, process management and measurement systems and process values and beliefs (McCormack, 1999; Skrinjar et al., 2008; Sussan and Johnson, 2003). The process view accentuates process thinking and process terminologies in the performance of activities in an organization (Davenport, 1993a; McCormack, 1999; Tenner and Detoro, 2000; Skrinjar et al., 2008). Process structures are the structural elements, boundaries and activities of the business process (Davenport, 1993a; McCormack and Rauseo, 2005; McCormack and Johnson, 2001). Process jobs are organizational jobs understood in terms of business processes that recognize the process owners who are responsible for them (Skrinjar et al., 2008; McCormack; 1999; McCormack; 2001b; Davenport, 1993a; McCormack and Johnson, 2001). Process values and beliefs represent a process-oriented organizational culture that emphasizes customer orientation, teamwork, empowerment, cross-functional coordination and continuous improvement (Schutta, 2006; McCormack, 1999; McCormack and Johnson, 2001). Process management and measurement systems describe methods of measuring process performance and rewards for process improvement (McCormack, 1999; McCormack; 2001b; Davenport, 1993a; McCormack and Johnson, 2001; Skrinjar et al., 2008).

Business process innovation (BPI)

Business process innovation encourages new ideas and ways of doing work to achieve business objectives efficiently (Davenport, 1993a, b). It encourages dynamism focusing on how different business processes can be performed to achieve a desired objective (Wang and Ahmed, 2003).

The traditional and routine way of doing work creates loopholes and lock-ins in systems, especially in a dynamic organizational environment. A continuous process change and innovation are imperative to challenge such ambiguities in the organization (Sethi and King, 2003). Technology and empowerment play a critical role in business process innovation (Davenport, 1993b; Talwar, 1993; Markus and Benjamin, 1997).

Business process efficiency (BPE)

Business process efficiency defines the level of performance of business processes. The efficiency of business processes is generally measured using various parameters, such as cost, time, the extent of electronic work over manual processing and the number of people and departments involved in process execution (Arveson, 1999; Hammer and Champy, 1993; Tenner and Detoro, 2000; Stalk and Hout, 1990; Nenadal, 2008; Cook; 1996). Information technology plays a key role in improving business process efficiency (Venkatraman, 1994; Davenport, 1993a; Sethi and King, 2003; Keen, 1991; Furey, 1993; Hammer, 1990; Talwar, 1993).

Organizational performance (OP)

Organizational performance refers to the degree to which organizational objectives are met (Lin et al., 2008). This paper measures organizational performance using parameters such as competitiveness, innovation and learning. Organizational performance can be enhanced by streamlining the organizational processes and culture to serve customers (Matin et al., 2009).

Herciu and Ogrean (2008), Singh et al. (2008) and Lopez et al. (2005) describe competitiveness as a comparison between a firm's performance and standard performance, specifically standard performance in the industry, in terms of quality, flexibility, delivery, innovation, cost and learning.

Innovation refers to the support and employment of

new ideas, formally as well as informally, used to perform work more productively and meet the organizational objectives more efficiently and effectively (Pangarkar and Kirkwood, 2008; Zolfagharian and Paswan, 2008), outcomes that are strategically vital in a competitive and dynamic environment (Deshpande et al., 1993; Monge et al., 1992).

Learning is also an important element of organizational performance (Lopez et al., 2005; Pangarkar and Kirkwood, 2008; Lin et al., 2008) because it promotes innovation and creativity in an organization (Pangarkar and Kirkwood, 2008). Learning is the process of creating, attaining and disseminating knowledge-based information to improve organizational capabilities (Jimenez et al., 2008).

Employee performance (EP)

Employee performance is vital for business success. The literature identifies factors such as job security, workload, absenteeism, retention and on- and off-the-job training as affecting employee performance (Dibben and James, 2007; Dyer and Reeves, 1994). Employee turnover, satisfaction, commitment, esprit de corps and citizenship are some other determinants of employee performance (Dyer and Reeves, 1994; Jaworski and Kohli, 1993; Tesluk, 1999; Dyer and Reeves, 1994; Baptise, 2008).

This study uses commitment and esprit de corps as measures of employee performance. Commitment refers to the degree to which employees sacrifice for, identify with and involve themselves in achieving organizational objectives (Lancaster and Vender, 2004; Jaworski and Kohli, 1993). Employee attachment and loyalty are other measures of employee commitment (Meyer and Allen, 1991; Ogba, 2008). Esprit de corps relates to teamwork and cohesion in the context of an organization (Jaworski and Kohli, 1993; Al-Rawi, 2008). It signifies employee attachment to achieve common objectives (Robins and DeCenzo, 2001). Effective organizational leadership and behavior create pride, commitment and dedication in employees, which are important determinants of esprit de corps (Al-Rawi, 2008; Ogba, 2008; Robins and DeCenzo, 2001; Houldsworth and Machin, 2008).

THEORETICAL SUPPORT OF BUSINESS PROCESS ORIENTATION MODEL

This section describes the theoretical support for the interrelationships among the variables in the proposed model.

Business process orientation and business process efficiency

Business process orientation has become a core function of every organization as they strive to cope with competitive pressure by enhancing the efficiency of business processes (Skrinjar et al., 2008). Business process orientation helps to improve business processes by reducing cost (Skrinjar et al., 2008; Tenner and Detoro, 2000; Zaheer et al., 2008a; Hammer and Champy, 1993; Harrison and Pratt, 1993), improving process execution time (Skrinjar et al., 2008; Tenner and Detoro, 2000; Zaheer et al., 2008a; Hammer and Champy, 1993; Ginn and Barlog, 1994; Harrington, 1991; Sethi and King, 2003; Harrison and Pratt, 1993) and eliminating bureaucratic activities such as excessive paperwork, signoffs and duplications (Zaheer et al., 2008a,b; Stalk and Hout, 1990; Arveson, 1999; Cook, 1996; Keen, 1991).

Business process orientation and business process innovation

The effectiveness of business process orientation helps to create innovation in key processes. It envisions the new work strategies in the organization (Davenport, 1993). Business process orientation assists in the process-based allocation of resources, which is critical in developing new business work models (McCormack and Johnson, 2001). The success of business process orientation depends on process teams' innovative and creative abilities (Davenport, 1993; Harrington, 1991). Business process orientation introduces process-based structural change into an organization, which in turn leads to creative ways of achieving organizational objectives (Harrington, 1991).

The efficient management of business processes is vital in a dynamic and competitive environment. Business process orientation and management foster a process culture based on innovation and performance (Singh et al., 2008).

Business process orientation and organizational performance

The literature indicates the positive impact of business process orientation on organizational performance (Fitzgerald and Murphy, 1996; Kaplan and Norton, 1996; Mackay et al., 2008; McCormack and Johnson, 2001; Skrinjar et al., 2008).

Business process orientation helps to improve both the financial and the non-financial performance of an organization (Skrinjar et al., 2008). Investment in business processes creates competitive advantage for the organization and brings about significant improvements to the system (Kaplan and Norton, 1996; McCormack and Johnson, 2001).

Business process orientation focuses on the efficient transformation of input into output to meet customer requirements. In this way, it helps to achieve overall organizational goals by attaining efficiency as well as

efficacy (Fitzgerald and Murphy, 1996; Mackay et al., 2008).

Business process orientation and employee performance

Business process orientation has a significant impact on employee performance (Sethi and King, 2003; Skrinjar et al., 2008; Uusitalo et al., 2008; Martenette et al., 2003). Skrinjar et al. (2008) examined the relationship between business process orientation and non-financial performance measures such as employee satisfaction, learning, commitment, absenteeism and working conditions. The study revealed a positive relationship between business process orientation and non-financial performance measures.

Business process orientation demands better employee performance. The quality and efficiency of business processes help to boost the performance of employees and provide better service to customers (Martenette et al., 2003; Uusitalo et al., 2008).

Business process orientation is a socio-technical approach that brings about behavioral improvement as well as material change (Sethi and King, 2003). It helps to mold employee behavior and attitude via self-management (Sethi and King, 2003; Uusitalo et al., 2008).

Business process innovation and organizational performance

There is a positive impact of business process innovation on organizational performance (Deshpande et al., 1993; Lin and Chen, 2007; Han et al., 1998; Davenport, 1993; Pinho, 2008; Carmon and Jose, 2008; Pitt and Tucker, 2008).

Lin and Chen (2007) and Han et al. (1998) examine the relationship between innovation and business performance. The authors conclude that there is a positive impact of administrative and technological innovation on business performance.

Business process innovation helps to improve operational efficiency. Process change initiatives bring about business efficiency by reducing time and cost. Novel ideas about doing business may be expensive in the short run, but they have a long-term impact on performance measures (Davenport, 1993).

Pinho (2008) examined different types of innovation, such as process innovation, product innovation and technology innovation, to reveal their impact on performance. An analysis of small and medium-sized enterprises revealed a positive effect of innovation on organizational performance.

Roberts and Amit (1995) analyzed the impact of product and process innovation on business performance in Australian retail banks. Both types of innovation help to build competitive advantage for the business, which in turn, leads to better performance. Banks with a high level of innovation showed better performance than banks with relatively low level of innovation.

Carmon and Jose (2008) observed the mediating effect of technological and administrative innovation between market orientation and business performance. An empirical investigation of cultural organizations revealed a significant mediating role for process innovation.

Business process efficiency and employee performance

The literature shows a significant impact of business process efficiency on employee performance and proficiency (Certo, 2001; Hammer and Champy, 1993; Luthans, 1997; Pangarkar and Kirkwood, 2008; Roy, 2005).

Business processes are the reason for the existence of any business; they encompass what it produces and delivers. It is absolutely necessary for every organization to identify key business processes and excel at them to achieve strategic goals and long-term viability (Pangarkar and Kirkwood, 2008). The efficiency of business processes has a significant, positive impact on quality and productivity (Hammer and Champy, 1993).

Bureaucratic business processes, which involve a lack of empowerment, an autocratic style, centralized decision-making, no performance feedback, excessive approvals/signoffs and delaying tactics, are a source of stress on organizations that impedes the performance level of employees (Luthans, 1997).

Today, businesses tend to build a supportive organizational climate with more autonomy and flexibility, mainly based on performance instead of on rules, to improve employee performance. Organizations that still employ a bureaucratic management style and rigid structure face job stress, which negatively impacts employee performance (Certo, 2001).

PROPOSED MODEL AND HYPOTHESIS

Proposed model

The following conceptual model is proposed on the basis of the literature review and theoretical background (Figure 1).

McCormack (1999) developed the original model of business process orientation to examine its impact on performance through interdepartmental connectedness and conflict. The research team introduced the important consequences of business process orientation, such as business process efficiency and business process innovation, to develop and test the modified form of the

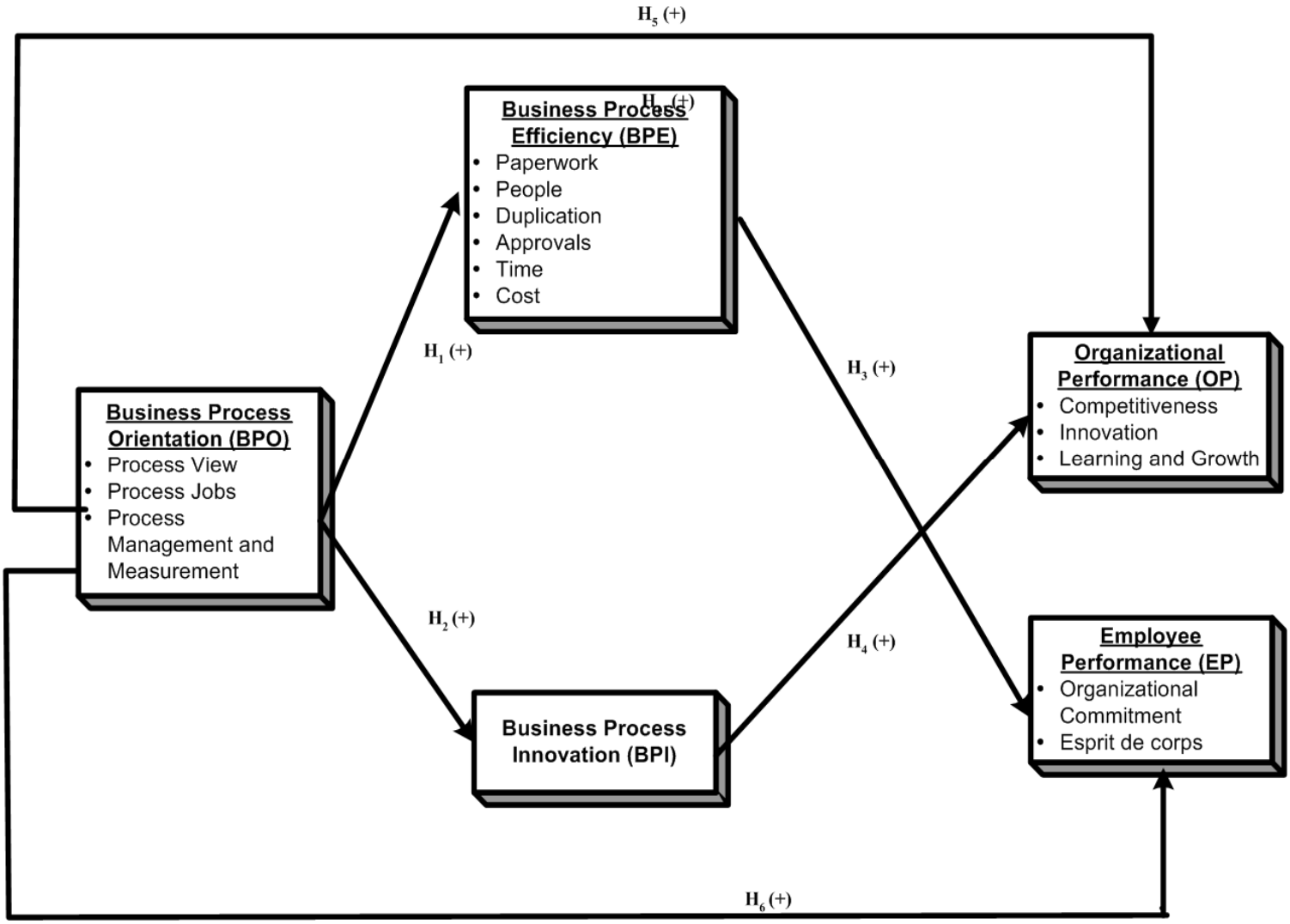

Figure 1. Conceptual model and path diagram.

business process orientation model.

Hypotheses

The following hypotheses have been developed from the literature review:

H_1: Business process orientation has a significant positive impact on business process efficiency.
H_2: Business process orientation has a significant positive impact on business process innovation.
H_3: Business process efficiency has a significant positive impact on employee performance.
H_4: Business process innovation has a significant positive impact on organizational performance.
H_5: Business process orientation has a significant positive impact on organizational performance.
H_6: Business process orientation has a significant positive impact on employee performance.

METHODOLOGY

This study is descriptive in nature and is conducted to test the hypotheses based on the business process orientation model.

Instrument and Measures

The research team used a survey questionnaire based on scale items that were developed, validated and tested in past studies. The research team conducted informal interviews with a panel of experts and bank employees to incorporate expert opinion into the development of the questionnaire. Accordingly, a few changes were incorporated into the item wording and the selection of items to make the concepts expressed in the questionnaire clear and comprehensible to the respondents.

The survey questionnaire consisted of six parts. First, it measured the demographics of the respondents. Second, it measured the business process orientation. To measure the

Table 1. Demographic and organizational profile of respondents.

Variable	Category	Frequency	Percentage
Gender	Male	218	69.2
	Female	97	30.8
Age (years)	25 or below	109	34.6
	26 - 35	109	40.6
	36 - 45	39	12.4
	46 or above	39	12.4
Education	Undergraduate	4	1.3
	Graduate	79	25.1
	Masters	198	62.9
	M.Phil	26	8.3
	PhD	5	1.6
	Other	3	1.0
Job experience (years)	1 - 5	187	59.4
	6 - 10	55	17.5
	11 - 15	31	9.8
	16 or above	42	13.3
Position/Designation	Executive	24	7.6
	Officer	291	92.4

Source: Field data.

business process orientation, the research team adapted the 15-item scale developed and tested by McCormack (1999). Three dimensions of business process orientation: the process view, process jobs and process management and measurement systems were measured using five items, three items and seven items, respectively. Third, it measured business process innovation using a 3-item scale developed by Das and Joshi (2007). Fourth, it measured business process efficiency using a 21-item scale that was also used and validated by Zaheer et al. (2008). Seven dimensions of business process efficiency: paperwork, people, duplication, approvals, time, cost and IT usage were measured in separate parts. The first part consisted of three items and measured 'paperwork'. The second part, consisting of two items, measured 'people'. The third part, consisting three items, measured 'duplication'. The fourth part consisted of three items and measured 'approvals'. The fifth part, consisting of four items, measured 'time'. The sixth part, consisting of three items, measured 'cost'. The last part, consisting of three items, measured IT usage. Fifth, it measured employee performance using a 9-item scale used by Jaworski and Kohli (1993). Two separate parts, consisting of three items and six items, respectively, measured the two dimensions of employee performance, organizational commitment and esprit de corps. Finally, it then measures organizational performance using a 9-item scale. This scale consisted of three parts. The first part, with three items, measured 'competitiveness'. The second part, with four items, measured 'innovation'. The last part, with three items, measured 'learning and growth'. The research team coded the items of each construct either positively or negatively to create a consistent framework.

The researcher used visual partial least squares (VPLS) software 1.02 to compute the composite reliability and average variance extracted. The statistics either met or were very close to the prescribed criteria.

Sample

Based on the recent developments and reengineering of business processes, the research team selected private sector domestic banks as the population of this study. Out of 26 private sector banks in Pakistan, the research team chose 5 banks to approach, including 2 privatized banks and 3 private banks as categorized by the State Bank of Pakistan (2007) to distribute 1,868 questionnaires among their employees all over Pakistan using the stratified random sampling method. With a response rate of 17%, the research team received 315 valid responses, which became the sample size of this study. A sample of 315 met the minimum sample size criteria of 100 for a factor analysis, 10 times the number of the variable of study for a regression analysis and 10 times the number of items in the construct for partial least squares analysis (Gefen et al., 2000; Hair et al., 1992; Roscoe, 1975).

Procedure

The research team used Structural Equation Modeling to test the hypothesized relationship between the variables in the business process orientation model. Based on past research (Sajjad, 2008; Gefen et al., 2000), this study used the partial least squares (PLS) method to test the model. PLS is a second-generation SEM method used to test the model in a single run (Gefen et al., 2000).

ANALYSIS AND RESULTS

Table 1 reveals the demographic profile of the respondents.

Table 2. Reliability statistics of scales.

Constructs/Variables	Number of items	Cronbach's alpha coefficient	Guttman split-half coefficient
Business process orientation			
Process view	5	0.74	0.67
Process jobs	3	0.64	0.58
Process management and measurement systems	7	0.81	0.78
Process Innovation	3	0.73	0.60
Business process efficiency			
Paperwork	3	0.76	0.67
People	2	0.62	0.62
Duplication	3	0.77	0.68
Approvals	3	0.76	0.70
Time	3	0.74	0.65
Cost	3	0.75	0.66
Information systems	3	0.82	0.72
Employee performance			
Organizational commitment	3	0.81	0.68
Esprit de Corps	6	0.69	0.67
Organizational performance			
Competitiveness	3	0.77	0.71
Innovation	4	0.90	0.90
Learning and Growth	3	0.81	0.70

Source: Field data.

Reliability and validity

The research team computed Cronbach's alpha and Guttman split-half coefficients to assess the reliability of the scale (Decoster, 2005) as shown in Table 2.

The values for both the coefficients were above or near to the minimum acceptable value of 0.6 in all cases, which confirms the reliability of the scale.

The research team extracted the dimensions of variables from past studies and finalized the instrument by incorporating expert opinion to ensure the face and content validity of the scale (Kumar, 2007). To confirm construct validity, the researcher compared the results with those of past literature. Furthermore, the research team used factor analysis to confirm the unifactorial variables.

The research team examined the symmetry of the sample distribution by computing skewness and kurtosis statistics. All of the values lie well within the recommended range of prescribed limits of ±2, thus ensuring the normality of the data. Table 3 presents the univariate statistics for the shape of the distribution.

To check the assumptions regarding factor analysis, the research team analyzed the inter-variable correlation pattern. All variables were reasonably correlated that is greater than 0.3 and less than 0.8 (Field, 2005). Furthermore, the research team analyzed the data for multicollinearity and singularity. The reasonable value of the determinants of the correlation matrices, which were greater than 0.00001 for the different variables, confirmed that the data did not suffer from multicollinearity or singularity (Field, 2005).

To further analyze the preconditions of factor analysis, the research team computed measures of sampling adequacy (MSA), performed the Kaiser-Meyer-Olkin (KMO) test and completed Bartlett's Test of Sphericity. The measure of sampling adequacy was greater than 0.5 for individual variables and for the set of variables. The Kaiser-Meyer-Olkin measure was greater than 0.5 for all variables. The value of Bartlett's Test of Sphericity was significant (less than 0.05) for all variables. All these values ranged within the recommended limits (Hutcheson and Sofroniou, 1999; Kaiser, 1974; Field, 2005).

After checking the assumptions of the factor analysis, the research team conducted principal component factor analysis to obtain a factor solution. An iterative process method was used that involved repeating the factor analysis process to achieve the best factor solution. As a result, a total of 36 items were extracted out of 57 items.

In order to confirm convergent and discriminate validity,

Table 3. Univariate statistic for shape of distribution.

Constructs/Variables	Skewness	Kurtosis
Business Process Orientation		
Process View	-0.474	-0.058
Process Jobs	-0.557	0.267
Process Management and Measurement Systems	-0.512	0.082
Process Innovation	-0.623	-0.121
Business Process Efficiency		
Paperwork	-0.124	-0.662
People	-0.261	-0.772
Duplication	0.014	-0.743
Approvals	-0.310	-0.584
Time	-0.009	-0.665
Cost	-0.208	-0.604
Information Systems	-0.738	0.031
Employee Performance		
Organizational Commitment	-0.477	-0.355
Esprit de Corps	-0.413	-0.701
Organizational Performance		
Competitiveness	-0.591	-0.076
Innovation	-0.599	-0.396
Learning and Growth	-0.395	-0.542

Source: Field data.

the research team computed composite reliability and average variance extracted (AVE) for the revised variables by using visual partial least square (VPLS) version 1.04. All of the revised variables exhibited either greater than minimum or nearly equal to minimum acceptable composite reliability of 0.6 and AVE of 0.4, which confirmed the convergent reliability of the variables (Diamantopoulos and Siguaw, 2000. The pattern of the factor loading of each item as compared to the cross-loadings of other variables' items and the comparison between the square root of the AVE and inter-variable correlations, ensured the discriminate validity of the variables (Vlachos et al., 2008; Bhattacherjee and Sanford, 2006; Pavlou and Gefen, 2004).

Descriptive analysis

Figure 2 presents the mean values of the variables. The mean value of all the variables is greater than 3.5 except for business process efficiency, which has the lowest mean of 2.82. The higher mean value of BPO, BPI, OP and EP indicates the better implementation of the business process orientation concept by the banks, which yields innovation and better performance. The lower value of BPE signifies that the banks still need to improve on its efficiency of business processes.

TESTING THE MODEL OF EMPLOYEE AND ORGANIZATIONAL PERFORMANCE

The research team used both linear regression and the PLS methods to test the business process orientation model. The research team checked the assumptions of normal distribution, the linear relationship of the variables and the homogeneity of variances. The main objective of the study was to test the proposed model of employee and organizational performance. Both the linear regression and the PLS techniques were used to test the model, as explained in the subsequent sections.

Linear regression method

The research team used the linear regression method to test the hypothesized relationships between the constructs of the model. This approach is consistent with past research (Sajjad, 2008; Lee et al., 2003; Nilson, 2005; Morris et al., 2005). The following assumptions of the linear regression were checked using both descriptive statistics and graphical methods so that the results of regression can be confidently interpreted. 1) Normal distribution of errors. 2) Linear relationship of variables. 3) Homogeneity of variance (Homoskasidicity).

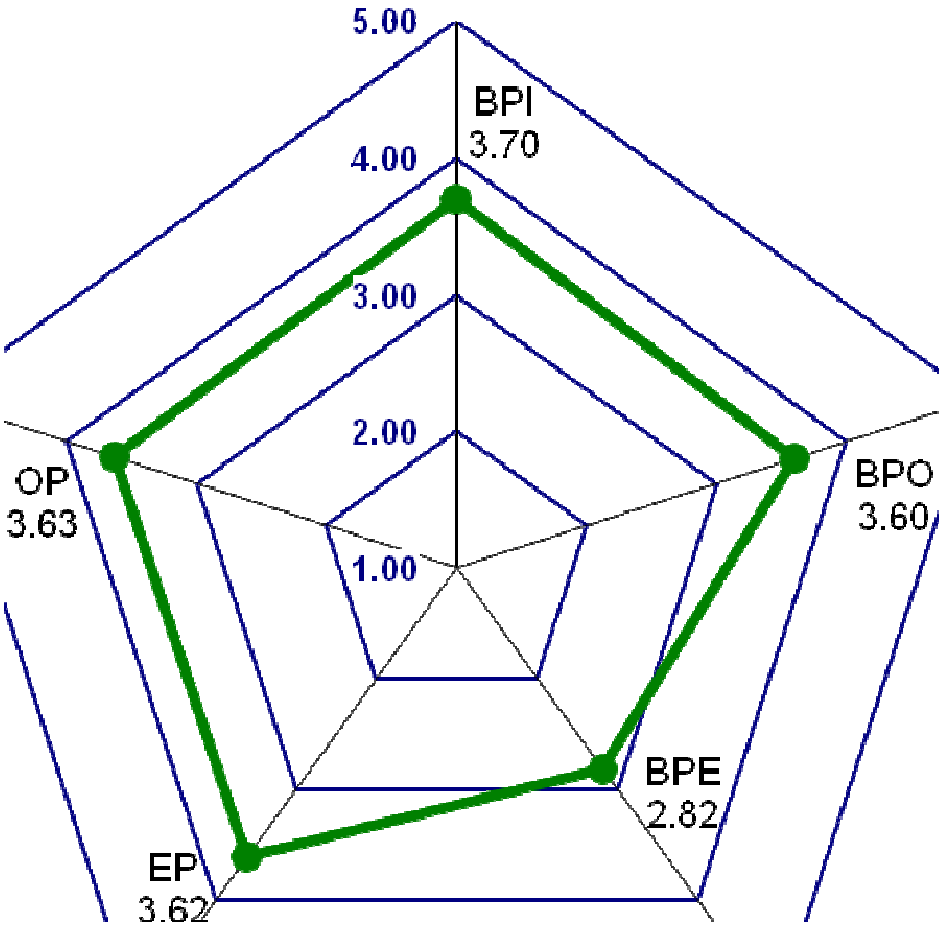

Figure 2. Graphical representation of mean values of variables.

Since the sample data were cross-sectional, the assumption of independence was not checked. In cross-sectional data, the assumption of independence is irrelevant because the data are not collected in any meaningful sequence (Carver and Nash, 2000).

Model testing

The research team used both the regression method and the partial least squares (PLS) method to test the proposed model consistent with past studies (Abdi, 2007; Sajjad, 2008; Srite, 2006; Bhattacherjee and Sanford, 2006).

With the regression method, the research team used the coefficient of determination (R^2) and standardized regression coefficients (β) to measure the strength of the relationship between the variables (McCormack, 1999, 2001). Figure 3 reveals the strength and direction of the relationship in the business process orientation model.

The relationship between the different constructs of the proposed model is significant ($p < 0.01$) and positive.

Furthermore, the research team used the bootstrapping technique of PLS to confirm the relationship between the variables (Abdi, 2007; Gefen et al., 2000; Calantone et al., 2006; Sajjad, 2008).

Table 4 reveals the bootstrap PLS results for structural model using visual partial least squares (VPLS) version 1.04.

The results are consistent with the output of the linear regression method, as there is a significant relationship ($p < 0.05$) between all of the variables, as proposed in the model. Based on the results of both the linear regression method and the PLS method, all of the hypotheses (H_1-H_7) are accepted.

DISCUSSION AND CONCLUSION

The statistically significant and positive relationship between business process orientation and organizational performance are consistent with past research (McCormack, 1999; Skrinjar et al., 2008). The strength of this relationship is weaker ($R^2 = 0.074$, $\beta = 0.272$) than that indicated by the values of similar parameters ($R^2 = 0.135$, $\beta = 0.279$) computed by McCormack (1999) and

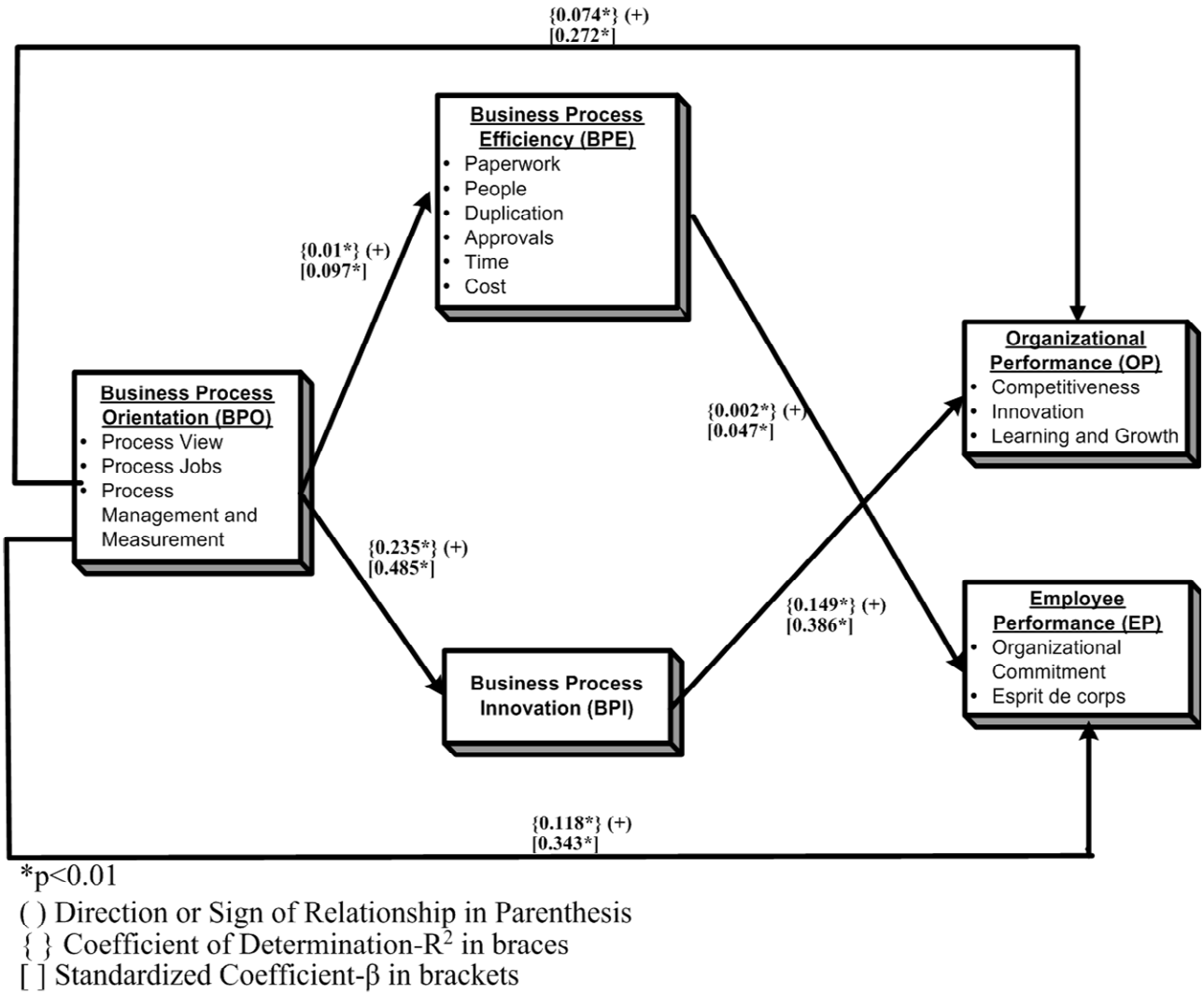

Figure 3. Testing the business process orientation model.

Table 4. Bootstrap-structural model.

	Entire sample estimate	Mean of sub-sample	SE	t-statistic
BPO-BPE	0.19	0.1951	0.0557	3.377
BPO-BPI	0.48	0.4801	0.0425	11.2041
BPO-OP	0.30	0.3059	0.0489	6.1548
BPO-EP	0.50	0.5052	0.0382	13.0753
BPE-EP	0.10	0.1045	0.0651	1.5059
BPI-OP	0.36	0.3594	0.0585	6.1572

Source: Field data.

Skrinjar et al. (2008). This study also indicates a statistically significant and positive relationship between business process orientation and employee performance, consistent with past studies (McCormack, 1999, 2001a). The strength of this relationship is weaker (R^2 = 0.118,B = 0.343), compared to the results indicated by (R^2 = 0.135, β = 0.5) McCormack (1999) and McCormack (2001a) studies. The findings reveal an emphasis on process orientation in business as intended to improve employee and organizational performance in the banking sector of

Pakistan.

This study reveals a significant and positive relationship between business process orientation and business process efficiency, as is consistent with theoretical studies (Skrinjar et al., 2008; Tenner and Detoro, 2000; Zaheer et al., 2008a; Hammer and Champy, 1993; Harrington, 1991; Harrison and Pratt, 1993; Cook, 1996; Sethi and King, 2003).

Business process orientation is also a good predictor of business process innovation, as revealed by the significant and positive relationship indicated. This is consistent with past theories (Davenport, 1993; McCormack and Johnson, 2001; Harrington, 1991; Singh et al., 2008).

This study reveals a significant and positive relationship between business process efficiency and employee performance, consistent with past theoretical studies (Certo, 2001; Hammer and Champy, 1993; Luthans, 1997; Pangarkar and Kirkwood, 2008; Roy, 2005). The significant positive relationship between business process innovation and organizational performance also supports the results of past theoretical research (Deshpande et al., 1993; Lin and Chen, 2007; Han et al., 1998; Davenport, 1993; Pinho, 2008; Carmon and Jose, 2008; Pitt and Tucker, 2008).

In summary, this study supports the conceptual model of business process orientation as intended to improve employee and organizational performance based on field data and statistical results. Business process orientation helps to improve performance directly and indirectly. Process-oriented businesses tend to perform well because of enhanced efficiency and support for innovation.

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Full Length Research Paper

Delivering quality service to in- and out-patients in a South African public hospital

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The evaluation of public healthcare is important for customers, healthcare providers and society. Understanding the determinants of healthcare satisfaction will lead to improvement of healthcare quality in developing countries. In this study in-patient and out- patients' expectations, perceptions and satisfaction with the responsiveness provided by a public healthcare provider in South Africa is measured by using an adapted version of SERVQUAL (service quality). The major findings were that all patients demand excellent responsive levels but none of these were met, resulting in dissatisfaction. Overall patients were least satisfied with reasonable waiting time for the dispensing of medication as well as reasonable waiting time for treatment. The findings of this study could be used to guide public hospitals in general to render healthcare programs that are more patient-centered and to increase their efficiency in a context of scarce resources.

Key words: Service quality, public healthcare, responsiveness, in- and out-patients.

INTRODUCTION

Services are becoming an increasingly important element of national economies and it is crucial to appreciate the distinguishing qualities of services and resulting management implications with specific focus on healthcare services. Public healthcare organisations all over the world are increasingly concerned about their insufficient financial resources and their ability to meet social obligations (Ramani, 2004:212). Increasing financial aid alone will not improve healthcare systems, but drastic restructuring with sound government and management principles need to be implemented. The organizational structures of public healthcare providers must facilitate the delivery of a responsive and flexible healthcare system that is people centered with the interest of the public, patients and clients guiding the decision making at all levels (Downey-Ennis and Harrington, 2002:316). In reaction to patients' and other role-player's increasing expectations regarding the quality of healthcare, this industry should implement more business-like practices (Robinson and Lefort, 2000:112). Healthcare organisations in developed (Willcocks and Conway, 2000:310) as well as developing countries (Andaleeb, 2001:1360; Raghavan-Gilbert, Phillips and Gilbert, 1998:792) seem to realize that marketing principles and concepts could and should be embraced.

The delivery of quality healthcare services and the integration thereof in healthcare policies are concerns in various health organisations across the world (James, 2005). In the past decade in particular, patient satisfaction has become an important performance measure and outcome of healthcare services (Sohail, 2003; Zineldin, 2006; Akter, Hani and Upal, 2008). Researching healthcare service quality is vital to ensure a high quality of care and patient satisfaction and to maximise the benefits of scarce resources, although this research results are still limited in South Africa (Wouters, Heunis, van Rensburg and Meulemans, 2008). Determining the factors associated with patients' satisfaction is thus critical for public healthcare providers in order to understand what is valued by patients, how the quality of care is perceived by the patients and to know where, when and how service changes and improvements could be made. This article reviews the relevant literature on service marketing in public healthcare, service quality in public healthcare followed by a discussion of the research

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methodology applied to determine the service quality delivered in a government - controlled hospital in South Africa. The main results of this study are summarised and relevant management implications are highlighted.

SERVICE MARKETING IN PUBLIC HEALTHCARE

There are various definitions of what constitutes a service. Contemporary definitions agree that a service in itself delivers no tangible output, although it may facilitate the production of tangible products (Palmer, 2008). Armstrong and Kotler (2003) define a service as any act or performance that one party can offer to another that is essentially intangible and does not result in the ownership of anything. Services are also described as “deeds, performances or efforts that cannot be physical possessed (Lamb, Hair, McDaniel, Boshoff and Terblanche, 2004). Services have unique features that differentiate it from goods namely: intangibility, inseparability, heterogeneity and perishability (Parasuraman, Zeithaml and Berry, 1985; Palmer 2008). Kotler, Armstrong, Wong and Saunders (2008) stresses that a company must consider and “cash in” on these special service characteristics (that includes the SERVQUAL constructs) when designing marketing programs. Smart services businesses, just like manufac-turing businesses use marketing to position themselves or their brands more strongly in chosen markets. Kotler and Andreasen (1996) points out that each of the service characteristics poses a special problem for the management of service offerings and should be converted into challenges when designing the final service offerings. For example, one has to bear in mind that the intangibility of services results in high risk and difficulty for consumers to evaluate the quality causing them to rely on personnel information sources, physical evidence and price rather than the core service. Service organisations in return may react to this (in their marketing efforts) by focussing on physical evidence (thus making the intangible, tangible) and service quality (Palmer, 2008). The physical evidence for example may include focussing on “atmospherics”, meaning the way the service providers are dressed, could be utilized to create a favourable image of the company in the minds of the customers. This causes a helpful tool in the marketing process. Service providers in the public healthcare sector should also understand the strategic- and management implications as a result of how to deal with these characteristics. Service marketers can also make their companies efforts tangible by leaving behind a concrete sign of their efforts (Kotler and Andreasen, 1996). In the case of public hospitals the good work of the staff members (e.g. successful medical procedures) could be displayed in the media (e.g. community newspapers) in order to create loyalty amongst the community members. This in return eases the task of the marketers.

A further challenge for managers and service providers in public healthcare arises from the fact that these services are provided by public originations. The application of marketing to public services is unique and challenging compared to services in the private sector (Palmer, 2008). In the public sector the choice of the buyers and sellers is much more limited. In public healthcare, patients will only receive treatment at the hospital where they are designated. Furthermore, public healthcare organisations at various levels serve specific areas and needs as determined by the policy of the South African government. The aim of the public sector is not to earn a profit for services provided and it does not operate within narrow internal financial goals, however its goals are more diverse with various external stakeholders. Public managers have relatively limited discretion regarding the standards and ways of service delivery based on legislation and policies of the government. In South Africa, quality public service delivery is the focus of the White Paper on the Transformation of Public Services (Republic of South Africa, 1995) and it is guided by the Batho Pele (a Sotho word meaning “People First”) principle. This philosophy serves as guide for public service delivery in South Africa and demands that patients should be at the centre of healthcare service delivery that is capable of equally satisfying the healthcare needs of all South Africans. Continuous evaluation of the quality delivered by public healthcare organisations in South Africa is therefore essential to ensure that the policies of government is effectively and efficiently implemented (Arries and Newman, 2008).

SERVICE QUALITY IN PUBLIC HEALTHCARE

Grönroos (1984) was the first who attempted to define and explain service quality and differentiated between the process of delivery (functional quality), which relates to the perceived quality and the actual output of the service (technical quality), which relates to objective quality. Technical quality in healthcare refers to the accuracy of diagnosis and procedures and functional quality refers to the manner of delivery of healthcare. Sohail (2003) is of the opinion that service quality is primarily shaped by functional quality, because patients often find it difficult to assess the technical quality. Service quality, unlike product quality, is more abstract and elusive because of the features unique to services and is therefore difficult to evaluate and measure. Evaluating the quality of service can be complicated due to the following reasons (Lamb et al., 2004). Firstly, services have fewer search qualities that can easily be assessed before a use or purchase. Healthcare is characterised by high involvement of consumers due to the higher risk in terms of outcomes, yet it requires the complete involvement of these customers during the service production and delivery process (Palmer, 2008). This implies that the quality of

the process and outcome is of equal importance. Secondly, services tend to exhibit more experience qualities that can only be assessed after use, such as the quality of medical consultation and treatment resulting in better health. Lastly, services tend to exhibit more credence qualities that consumers may have difficulty assessing, even after the purchase, because they may not have the necessary knowledge or experience. For instance, even after undergoing surgery, a patient may be unable to assess whether the quality of service received was satisfactory.

Quality within healthcare service delivery refers to services that meet set standards, implying excellence, and satisfy the needs of both consumers and healthcare practitioners in a way that adds significant meaning to both parties' healthcare experiences (Arries and Newman, 2008). Zineldin (2006) advocates that quality healthcare should be regarded as the right of all patients and ought to be the responsibility of all the staff within healthcare organisations. Internationally, healthcare quality is still a concern for various healthcare stakeholders (e.g. decision makers and patients) as reflected by the various studies recently published (Sohail, 2003; Zineldin, 2006; Akter, Hani and Upal, 2008). The most popular model of service quality is SERVQUAL (service quality), a set of 22 structured and paired questions designed to assess customers' expectations of service provision and customers' perceptions of what was actually delivered. This instrument is structured in five dimensions, namely: Tangibles, Reliability, Responsiveness, Assurance, Empathy: (Parasuraman et al., 1985). SERVQUAL is widely used by academics and practitioners to measure service quality including numerous studies on service quality in healthcare (Akter, Hani and Upal, 2008; Sohail, 2003). Zineldin (2006) explored how patients in Egypt and Jordan evaluate the quality of healthcare and comment that health quality models applied in the West are not necessary applicable in developing countries. This study consequently identified the health attributes found to be appropriate for hospitals in Egypt and Jordan. Two existing models, namely the technical/functional and SERVQUAL quality models, were adopted to develop a new five quality (5Q) model for healthcare. It includes technical, functional infrastructure, interaction and atmosphere qualities and services. This study measured patients' satisfaction with the quality of service delivered at a number of public and private hospitals in Egypt and Jordan. Akter, Hani and Upal, (2008) assessed the service quality and satisfaction in suburban public hospitals in Bangladesh. They adopted and applied SERVQUAL to measure the difference between patients' expectation and perception of delivered service on the following dimensions of service quality: responsiveness, assurance, communication, discipline (adherence to rules and regulations) and baksheesh (additional compensation). It was found that the majority of suburban public hospitals do not meet the patients' expectations on all these dimensions resulting in dissatisfaction.

Two of the recent studies on service quality in the healthcare sector in South Africa include those by Wouters, Heunis, van Rensburg and Meulemans (2008) and Arries and Newman (2008). Wouters, at al. (2008) evaluates patient satisfaction with antiretroviral services at primary healthcare facilities in South Africa in a longitudinal study. In this study, high levels of patient satisfaction were found despite the limited human resources available. Arries and Newman (2008) conducted qualitative research to explore out-patients' experiences of the quality of services delivered at a public hospital in Gauteng. It was found that outpatients reported positive experiences with the medical staff, specifically the doctors, while they had negative experiences with the lack of service orientation of (especially the nursing staff), unethical situations, and frustrating inter-personal relationship difficulties. The study for this paper was not a qualitative study similar to that of Arries and Newman (2008). Quantitative methodology was applied by interviewing in-patients as well as out-patients at a training hospital in Gauteng. The questionnaire used in this study also differentiate clearly between services provided by doctors, nurses as well as non-medical staff in order to evaluate the performance of every group as experienced by the patients. SERVQUAL was used in the study to measure in- and out-patients' expectations, perceived performance and satisfaction with the responsiveness provided by a large public hospital in Gauteng.

HYPOTHESIS

Three primary hypotheses are tested namely:

Hypothesis 1

Ho1: There exist no significant differences between in-patients and out-patients regarding their expectations of the hospital's responsiveness construct.

If the Ho hypothesis is accepted then it can be assumed that equality exists amongst in-patients and out-patients and that all patients expect the same level of treatment with regards to responsiveness. On the other hand, if the Ho hypothesis is rejected it is assumed that in- and out-patients inequality exists in terms of their expectations.

Hypothesis 2

Ho2: There exist no significant differences between impatients and out-patients regarding the perceived performance of the hospital in terms of responsiveness.

If the Ho hypothesis is accepted then it can be assumed that equality exists amongst in- patients and out-patients and that all patients perceived the performance of the hospital on the same level regarding the responsiveness of the hospital. On the other hand, if the Ho hypothesis is rejected it is assumed that in-patients and out-patient inequality exists in terms of the perceived performance of the hospitals services.

Hypothesis 3

Ho3: There exist no significant differences between in-patients and out- patients' satisfaction levels with regard to the hospital's responsiveness respectively.

If the Ho hypothesis is accepted then it implies that the expectations of patients are met, leading to a feeling of satisfaction. On the other hand, if the Ho hypothesis is rejected, then it is assumed that patients' expectations are not met and this may lead to a feeling of dissatisfaction. The null hypothesis is tested at a 0.05 significance level.

PURPOSE AND OBJECTIVES OF THE RESEARCH

The purpose of this paper is to examine responsiveness as a determinant of service quality in a government-controlled hospital in South Africa. The objectives of this study are twofold namely:

- To determine if equality exists between in-patients and out-patients for the service responsiveness provided to patients in a government-controlled hospital in South Africa (perceived performance).
- To determine whether the expectations of in-patients and out-patients are met (satisfactory) terms of how hospital staff responds to their needs in terms of the responsiveness variables.

In-patients refer to patients admitted to the hospital and out-patients refer to patients who receive medical consultation and/or treatment without being admitted. The service responsiveness content under investigation includes the following constructs: Prompt service during registration/admission; reasonable waiting time for treatment; reasonable waiting time for the dispensing of medication; responsiveness to complaints; speediness of services by medical staff; proper explanation of hospital procedure (what to do and where). The most outstanding items will however be discussed.

RESEARCH METHODOLOGY

The research methodology that was followed for this investigation is consequently explained. The data analysis illustrates the levels of importance, perceived performance and consequently satisfaction (dissatisfaction) of one of the dimensions of the service quality dimensions for in-patients and out-patients of the hospital namely, responsiveness.

The SPSS version 17.0 statistical package was utilised to analyse the data. For this analysis the Kolmogorov-Smirnov Test was employed based on the assumption that if the significant values exceeded 0.5, normality could not be assumed and the researchers had to rely on employing non-parametric analysis techniques. As normality could not be assumed after applying the Kolmogorov - Smirnov Test the researchers employed the Kruskall Wallis test to test the null hypothesis and the alternative hypothesis that there exists no significant difference between the levels of importance and satisfaction between the two groups (in-and out-patients) respectively and that there exists significant differences between the groups of patients.

The sample framework, measuring instrument and data collection and analysis

A service satisfaction survey was conducted in 2007 amongst patients treated at a provincial hospital in Gauteng, South Africa. The perceived performance of the hospital by its patients was tested regarding pre-identified service quality aspects related to healthcare. A total of 448 patients (205 in- and 242 out-patients) were personally interviewed during the research. Although an attempt was made to select the patients randomly it was not always possible due to patients that were not able and/or willing to complete the questionnaires. In such cases substitutes were selected to overcome the problem of non-responses.

The expectations and perceptions of in-patients and out-patients regarding the hospital's responsiveness services is reported in this paper. The two dimensions (expectations and perceived performance) represent a mirror-image of each other. A five-point Likert type scale was used to measure the levels of perceived performance of the hospital as well as the expectation levels of the patients. Respondents were asked to indicate their evaluation on the scales in which 1 = Very important (Excellent) and 5 = Not important at all (Not good at all).

A total of 6 items were used to measure the responsiveness related variables as offered by the hospital. An item analysis was carried out to test the validity and the reliability of the questionnaire and an overall Cronbach coefficient Alpha of 0.91254 and 0.9163 were measured for expectations and performance respectively. Data was captured by a trained assistant and analysed using the SPSS version 17 statistical package. Data was analysed after grouping the list of 53 pre-identified service related variables into five service related groupings. Only the responsiveness dimension was utilized and adapted for the purpose of the study and were analysed for this paper.

FINDINGS OF THE STUDY

The service responsiveness content under investigation includes the following constructs: prompt service during registration/admission; reasonable waiting time for treatment; reasonable waiting time for the dispensing of medication; responsiveness to complaints; speediness of services by medical staff; proper explanation of hospital procedure (what to do and where).

The patients reported fairly high expectations on all the responsiveness variables (Table 1). This clearly signals that all patients demand excellent responsive levels. The two most important issues (in terms of their expectations) for patients in general were: Proper explanation of

Table 1. Test for differences with regard to expectations on responsiveness constructs.

Responsiveness:	n	In-patients		Out-patients		Total patients		Sig. p value
		Mean	Std.	Mean	Std.	Mean	Std.	
Prompt service during registration/admission V 36	448	1.93	1.11	1.71	0.97	1.832	1.05	0.022
Reasonable waiting time for treatment V 37	448	1.96	1.17	1.82	1.07	1.95	1.12	0.198
Reasonable waiting time for receiving medicine V 38	448	1.82	1.13	1.9	1.17	1.854	1.15	0.422
Responsiveness to complaints V 39	448	2.07	1.54	2.27	1.47	2.166	1.50	0.031
Speediness of services by medical staff V 40	448	1.89	1.3	1.75	1.05	1.832	1.2	0.029
Proper explaining of hospital procedure (what to do and where to go)	448	1.9	1.12	1.7	1.04	1.811	1.1	0.022

*Significant on 0.95 level, Std = standard deviation.

Table 2. Test for significant differences with regard to perceived performance on responsiveness constructs.

Responsiveness:	n	In-patients		Out-patients		Total patients		Sig.
		Mean	Std.	Mean	Std.	Mean	Std.	
Prompt service during registration/admission V 89	448	2.58	1.36	2.7	1.3	2.633	1.33	0.185
Reasonable waiting time for treatment V 90	448	2.68	1.36	2.93	1.4	2.85	1.39	0.054
Reasonable waiting time for receiving medicine V 91	448	2.5	1.37	3.12	1.51	2.794	1.47	0.001
Responsiveness to complaints V 92	448	2.67	1.54	3.37	1.63	2.986	1.62	0.001
Speediness of services by medical staff V 93	448	2.48	1.33	2.46	1.22	2.472	1.29	0.824
Proper explaining of hospital procedure (what to do and where to go)	448	2.39	1.23	2.4	1.3	2.391	1.26	0.74

*Significant on 0.95 level, Std = standard deviation.

hospital procedure (what to do and where to go) and speediness of services by medical staff. Interesting to note is that the perceived performance of the hospitals' services (Table 2) was in the same sequence, implying that satisfaction was met in terms of the rank. However, if the mean is used as an indication, then satisfaction was not met as the means of expectations were lower than the perceived performance. In-patients' expectations of the two most preferred variables were significantly higher compared to those of out-patients. The overall least preferred variable in the responsiveness category was responsiveness to complaints. Significant differences were measured between in-patients and out-patients with out-patients rating it significantly less important that in-patients.

A non-parametric test procedure was used to compare the patients' expectations regarding the responsiveness variables with their perceived performance of the hospital, as experienced by the sample as a whole. The test computes the differences between the mean values of two variables for each case and tests whether the average differs significantly from 0.0. This test could be used as the observations for each variable pair were made under the same conditions. The aim was to determine whether performance on responsiveness matches the expectations of patients or not (table 3). Significant differences exist between expectations and perceived performance for both in-patients and out-patients on all responsiveness variables. This is an indication that expectations have not been met. The overall smallest deviation between expectations and perceived performance is measured in terms of proper explanation of hospital procedure where in-patients are less dissatisfied with this variable compared to out-patients. This variable was rated first in terms of expectations as well as their perceived performance of the hospitals' services. The overall second smallest deviation between expectations and perceived performance is the speediness of services provided by medical staff. Again, in-patients were less dissatisfied with this service. The variable in this category that was perceived as most dissatisfactory was reasonable waiting time for the dispensing of medicine. Out-patients indicated the highest level of dissatisfaction with regard to this variable. This variable was rated relatively important in terms of expectations.

Table 3. Test for significant differences between expectations and perceived performance of responsiveness.

Responsiveness:	In-patients				Out-patients				Total patients		
	Em	Pm	Em - Pm	Sig.	Em	Pm	Em-Pm	Sig.	Em	Pm	Em-Pm
Prompt service during registration/admission V 36-	1.53	2.58	-1.05	0.0001	1.71	2.7	-0.99	0.0001	1.83	2.63	-0.83
Reasonable waiting time for treatment V 37 – 90	1.93	2.68	-0.75	0.0001	1.82	2.93	-1.11	0.0001	1.9	2.8	-0.95
Reasonable waiting time for receiving medicine V 38 – 91	1.96	2.5	-0.54	0.0001	1.9	3.12	-1.22	0.0001	1.85	2.79	-0.946
Responsiveness to complaints V 39 – 92	1.82	2.67	-0.85	0.0001	2.27	3.37	-1.1	0.0001	2.16	2.98	-0.824
Speediness of services by medical staff V 40 – 93	2.07	2.48	-0.41	0.0001	1.75	2.46	-0.71	0.0001	1.83	2.47	-0.642
Proper explaining of hospital procedure (what to do and	1.89	2.39	-0.5	0.0001	1.7	2.4	-0.7	0.0001	1.81	2.39	-0.581

Em = Expectations mean,Pm = Perceived performance mean, Significant on 0.95 level.

Conclusion and Management Implications

The primary purpose of this paper is to examine responsiveness as a determinant of service quality in a government - controlled hospital in South Africa. The objectives of this study are twofold namely: To determine if equality exists between in-patients and out-patients for the service responsiveness provided to patients in a government-controlled hospital in South Africa (perceived performance); and to determine whether the expectations of in-patients and out-patients are met (satisfaction) terms of how hospital staff responds to their needs in terms of the responsiveness variables.

The results of the investigation hold important implications for future planning and development in the South African healthcare industry, and more specifically at public hospitals. Service managers should take cognisance of the most important service quality issues identified in this investigation. These issues, (in terms of patients' expectations) in general were: Proper explaining of hospital procedure (what to do and where to go) and speediness of services by medical staff. Coincidently, the order in which they perceived the performance of the hospitals' services was exactly in the same sequence. However, further measurements confirmed that satisfaction was not met. Consequently, it is important to communicate these findings to the respective individuals or groups that are responsible for satisfying customer needs, in particular at public hospitals.

The importance of these findings lies incontrovertibly therein that they prospectively contribute towards a constructive paradigm shift that espouses the benefits of an improved perception of service delivery, especially, but not necessary limited to the public health sector.

Based on the findings of this study it can be recommended that the public health sector should consist of investment in, firstly, an analysis of patients' perceptions of the performance of a hospital on an ongoing and formalised basis and secondly, proper staff and management training sessions. With regard to specific outcomes, service managers should be aware of the various gaps in performance in the responsiveness dimension, such as proper explanations of hospital procedure.

In conclusion, the findings of this study clearly identifies important positive and negative perceptions regarding the healthcare services provided by the hospital under examination and substantiate the conclusion that it is imperative the hospital management take the necessary measures to improve the perceived performance of the hospital. A different approach should be considered and implemented to satisfy the needs of in-patients and out-patients as significant differences exist between the two groups.

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Full Length Research Paper

Achieving competitive supply chain through business process re-engineering: A case from developing country

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Recent business development in the light of increased competition has caused many companies to explore new drivers in order to remain competitive. In this context, business process re-engineering is the key to the successful implementation of effective supply chain management which has become a potentially valuable way of securing competitive advantage. This paper presents the characteristics of business re-engineering effort and how business process modeling can be used for these purposes. Effective supply chain management requires a high degree of coordination and information sharing between partners in the supply chain. The main idea was to show through business process modeling how the business process re-engineering of existing process needs to follow the introduction of new information technologies into organizations to improve information sharing. This paper will show that only harmonized implementation of information technology and business process re-engineering will bring to the effective supply chain management and full improvement of companies competitiveness.

Key words: Supply chain management, business process re-engineering, business process modeling, competitiveness, case study.

INTRODUCTION

In the 1980s companies discovered new manufacturing technologies and strategies that allowed them to reduce costs and better compete in different markets. In the last few years, however, it has become clear that many companies have reduced manufacturing costs as much as is practically possible. Many of these companies are discovering that effective supply chain management is the next step they need in order to increase profit and market share (Simchi-Levi, 2003). In order to compete the effective management of the supply chain is critical.

In today's dynamic market, companies can no longer exploit the traditional drivers in order to remain competitive. The nature of competition has forever changed, and more significant change will occur going forward. Companies can no longer compete by designing, manufacturing and selling a single product, and manufacturing that product in advance to handle anticipated demand. Customer expectations now include both traditional activities associated with warehousing and distribution and new activities like technical support, electronic order processing, and customized financial services. Today's sophisticated customers demand products specifically tailored to their needs, when they need them. Responsiveness to customer needs requires a high degree of coordination and information sharing between partners in a supply chain. Such a revolutionary change in the supply chain requires new information technology (IT) which will be employed to facilitate and accelerate a new set of business processes. A new business processes are gained by renovation of current business practice in order to fully realise the benefits of improved information quality and share. The simply use of IT applications to improve information transfers between supply chain members is not in itself enough to realise the benefits of information sharing. The business models of existing processes have to be changed so as

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to facilitate the better use of the transferred information (Trkman et al., 2007).

A supply chain is the set of business processes and resources that transforms a product from raw materials into finished goods and delivers those goods into the hands of the customer. Supply chain management (SCM) has been defined as "the management of upstream and downstream relationship with suppliers, distributors and customers to achieve greater customer value-added at less total cost" (Wilding, 2003). The understanding and practicing of SCM has become an essential prerequisite for staying competitive in the global race and for enhancing profitability. SCM need to be defined to explicitly recognize the strategic nature of coordination and information sharing between trading partners and to explain the dual purpose of SCM: to improve the performance of an individual organisation, and to improve the performance of the whole supply chain. The goal of SCM is to integrate both information and material flows seamlessly across the supply chain as an effective competitive weapon (Childhouse and Towill, 2003). In this paper we present the business process re-engineering (BPR) as a tool for effective supply chain management, which is the principal determinant of the ability to compete, and illustrate through a case study how business process modelling (BPM) can help in achieving successful improvements in sharing information and the integration of supply chain processes.

SUPPLY CHAIN MANAGEMENT

The objective of supply chain management is to provide a high velocity flow of high quality, relevant information that enables suppliers to provide for the uninterrupted and precisely timed flow o materials to customers. Supply chain excellence requires standardized business processes supported by a comprehensive data foundation, advanced information technology support and highly capable personnel. It needs to ensure that all supply chain practitioners actions are directed at extracting maximum value. Council of Logistics Management (CLM) defines SCM as the systematic, strategic coordination of the traditional business functions and tactics across these business functions within a particular organisation and across businesses within the supply chain for the purposes of improving the long-term performance of the individual organisations and the supply chain as a whole (CLM, 2000).

The concept of SCM has received increasing attention from academicians, consultants, and business managers alike (Tan et al., 2002; Feldmann and Miler, 2003; Croom at al., 2000). Many organisations have begun to recognize that SCM is the key to building sustainable competitive edge for their products and/or services in an increasingly crowded marketplace (Jones, 1998). SCM has been considered as a critical strategy for effectively competing in the 21 century. Successful companies recognizes that with effective SCM they are not only be able to reduce production cost by eliminating non-value added activities, but also to create a new set of market capabilities that are difficult to replicate. However, implementation of a successful supply chain may encounter resisting forces that include lack of SCM actor's support, inadequate measurement and information systems, and organisational culture. Thus successful supply chains can create value contingent on their ability to overcome resisting forces through various mechanisms (Migiro and Ambe, 2008), and BPR may be one of them.

Information sharing

Companies historically have considered information an asset to be hoarded and protected, rather than shared. Sharing information with suppliers, for examples, weakens negotiating positions. Such mentality (silo mentality) also led to large vertically integrated corporations that allowed a company to work closely with a few internal suppliers without having to leave the boundaries of the company. A fundamental shift in the ways in which companies compete is driving a new way of thinking. Today, rather than companies competing against companies, supply chains compete against supply chains. Effective information sharing means that you no longer have to own all the pieces of the supply chain to effectively operate as a single entity. And the ability to form the appropriate partnerships in a timely manner and effectively operate as a single entity allows some supply chains to thrive while others fail (Sturim, 1999).

Information sharing is a key ingredient for any SCM system (Moberg at al., 2002). Many researches have suggested that the key to the seamless supply chain is making available undistorted and up-to-date marketing data at every node within the supply chain (Childhouse and Towill, 2003, 1997). By taking the data available and sharing it with other parties within the supply chain, an organisation can speed up the in-formation flow in the supply chain, improve the efficiency and effectiveness of the supply chain, and respond to customer changing needs quicker. Therefore, information sharing will bring the organization competitive advantage in the long run. The value of information sharing within a supply chain has been extensively analysed by researches. Various studies have used a simulation to evaluate the value of information sharing in supply chains (Towill et al. 1992; Bourland et al., 1996; Chen, 1998; Dejonckheere et al., 2004; Ferguson and Ketzenberg, 2006). The existing literature has in-vestigated the value of information sharing as a consequence of implementing modern IT. However, the formation of a business model and utilization of information is also crucial. Information should be readily available to all companies in supply

chains and the business processes should be structured so as to allow the full use of this information (Trkman et al., 2007). One of the objectives of this paper is to offer insights into how the value of information sharing within case study supply chain is affected when two different models of business process re-engineering are applied.

Time and value adding activity along supply chain

The majority of organisations have a traditional supply chain strategy. In this strategy, each department has its own workspace, and interactions usually occur intra-departmentally. It has been found that within a company whose strategy is of such a traditional form much of the work being executed is non-value-adding. By this, a significant number of the tasks which are carried out are performed more out of procedure than necessity and, had they have been removed, effective output and the general running of the company would not suffer. On the contrary, in fact, the remove such tasks may be beneficial to the company. Over a decade ago, a few companies had been seen to be aware of this and consequently restructured their supply chain to address this matter.

In set up effective SCM, the key factors that need to be focused on are building relationship and creating value. When this is achieved companies become more agile, responsive, and competitive. One of the most significant things in understanding how to build effective SCM is understands of the time dimension of the supply chain. Within supply chains the need for improvement with respect to time-based resource management is receiving increasing recognition. Research indicates that it is not uncommon for the time spent actually “adding value” i.e. doing things that a customer is willing to pay for, to be as little as one tenth of 1% (Wilding, 2003). Value-adding time is characterized using three criteria:

- Whether the process is physically changing the nature of the consumable item (that is the customer’s product/service);
- Whether the change to the consumable item produces something that the customer values or cares about and may be willing to pay for;
- Whether the process is right first time, and will not have to be repeated in order to produce the desired result that is valued by the customer.

Non-value adding activity can be split into three categories: queuing time, rework time and time wasted due to management decisions. A time-based process map can be used to gain transparency of the value adding and non-value adding activities. This map also enables the user to gain transparency of the supply chain process. Example of this time-based process map will be presented in the case study section.

BUSINESS PROCESS RE-ENGINEERING

In re-engineering theories, organisational hierarchies and representation of organisations in terms of different functions are replaced with a process oriented perspective. Organisational structures are redesign by focusing on business processes and their outcome. Business process re-engineering (BPR) may be seen as an initiative of the 1990s, which was of interest to many companies. The initial drive for re-engineering came from the desire to maximize the benefits of the introduction of IT and its potential for creating improved cross-functional integration in companies (Davenport and Short, 1990). Business redesign was also identified as an opportunity for better IT integration both within a company and across collaborating business units in a study in the late 1980s conducted at Massachusetts Institute of Technology. The initiative was rapidly adopted and extended by a number of consultancy companies and “gurus” (Hammer, 1990).

In BPR, a business process is seen as a horizontal flow of activities while most organizations are formed into vertical functional groupings sometimes referred to in the literature as “functional silos”. BPR by definition radically departs from other popular business practices like total quality management, lean production, downsizing, or continuous improvement. BPR is based on efficient use of IT, hence companies need to invest large amount of money to achieve IT-enabled supply chain. BPR is concerned with fundamentally rethinking and redesigning business processes to obtain dramatic and sustaining improvements in quality, cost, service, lead times, outcomes, flexibility and innovation. In support of this, technological change through the implementation of simulation modeling is being used to improve the efficiency and consequently is playing a major role in BPR initiatives (Cheung and Bal, 1998).

BUSINESS PROCESS MODELLING

The business process is a set of related activities which make some value by transforming some inputs into valuable outputs. A business process model is an abstraction of a business that shows how business components are related to each other and how they operate. Its ultimate purpose is to provide a clear picture of the enterprise’s current state and to determine its vision for the future. Modelling a complex business requires the application of multiple views. Each view is a simplified description of a business from a particular perspective or vantage point, covering particular concerns and omitting entities not relevant to this perspective. To describe a specific business view process mapping is used. It consists of tools that enable us to document, analyse, improve, streamline, and redesign the way the company performs its work. Process mapping provides a critical assessment of what

really happens inside a given company.

The aims of using BPM are: (1) to help the BPR team obtain a holistic view of the process under study: (2) to identify areas for improvement; (3) to visualize the impacts and implications of new processes; and (4) to describe the rules that underlie the business process (Kovacic, 2007). The usual goal is to define two process states: AS-IS and TO-BE. The AS-IS state defines how a company's work is currently being performed. The TO-BE state defines the optimal performance level of "AS-IS". In other words, to streamline the existing process and remove all rework, delays, and bottlenecks, there is a need to achieve the TO-BE state. BPM and the evaluation of different alternative scenarios (TO-BE models) for improvement by simulation are usually the driving factors of the business renovation process (Bosilj-Vuskic et al., 2002). In the next section a detailed case study is presented.

A CASE EXPERIENCE OF BUSINESS PROCESS RE-ENGINEERING

The case study is a Serbian oil downstream company. Serbia is an upper-middle income economy by the World Bank, with a GDP at $10,792 per capita for 2008 (World Bank, 2008). The point of the case study is to present methodological approach applied in the company of the one developing country which can be helpful for the companies in other developing countries. Observed company's sales and distribution cover the full range of petroleum products for the domestic market: petrol stations, retail and industries. The company supply chain comprises fuel depot-terminals (distribution centre), petrol stations and final customers. The products are distributed using tank tracks. The majority of deliveries is accomplished with own trucks, and a small percentage of these trucks is hired. The region for distribution is northern Serbia. It is covered by two distribution centres and many petrol stations at different locations. In line with the aim of the paper only a fragment, namely the procurement process, will be shown in the nest section. A broader description of the case study can be found in (Maslaric, 2008). In order to simulate this business process and identify non-value adding activities, a business process models was developed using the iGrafx Process software. Information about the system was collected from workers and interviews with managers and engineers. An increasing number of details were then added to the model and tested repeatedly, which gradually contributed to the development of the simulation model.

AS-IS model development

The next section covers the modeling of the existing situation (AS-IS) in the procurement process of the observed downstream supply chain case study. The objective was to map out in a structured way the distribution processes of the oil company. The AS-IS model was initially designed so that the personnel involved in the distribution processes could review them, and after that the final model shown in Figure 1 was developed.

The core objective of supply chains is to deliver the right product at the right time, at the right price and safely. In a highly competitive market, each aims to carry this out more effectively, more efficiently and more profitably than the competitors. Because both the prices and quality of petrol in Europe are regulated, the main quality indicator in oil supply chains is the number of stocks-outs. The main cost drivers are therefore: number of stock-outs, stock level at the petrol station and process execution costs. Lead time is defined as the time between the start (measurement of the stock level) and the end (either the arrival at a petrol station or the decision not to place an order) of the process (Trkman et al., 2007).

The main problems identified when analysing the AS-IS model relate to the company's performance according to local optimisation instead of global optimisation. The silo mentality is identified as a prime constraint in the observed case study. Other problems are in inefficient and costly information transfer mainly due to the application of poor information technology. There is no optimisation of the performance of the supply chain as a whole. Purchasing, transport and shipping are all run by people managing local, individual operations. They have targets, incentives and local operational pressures. Everything was being done at the level of the functional silo despite the definition that local optimisation leads to global deterioration. The full list of problems identified on tactical and strategic level are identical to those in (Trkman et al. 2007), so for greater detail see that paper. Based on the mentioned problems, some improvements are proposed. The main changes lie in improved integration of whole parts of the supply chain and centralized distribution process management.

TO-BE models development

The emphasis in BPR is put on changing how information transfers are achieved. A necessary, but no means sufficient condition for this is to implement new IT which enable efficient and cheap information transfer. Hence, IT support is not enough as deep structural and organizational changes are needed to fully realise the potential benefits of applying new IT. In this case study we develop two different propositions for BPR (two TO-BE models) to show how the implementation of new IT without BPR and the related organizational changes does not mean the full optimisation of supply chain performance. The first renewed business model (TO-BE 1) is shown in Figure 2 and represent the case of implementing IT without structural

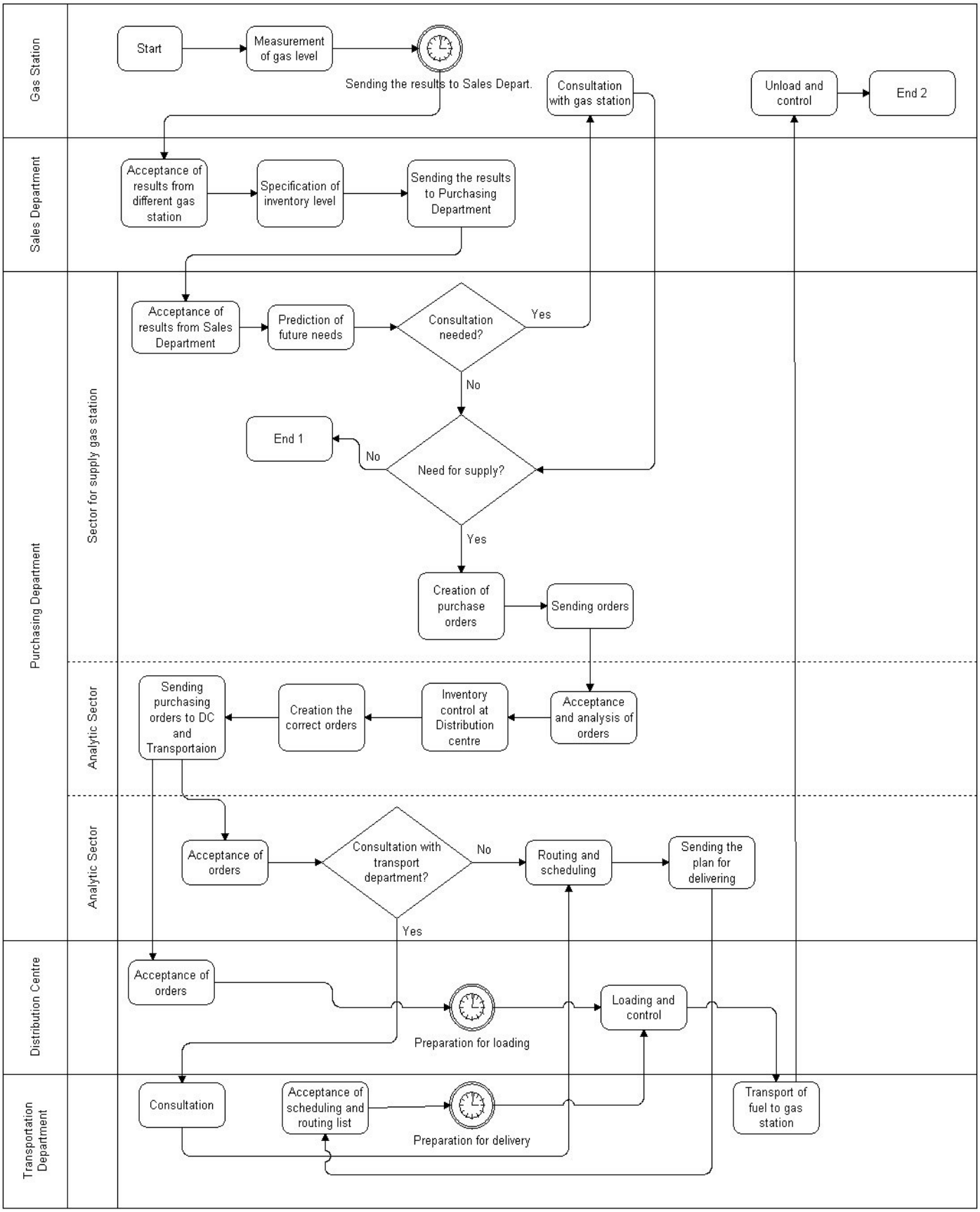

Figure 1. AS-IS model of the process.

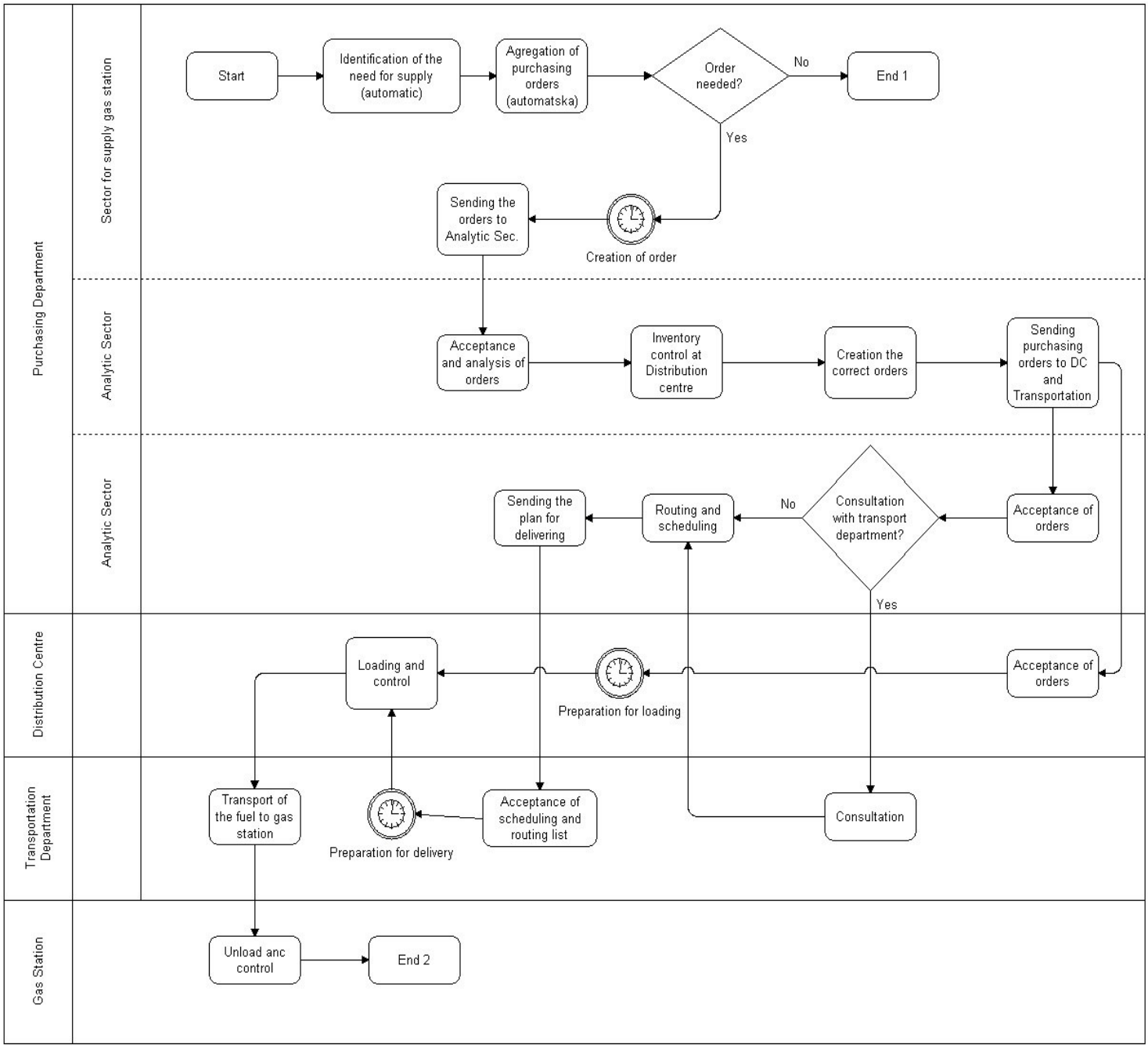

Figure 2. TO-BE 1 model of the process.

changes to business processes. In the TO-BE 1 model, there is no integrated and coordinated activity through the supply chain.

Inventory management at the petrol stations and distribution centre is still not coordinated.

The TO-BE 2 model assumes that the processes in the whole downstream oil supply chain are full integrated and the distribution centre takes responsibility for the whole procurement process. The TO-BE 2 business model is shown in Figure 3.

The main idea is that a new organizational unit within the distribution centre takes on a strategic role in co-ordinating inventory management and in providing a sufficient inventory level at the petrol stations and distribution centre to fulfill the demand of the end customer. It takes all the important decisions regarding orders in order to realise this goal. Other changes proposed in the TO-BE 2 model are the automatic measurement of petrol levels at petrol stations and the automatic transfer of such data to the central unit responsible for petrol

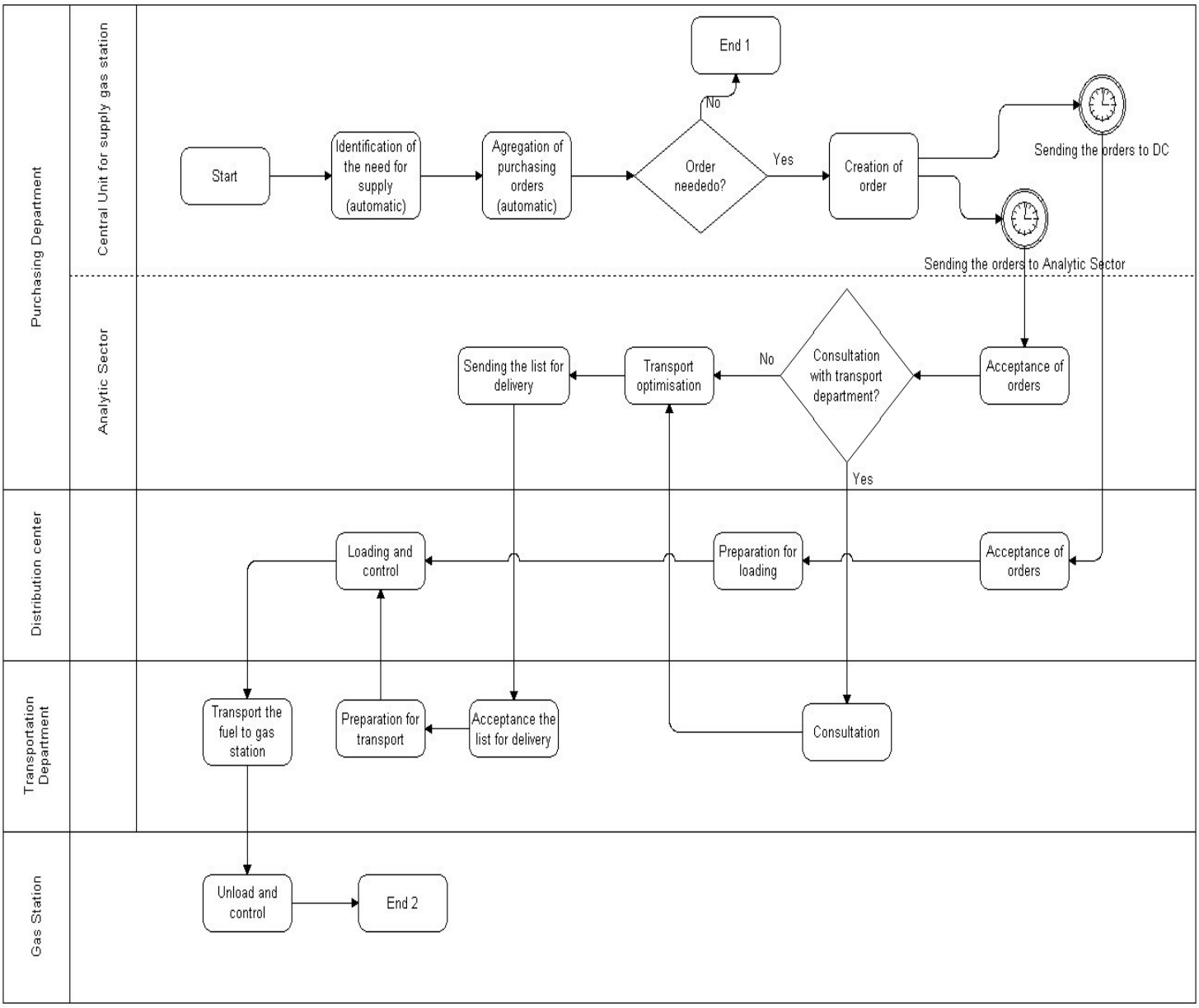

Figure 3. TO-BE 2 model of the process.

replenishment; the predicting of future demand by using progressive tools; and using operations research methods to optimize the transportation paths and times. The role of IT in all of these suggestions is crucial.

Measuring the effect of re-engineering

The effect of the changes can be estimated through simulations. We simulated business processes to investigate the impact of BPR on the information sharing value, and value-adding activity, measured by lead times and process execution costs. A three-month simulation of the AS-IS and of both the TO-BE models was run. In the AS-IS model a new transaction is generated daily (the checked automatically every hour). The convincing results are summarized in Table 1. The label “Yes” refers to those transactions that lead to the order and delivery of petrol, while the label “No” means a transaction where an order was not made since the petrol level was sufficient.

The average process costs are reduced by almost 50%, while the average lead time is cut by 62% in the case of the TO-BE 2 business model. A time-based process map shows that BPR will be contributed to the reduction of the non-value adding activities during the average lead time (Figure 4). Decreasing non-value

Table 1. Comparison of simulation results for the AS-IS and TO-BE models.

Transaction	Number	Average lead-time (h)	Average work (h)	Average wait (h)	Average costs (€)
Yes (AS-IS)	46	33.60	11.67	21.93	60.10
No (AS-IS)	17	8.43	2.40	6.03	8.47
Yes (TO-BE 1)	46	27.12	10.26	16.86	56.74
No (TO-BE 1)	1489	0.00	0.00	0.00	0.00
Yes (TO-BE 2)	46	12.85	4.88	7.98	32.54
No (TO-BE 2)	1489	0.00	0.00	0.00	0.00

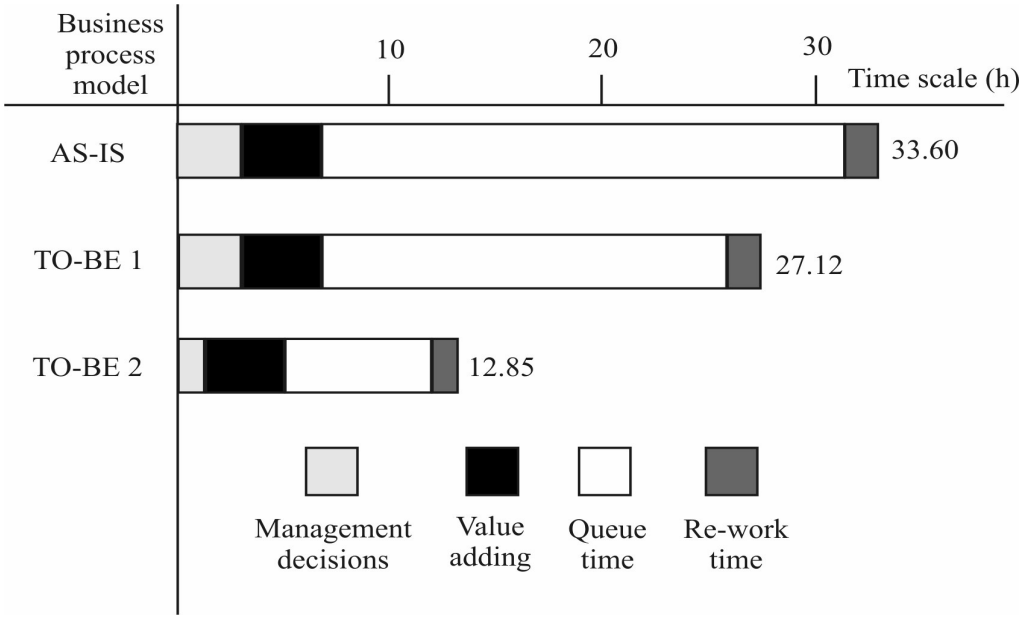

Figure 4. Time-based process map.

adding activities imply increasing competitiveness of the supply chain.

From this it is clear that this renovation project is justifiable from the cost and time perspective. The results in Table 1 and Figure 4 show that a full improvement and effective supply chain management are only possible in the case of implementing both IT which enables efficient information sharing and the re-engineering of business processes. The mere implementing of IT without structural and organizational changes in business processes would not contribute to realising the full benefit.

Conclusion

This paper has investigated the potential of using BPR for improving supply chain performances and competiveness. A definition of SCM, BPR and relevant issues was presented, together with an overview of the role of IT in supporting BPR. There followed a brief overview of business process modeling methods, with a case study providing an example of its use in oil downstream supply chain in one developing country. The results of the case study served to illustrate the potential benefits of BPR for improving supply chain performances and establishing competitive supply chain. Effective SCM is critical advance for supply chain competitiveness. Not surprisingly, IT sits at the heart of this advance. Specific technologies may vary from company to company, but the underlying principles remain the same: to create seamless pipeline where product is handled minimally but moves at maximum velocity. The results is a supply chain that can be managed according to approach where the customer order is a starting point, and works down the rest of the chain are such to eliminating waste and trimming processes that do not add value along on the way.

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Full Length Research Paper

Managing corporate sustainability: Risk management process based perspective

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Sustainability risk management requires holistic and systematic integration of ecological, socioeconomic, and corporate risk factors in the business management. This paper presents an integrative conceptual framework for sustainability risk management in enterprise-wide. The development of this integrative framework is accomplished by tailoring of the enterprise risk management framework. In this paper, the conceptual model to corporate sustainability is offered as the specific management and organizational system to both manage and integrate the corporate goals in order to create economic and financial value and awareness of environmental and social responsibility.

Key words: Corporate sustainability, management, risk, risk management, strategic management, sustainability.

INTRODUCTION

Businesses today need to fully integrate sustainability and risk management into their strategy - not only to minimize potential losses but also to exploit new business opportunities arising from the sustainability agenda. These may include new products and services to meet developing sustainability needs, new technologies to improve sustainability or risk performance, or new business models to access and develop emerging markets and support the creation of sustainable communities. This paper focuses on constructing a theoretical model for Enterprise Sustainability Risk Management and aims to improve awareness in the following areas:

- Corporate risks as both threats and opportunities
- Enterprise sustainability risk management
- Climate change and Global Warming
- Risk culture
- Basic philosophy of the “think global, act local” mentality

This paper is organized into 4 main parts. The corporate sustainability concept and literature review is given in next part. Strategies for corporate sustainability and enterprise risk management are given in the third part of the paper. Enterprise sustainability risk management model as conceptual framework is given in fourth part. Concluding remarks is presented in last part of the paper.

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CORPORATE SUSTAINABILITY CONCEPT AND LITERATURE REVIEW

The “corporate sustainability” has gained considerable interest among risk managers and has also been examined in the academic literature (Bebbington and Gray, 1996; Gladwin et al., 1995a; Gladwin et al., 1995b; Hoffman and Ehrenfeld, 1998, Dyllick and Hockerts, 2002; Morrison, 1991a; Schaltegger et al., 2002; Winn, 1995). However, as the vision of corporate sustainability is currently not well-defined it remains a broad approach that includes various characteristics, in particular relating to the contextual integration of economic, environmental and social aspects. It may seem astonishing to realize that the best known aspect of corporate sustainability is the heuristic, multicriteria triple bottom line perspective (Figure 1) which aims to integrate economic, social and environmental aspects of business management (Elkington, 1998). This differs from the macro and political levels where the orientation towards future and present needs as formulated in the Brundtland report has dominated for much longer (Folmer and Tietenberg, 2005). Corporate sustainability encompasses three dimensions of needs, known as the “triple bottom line”; economic prosperity and opportunity; social equity and quality of life; ecological resource preservation. Corporate sustainability is an organizational commitment to

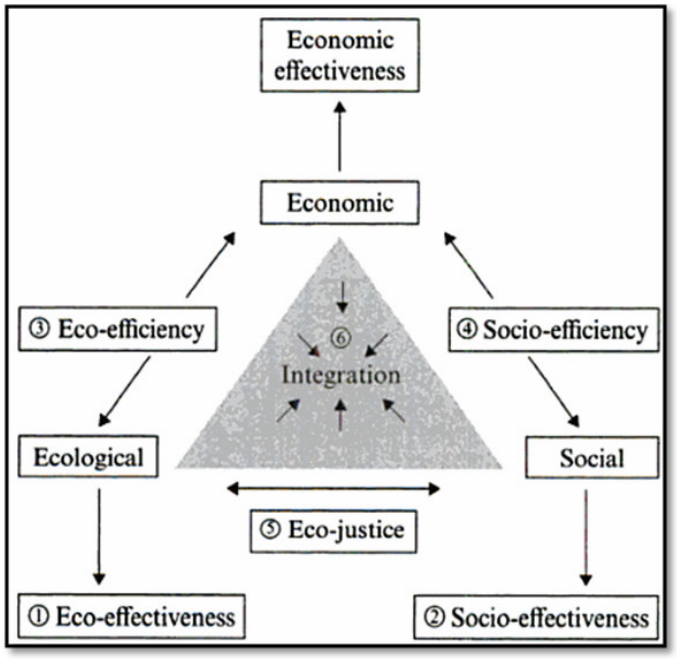

Figure 1. Corporate sustainability Challenges (Folmer and Tietenberg, 2005)

achieving competitive advantage through the strategic adoption and development of ecologically and socially supportive production processes, products and services and innovative human resource management practices (Nemli, 2004). Figure 1 illustrates the three pillar approach of corporate sustainability.

Corporate sustainability can be viewed as a new and evolving corporate management paradigm. The term 'paradigm' is used deliberately, in that corporate sustainability is an alternative to the traditional growth and profit-maximization model. While corporate sustainability recognizes that corporate growth and profitability are important, it also requires the corporation to pursue societal goals, specifically those relating to sustainable development - environmental protection, social justice and equity, and economic development. A review of the literature suggests that the concept of corporate sustainability borrows elements from four more established concepts: 1) sustainable development, 2) corporate social responsibility, 3) stakeholder theory, and 4) corporate accountability theory. The contributions of these four concepts are illustrated in Figure 2 (Wilson, 2003).

Corporate sustainability management is defined by Salzmann, Steger and Ionescu-Somers (2005) as a "profit-driven corporate response to environmental and social issues that are caused through the organization's primary and secondary activities." From a more focused business perspective, corporate sustainability can be defined as "a business approach that creates long-term shareholder value by embracing opportunities and managing risks derived from economic, environmental and social developments" (Dow Jones Sustainability Indexes, 2009). Another definition is made by the Australian Government, Department of the Environment, Water, Heritage and the Arts (2009) as encompassing "strategies and practices that aim to meet the needs of stakeholders today while seeking to protect, support and enhance the human and natural resources that will be needed in the future" (Australian Government, 2009). Enterprise sustainability risk management (ESRM) includes corporate sustainability based aims. For this reason, our new Enterprise sustainability risk management (ESRM) concept is based on the triple bottom line concept and it's also includes strategic and cultural dimensions of business management:

- Financial
- Social
- Environmental
- Strategic and cultural dimensions (Values and norms, Communication, Leadership styles and Conflicts)

Corporate sustainability management can be described in both functional and institutional terms. From a functional point of view it is designed to steer ecological, social and economic impacts of business activities in such a way that an enterprise develops in the direction of sustainability. The aim is not only to ensure systematic management of social and ecological aspects using economic methods, but also to integrate them in the conventional business management process. From an institutional point of view, corporate sustainability management describes the group of actors and organisational structure within the business enterprise that are concerned with social and ecological aspects and their integration in the conventional process of operational management of business activities (Schaltegger, Herzig, Kleiber, Müller, 2002). According to the Visser (2007), the corporate sustainability is a values - laden umbrella concept, which refers to the way in which the interface between business, society and the environment is managed. Despite being a relatively young field of academic inquiry, scholars have succeeded in engaging with the mainstream management literature, as well as establishing journals that specialise in various aspects of corporate sustainability. However, research on corporate sustainability still has a bias towards an environmental association and is mainly focused at the organisational level. Scholars approach the subject in a variety of ways, performing exploratory, descriptive, normative and instrumental research, and employing both quantitative and qualitative methods (Visser, 2007).

In their review of corporate social responsibility (CSR) articles published in top-rated management journals between 1992 and 2002, Lockett, Moon et al. (2006) found that environmental/sustainability and ethical subjects dominate CSR research in management, accounting for 36% (64 of the 176 papers) and 31% (54 papers) respectively, compared with papers on stakeholders (18%, 31 papers) and social (15%, 27 papers) themes ((Visser, 2007). Concept of the corporate sustainability is listed by Siebenhüner (2007):

- Triple bottom line (Bowden, et al. 2001, Elkington 1997), Corporate social responsibility (European Commission

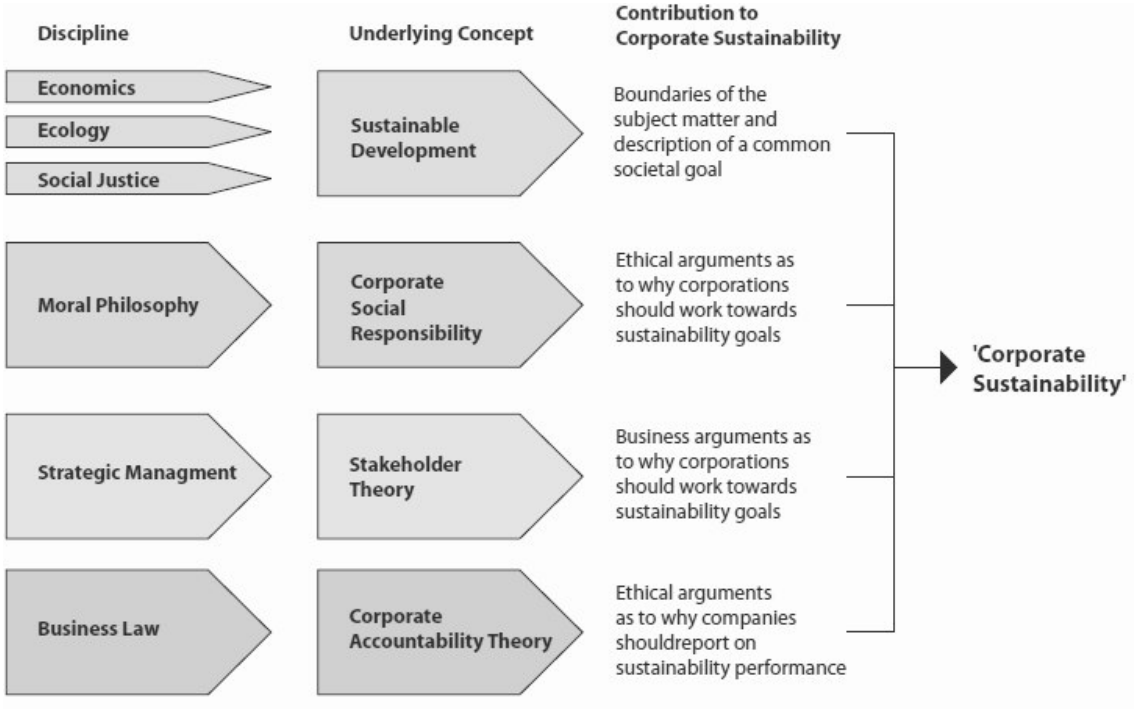

Figure 2. The Evolution of Corporate Sustainability (Wilson, 2003).

2002, Ruggie 2002, Clarkson 1995).
- Corporate sustainability (Dyllick, Hockerts 2002, Gladwin, et al. 1995, Schaltegger, et al. 2003, Shrivastava, Hart 1995a, and Welford 1997).
- Company oriented sustainability (COSY) (Schneidewind 1994, Schneidewind, et al. 1997).

STRATEGIES FOR CORPORATE SUSTAINABILITY AND ENTERPRISE RISK MANAGEMENT

Companies are focusing on corporate sustainability in very different ways. However, successful sustainability programs methodically address strategic, operational, collaborative, and governance requirements (Deloitte, 2007). The United Nations Environment Programme (UNEP) Finance Initiative, addresses the interaction between financial institutions and four broad groups of stakeholders: Suppliers, Internal (employees), Clients and shareholders, Society and the environment. Also, four primary ways in which implementing Sustainability Management and Reporting (SMR) can provide benefits to financial institutions, especially in emerging and developing economies, are identified by the UNEP Finance Initiative (2006) (Figure 3) :

- Revenue growth
- Risk management
- Access to capital
- Cost savings and efficiency

ERM reflects the change of mindset in risk management over the past decades. Business leaders realize that certain risks are inevitable in order to create value through operations and some risks are indeed precious opportunities if effectively exploited and managed (Ai, 2006). ERM as a framework for capturing risks that are material from the point of view of the achievement of the strategic objectives of the enterprise. According to the Treadway Commission's recent authoritative definition, ERM is '… a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risks to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives.'(COSO, 2003:6) Apart from the measurable risk silos, this conception of ERM encompasses risks that cannot be readily quantified or aggregated. These non- quantifiable risks include, for example, the risks of strategic failure, environmental risks, reputational risks and operational risks that materialise only rarely (Mikes, 2007). The linkage between enterprise risk management and sustainability management is an emerging field of research. Our framework model serves as a starting point to develop a company - specific model. Also, ESRM model is based on risk management principles as following (Kwak and Stoddard, 2003):

Shared product vision: A shared vision for success based upon commonality of purpose, shared ownership, and collective commitment.

Open communications: A free flow of information at and between all program levels though formal, informal, and impromptu communication and consensus-based

Matrix of Sustainability Management and Reporting SMR drivers				
Stakeholders Benefits	A. Suppliers	B. Internal	C. Clients & Shareholders	D. Society/ Environment
i. Revenue growth	Opportunities for new business developments	Improve competitiveness and business	New products and services	Boost local economic growth
ii. Risk management	Reduce risk of supply chain reputational damage	Governance – improve compliance and transparency	Manage environmental risk	Manage reputational risks
iii. Access to capital			Improve access to finance	Meet stock exchange listing requirements
iv. Cost savings & efficiency	Build better relationships	Reduce waste Motivate workforce	Build better relationships	

Figure 3. Matrix of Corporate Sustainability Management Drivers (UNEP Finance Initiative, 2006).

processes.

System percpective: That software development is viewed within the larger systems-level definition, design, and development.

Proactive strategies: Proactive strategies that involve planning and executing program activities based on anticipating future events.

Systematic and adaptable methodolgy: A systematic approach that is adaptable to the program's infrastructure and culture.

The vision of sustainable development embraces three dimensions – economic, ecological and social aspects – and seeks to integrate them. In the past ten years this vision has grown increasingly important, and at the same time its status has evolved from a theoretical, abstract project to an increasingly tangible and concrete task. The objective of sustainable development confronts business enterprises with four sustainability challenges (Schaltegger, Herzig, Kleiber, Müller, 2002):

Ecological challenge: increasing ecological effectiveness.

Social challenge: increasing social effectiveness. Economic challenge to environmental and social management: improving eco-efficiency and/or social efficiency.

Integration challenge: bringing together the first three challenges and integrating environmental and social management in conventional economically oriented management.

The Enterprise Sustainability Risk Management conceptual model offers a strategic road map, which provides a contextual framework for businesses serious about taking on the challenges and opportunities of sustainable development. The process of the Enterprise Sustainability Risk Management conceptual model is composed of five main phases and their sub-steps. The main phases are:

Phase 1: Strategic Management: Strategic Plan and Orientation.

Phase 2: Management and Organization: Organiza-tional and Infrastructural Orientation (includes Strategic and cultural dimensions (Values and norms, Communication, Leadership styles and Conflicts)

Phase 3: Framework Set up: Establishment and frame-

Framework Orientation.

Phase 4: Report and Monitor: Internal Control Orientation.

Phase 5: Enterprise Sustainability Performance Optimization: Corporate Orientation.

The decision to undertake sustainability is a relatively easy one. However, implementing sustainability in a way that balances opportunity and risk is a significant challenge requiring fundamental business model innovation. Breakthrough thinking is necessary to incorporate sustainability into every aspect of the business model. Leading companies factor changing technologies, emerging consumer demands, and evolving regulatory requirements into sustainable strategies and operations. Companies are focusing on sustainability in very different ways. However, successful sustainability programs methodically address strategic, operational, collaborative, and governance requirements. Leading companies take a top-down, sequential approach when implementing sustainability into their organizations. Leadership commitment is the most important first step. Then, through non-traditional collaborations, systematic assessments of value - chain impacts, and robust governance structures, leading companies ensure that sustainability is woven into the very fabric of the company (Deloitte, 2007). Corporate sustainability involves both financial and non-financial measurement and it can be built on (Salzmann, Steger and Ionescu-Somers, 2005: 3/24):

- Cost reduction achieved through improved environmental, health and safety performance (fewer accidents, fines, lost workdays, etc.).
- Revenue increases achieved through gain in market share due to new environmentally sound products.
- Positive effects on intangibles or, as referred to in Figure 4, value constructs, which do not increase financial performance per se but are yet to be leveraged accordingly.

Companies will not be able to dictate the time frames or expectations for managing sustainability. Shareholders, federal and state agencies, and consumers are driving the evolution of sustainability. The time is now to undertake initiatives and integrate sustainability into the organization. However, sustainability need not be a reactive response to environmental or regulatory threats. As sustainability develops in the business world, companies can move from short-term risk avoidance and regulation compliance to long-term development of brand, competitive, and operational advantage. Proactive sustainability initiatives are an opportunity for companies to differentiate themselves as leaders in the industry, the environment, and society, ensuring long - term business success (Deloitte, 2007).

We have developed this new conceptual Enterprise Sustainability Risk Management framework model as a specific management and organization system to manage integration between the corporate goals of creating economic and financial value and the aspects of environmental and social responsibility. Enterprise Sustainability Risk Management framework has been developed as an important mechanism for improving corporate sustainability performance. It can protect, create, and enhance business value through measurement and management of sustainability threats and opportunities. In addition, this can help businesses effectively respond to the growing expectations of the corporate stakeholders. The Enterprise Sustainability Risk Management framework provides guidance to managers on how to establish a holistic and systematic sustainability risk management process that generates the risk indicators, risk sources, objectives, and reporting systems needed to ensure effective handling of sustainability risks and improved overall organizational performance and value. We believe that integrating sustainability considerations into existing corporate systems and processes is the most effective way to embed sustainability into corporate business rather than creating new systems and processes. The Enterprise Sustainability Risk Management model enables companies to enhance their competitiveness and future orientation while minimizing their business risks. Managing business processes by using a Corporate

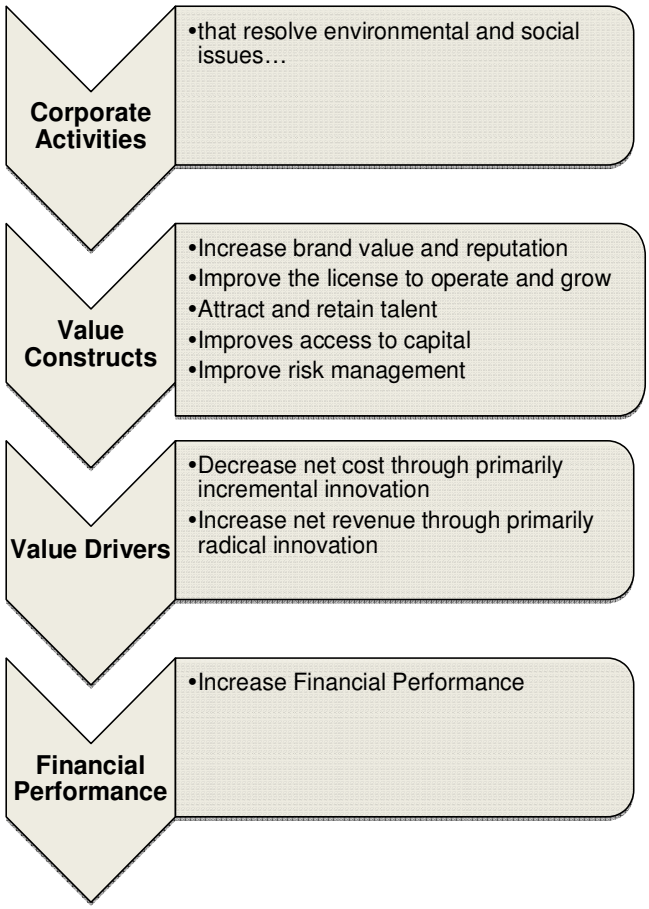

Figure 4. Systemization of value drivers and value constructs (Salzmann, Steger, Ionescu-Somers, 2005).

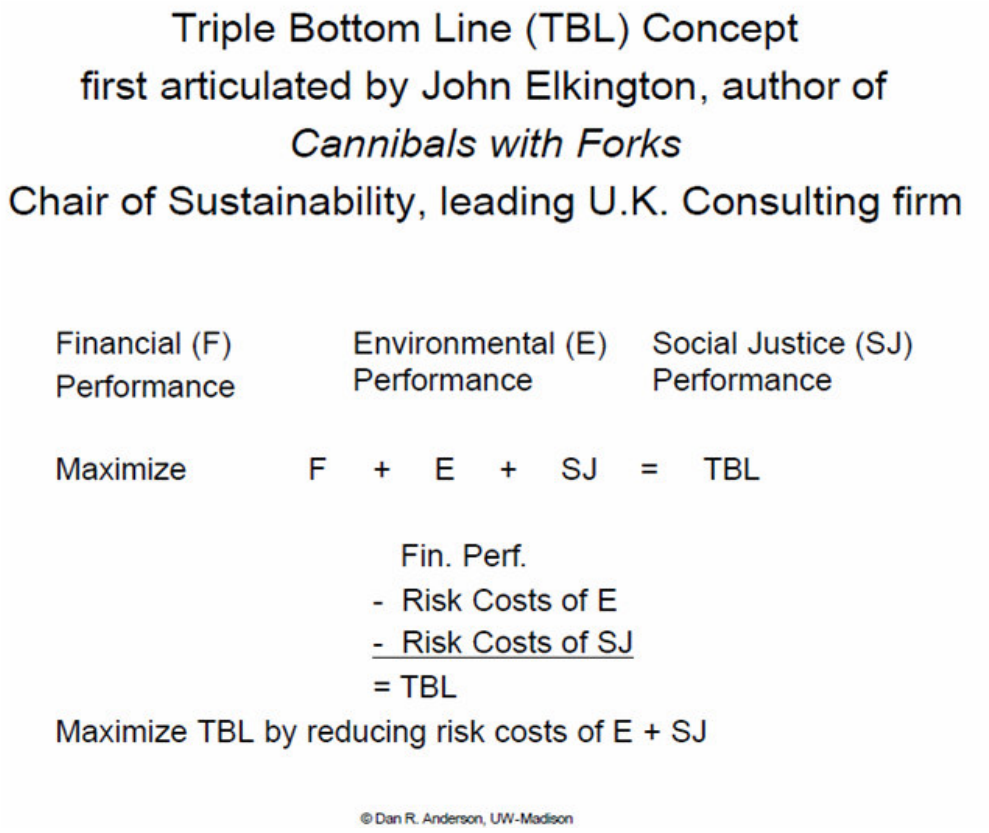

Figure 5. Triple Bottom Line concept to corporate sustainability risk management (Anderson, 2006).

Sustainability based approach is crucial in today's global business environment. Companies should incorporate a sustainability based approach in their decision-making process and activities in pursuit of corporate objectives.

THE PROCESS OF THE ENTERPRISE SUSTAINABILITY RISK MANAGEMENT MODEL

Current sustainability risks are considerably different from old risks. For this reason, more holistic and enterprise-wide approach needs to managing corporate sustainability risks. Also, new approaches should be set on triple bottom line concept since this concept includes and assess corporate performance in both social, financial and environmental sides (see figure below). Reflecting the diversity of public reporting to emerge in Europe during the late 1990s, John Elkington (1997) coined the phrase the *triple-bottom-line* to capture the notion that organisations should report not only on their financial performance, but also on their social and environmental performance (Milne, Tregidga and Walton, 2003). The expression 'triple bottom line' was developed by environmentalist and economist John Elkington in 1997 and has fast become an international commonplace to describe a mode of corporate reporting that encompasses environmental and social as well as economic concerns. The term is now also used widely in discussions of sustainability. Elkington's expression crystallised the increasingly widespread view that 'we need to bear in mind that it is not possible to achieve a desired level of ecological or social or economic sustainability (separately), without achieving at least a basic level of all three forms of sustainability, simultaneously'. In Elkington's own words (Elkington, 1999) , 'the sustainability agenda, long understood as an attempt to harmonise the traditional financial bottom line with emerging thinking about the environmental bottom line, is turning out to be much more complicated than some early business enthusiasts imagined. Increasingly, we think in terms of a "triple bottom line", focusing on economic prosperity, environmental quality, and—the element which business has tended to overlook—social justice'(McKenzie, 2004). For organizations, a sustainability framework or model of social, environmental, and economic performance creates a powerful opportunity to create enduring value for multiple stakeholders (Figure 5) (Epstein, 2009).

The Enterprise Sustainability Risk Management Framework is designed to provide guidance to managers on how to establish a holistic and systematic sustainability risk management process that generates the risk indicators, risk sources, objectives, and reporting systems needed to ensure effective handling of sustainability risks and improved overall organizational performance and value. ESRM implementations and related process actions have potential to create additional value for cor-

porates. ESRM framework includes all corporate risks of the social, economic and environmental aspects in doing business. ESRM is a management approach whereby a company considers the interests of all stakeholders both within the organisation and in society and applies those interests while developing its strategy and during execution. The Enterprise Sustainability Risk Management framework is a logical model that offers a strategic road map, which provides a contextual framework for businesses serious about taking on the challenges and opportunities of sustainable development. The Enterprise Sustainability Risk Management framework model aims to provide a systematic process for integrating sustainability into all company functions, including strategic and business planning, business development, corporate governance, project management, risk management, resources, human resource process, stakeholder management, performance management, and corporate social responsibility. The Enterprise Sustainability Risk Management process provides a framework for corporate sustainability factors to be built into corporate systems, functions, and operations.

We assume that Enterprise Sustainability Risk Management (ESRM) is a kind of enterprise risk management which is not just for building and maintaining the capacity to understand the risk of new socio-environmental businesses. In a world where new regulations and expectations of the social responsibility of financial institutions are growing, ESRM assists in appropriately assessing these risks within the institution's overall credit risk analysis and other financial decision-making (UNEP Finance Initiative, 2006). "Integrating sustainability" means that environmental, social, and broader economic factors, as well as more traditional financial factors are incorporated into business decision-making, actions, and performance. Companies are increasingly integrating sustainability into their key business processes for different reasons, whether to manage new risks, gain business opportunity, or extend their role in society (Stratos, 2007). Corporations are now re-designing themselves in order to integrate sustainability principles into their business strategies and policies. Global companies increasingly recognize that sustainability is an integral part of good enterprise risk management and affects the bottom line and long-term profitability. Corporate sustainability requires companies to address the issues of economic prosperity, social equity, and environmental quality simultaneously. No individual company can be fully 'sustainable' within an unsustainable economic system. Managing for long-term success requires a full integration of the principles of sustainability into an organization's enterprise risk management processes. Working towards the goal of corporate sustainability is a complex journey in which different process concerns may be emphasized at different phases. The new ESRM framework model is designed as a process to help following subjects mainly:

- Improve awareness of the necessity for sustainability risk management
- Identify sustainability risks and opportunities
- Promote innovation and operational efficiency
- Develop a company-specific sustainability risk management model, policy, and guideline.
- Integrate sustainability considerations into the decision-making process and practices
- Manage sustainability funds
- Proactively manage risk and achieve competitive advantages
- Increase value and innovative capacities
- Move towards sustainable business practices
- Promote corporate social investment, citizenship, and social responsibility
- Increase financial, social and environmental contributions
- Improve the corporate reputation

We listed here the expected Main Benefits of the ESRM Model as follows:

- Achievement of balanced and integrated economical, social and environmental performance.
- Full integration of sustainability based topics into business strategy, management and organization at all levels.
- Corporate value optimization.
- Reasonable assurance to achievement of the corporate objectives in triple bottom line concept.
- Corporate resource optimization
- Corporate risk optimization
- Effective and proactive management of the sustainability based risks.

The Enterprise Sustainability Risk Management ESRM model helps managers to employ tools such as environmental management systems, cleaner production, environmental auditing, life-cycle assessment, and environmental accounting. These tools can be applied to reduce risk, reduce costs, identify opportunities, and enhance business reputation and stakeholder interest. The findings of Deloitte (2007) indicate that leading companies focus on the following critical success factors in order to have a successful, long-term sustainability program. Importantly, the sequence in which these efforts are undertaken is crucial to implementation success. The new ESRM Model is designed as a conceptual process, consisting of five main phases as shown in Figure 6. The sub-steps of each phase are presented below.

Phase 1: strategic plan and orientation

Objective and Related Activities: Establishment of Strategic Orientation to practice use of the ESRM model.

Sub-steps of Phase 1:

- Set strategic Sustainability Strategy and determine the related objectives: economic, social, and environmental (triple bottom line concept)

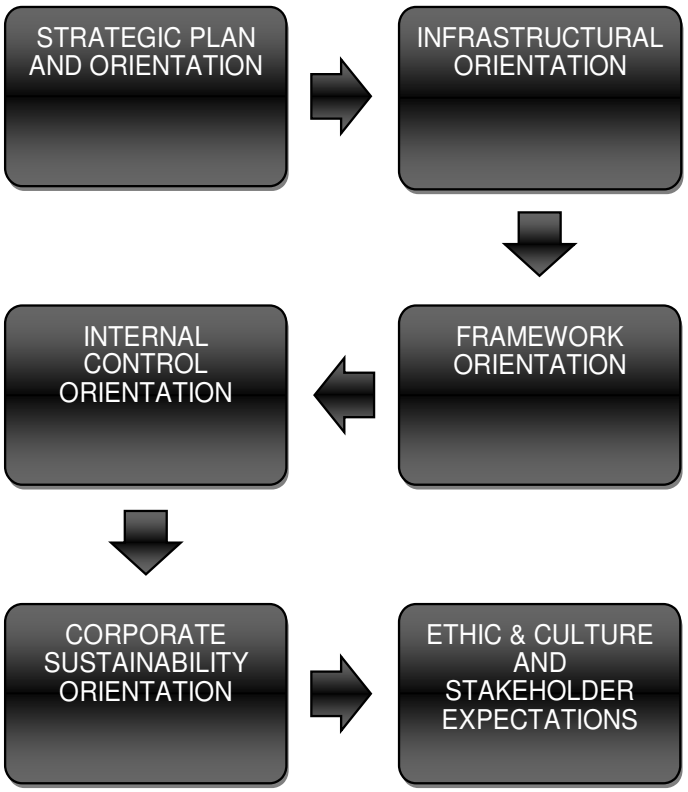

Figure 6. The Enterprise Sustainability Risk Management Framework Model

- Define business objectives in terms of sustainability
- Demonstrate leadership
- Stakeholder Analysis: Identify stakeholders and stakeholder expectations
- Define strategy, targets, and plans
- Define company policies: Environmental, social and economic considerations
- Search competitive advantage fields: current and latent
- Look to create innovation - driven corporate sustainability strategies
- Examine current strategies from a sustainability perspective
- Examine operations from a sustainability perspective
- Examine current risk culture from a sustainability perspective
- Improve strategic plan in terms of enterprise sustainability risks
- Improve business plan in terms of enterprise sustainability issues
- Improve operational plan in terms of enterprise sustainability issues
- Link up with like-minded companies

Phase 2: management and organization: infrastructural orientation

Objective and Related Activities: Integration of ESRM into key corporate activities and functions: Sustainability based approach.

Sub-steps of Phase 2

- Check over infrastructural situation related to corporate resources in view of financial, social, and operational processes
- Mobilize corporate resources
- Develop guideline of ESRM model
- Develop measures and standards of business performance
- Assign ESRM committee and alignment of roles and responsibilities
- ESRM Organization: identify roles and responsibilities
- Training: Familiarize personnel with enterprise risk management, corporate sustainability, and related practices; train ESRM team on emerging approaches and techniques; hold executive seminars on enterprise risk management, corporate sustainability, and integration of enterprise risk management and sustainability
- Create and improve a corporate culture supportive of sustainability (includes Strategic and cultural dimensions (Values and norms, Communication, Leadership styles and Conflicts)
- Sustainability in human resource management issues: attract and retain talent
- Set up corporate Sustainability Performance Criteria
- Set up Stakeholder Engagement plan and its process

Phase 3: set process step: framework orientation

Objective and Related Activities: Systemization of sustainability issues, corporate value drivers, and relevant corporate activities by setting up the risk management framework.

Sub-steps of Phase 3:

Identify threats and opportunities which affect enterprise sustainability:
- determine sustainability issues affecting both strategic and operational risks which are related to not meeting and meeting business objectives
- Create Scenario Analysis for potential sustainability risk events
- Prioritize sustainability based threats and opportunities
- Establish Strategic Plan to achieve business objectives
- Establish thresholds and targets according to enterprise risk appetite
- Analyze impact, cost, and benefits of sustainability based risks
- Prepare corporate risk map and holistic picture of the company
- Exercise decision-making to optimize risk handling options
- Implement risk handling plans for enterprise risk optimization

Phase 4: report and monitor: internal control orientation

Objective and Related Activities: Collection, analysis, and

dissemination of risk data for relevant levels of management; Communication and reporting in a timely manner.

Part of the effort to integrate innovation for sustainability throughout the organization is achieved through regular communication. Both within and outside the organization, a systematic process should be in place to spread the word about any achievements being made, in as solid and quantifiable a way as possible, to encourage everyone involved and give those associated with the company something to boast about and identify with.

Phase 5: corporate sustainability check: corporate sustainability orientation

Objective and Related Activities: Establishment of internal control of model and related activities towards effective implementation of sustainability practices.

Sub-steps of Phase 5:

- Create gap analysis: performance optimization aimed at assessing and comparing triple bottom line based performance results and risk factors according to planned and desired ESRM model outputs
- Assess progress towards sustainability goals
- Determine overall score
- Adjust strategies to ensure goals are met

Overall enterprise sustainability check: This phase includes assessment of ESRM implementation performance by Control and Measurement of sustainability variables according to the determined criteria (Esquer-Peralta, 2006) as follows:

- Sustainability Leadership
- Planning for Sustainability Improvement
- Employees Involvement
- Process Management
- Product / Service Management
- Information and Analysis Management
- Customers and Suppliers Involvement
-Other stakeholders Involvement
- Sustainability Results

An effective strategy for sustainable development requires good management. It must provide co-ordination, leadership, administration, and financial control, harnessing skills and capacities and ensuring adherence to timetables. The roles, responsibilities, and relation-ships between the different key participants in strategy processes must be clearly defined and understood (Organisation for Economic Co-Operation and Development [OECD], 2001).

CONCLUSION

Our model presents a holistic and proactive fresh way to manage the enterprise -wide sustainability risks. To go beyond compliance and legal liabilities, businesses have to integrate risk management based philosophy and culture into core business functions of the company. Sustainability management will succeed only if managers and personnel recognize that the reforms create value for them. Cultural change within the context of an overall sustainability management system must be accomplished within the business in order to provide sustainability management based benefits, seizing opportunities. The policies and objectives regarding climate change issues should be integrated into an overall sustainability management framework which is an integral part of the firm's business strategy. Integration and a holistic approach are the key concepts for both a successful business and sustainability. The triple bottom line of social, environmental, and economic objectives in the sustainability concept requires more coordination between internal and external stakeholders of the business. The Enterprise Sustainability Risk Management framework model provides many basic benefits which allow a business to ensure its sustainability. These include:

- Managerial approaches and processes such as strategic planning, corporate governance, human resource management, the decision-making process, reputation management, crisis management, corporate resource planning and management, and financial risk management.
- Shareholder acquisition.
- A systematic process for strategic and operational decisions at all levels in business
- A holistic snapshot of economic, environmental, and social impact factors on corporate sustainability for both managers and personnel.
- The integration of economic, social, and environmental factors with strategic objectives according to the triple bottom line concept.
- An understanding of the interdependence between business, society, and the environment.

We envision that Enterprise Sustainability Risk Management will be a core competency for global business management and organization. The new Enterprise Sustainability Risk Management framework offers a flexible strategic approach to anticipating potential problems and resolving sustainability challenges through risk analysis, positive external engagement, and robust management systems.

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Full Length Research Paper

The fırm-level determınants underlyıng the profıtabılity ın brokerage ınstıtutıons: Some evıdence from Turkey

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Sampling the period of 2005- 2007 on a quarter basis, this paper made a comprehensive empirical investigation on identifying the firm-level determinants underlying the profitability in brokerage institutions operating in Turkey. We performed multiple regression and panel data analyses for a large array of brokerage institutions and observations. Two sets of dependent variables were built to control for profitability. The first regressed variable was the operating profitability of total assets and the second one was the pre-tax profitability of total assets. We found that, the balance sheet-based factors such as current trade receivables to total assets, financial assets to total assets and short-term liabilities to total assets significantly, robustly and commonly account for the brokerage houses' profitability. We also found that, the firm-level factors do better explain the changes in the profitability should the former ratio be proxied as a profitability indicator. Paper concludes with some concrete policy recommendations.

Key words: Brokerage institutions (investment houses), profitability, firm-level factors, ACMIIT (the association of capital market ıntermediary Institutions of Turkey).

INTRODUCTION

Brokerage institutions are such important organizations ranking after banks in money and capital markets. These businesses, whose basic function is to intermediate the conduct of the securities transactions and hence to provide financial services, help clearing out the market through meeting supply and demand and achieving market dealership along the line of the rights and obligations attributed to them capital markets legislations surround. In particular, from legal standpoint, brokerage institutions that are acting as a mediator in a sense like banks, maintain their businesses in the form of capital companies in Turkey. Therefore, they are subject to corporate tax law numbered as 5520.

In our territory, the Capital Markets Board (CMB) of Turkey that is entitled to organize, oversee and supervise all the transactions taking place in the capital markets has defined the intermediation forms as best effort underwriting, stand-by underwriting, full underwriting, partial stand-by underwriting and partial underwriting.[1]

Brokerage institutions, in accordance with their definition of duties provisioned in their articles of incorporation, earn such revenues as sales revenues, service revenues, commission fees, corporate financing incomes, asset management incomes or interest incomes while incurring some material expenses like allowances from service revenues, general administrative expenses on top of cost of sales.

In this paper, the firm-level or the micro factors determining

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[1] See http://www.spk.gov.tr

the profitabilities of the brokerage institutions are investigated.[2] Unlike a number of studies on banks, to our knowledge, the literature is silent on the profitability issue as for brokerage institutions.[3] In covering this gap, we make a comprehensive empirical examination for a large set of brokerage institutions that have been active in the years of 2005-2007 in Turkey. Multiple and panel regression analyses are performed. Hence the resting paper is organized as follows. The second section presents the dataset and the methodology, the third section discusses the empirical findings and the fourth section concludes the paper with some policy recommendations.

DATASET AND METHODOLOGY

All the data in this study has been obtained from the URL of The Association of Capital Market Intermediary Institutions of Turkey (ACMIIT).[4] For the time span of 2005-2007, 99 brokerage institutions having run their operations under the auspices of the Capital Markets Board of Turkey and having been publicly released by ACMIIT are sampled on a quarter basis totaling 12 periods.

ACMIIT has disclosed the comparative financial statements of the brokerage institutions starting from the year 1999 up until the second quarter of the year 2009 in its website. It cascaded the time periods in a way to be compatible with then mandatory accounting policies. Accordingly; the financial statements that were reported on the cost basis include the period from 1999 to 2003, the ones reported on the inflationary accounting basis include the period from 2003 (last quarter) to 2004, the ones reported in concordance with the communiqué Serial XI No: 25 by CMB include the period from 2005 to 2007 and eventually those reported on the basis of international financial reporting standards (IFRS) to entail the period from 2008 to the first 6 months of 2009. Namely, there appears to exist data on four different financial reporting types or groups.

There are some severe obstacles on not sampling all the time horizon in this research. As to be realized, possessing different accounting structures and thus enforcements, the abovementioned financial periods (groups) exhibit unique differences. It can not be possible to harmonize them in first place. Carve-outs are not restricted to this. For instance, while comparative financial statements are decomposed into quarterly periods in some groups (e.g. the periods from 2005 to 2007), they are given as the entire (annual) financial period in some others (e.g. the periods from 2000 through 2002). Further, although comprehensive financial data is available including all the accounting items in some groups (e.g. the period from 2005 to 2007), quite limited financial information is presented in some others (e.g. the periods 2000 - 2003, 2003 - 2004). For these and similar reasons, it has not been possible to match all the financial groups and hence to cover the sample period starting from 1999 to 2009. Therefore, we pick up the period of 2005 - 2007 as our sample period since it entails quite updated data as well as unveiling the financial statements in a comparative and comprehensive fashion. Besides, as we incorporate not the annual but the quarterly periods into our examinations, we feel that observation number is more than sufficient along our objective. More importantly, we sample all the brokerage institutions that ACMIIT published in its website and there might not be another way of obtaining this data from elsewhere, as these brokerage institutions are not publicly listed but closed corporations.

Our essential goal is to identify, in first place, the basic firm-level or micro factors that determine the profitability in the brokerage institutions that have been active in the period from 2005 to 2007. In so doing, multiple regression and panel regression analyses are performed. First, a multiple regression is employed through SPSS. As known well, multiple regression analysis can be conducted in several ways. One of the pervasively used approaches out there is to run stepwise regression. Stepwise regression which is perhaps the most user-friendly technique unveiling the effects of each and every tested variable in our hands generates the best fit models on a simultaneous basis as well. Furthermore, along our very research purpose, willingness to keep the vector comprising of the independent or explanatory variables as large as possible makes stepwise attactive in comparison to its alternatives. Therefore, stepwise regression is followed in this paper rather than the ones such as

[2] The analysis and findings in this research are based on the data obtained from the items originating from the brokerage institutions' own performances/positions and taking place in their financial statements (e.g. income statement and balance sheet). In other words, we are working with firm-level or micro data. Macro-economic indicators such as interest rate, foreign exchange rate, inflation rate, budget deficit or surplus, growth rate, GNP, GNP per capita; or the industrial structural factors like industry (brokerage institutions market) concentration, degree of competition, capitalization rate and their probable effects on brokerage institutions' profitability fall entirely outside our scope. Moreover, as is the case in the financial literature, the words "firm-level", "micro", "endogenous", "intrinsic" are all used interchangeably.

[3] There is a number of studies in the literature investigating the profitability of the commercial banks. In all these studies, a large variety of examinations on the factors determining banking profitability, at either micro or macro bases, is available. Ho and Saunders (1981) being at the forefront, Afanasieff et al. (2001), Brock and Suarez (2000), Kunt and Huizinga (1999), Saunders and Schumacher (2000), Barajas et al. (2001), Valverde and Fernandez (2007), Kaya (2002), Angbazo (1997), Abreu and Mendes (2001) are just some well-known among these. For this and for the studies that investigate the firm-level factors indicating banking profitability and that make a sampling on a quarter basis, see for instance Kaymaz (2009). Similarly, studies such as Ö. Kaymaz, M. Pehlivan and Ö. Kaymaz (Asset size does matter to deposit banks: Evidence from Turkish banking sector, 2009, unpublished manuscript) or in particular Ö. Kaymaz, Ö. Kaymaz and S. Kılıç (It is the operating profit drivers that explain credit margins in deposit banks: Evidence from Turkish banking sector, 2009, unpublished manuscript) are recommendable to review.

[4] See http://www.tspakb.org.tr

enter, backward, forward or remove-based regression techniques.[5] Second, using the identical dataset we perform a panel data analysis through E-views. To facilitate comparisons across cross-sections (brokerage houses) and time period, we both specify fixed effects and random effects models.

Table 1 shows the dependent and the explanatory variables employed in our models. Two regressed variables have been determined to capture the profitability of or the return on assets. The first one is the ratio averaging total assets (asset size) by gross real operating profits (AOP) whereas the second one is given as a ratio of earnings before taxes to total assets (ATP). 16 independent or explanatory firm-level variables have been selected to predict the changes in the level of the corporate profitability; meaning the profitability of the sampled brokerage institutions. As the names indicate; AOP builds on gross real operating profits or net incomes while ATP draws on pre-tax profits or net incomes.[6] Table 2 which is based on the income statements encompassing the period of 2005-07 found in the URL of ACMIIT presents the profit breakdown used to calculate the profitability ratios.[7]

The regressors (independent variables), like the regressed variables, are all intrinsic or endogenous firm covenants that are composed of the items captured from the brokerage institutions' own financial statements. Specifically, the variables ranging from X_1 to X_7 can be named as asset ratios, the ones from X_8 to X_{13} as liability ratio, X_{15} as equity ratio and X_{15} with X_{16} as volume ratios. This is because asset, liability and equity ratios are the proportional values generated from their corresponding accounting items covered in the balance sheets. For the same reason, these ratios can be called balance sheet ratios. Likewise, the transaction volumes appearing at the bottom lines of the comparative financial statements of the sampled brokerage institutions are essential to the calculation of the volume-based ratios or regressors expected to explain the profitability.

The balance sheet ratios are comprised of such financial items that reveal either balance sheet major sub-totals (e.g. current assets, fixed assets, short-term liabilities, equity etc.) or minor sub-totals (e.g. liquid assets, marketable securities, financial assets, short and long term trade liabilities etc.). Therefore, they are important variables that are key to balance sheet sizes. On the other hand, by experience, it is a well known fact that (a) the asset sizes of the brokerage institutions pertain to their tradings in the securities market and that (b) these transaction volumes play quite an important role in the establishment of the corporate earnings. Generally speaking, it would not be incorrect to argue that as the asset size rises (reduces) transaction volumes will rise (reduce) as well. Therefore, among the ratios that are highly expected to account for the profitability, in addition to the balance sheet covenants, we have volume-based ratios that serve for achieving our goal as well. For transaction volumes arise from such sources as stocks and fixed income securities (e.g. government bonds, treasury bills), volume ratios are built on these grounds. As the hypothesis below depicts,

H_1: There is a relationship between X_1 and Y (Y_1 / Y_2).
H_2: There is a relationship between X_2 and Y (Y_1 / Y_2).
H_3: There is a relationship between X_3 and Y (Y_1 / Y_2).
H_4: There is a relationship between X_4 and Y (Y_1 / Y_2).
H_5: There is a relationship between X_5 and Y (Y_1 / Y_2).
H_6: There is a relationship between X_6 and Y (Y_1 / Y_2).
H_7: There is a relationship between X_7 and Y (Y_1 / Y_2).
H_8: There is a relationship between X_8 and Y (Y_1 / Y_2).
H_9: There is a relationship between X_9 and Y (Y_1 / Y_2).
H_{10}: There is a relationship between X_{10} and Y (Y_1 / Y_2).
H_{11}: There is a relationship between X_{11} and Y (Y_1 / Y_2).
H_{12}: There is a relationship between X_{12} and Y (Y_1 / Y_2).
H_{13}: There is a relationship between X_{13} and Y (Y_1 / Y_2).
H_{14}: There is a relationship between X_{14} and Y (Y_1 / Y_2).
H_{15}: There is a relationship between X_{15} and Y (Y_1 / Y_2).
H_{16}: There is a relationship between X_{16} and Y (Y_1 / Y_2).

Since we have 16 different variables to predict the profitability, 16 hypotheses are set. In order to test these hypotheses, regression models are built, one for multiple regression analysis and two for panel data analysis. For the multiple regression analysis, the model for both the regressed variables may be given as the following:

$$Y\ \left(Y_1 / Y_2\right) = \alpha_0 + \sum_{i=1}^{16} \alpha_i X_i + \varepsilon$$

Where; Y refers to the dependent variable meaning the profitability ratio, α_0 to constant value, α_i to the coefficient values of the independent variables, X_i to the independent variables and ε to the sampling error. The

[5] It should not been forgotten, that the main research objective in this paper is not to set the best fit model predicting the profitability. As stressed several times, we want to identify firm-level or micro factors that significantly underlie the profitability in the brokerage institutions in first place. That is the main idea. Nonetheless, as multiple regression examination is built on the stepwise technique, we also have the chance to see the best fit models characterized by such a wide variety of firm-level indicators signifying the profitability as well. Therefore, we will also credit it in here.

[6] In the calculation of the second profitability ratio, not the post-tax earnings (net profit or income after taxes) but the pre-tax earnings (earnings before taxes or taxable income) is used. This is because pre-tax profit reveals companies' profit in the concerning period. In other words, taxes companies are liable and hence pay out to are not directly connected to their financial performances.

[7] See http://www.tspakb.org.tr

Table 1. Definitions of the variables.

Variables	Definition
Dependent variable	
Y= Y1 (AOP)	Operating Profitability of Total Assets (Gross Real Operating Profit/Total Assets) (%)
Y= Y2 (ATP)	Pre-Tax Profitability of Total Assets (Earnings Before Taxes/Total Assets) (%)
Independent variables	
X1	Current assets/Total assets (%)
X2	Liquid assets/Total assets (%)
X3	Marketable securities/ Total assets (%)
X4	Short-term trade receivables/ Total assets(%)
X5	Fixed assets/ Total assets (%)
X6	Long-term trade receivables/ Total assets (%)
X7	Financial assets/ Total assets (%)
X8	Short-term liabilities/ Total assets (liabilities + equity) (%)
X9	Short-term financial liabilities/ Total assets (liabilities + equity) (%)
X10	Short-term trade liabilities/ Total assets (liabilities + equity) (%)
X11	Long-term liabilities/ Total assets (liabilities + equity) (%)
X12	Long-term financial liabilities/ Total assets (liabilities + equity) (%)
X13	Long-term trade liabilities/ Total assets (liabilities + equity) (%)
X14	Equityt/ Total assets (liabilities + equity) (%)
X15	Stock trading volume/ Total assets (%)
X16	Fixed income securities trading volume/ Total assets (%)

Table 2. Profit breakdown.

(Ia) Gross Real Operating Profit/Loss [Ia = II-III+IV+V]
Sales Revenues (II)
Cost of Sales (III)
Service Revenues (IV)
Other Real Operating Revenues (V)
Operating Expenses (VI)
Revenues and Profits From Other Operations (VII)
Expenses and Losses From Other Operations (VIII)
Financial Expenses (IX)
Net Monetary Gains or Losses (X)
Profits or Losses From Consolidated Participations (XI)
(Ib) Earnings Before Taxes [Ib = Ia-VI+VII-VIII-IX+X+XI]

above model is a vectorial form of representation of our multiple regression allowing to capture two forms of the profitability indicators, that is, Y_1 and Y_2.

For the panel data analysis, the fixed effects model is given as the following: For the panel data analysis, the fixed effects model is given as the following:

$$Y_{it}\ \left(Y_{1_{it}} / Y_{2_{it}}\right) = \alpha_0 + \sum_{i=1}^{16} \alpha_i X_{it} + \varepsilon_{it}$$

Where; the variables have obvious meaning. The subscript *i* stands for the cross-section or the group (brokerage institution) and *t* for time. The random effects model is obtained as the following:

$$Y_{it}\ \left(Y_{1_{it}} / Y_{2_{it}}\right) = \alpha_{0i} + \sum_{i=1}^{16} \alpha_i X_{it} + \varepsilon_{it}$$

Where; the variables and the symbols are of obvious meaning. This model allows us to see how our fixed effects panel estimation is to be prompted to change across time and cross-section.[8]

EMPIRICAL FINDINGS

As we have conducted two empirical analyses, we classify our findings into two sub-sections: empirical findings on multiple regression analysis and empirical findings on panel data analysis. Since we have defined two indicators to proxy for the brokerage institutions' profitability, we further cascade our outcomes on two bases: 'Y_1 (AOP) set as the dependent variable' and 'Y_2

[8] See for instance Kök and Şimşek (unknown w.date) and Yaffee (posted on Nov. 5, 2003 and lastly revised on Nov. 30, 2005).

Table 3. Descriptive statistics.

	Mean	Std. Deviation	N
Y1	.23763674586910	.207941680447395	1197
X1	.80070559184553	.186742599322661	1197
X2	.17609762879751	.226071270768783	1197
X3	.22940299137070	.222208387453564	1197
X4	.27062542751942	.235143152393016	1197
X5	.19929440815447	.186742599322661	1197
X6	.00	.008	1197
X7	.11289962387754	.171332804242480	1197
X8	.36133884824921	.224517578278755	1197
X9	.05299180404479	.112105036244861	1197
X10	.17	.192	1197
X11	.02067661496098	.045281121270572	1197
X12	.00	.022	1197
X13	.00	.001	1197
X14	.61216359863957	.225124241985985	1197
X15	2.89140736213173E2	6.371579301834049E2	1197
X16	1.63570909679341E2	6.311446505487407E2	1197

(ATP) set as the dependent variable'.

Empirical findings: Multiple regression analysis

Y_1 (AOP) set as the dependent variable

We can discuss our empirical findings as the following. Table 3 presents the descriptives. Y_1 refers to the regressed variable and the variables that range from X_1 through X_{16} are all independent variables forming a vector. Observation number is 1197. This table tells that the profitability ratio being Y_1 dependent variable as a mean value of ca. % 24 and standard deviation of ca. 21%. The variable X_{15} has the highest mean and standard deviation of ca. 289% and ca. 637% respectively. The ones with the lowest mean values (ca. 0%) are X_6, X_{12} and X_{13}. Among these variables, the ratio X_{13} has the lowest standard deviation with ca. 0.1%.

Table 4a presents the correlations and Table 4b shows the entered/removed variables. Order of these tables matters as multiple regression analysis has been performed using stepwise method. We first need the correlations table in order to identify the variables to enter in or remove from the model. It shows the correlations between the dependent and the independent variables as well as the ones among the independent variables. According to this, the independent variables correlated to the dependent variable is ordered from the highest to the lowest at the significance level which is set at 5% being the default. From Table 4b, we see that SPSS builds up 7 different models wherein the simplest model consists of one variable (X_{15}) and the most comprehensive one is model 7. As the subsequent models illustrate, Model 7 is also the best fit model as it reveals statistically most robust and significant outcomes. Therefore, Table 5b orders the models from the weakest (worst fit) to the strongest (best fit) as well.

Table 5 presents the model summary. As implied from above, seven models have been set up in total. The weakest model is Model 1 and the strongest one is Model 7. The degree of (Pearson) correlation or coefficient being R indicates the level and the direction of the relationship between the dependent and the independent variable. In the case of Model 1, the relationship between Y_1 and X_{15} is 29.8%, with a positive direction and the adjusted R^2 is even less than 9%. However, in the case of Model 7, R value being positive is 49.5 % and the adjusted R^2 is 24.1%. In other words, the change in the level of the independent variables (X_{15}, X_7, X_{10}, X_4, X_2, X_{16}, X_8) accounts for the change in the level of the dependent variable ca. 24%. Model 7 is the one that explains the dependent variable among all the other models at best. Table 5 further shows that (i) all the changes in the coefficients of determinations (adjusted R^2) are significant ($p < 0.05$) and (ii) there is no any autocorrelation problem among the error terms.

Table 6 presents ANOVA stats. It tells that all the models are statistically significant ($p < 0.05$) and robust ($p \rightarrow 0$). Model 7 does not only predict the dependent variable as statistically significant ($p < 0.05$) but robustly as well ($p \rightarrow 0$). Table 7 is the table revealing the coefficients of the variables. In this, it will be appropriate to examine Model 7 across the unstandardized coefficients. Accordingly, the independent variables X_7, X_8, X_{10} and X_{16} adversely and the ones X_2, X_4 and X_{15}

Table 4a. Correlations.

		Y1	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16
Pearson correlation	Y1	1.000	.156	.160	-.089	.137	-.156	-.007	-.212	-.085	.016	-.134	.016	-.021	-.026	.083	.298	.082
	X1	.156	1.000	.224	.259	.219	-1.000	-.063	-.871	.350	.043	.257	-.163	.020	.006	-.335	-.007	.027
	X2	.160	.224	1.000	-.280	-.350	-.224	.011	-.237	-.094	-.151	-.004	-.007	.028	-.069	.099	.061	.025
	X3	-.089	.259	-.280	1.000	-.325	-.259	-.075	-.155	-.288	-.063	-.209	-.043	-.031	.054	.274	-.075	.046
	X4	.137	.219	-.350	-.325	1.000	-.219	-.047	-.227	.426	.284	.389	-.069	-.017	.052	-.417	-.005	.019
	X5	-.156	-1.000	-.224	-.259	-.219	1.000	.063	.871	-.350	-.043	-.257	.163	-.020	-.006	.335	.007	-.027
	X6	-.007	-.063	.011	-.075	-.047	.063	1.000	-.010	-.009	-.031	.001	.177	-.010	.163	-.021	-.014	-.030
	X7	-.212	-.871	-.237	-.155	-.227	.871	-.010	1.000	-.287	-.064	-.221	.056	-.014	-.001	.286	-.037	-.009
	X8	-.085	.350	-.094	-.288	.426	-.350	-.009	-.287	1.000	.383	.619	-.135	-.035	.101	-.972	.009	-.058
	X9	.016	.043	-.151	-.063	.284	-.043	-.031	-.064	.383	1.000	-.063	-.009	-.012	.023	-.374	.079	.032
	X10	-.134	.257	-.004	-.209	.389	-.257	.001	-.221	.619	-.063	1.000	-.102	-.011	.091	-.601	-.055	-.047
	X11	.016	-.163	-.007	-.043	-.069	.163	.177	.056	-.135	-.009	-.102	1.000	.463	-.006	-.059	.033	-.021
	X12	-.021	.020	.028	-.031	-.017	-.020	-.010	-.014	-.035	-.012	-.011	.463	1.000	-.005	-.058	-.009	-.009
	X13	-.026	.006	-.069	.054	.052	-.006	.163	-.001	.101	.023	.091	-.006	-.005	1.000	-.097	-.013	-.015
	X14	.083	-.335	.099	.274	-.417	.335	-.021	.286	-.972	-.374	-.601	-.059	-.058	-.097	1.000	-.007	.062
	X15	.298	-.007	.061	-.075	-.005	.007	-.014	-.037	.009	.079	-.055	.033	-.009	-.013	-.007	1.000	.613
	X16	.082	.027	.025	.046	.019	-.027	-.030	-.009	-.058	.032	-.047	-.021	-.009	-.015	.062	.613	1.000
Sig. (1-tailed)	Y1	.	.000	.000	.001	.000	.000	.399	.000	.002	.295	.000	.293	.233	.187	.002	.000	.002
	X1	.000	.	.000	.000	.000	.000	.015	.000	.000	.070	.000	.000	.249	.421	.000	.406	.171
	X2	.000	.000	.	.000	.000	.000	.356	.000	.001	.000	.452	.407	.164	.008	.000	.018	.190
	X3	.001	.000	.000	.	.000	.000	.005	.000	.000	.015	.000	.070	.140	.032	.000	.005	.057
	X4	.000	.000	.000	.000	.	.000	.053	.000	.000	.000	.000	.009	.273	.037	.000	.428	.257
	X5	.000	.000	.000	.000	.000	.	.015	.000	.000	.070	.000	.000	.249	.421	.000	.406	.171
	X6	.399	.015	.356	.005	.053	.015	.	.370	.376	.139	.484	.000	.366	.000	.230	.315	.151
	X7	.000	.000	.000	.000	.000	.000	.370	.	.000	.014	.000	.026	.312	.485	.000	.102	.384
	X8	.002	.000	.001	.000	.000	.000	.376	.000	.	.000	.000	.000	.114	.000	.000	.383	.022
	X9	.295	.070	.000	.015	.000	.070	.139	.014	.000	.	.014	.384	.339	.210	.000	.003	.136

Table 4a. Contd.

	X10	.000	.000	.452	.000	.000	.000	.484	.000	.000	.014	.	.000	.357	.001	.000	.030	.051
	X11	.293	.000	.407	.070	.009	.000	.000	.026	.000	.384	.000	.	.000	.420	.020	.127	.230
	X12	.233	.249	.164	.140	.273	.249	.366	.312	.114	.339	.357	.000	.	.432	.022	.378	.378
	X13	.187	.421	.008	.032	.037	.421	.000	.485	.000	.210	.001	.420	.432	.	.000	.326	.302
	X14	.002	.000	.000	.000	.000	.000	.230	.000	.000	.000	.000	.020	.022	.000	.	.403	.016
	X15	.000	.406	.018	.005	.428	.406	.315	.102	.383	.003	.030	.127	.378	.326	.403	.	.000
	X16	.002	.171	.190	.057	.257	.171	.151	.384	.022	.136	.051	.230	.378	.302	.016	.000	.
N	Y1	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X1	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X2	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X3	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X4	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X5	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X6	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X7	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X8	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X9	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X10	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X11	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X12	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X13	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X14	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X15	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X16	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197

or AOP. All these relationships are both statistically significant as $p < 0,05$ and robust as $p \rightarrow 0$. The model constant value is 0.212 or 21.2%. Standardized coefficients column reports that the variable being of the highest signi-ficance degree is X_{15} with 0.384 while the one with the lowest significance degree (0.141) appears as X_8. Thus; H_2, H_4, H_7, H_8, H_{10}, H_{15}, H_{16} are accepted leaving the resting eight hypotheses rejected.

Y_2 (ATP) set as the dependent variable

We will discuss here important tables along our objective. As to be realized from Tables 8, 8a and b, when Y_2 becomes the dependent variable, we face five different models. Once Model 5 is picked up among all the others, R value appears as 0.357. Accordingly, the degree of the relationship among the given variables in the model is 35.7% with an overall positive direction. The best fit

Table 4b. Variables entered/removed[b].

Model	Variables entered	Variables removed	Method
1	X15	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	X7	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	X10	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
4	X4	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
5	X2	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
6	X16	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
7	X8	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent variable: Y1.

Table 5. Model summary[h].

					Change statistics					
Model	R	R square	Adjusted R square	Std. error of the estimate	R square change	F change	df1	df2	Sig. F change	Durbin-Watson
1	.298a	.089	.088	.198605002801139	.089	116.094	1	1195	.000	
2	.359b	.129	.128	.194223338753927	.041	55.526	1	1194	.000	
3	.396c	.157	.155	.191170862762199	.028	39.434	1	1193	.000	
4	.430d	.185	.182	.188093025911670	.028	40.362	1	1192	.000	
5	.465e	.216	.213	.184456355181586	.032	48.465	1	1191	.000	
6	.484f	.234	.230	.182431012684561	.018	27.592	1	1190	.000	
7	.495g	.245	.241	.181194092091209	.011	17.303	1	1189	.000	1.562

a. Predictors: (Constant), X15, b. Predictors: (Constant), X15, X7, c. Predictors: (Constant), X15, X7, X10, d. Predictors: (Constant), X15, X7, X10, X4, e. Predictors: (Constant), X15, X7, X10, X4, X2, f. Predictors: (Constant), X15, X7, X10, X4, X2, X16, g. Predictors: (Constant), X15, X7, X10, X4, X2, X16, X8, h. Dependent variable: Y1.

model is Model 5 entailing the independent variables X_4, X_7, X_8 and X_{11} as it is the one ranking with the highest adjusted R^2 value (12.4%) among all the resting models. In other words, the change in the level of the independent variables accounts for the change in the level of the dependent variable ca. 12.4% with Model 5. Further, we see that the changes in all the models are statistically significant at the significance level of 5% ($p < 0.05$) and that there is no any autocorrelation problem positively relate to the dependent variable being Y_1 among the error terms.

Examining Table 9, we see that at the significance level of 5%, all the models including Model 5 are both statistically significant ($p < 0.05$) and robust ($p \rightarrow 0$). Table 10 shows the coefficients of the variables given that Y_2 or ATP is the dependent variable. Looking at Model 5 which is the most significant and robust one, we see that the variables X_8 and X_{11} negatively and the variables X_1, X_4 and X_7 positively relate to Y_2. The model coefficient takes a value of -0.256. The standardized coefficients column of the same table tells that X_1 has the highest significance value with 48.9% while X_4 takes the lowest significance value of 13%. Hence, we accept H_1, H_4, H_7, H_8, H_{11} and reject the resting 11 hypotheses. Next section presents the panel data analysis findings for each of the preset profitability
ratios.

Empirical findings: Panel data analysis

This section discusses the findings on the panel data analysis performed for both the profitability indicators, that is, AOP being Y_1 and ATP being Y_2. Panel regressions have been set through fixed and random effects models and run with E-views. For one thing, to perform panel analysis with fixed and random effects, dataset needs not exhibit any matrix singularity character or something close to it.[9] This was a problem we confronted with. In tackling this issue, ob-serving the results obtained from thestepwise regression analysis, we have removed some noisy variables from our vector

[9] Singular matrices are the matrices whose determinations are zero.

Table 6. ANOVA[h].

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	4.579	1	4.579	116.094	.000[a]
	Residual	47.136	1195	.039		
	Total	51.715	1196			
2	Regression	6.674	2	3.337	88.459	.000[b]
	Residual	45.041	1194	.038		
	Total	51.715	1196			
3	Regression	8.115	3	2.705	74.016	.000[c]
	Residual	43.600	1193	.037		
	Total	51.715	1196			
4	Regression	9.543	4	2.386	67.434	.000[d]
	Residual	42.172	1192	.035		
	Total	51.715	1196			
5	Regression	11.192	5	2.238	65.788	.000[e]
	Residual	40.523	1191	.034		
	Total	51.715	1196			
6	Regression	12.110	6	2.018	60.646	.000[f]
	Residual	39.604	1190	.033		
	Total	51.715	1196			
7	Regression	12.678	7	1.811	55.167	.000[g]
	Residual	39.036	1189	.033		
	Total	51.715	1196			

a. Predictors: (Constant), X15, b. Predictors: (Constant), X15, X7, c. Predictors: (Constant), X15, X7, X10, d. Predictors: (Constant), X15, X7, X10, X4, e. Predictors: (Constant), X15, X7, X10, X4, X2, f. Predictors: (Constant), X15, X7, X10, X4, X2, X16, g. Predictors: (Constant), X15, X7, X10, X4, X2, X16, X8, h. Dependent Variable: Y1.

Table 7. Coefficients[a].

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	95% Confidence ınterval for B	
		B	Std. error	Beta			Lower bound	Upper bound
1	(Constant)	.210	.006		33.240	.000	.197	.222
	X15	9.711E-5	.000	.298	10.775	.000	.000	.000
2	(Constant)	.238	.007		32.850	.000	.224	.252
	X15	9.470E-5	.000	.290	10.737	.000	.000	.000
	X7	-.244	.033	-.201	-7.452	.000	-.309	-.180
3	(Constant)	.276	.009		29.399	.000	.258	.295
	X15	9.119E-5	.000	.279	10.482	.000	.000	.000
	X7	-.291	.033	-.240	-8.783	.000	-.356	-.226
	X10	-.186	.030	-.172	-6.280	.000	-.244	-.128
4	(Constant)	.241	.011		22.412	.000	.220	.262
	X15	9.067E-5	.000	.278	10.592	.000	.000	.000
	X7	-.258	.033	-.213	-7.820	.000	-.323	-.193
	X10	-.256	.031	-.237	-8.229	.000	-.317	-.195
	X4	.162	.025	.183	6.353	.000	.112	.211

Table 7. Contd.

5	(Constant)	.182	.014		13.370	.000	.155	.208
	X15	8.715E-5	.000	.267	10.363	.000	.000	.000
	X7	-.179	.034	-.148	-5.232	.000	-.247	-.112
	X10	-.281	.031	-.259	-9.131	.000	-.341	-.220
	X4	.246	.028	.278	8.866	.000	.191	.300
	X2	.188	.027	.205	6.962	.000	.135	.242
6	(Constant)	.180	.013		13.365	.000	.153	.206
	X15	.000	.000	.370	11.504	.000	.000	.000
	X7	-.176	.034	-.145	-5.177	.000	-.242	-.109
	X10	-.285	.030	-.263	-9.375	.000	-.345	-.225
	X4	.251	.027	.284	9.163	.000	.198	.305
	X2	.189	.027	.206	7.072	.000	.137	.242
	X16	-5.562E-5	.000	-.169	-5.253	.000	.000	.000
7	(Constant)	.212	.015		13.744	.000	.181	.242
	X15	.000	.000	.384	11.940	.000	.000	.000
	X7	-.201	.034	-.166	-5.872	.000	-.268	-.134
	X10	-.205	.036	-.190	-5.738	.000	-.275	-.135
	X4	.272	.028	.308	9.822	.000	.218	.326
	X2	.180	.027	.196	6.740	.000	.128	.232
	X16	-6.000E-5	.000	-.182	-5.676	.000	.000	.000
	X8	-.131	.031	-.141	-4.160	.000	-.192	-.069

a. Dependent Variable: Y1

of independent variables.[10] X_3, X_5, X_6, X_9, X_{12}, X_{13} and X_{14} have hence been precluded from this set of identifiers. This helped to root out the singularity problem. For another thing, we need to have a balanced panel to carry out the panel regression with two-way random effects. This is purported to gauge if cross-sections and/or temporal dimensions are influential on the degree of the regressed variable.[11] The initial observation number was 1197. Removing the redundant nine observations from the sample set along 99 cross-sections (brokerage institutions) and 12 quarter periods, observation number reduced to 1188 (99*12). Hence unbalanced panel became balanced panel, which allowed us to gather tractable results from random effects model as well. In other words, it has been possible to make the panel analysis along both dynamic cross-section and time dimensions.

Y_1 (AOP) set as the dependent variable

We first needed to check if the series are stationary and thereby conducted unit root tests. Table 11 reports that there is neither common nor unit roots among the series, which implies that the series are stationary and that there is no need to reorganize or adjust them. Therefore, panel data analysis has been doable.

Looking at the fixed and random effects model, we see that X_2, X_4, X_7, X_8, X_{10}, X_{15} and X_{16} are the variables that do significantly account for the dependent variable being Y_1 or AOP. The explanatory variables X_7, X_8, X_{10} and X_{16} negatively and the ones X_2, X_4 and X_{15} positively relate to the dependent variable. All these relationships are both statistically significant as $p < 0.05$ and robust as $p \rightarrow 0$. Adjusted R^2 value in fixed effects model (Table 12) appears as ca. 42%, which means that the changes in the

[10] Stepwise regression provides us with a due diligence opportunity to make a cross-check with panel data analysis among the others. Particularly, as we can recognize that which variables are statistically significant, we can use them to disentangle the redundant variables from the entire set of the panel data, so that we can have a smooth (ie. non-singular matrix) structure with a determination value of non-zero. Recall that, should we not predefine any cross-section or temporal effects in running the panel analysis, the results we get will be pooled (ordinary least regression) model results by default.

[11] Panel regression with fixed effects model does not need to tune the panel data. Nonetheless, if a matrix singularity is detected, one needs to rearrange the panel set anyway.

Table 8. Descriptive statistics.

	Mean	Std. Deviation	N
Y2	.03346339813567	.146036034148202	1197
X1	.80070559184553	.186742599322661	1197
X2	.17609762879751	.226071270768783	1197
X3	.22940299137070	.222208387453564	1197
X4	.27062542751942	.235143152393016	1197
X5	.19929440815447	.186742599322661	1197
X6	.00	.008	1197
X7	.11289962387754	.171332804242480	1197
X8	.36133884824921	.224517578278755	1197
X9	.05299180404479	.112105036244861	1197
X10	.17	.192	1197
X11	.02067661496098	.045281121270572	1197
X12	.00	.022	1197
X13	.00	.001	1197
X14	.61216359863957	.225124241985985	1197
X15	2.89140736213173E2	6.371579301834049E2	1197
X16	1.63570909679341E2	6.311446505487407E2	1197

Table 8a. Correlations.

		Y2	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16
Pearson correlation	Y2	1.000	.144	.044	.099	.056	-.144	-.118	-.036	-.115	-.086	-.031	-.197	-.018	-.022	.148	-.050	.043
	X1	.144	1.000	.224	.259	.219	-1.000	-.063	-.871	.350	.043	.257	-.163	.020	.006	-.335	-.007	.027
	X2	.044	.224	1.000	-.280	-.350	-.224	.011	-.237	-.094	-.151	-.004	-.007	.028	-.069	.099	.061	.025
	X3	.099	.259	-.280	1.000	-.325	-.259	-.075	-.155	-.288	-.063	-.209	-.043	-.031	.054	.274	-.075	.046
	X4	.056	.219	-.350	-.325	1.000	-.219	-.047	-.227	.426	.284	.389	-.069	-.017	.052	-.417	-.005	.019
	X5	-.144	-1.000	-.224	-.259	-.219	1.000	.063	.871	-.350	-.043	-.257	.163	-.020	-.006	.335	.007	-.027
	X6	-.118	-.063	.011	-.075	-.047	.063	1.000	-.010	-.009	-.031	.001	.177	-.010	.163	-.021	-.014	-.030
	X7	-.036	-.871	-.237	-.155	-.227	.871	-.010	1.000	-.287	-.064	-.221	.056	-.014	-.001	.286	-.037	-.009
	X8	-.115	.350	-.094	-.288	.426	-.350	-.009	-.287	1.000	.383	.619	-.135	-.035	.101	-.972	.009	-.058
	X9	-.086	.043	-.151	-.063	.284	-.043	-.031	-.064	.383	1.000	-.063	-.009	-.012	.023	-.374	.079	.032
	X10	-.031	.257	-.004	-.209	.389	-.257	.001	-.221	.619	-.063	1.000	-.102	-.011	.091	-.601	-.055	-.047
	X11	-.197	-.163	-.007	-.043	-.069	.163	.177	.056	-.135	-.009	-.102	1.000	.463	-.006	-.059	.033	-.021
	X12	-.018	.020	.028	-.031	-.017	-.020	-.010	-.014	-.035	-.012	-.011	.463	1.000	-.005	-.058	-.009	-.009
	X13	-.022	.006	-.069	.054	.052	-.006	.163	-.001	.101	.023	.091	-.006	-.005	1.000	-.097	-.013	-.015
	X14	.148	-.335	.099	.274	-.417	.335	-.021	.286	-.972	-.374	-.601	-.059	-.058	-.097	1.000	-.007	.062
	X15	-.050	-.007	.061	-.075	-.005	.007	-.014	-.037	.009	.079	-.055	.033	-.009	-.013	-.007	1.000	.613
	X16	.043	.027	.025	.046	.019	-.027	-.030	-.009	-.058	.032	-.047	-.021	-.009	-.015	.062	.613	1.000
Sig. (1-tailed)	Y2	.	.000	.065	.000	.026	.000	.000	.108	.000	.001	.142	.000	.268	.221	.000	.043	.068
	X1	.000	.	.000	.000	.000	.000	.015	.000	.000	.070	.000	.000	.249	.421	.000	.406	.171
	X2	.065	.000	.	.000	.000	.000	.356	.000	.001	.000	.452	.407	.164	.008	.000	.018	.190
	X3	.000	.000	.000	.	.000	.000	.005	.000	.000	.015	.000	.070	.140	.032	.000	.005	.057
	X4	.026	.000	.000	.000	.	.000	.053	.000	.000	.000	.000	.009	.273	.037	.000	.428	.257
	X5	.000	.000	.000	.000	.000	.	.015	.000	.000	.070	.000	.000	.249	.421	.000	.406	.171

Table 8a. Contd.

	X6	.000	.015	.356	.005	.053	.015	.	.370	.376	.139	.484	.000	.366	.000	.230	.315	.151
	X7	.108	.000	.000	.000	.000	.000	.370	.	.000	.014	.000	.026	.312	.485	.000	.102	.384
	X8	.000	.000	.001	.000	.000	.000	.376	.000	.	.000	.000	.000	.114	.000	.000	.383	.022
	X9	.001	.070	.000	.015	.000	.070	.139	.014	.000	.	.014	.384	.339	.210	.000	.003	.136
	X10	.142	.000	.452	.000	.000	.000	.484	.000	.000	.014	.	.000	.357	.001	.000	.030	.051
	X11	.000	.000	.407	.070	.009	.000	.000	.026	.000	.384	.000	.	.000	.420	.020	.127	.230
	X12	.268	.249	.164	.140	.273	.249	.366	.312	.114	.339	.357	.000	.	.432	.022	.378	.378
	X13	.221	.421	.008	.032	.037	.421	.000	.485	.000	.210	.001	.420	.432	.	.000	.326	.302
	X14	.000	.000	.000	.000	.000	.000	.230	.000	.000	.000	.000	.020	.022	.000	.	.403	.016
	X15	.043	.406	.018	.005	.428	.406	.315	.102	.383	.003	.030	.127	.378	.326	.403	.	.000
	X16	.068	.171	.190	.057	.257	.171	.151	.384	.022	.136	.051	.230	.378	.302	.016	.000	.
N	Y2	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X1	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X2	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X3	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X4	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X5	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X6	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X7	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X8	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X9	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X10	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X11	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X12	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X13	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X14	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X15	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197
	X16	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197	1197

independent variables account for the changes in the level of the profitability (AOP) as much as ca. 42%. On the other hand, adjusted R^2 value in random effects model (Table 13) is ca. 25%, meaning that the independent variables explain the profitability (AOP) as much as ca. 25%.

We are interested in seeing which panel model should be followed to better predict the brokerage houses' profitability. Therefore, we have conducted a Hausman test. The test results show that random effects model should be used to predict the profitability as the p-value in Table 14 is much greater than 5%, telling that cross-section and temporal effects are randomly given (e.g. Kök and Şimşek, ibid.). This can also be understood looking at the F-stat of the fixed effects model (ca. 8) versus that of random effects model (ca. 45). This suggests that both the cross-sections or groups (brokerage institutions) and time are influential in determining the profitability and thus we need to consider not fixed but random effects panel regression in interpreting the outcomes.

Y_2 (ATP) set as the dependent variable

As Table 15 reports that the series across and within the roots are stationary ($p < 0.05$), there is not either common nor any unit root problem over here as well. On the fixed effects model, the results suggest that X_1, X_2, X_4, X_7, X_8 and X_{11} are the variables that do significantly account for the dependent variable being Y_2 or ATP. The explanatory

Table 8b. Variables entered/removed[a].

Model	Variables entered	Variables removed	Method
1	X11	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	X8	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	X1	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
4	X7	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
5	X4	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Y2.

Table 9a. Model summary[f].

Model	R	R square	Adjusted R square	Std. error of the estimate	Change statistics					Durbin-Watson
					R square change	F change	df1	df2	Sig. F change	
1	.197[a]	.039	.038	.143239581082055	.039	48.155	1	1195	.000	
2	.243[b]	.059	.058	.141766534329941	.020	25.963	1	1194	.000	
3	.298[c]	.089	.086	.139591424153291	.029	38.500	1	1193	.000	
4	.338[d]	.114	.111	.137696808642069	.025	34.056	1	1192	.000	
5	.357[e]	.127	.124	.136695782056969	.014	18.522	1	1191	.000	1.993

a. Predictors: (Constant), X11, b. Predictors: (Constant), X11, X8, c. Predictors: (Constant), X11, X8, X1, d. Predictors: (Constant), X11, X8, X1, X7, e. Predictors: (Constant), X11, X8, X1, X7, X4, f. Dependent Variable: Y2.

Table 9b. ANOVA[f]

	Model	Sum of squares	df	Mean square	F	Sig.
1	Regression	.988	1	.988	48.155	.000[a]
	Residual	24.519	1195	.021		
	Total	25.507	1196			
2	Regression	1.510	2	.755	37.562	.000[b]
	Residual	23.997	1194	.020		
	Total	25.507	1196			
3	Regression	2.260	3	.753	38.661	.000[c]
	Residual	23.247	1193	.019		
	Total	25.507	1196			
4	Regression	2.906	4	.726	38.313	.000[d]
	Residual	22.601	1192	.019		
	Total	25.507	1196			
5	Regression	3.252	5	.650	34.805	.000[e]
	Residual	22.255	1191	.019		
	Total	25.507	1196			

a. Predictors: (Constant), X11, b. Predictors: (Constant), X11, X8, c. Predictors: (Constant), ,X11, X8, X1, d. Predictors: (Constant), X11, X8, X1, X7, e. Predictors: (Constant), X11, X8, X1, X7, X4, f. Dependent Variable: Y2.

variables X_8, X_{11} and X_{15} adversely and the ones X_1, X_2, X_4 and X_7 positively relate to the dependent variable. All these relationships are both statistically significant as $p < 0.05$ and robust as $p \rightarrow 0$. For the random effects model, it is almost the same, with the exception that X_2 isstatistically insignificant out there ($p > 0.05$). Adjusted R^2 value in fixed effects model (Table 16) appears as ca. 15%, which means that the changes in the independent variables account for the changes in the degree of the adjusted R^2 value in random effects model (Table 17) is almost 13%, meaning that the independent variables explain the profitability as much as ca. 13%.

Table 10. Coefficients[a].

Model		Unstandardized coefficients		Standardized Coefficients	t	Sig.	95% confidence ınterval for B	
		B	Std. error	Beta			Lower bound	Upper bound
1	(Constant)	.047	.005		10.235	.000	.038	.056
	X11	-.635	.091	-.197	-6.939	.000	-.814	-.455
2	(Constant)	.082	.008		9.915	.000	.066	.098
	X11	-.698	.091	-.216	-7.635	.000	-.877	-.518
	X8	-.094	.018	-.144	-5.095	.000	-.130	-.058
3	(Constant)	-.021	.018		-1.124	.261	-.057	.015
	X11	-.627	.091	-.194	-6.917	.000	-.805	-.449
	X8	-.134	.019	-.206	-6.957	.000	-.172	-.096
	X1	.144	.023	.185	6.205	.000	.099	.190
4	(Constant)	-.237	.041		-5.742	.000	-.318	-.156
	X11	-.534	.091	-.166	-5.880	.000	-.712	-.356
	X8	-.137	.019	-.210	-7.197	.000	-.174	-.099
	X1	.374	.046	.478	8.210	.000	.285	.463
	X7	.281	.048	.330	5.836	.000	.187	.375
5	(Constant)	-.256	.041		-6.217	.000	-.337	-.175
	X11	-.526	.090	-.163	-5.836	.000	-.703	-.349
	X8	-.171	.020	-.262	-8.346	.000	-.211	-.130
	X1	.383	.045	.489	8.458	.000	.294	.472
	X7	.302	.048	.354	6.282	.000	.208	.396
	X4	.081	.019	.130	4.304	.000	.044	.117

a. Dependent Variable: Y2.

Table 11. Unit root tests.

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin and Chu t*	-7.83833	0.0000	14	16690
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-90.5556	0.0000	14	16690
ADF - Fisher Chi-square	1383.71	0.0000	14	16690
PP - Fisher Chi-square	1280.70	0.0000	14	16743

** Probabilities for Fisher tests are computed using an asymptotic Chi. -square distribution. All other tests assume asymptotic normality.

Hausman test (Table 18) indicates that random effects panel regression should be preferred over fixed effects model as $p > 0.05$. This suggests that X_2 be removed from our set of profitability identifiers. Hence the determinants underlying the profitability appear as X_1, X_2, X_4, X_7, X_8 and X_{11} ratios.

To sum up, the empirical findings report that the factors (ratios) significantly and robustly accounting for the operating profitability of total assets are Liquid Assets/Total Assets, Current Trade Receivables/Total Assets, Stock Trading Volume/Total Assets, Financial Assets/Total Assets, Short-Term Liabilities/Total Assets, Short-Term Trade Payables/Total Assets and Fixed Income Securities Trading Volume/Total Assets. The first the profitability. Pre-tax profitability of total assets has been found to be accounted for by the ratios Short-Term Liabilities/Total Assets, Long-Term Liabilities/Total Assets, Current Assets/Total Assets, Current Trade Receivables/ Total Assets and Financial Assets/Total Assets. The first two is negatively and the last three is positively related to the profitability. In the case of multiple regression analysis; the adjusted coefficient of determination in the best fit model (24.1%) wherein the dependent variable is the operating profitability of total assets hugely varies from the one (12.4%) in the best fit model wherein the dependent variable is the pre-tax profitability of total assets. In the case of panel data analysis, random effects models have been shown to be considered in both the profitability

Table 12. Fixed effects

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.204167	0.050757	4.022422	0.0001
X1	0.022256	0.055265	0.402722	0.6872
X10	-0.203863	0.034119	-5.974987	0.0000
X11	-0.006479	0.109733	-0.059042	0.9529
X15	9.71E-05	9.87E-06	9.838760	0.0000
X16	-4.55E-05	1.01E-05	-4.506732	0.0000
X2	0.172186	0.024911	6.912124	0.0000
X4	0.257077	0.025452	10.10057	0.0000
X7	-0.193654	0.058881	-3.288902	0.0010
X8	-0.131622	0.030200	-4.358309	0.0000

Effects Specification			
Cross-section fixed (dummy variables)			
Period fixed (dummy variables)			
R-squared	0.473473	Mean dependent var	0.237687
Adjusted R-squared	0.415353	S.D. dependent var	0.208286
S.E. of regression	0.159260	Akaike info criterion	-0.741770
Sum squared resid	27.11380	Schwarz criterion	-0.232912
Log likelihood	559.6112	Hannan-Quinn criter.	-0.549992
F-statistic	8.146479	Durbin-Watson stat	2.275938
Prob(F-statistic)	0.000000		

Dependent Variable: Y1, Method: Panel Least Squares,Sample: 2005Q1 2007Q4. Periods included: 12 Cross-sections included: 99. Total panel (balanced) observations: 1188.

forms. For the operating profitability of total assets, the adjusted coefficient of determination has been reported to be ca. 25%, while for the pre-tax profitability of total assets, it was reported as ca. 13%. Namely; when the profitability ratio is set not relying on earnings before taxes but on gross real operating income, the effects of the firm-level factors on the profitability become profound and the model's predictive power rises significantly. However, no three is positively and the last four is adversely related to matter how profitability is given, the factors (ratios) current trade receivables to total assets, financial assets to total assets and short-term liabilities to total assets preserve their significances ($p<0,05$) and robustnesses ($p\rightarrow0$) in either the cases. As to be recalled from Table 1, these firm-level or micro factors are such proportional values that have been obtained from the balance sheet items of the brokerage institutions. For this reason, we can argue that the balance sheet-based factors such as current trade receivables to total assets, financial assets to total assets and short-term liabilities to total assets not only significantly and robustly but commonly explain the brokerage houses' profitability.

CONCLUSION AND SOME POLICY RECOMMENDATIONS

Following banks, brokerage institutions are remarkably important businesses running in the capital markets in general and financial services industry in particular. With this awareness, in parallel to the studies made for the similar sectors such as banking, the firm-level or micro factors that determine profitability in the brokerage institutions have been the main subject-matter of this paper. These firm-level factors are firm-intrinsic characters that stem from the brokerage institutions' self dynamics. In this respect, along the financial reporting techniques mandated by the respective statute, a large number of brokerage institutions overseen and supervised by CMB of Turkey has been sampled for all the quarter periods running from 2005 through 2007. This ensured not only the existence of the complete data but also the reliability, through assuring coherence and consistency within and across the entire set of the financial information exhausted in this study.

As the basic objective of ours is to identify the role of the underlying firm-level indicators and their effects on the brokerage institutions' profitability, two empirical examinations have been conducted. Two sets of dependent variables were set to control for the profitability given as return on assets. The first regressed variable was built on the net revenue or income sourcing from the conduct of the main (gross real) operations (that is, operating profitability of total assets). The second one was drawn on the earnings before taxes (that is, pre-tax profitability of total assets) unveiling the global revenue that comes

Table 13. Random effects.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.197148	0.051224	3.848767	0.0001
X1	0.027428	0.055174	0.497114	0.6192
X10	-0.207013	0.033514	-6.176919	0.0000
X11	-0.013361	0.108923	-0.122663	0.9024
X15	0.000106	9.81E-06	10.76075	0.0000
X16	-5.01E-05	9.97E-06	-5.024040	0.0000
X2	0.174513	0.024712	7.061850	0.0000
X4	0.260604	0.025190	10.34560	0.0000
X7	-0.189287	0.058719	-3.223599	0.0013
X8	-0.131612	0.029868	-4.406439	0.0000

Effects specification		
	S.D.	Rho
Cross-section random	0.078130	0.1940
Period random	0.000000	0.0000
Idiosyncratic random	0.159260	0.8060

Weighted statistics			
R-squared	0.255180	Mean dependent var	0.120542
Adjusted R-squared	0.249490	S.D. dependent var	0.185428
S.E. of regression	0.160640	Sum squared resid	30.39864
F-statistic	44.84344	Durbin-Watson stat	2.049321
Prob(F-statistic)	0.000000		

Unweighted statistics			
R-squared	0.243018	Mean dependent var	0.237687
Sum squared resid	38.98120	Durbin-Watson stat	1.598119

Dependent variable: Y1. Method: Panel EGLS (Two-way random effects). Sample: 2005Q1 2007Q4. Periods included: 12. Cross-sections included: 99. Total panel (balanced) observations: 1188. Swamy and Arora estimator of component variances.

Table 14. Husman test.

Test summary	Chi-Sq. statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	9	1.0000
Period random	0.000000	9	1.0000
Cross-section and period random	0.000000	9	1.0000

Correlated Random Effects - Hausman Test. Equation: Untitled. Test cross-section and period random effects.

Table 15. Unit root tests.

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin and Chu t*	-7.83833	0.0000	14	16690
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-90.5556	0.0000	14	16690
ADF - Fisher Chi-square	1383.71	0.0000	14	16690
PP - Fisher Chi-square	1280.70	0.0000	14	16743

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Table 16. Fixed effects.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.244953	0.042933	-5.705491	0.0000
X1	0.357114	0.046745	7.639555	0.0000
X10	0.016261	0.028860	0.563454	0.5732
X11	-0.523463	0.092817	-5.639716	0.0000
X15	-1.73E-05	8.35E-06	-2.070803	0.0386
X16	1.45E-05	8.53E-06	1.703274	0.0888
X2	0.045006	0.021071	2.135947	0.0329
X4	0.090605	0.021528	4.208670	0.0000
X7	0.289677	0.049804	5.816295	0.0000
X8	-0.171194	0.025545	-6.701729	0.0000

Effects specification			
Cross-section fixed (dummy variables)			
Period fixed (dummy variables)			
R-squared	0.230017	Mean dependent var	0.033473
Adjusted R-squared	0.145024	S.D. dependent var	0.145687
S.E. of regression	0.134709	Akaike info criterion	-1.076605
Sum squared resid	19.39873	Schwarz criterion	-0.567747
Log likelihood	758.5034	Hannan-Quinn criter.	-0.884827
F-statistic	2.706291	Durbin-Watson stat	2.268244
Prob(F-statistic)	0.000000		

Dependent Variable: Y2. Method: Panel Least Squares. Sample: 2005Q1 2007Q4. Periods included: 12. Cross-sections included: 99. Total panel (balanced) observations: 1188.

Table 17. Random Effects.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.244800	0.041865	-5.847385	0.0000
X1	0.359264	0.045593	7.879883	0.0000
X10	0.011396	0.027080	0.420807	0.6740
X11	-0.525226	0.089634	-5.859709	0.0000
X15	-1.39E-05	8.02E-06	-1.733426	0.0833
X16	1.12E-05	8.12E-06	1.372921	0.1700
X2	0.037641	0.020174	1.865852	0.0623
X4	0.090683	0.020746	4.371061	0.0000
X7	0.291293	0.048571	5.997279	0.0000
X8	-0.172130	0.024261	-7.094772	0.0000

Effects specification		
	S.D.	**Rho**
Cross-section random	0.023370	0.0292
Period random	0.000000	0.0000
Idiosyncratic random	0.134709	0.9708

Weighted statistics			
R-squared	0.133930	Mean dependent var	0.028690
Adjusted R-squared	0.127314	S.D. dependent var	0.143820

Table 17. contd.

S.E. of regression	0.134354	Sum squared resid	21.26400
F-statistic	20.24087	Durbin-Watson stat	2.090718
Prob(F-statistic)	0.000000		
Unweighted statistics			
R-squared	0.131273	Mean dependent var	0.033473
Sum squared resid	21.88647	Durbin-Watson stat	2.031257

Dependent variable: Y2. Method: Panel EGLS (Two-way random effects). Sample: 2005Q1 2007Q4. Periods included: 12. Cross-sections included: 99. Total panel (balanced) observations: 1188. Swamy and Arora estimator of component variances.

Table 18. Hausman test.

Test Summary	Chi-Sq. statistic	Chi-Sq. d.f.	Prob.
Cross-section random	5.508388	9	0.7879
Period random	4.693322	9	0.8602
Cross-section and period random	5.914701	9	0.7484

Correlated random effects - Hausman Test. Equation: Untitled. Test cross-section and period random effects.

from the maintance of not only the main but the entire array of financial activities.

The empirical findings suggest that the factors (ratios) significantly and robustly accounting for the operating profitability of total assets are Liquid Assets/Total Assets, Current Trade Receivables/Total Assets, Stock Trading Volume/Total Assets, Financial Assets/Total Assets, Short-Term Liabilities/Total Assets, Short-Term Trade Payables/Total Assets and Fixed Income Securities Trading Volume/Total Assets. The first three is positively and the last four is adversely related to the profitability. Pre-tax profitability of total assets has been found to be accounted for by the ratios Short-Term Liabilities/Total Assets, Long-Term Liabilities/Total Assets, Current Assets/Total Assets, Current Trade Receivables/Total Assets and Financial Assets/Total Assets. The first two is negatively and the last three is positively related to the profitability. Findings further point that the firm-level factors explain (identify) the operating profitability of the assets as much as ca. 25% on average and the pre-tax profitability of the assets as much as ca. 13% on average.

The findings also suggest that the balance sheet-based factors such as current trade receivables to total assets, financial assets to total assets and short-term liabilities to total assets not only significantly and robustly but commonly explain the brokerage houses' profitability. This implies that analyzing the balance sheets of the brokerage institutions will help understand their earnings and hence profitability formations or patterns.

The abovementioned points recommend that the public authorities, in particular those organizing, overseeing and/or supervising the brokerage institutions, assume or shoulder some responsibilities. The analyses in this study suggest that the degree of the financial items leading balance sheet major and minor sub-totals play a direct role on the establishment of the brokerage institutions' earnings. These items revealing the asset size and financing structure should be systematically monitored and audited. In addition, in the process of advancing the legislation towards the brokerage institutions, together with the other financial components, some specific provisions need to be particularly articulated across a due diligence basis. Last but not least, it is clear that, the examination of the brokerage institutions' balance sheets and even transaction volumes will yield some useful hints on observing the reliability of their earnings declaration (income) statements delivered to the taxing authorities or released for the purposes of public awareness.

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Full Length Research Paper

Metaphors suggested by teachers and students on the concept of school health

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By virtue of this study conducted among teachers and students from the Technical and Vocational High Schools in Elazığ province of Turkey, it has been aimed to identify their perceptions on the concept of "school health". Within the framework of this general aim, participants were given blank questionnaires, including the statements, as "School health is like …; because …", and asked to fill in these blank questionnaires. Workgroup of this study in the educational term of 2008-2009, is comprised of 34 teachers and 146 students from Gazi Technical and Vocational High School, located in Elazığ Centrum. Study was conducted within the frame of "content analysis" model, being assessed within the paradigm of qualitative research. Upon reviewing each and every one of the answers given by the teachers and students, in response to the semi-structured, open-ended questionnaires they received, metaphors suggested respectively by the teachers and students were processed by analysts. Taking the views from 125 students out of the total of 146, and 30 teachers out of the total 34 into consideration, 88 valid metaphors from the students, and 29 from the teachers have been attained. Taking the generated metaphors list into consideration, it was examined how each metaphor conceptualized the concept of school health. At the next stage, correlating each metaphor image with a specific theme, a total of 10 different conceptual categories were attained. According to the outcomes, attained from the study, metaphors, being suggested by 47% of the teachers for defining school health as per their schools, were classified under the "image of negativity", those, being suggested by 19.2% of the students for defining school health as per their schools, were classified under the "well of life". Thus, metaphors, being suggested by students for defining school health, seem to reveal a much more optimistic nature, in comparison with those being suggested by teachers. It would be worthwhile to examine the professional exhaustion to the part of teachers, due to the negative developments to have occurred in their schools for the recent years.

Key words: Metaphor, organization, school health, metaphors related with school health.

INTRODUCTION

Metaphor is an essential way of transmitting meanings figuratively in terms of cultural values. Metaphor is way of expressing an opinion, object, or action, by assimilating this into a condition via a word, or proverb (Palmer and Lundberg, 1995, 80; Balcı, 1999, 33; Alvesson, 2002, 17). Presenting the visual things in their depths, as well as accelerating our interpretation processes by reifying the abstract concepts, are among the principal roles of metaphors (Balcı, 1999, 34; Gibson and Zellmer-Bruhn, 2001, 276). According to Sargut (1994), metaphors and other symbolic forms are among the means of in-depth analysis of organizations, by enabling the anticipation of incidences and forms of behaviors unable to be explained totally (trans.: Şatır, 1998, 46).

According to Ortony (1975), metaphors are useful in the analysis of organizational culture because of three reasons (Palmer and Lundberg, 1995, 80): First; they are enable to bring an incidence into open thoroughly via related experiences of the organization members. Second; they are helpful in clarifying incidences, unable to be examined fully. Third; they are more lasting in terms of affection, and perception, due to their affinity with perceived experiences. In this study, it was tried to identify the opinions of teachers and students in terms of by its

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employees so as to affect their behaviors as well. Organizational atmosphere, while displaying the school health via metaphors.

Problem

Organizational health, organizational culture, organizational atmosphere are among the primary and complementary concepts of educational management literature. Before reviewing the opinions of teachers and students in form of metaphors on organizational health, it would be beneficial to render explanations on these concepts.

Organizational Culture and Climate

It is hard to speak of a single definition with regard to organizational culture (Ott, 1989; Scholl, 2003). Utilization of organizational culture by analysts from various disciplines has led to the appearance of different definitions with regard to the fact in question (Gizir, 2003; Şişman, 2002; Vural, 2003). While concept of culture has been examined inexplicitly within the literature of management and organization, as the intrinsic characteristics of any one community (Allaire ve Firsirotu, 1984), thus avoided a consensus on the fact of culture (Gudykunst, 1997).

Organizational culture may be characterized as a sub-culture in comparison with the cultures of the society, in which it is situated, and as a super-culture in comparison with the sub-cultures within its body (Şişman, 2002). Organizational culture may be affected from the cultures of the various units, sections, and professional groups within its body (Schein, 1985). Organizational culture may, at the same time, also be affected from national and regional culture (Gudykunst, 1997; Morley and Shockley-Zalabak, 1997).

It is accepted that, earliest of the works on organizational culture fate back to 1930's. Parallel to the changing approaches, human resources within the organizations have been emphasized and such issues as informal group, group norms, and organizational values have been pointed out (Şişman, 2002). Use of the concept of organizational culture, and start of substantial works on this subject dated back to early 1980's (Çelik, 2002; Gizir, 2003; Scholl, 2003; Şişman, 2002; Vural, 2003). First and foremost reason of the rise of interest in the concept of organizational culture is the developments in the management theory (Vural, 2003).

While organizational culture has been included as a concept in the literature of educational management in 1980's, inclusion of the concept of organizational atmosphere therein was earlier than that. Organizational atmosphere is the total of its dominant characteristics, while creating an organizational identity, being absorbed characteristics of the behaviors and attitudes of its employees, depends more on external observations. Organizational culture, on the other hand, comprises the fundamental values and communications being exchanged among the employees of the respective organization (Atay, 1999).

Katz and Kahn stated that, "each organization develops its own culture and atmosphere". While developing their own cultures and atmospheres, organizations meanwhile make use of certain prohibitions, customs, and ethical codes of the societies therein. Atmosphere and culture of an organization reflects the patterns and interpretations of its formal and informal values and behaviors (Ertekin, 1978: 3). Organizational atmosphere, at the same time, assesses the harmony between the values of the employees of the respective organization and the organizational culture. Organizational atmosphere is the overall environment within the organization, being developed due to the expectations of the persons therein with regard to the internal course of works, and their perceptions with regard to the level of fulfillment of their expectations (Dinçer, 1996: 211).

A number of prominent concepts, determining the efficiency and productivity of the organizations, such as internal communications, employee satisfaction, organizational loyalty, motivation, work accidents, etc., depend on organizational health. Another important point is that, organizational health as well depends on several concepts. Organizational culture and organizational atmosphere, playing major roles within organizational body, are among the factors effective on organizational health (Polatçı, 2007:142).

Organizational health

Organizational health is the capability of the organization in performing its functions of development and growth (Klingele, Lyden and Vaughan, 2001; trans.: Buluç, 2008: 4). Organizational health is an essential concept for organizations in performing their objectives, as well as in their efforts for orientation, and change. Organizations, likewise their employees, may either be healthy, or unhealthy. While unhealthy organizations fail in fully performing their functions, healthy organizations act functional. Level of organizational health is correlated with its rate of success in performing its aims and objectives (Childers, 1985: 4. trans.: Uras, 2000:1). Organizational health is not a concept to be taken into consideration singularly. It is well-known that, while organizational health is correlated with work stress, work stress is correlated with communication between employees of the respective organization as well. Organizational health concept is under the influence of organizational atmosphere and culture (Miller et al., 1999).

Organizational health concept is reviewed in various forms within literature. Educators have reviewed organizational health in terms of school management, activities, culture, and atmosphere. They have converted the relationship between employee-employer, into that between

teacher-student. Physicians have reviewed organizational health in terms of physical and mental well-beings of employees of their respective organizations, and have respectively examined physical, medical, and safety conditions thereof.

In determining organizational health, not only current conditions, but also arrangement of work schemes is taken into consideration, in order improve organizational health in line with the attained outcomes. Whether the organizational health is at an appropriate level, or not, is a determining factor for change and renovation. Main reason is to ascertain which factors affect healthy and unhealthy organizational health. In summary, findings attained via organizational health determine the conceptual essentials for diagnosing and solving the problems (Tarter et al., 1990). By assessing the organizational health, it is aimed to ascertain stronger and weaker aspects of the organization, as well as the opportunities and threats awaiting therefore. Taking the attained data into consideration, it is aimed to benefit more from the stronger aspects, as well as to develop and strengthen the weaker aspects In view of these information, characteristics of healthy organizations are as follows (Cicchelli, 1975):

i) Aims and objectives are expressly clarified.
ii) Systematic problem-solving and respective assessments are being conducted.
iii) An organizational spirit available, as being constructive, and open to changes.
iv) Energy and feed-back systems for growth and development are available.

In terms of organizational management, methods of working, as well as respective policies and implementations are not taken into consideration in general, unless a warning was made, or a condition of crisis occurred. Managers, in general, ignore organizational health, unless emergency conditions occurred (Nadler, 1970).

Organizational health concept with regard to schools was at first developed by Matthew Miles (1965) in the form of assimilation (metaphor) with school atmosphere. By making use of such assimilation, relationships between students, teachers, and managers are described (Hoy et al., 1990). Putting forth a model for the analysis of school health, Miles developed the following definition: “A healthy organization is the one, not only continuing its existence within its current environment, but also constantly developing in the long-term with improving competing and subsistence capabilities” (Miles, 1969: 17).

Hoy and Tarter (1997) dealt with organizational health in schools from two aspects. Firstly, school is deemed to be a social system, in which teachers, managers, and students take part for the future of the respective school. Organizational health is correlated with the reflection of internal communication between the members of this group. Secondly, a healthy school is deemed to perform its functions in an efficient way. In a healthy school, technical, managerial, and institutional themes are in harmony with each other. School is concentrated on performing its organizational objectives, by avoiding negative pressures from external sources.

Organizational health reveals the psycho-sociological condition of the school. Determination of organizational health of schools, as being organizations, is intended for not only ascertaining the current situation, but also for arranging improvement plans accordingly (Akbaba-Altun, 2001). Medium-scale vocational education institutions in Turkey, particularly the ones in its eastern regions have been losing their statuses parallel to the changing profiles of their students as from 2000’s. While such a situation affects professional efficiency of teachers, it has got negative effects also on school atmosphere, culture, and health. This study has got a distinctive aspect by ascertaining such reflections via metaphors.

THE AIM OF THE STUDY

By virtue of this study, conducted among teachers and students from the Technical and Vocational High Schools in Elazığ province of Turkey, it has been aimed to identify their perceptions on the concept of “school health” via metaphors. Within the framework of this general objective, answers to the following questions were sought:

i) What are the metaphors being suggested by teachers and students from Technical and Vocational High Schools with regard to school health?
ii) Under which conceptual categories may the metaphors being suggested by teachers and students with regard to the concept of “School Health” be classified?
iii) How are the distribution of the frequencies of the metaphors being suggested by teachers and students?

This study was conducted within the frame of “content analysis” model, being assessed within the paradigm of qualitative research.

Workgroup of this study in the educational term of 2008-2009, is comprised of teachers and students from Technical and Vocational High Schools in the province of Elazığ. Its sample is comprised of teachers and students from Gazi Technical and Vocational High School, located in Elazığ Centrum. Distribution and demographical features of the teachers and students comprised within this study are displayed on Table 1, as follows:

MATERIALS AND METHODS

Data collection

In order to ascertain the metaphors being suggested by teachers and students with regard to the concept of “school health”, all the

Table 1. Information on the participants.

Type of participants	f	(%)	Demographical features	f	(%)
Student	146	81.1	Male	129	71.7
			Female	17	9.4
Teacher	34	18.9	Male	23	12.8
			Female	11	6.1

participants were given to fill in the blanks of the sentence, "School health is like …; because …". Firstly, the participants were given the necessary explanations, and teachers and students were asked to fill in their forms as including only metaphors to be returned the day after. By including the term of "because" in this study, participants were required to present a clarifying reason with regard to the metaphors they were to suggest for describing school health. These forms being filled by all the participants were made use of as the main data source of this study.

Data analysis and interpretation

Upon reviewing each and every one of the answers given by the teachers and students, in response to the semi-structured, open-ended questionnaires they received, metaphors suggested respectively by the teachers and students were worked on. At this stage, questionnaires of the participants (25), not suggesting any metaphor, but revealing their overall opinions on school health, were eliminated. Following this process, taking the views from 125 students out of the total of 146, and 30 teachers out of the total 34 into consideration, 88 valid metaphors from the students, and 29 from the teachers have been attained. Arranging these metaphors under an alphabetical list, they were reviewed again, so as to decide on an exemplary metaphor statement as per the metaphors being suggested by participants in their questionnaires. An exemplary metaphors list was derived from such a generalization.

Taking the generated metaphors list into consideration, it was examined how each metaphor conceptualized the concept of school health. At the next stage, correlating each metaphor image with a specific conceptual category, a total of 10 different conceptual categories were attained. Exemplary metaphors list and conceptual categories list were presented in the forms of tables.

For conducting a reliability test on the study, expertise opinion was appealed, in order to see whether 117 metaphors attained from teachers and students might represent the conceptual categories, they were classified under.

In order to test the reliability of this study, the following formulation from Miles and Heberman (1994) was utilized:

$$\text{Compromise percentage (P)} = \frac{\text{Consensus (Na)}}{\text{(Consensus (Na) + Dissensus (Nd)}} \times 100.$$

With regard to qualitative works, a satisfactory reliability is deemed to be attained in case of a conformity by a rate of 90% and above between the assessments from experts and those from researchers (Saban 2008: 467). Expert, being applied to with regard to the reliability test, associated only two (discipline and sun) of the total number of metaphors with categories, different from those of the researchers. Upon this assessment, a calculation was attained as P = 115 / (115 + 2) × 100 = 98%.

FINDINGS AND INTERPRETATIONS

In this section, metaphors being suggested by teachers and students, and conceptual categories constituted accordingly, are included. Metaphors, attained from the questionnaires given to teachers and students, are listed on Tables 2a and b.

Categories, having been composed with regard to the metaphors being suggested by students and teachers, as well as the list of the metaphors classified under these categories are displayed on Tables 3a and b.

Reviewing Table 3a, among the 88 assessed metaphors, out of those being suggested by participant students, it is seen that, only 12 of that total are classified under the title of image of negativity. Overwhelming majority of the students (16) see school health as the means of knowledge and illumination. While school health is considered to be directive and instructive by 14 students, 11 students see the same as the hope of future, 10 students see it as the image of love, and another 10 as the well of life. Under the title of Image of Assiduousness, metaphors being suggested by 9 students are classified. Frequency of the students suggesting school life as Well of friendship, Well of joy, and Well of peace is 2.

Upon reviewing Table 3b, it is seen that 14 of the 29 metaphors, suggested by the participant teachers, are concentrated under the title of image of negativity. While five of these teachers see school health as hope of the future, four of them see the same as well of life, three of them as directive and instructive, two of them as means of information and illumination, and one of them as image of love.

With regard to the category of means of knowledge and illumination, while students suggest 16 metaphors, teachers suggest two metaphors. Respective metaphors, and their frequency distributions are displayed on Table 4.

Upon reviewing the statements of the participants with respect to this category, teachers and students consider school as an environment, in which they have easier access to knowledge. A couple of the definitions from students and teachers related with the metaphors, representing this category, are as follows:

"Like a mosque; because anyone may receive its preach" (Student) "Like a printing press; because the more knowledge being exchanged, the more number of students with high levels of knowledge increases." (Teacher).

While students suggest nine metaphors with regard to

Table 2a. Metaphors being suggested by students and their frequencies.

Name of metaphor	Frequency	Name of metaphor	Frequency	Name of metaphor	Frequency
Tree	7	Orderliness	1	Lever	1
Chatterbox	1	Drugstore	1	Pen	1
Decency	1	Joy Land	1	Heart	1
Stream	2	Joy	1	Carnation	1
Shopping center	2	Electricity	3	Ant	5
Ambulance	1	Police department	1	Book	3
Encyclopedia	1	Philosophy	1	Bridge	2
Beehive	1	Forum site	1	Valley of the Wolves	1
Military service	1	Football match	1	Bird	1
Source of knowledge	1	Newspaper	1	Culture	1
Information and Technology	1	Preparation to future	1	Lamp	2
Computer	1	Mirror of the future	1	Mine	1
Blank Sheet	1	Development	1	Civil Service	1
Mosque	1	Ship	1	Fruit	1
Living thing	3	Youth	1	Oxygen	1
Heaven	2	Rose	1	Bus	1
Prison	1	Sun	3	Important Element	1
Bag	1	Safety	1	Compass	1
Strongbox	1	Appealing Need	1	Obedient	1
Flower	1	Good behavior	1	Clock	1
Grass	3	Beauty	1	Water	5
Man searching his way in the desert	1	Hospital	4	Board	1
Mountain	1	Most important moment in life	1	Technology	1
Starfish	1	Life	1	Naughty Kid	1
Sea	1	Cell	1	Race	3
Derby match	1	Medicine	1	Blackboard	1
Discipline	1	Construction	1	Food	3
Friendship	1	Business center	1	Road	1
Smoke	1	Well-behavior	1	Home	1
World	2				
Total					**125**

the category of *"assiduousness"*, teachers suggest none with regard to this category. Respective metaphors and their frequency distributions are displayed on Table 5.

Upon reviewing the statements of the participants in compliance with this category, opinions, pointing out to the necessity of constant working, are seen to be suggested. Definitions from students with regard to the metaphors, representing the category of school health as "the image of assiduousness" are as follows:

"Like a beehive; because students work like bees".
"Like a derby match;" because it takes a hard work to win".

While students suggest two metaphors with regard to the category of "well of friendship", teachers suggest none with regard to this category. Respective metaphors and their frequency distributions are displayed on Table 6.

Upon reviewing the statements from the students under this category, opinions, as revealing an environment, in which new friendships may be made, and the current ones may be deepened, are suggested. Opinions related with this category are as follows:

"Like a computer; because everyone make new friendships.

Table 2b. Metaphors being suggested by teachers and their frequencies.

Name of metaphor	Frequency	Name of metaphor	Frequency	Name of metaphor	Frequency
Malfunctioned car	1	Twinkle in the eye	1	Wind rose	1
Unimmunized baby	1	Rough Iron	1	Dandle board	1
Living organism	1	Teen walking with crutches	1	Historical artifact	1
Mental health of employees	1	Maintaining our culture	1	One-footed chair	1
Rotten tree root	1	Printing press	1	Clean pool	1
State property	1	Cargo ship	1	Cornerstone of society	1
Confidence in future	1	Bus	2	Sowed seed	1
Ingrown living thing	1	Important element	1	Future of country	1
Ingrown element	1	Post office	1	Half-doctor	1
Unknown land of fantasy	1	Elder with dull reflexes	1		
Total					**30**

Table 3a. Distribution of metaphors being suggested by students as per categories.

Categories (n=10)	f	(%)	Metaphors (n=88)	f	(%)
Means of Knowledge and Illumination	22	17.6	Medicine 1, Shopping Center 2, Encyclopedia 1, Source of Knowledge 1, Mosque 1, Sea 1, Newspaper 1, Appealing Need 1, Business Center 1, Pen 1, Book 3, Lamp 2, Sun 3, Decency 1, Technology 1, Beehive 1	16	18.1
Image of Assiduousness	15	12	Derby Match 1, Forum Site 1, Football Match 1, Construction 1, Ant 5, Race 3, Orderliness 1, Clock 1, Computer 1	9	10.2
Well of Friendship	2	1.6	Friendship 1, Joy Land 1	2	2.3
Well of Joy	2	1.6	Joy, Information and Technology 1	2	2.3
Hope of Future	11	8.8	Preparation to Future 1, Mirror of Future 1, Development 1, Youth 1, Lever 1, Bird 1, Culture 1, Mine 1, Important Element 1, Strongbox 1, Safety 1	11	12.5
Well of Peace	2	1.6	Good Behavior 1, Chatterbox 1	2	2.3
Image of Negativity	12	9.6	Military Service 1, Prison 1, Man searching for his Way in the Desert 1, Mountain 1, Smoke 1, Police Department 1, Valley of the Wolves 1, Civil Service 1, Obedient 1, Naughty Kid 1, Road 1, Stream 2	12	13.6
Image of Love	14	11.2	Stream 1, Ambulance 1, Heaven 2, Flower 1, Grass 3, World 2, Rose 1, Beauty 1, Carnation 1, Home 1	10	11.4
Well of Life	24	19.2	Tree 7, Living Thing 3, Cell 1, Heart 1, Fruit 1, Oxygen 1, Water 5, Food 3, Drugstore 1, Bag 1	10	11.4
Directive and Instructive	21	16.8	Blank Sheet 1, Discipline 1, Electricity 3, Philosophy 1, Ship 1, Good Behavior 1, Hospital 4, Most Important Moment in Life 1, Life 1, Bridge 2, Bus 2, Compass 1, Board 1, Blackboard 1	14	15.9

Table 3b. Distribution of metaphors being suggested by teachers as per categories.

Categories (n=10)	f	%	Metaphors (n=88)	f	%
Means of Knowledge and Illumination	2	7	Printing Press 1, Post Office 1	2	6.9
Hope of future	5	17	Confidence in the future 1, Important Element 1, Cornerstone of Society 1, Future of Country 1, Rough Iron 1	5	17.2
Image of negativity	14	47	Malfunctioned Car 1, Unimmunized Baby 1, Rotten Tree Root 1, State Property 1, Ingrown Living Thing 1, Ingrown Element 1, Unknown Land of Fantasy 1, Teen walking with Crutches 1, Elder with Dull Reflexes 1, Dandle Board 1, Historical Artifact 1, One-Footed Chair, Half- Doctor 1, Wind Rose 1	14	48.3
Image of love	1	3	Twinkle in the eye	1	3.5
Well of life	4	13	Living Organism 1, Mental Health of Employees 1, Sowed Seed 1, Maintaining our Culture 1	4	13.8
Directive and instructive	4	13	Cargo Ship 1, Bus 2, Clean Pool 1	3	10.3

Table 4. Metaphors under the category of means of knowledge and illumination, and their frequency distributions.

Student's opinion			
Metaphors	**f**	**Metaphors**	**f**
Medicine	1	Business center	1
Shopping center	2	Pen	1
Encyclopedia	1	Book	3
Source of knowledge	1	Lamp	2
Mosque	1	Sun	3
Sea	1	Decency	1
Newspaper	1	Technology	1
Appealing need	1	Beehive	1
Teacher's opinion			
Printing press	1	Post office	1

Table 5. Metaphors under the category of assiduousness, and their frequency distributions.

Metaphors	f	Metaphors	f
Derby match	1	Race	3
Forum site	1	Orderliness	1
Football match	1	Clock	1
Construction	1	Computer	1
Ant	5		

"Like friendship; because we all learn friendship at school".

While students suggest two metaphors with regard to the category of "well of joy", teachers suggest none with regard to this category. Respective metaphors and their frequency distributions are displayed on Table 7.

Upon reviewing the statements from the students under the category of "well of joy", opinions, as revealing an environment, in which new friendships may be made, and the current ones may be deepened, are suggested. Definitions from students with regard to the metaphors, representing this category, are as follows:

Table 6. Metaphors under the category of well of friendship, and their frequency distributions.

Metaphors	f	Metaphors	f
Friendship	1	Joy land	1

Table 7. Metaphors under the category of well of joy, and their frequency distributions.

Metaphors	f	Metaphors	f
Joy	1	Information and technology	1

Table 8. Metaphors under the category of hope of the future, and their frequency distributions.

Student's opinion			
Metaphors	**f**	**Metaphors**	**f**
Preparation to future	1	Culture	1
Mirror of future	1	Mine	1
Development	1	Important element	1
Youth	1	Strongbox	1
Lever	1	Safety	1
Bird	1		
Teacher's opinion			
Confidence in the future	1	Future of country	1
Important element	1	Rough iron	1
Cornerstone of society	1		

Table 9. Metaphors under the category of well of peace, and their frequency distributions.

Metaphors	f	Metaphors	f
Good behavior	1	Chatterbox	1

"Like a joy land; because classes go by full of joy"
"Like fun; because it is fun to learn something"

While students suggest two metaphors with regard to the category of "hope of the future", teachers suggest none with regard to this category. Respective metaphors and their frequency distributions from the participants are displayed on Table 8.

Upon reviewing the respective opinions of teachers and students on their schools, it comes to the fore that, school is an important factor for developing the individuals to their future lives. Opinions related with this category are as follows:

"Like the mirror of future; because the more you work, the better your future gets" (Student).
"Like rough iron; because the more skilled the blacksmith is, the better forged the iron may become" (Teacher).

While students suggest two metaphors with regard to the category of "well of peace", teachers suggest none with regard to this category. Respective metaphors under this category, and their frequency distributions are displayed on Table 9.

Upon reviewing the respective statements, students express their content and ease from the environment in their schools. Definitions from students with regard to the metaphors, representing the category of school health as "the well of peace" are as follows:

"Like safety; because it makes you feel secure."

With regard to the category of "image of negativity", students suggest 12, and teachers suggest 14 metaphors. Respective metaphors and their frequency distributions are displayed on Table 10.

Upon reviewing the respective opinions, it is noteworthy

Table 10. Metaphors under the category of image of negativity, and their frequency distributions.

Student's opinion			
Metaphors	**f**	**Metaphors**	**f**
Military service	1	Valley of the wolves	1
Prison	1	Civil service	1
Man searching for his way in the desert 1	1	Obedient	1
Mountain	1	Naughty kid	1
Smoke	1	Road	1
Police department	1	Stream	2
Teacher's opinion			
Malfunctioned car	1	Teen walking with crutches	1
Unimmunized baby	1	Elder with dull reflexes	1
Rotten tree root	1	Dandle board	1
State property	1	Historical artifact	1
Ingrown living thing	1	One-footed chair	1
Ingrown element	1	Half- doctor	1
Unknown land of fantasy	1	Wind rose	1

Table 11. Metaphors under the category of image of love, and their frequency distributions.

Student's opinion			
Metaphors	**f**	**Metaphors**	**f**
Stream	1	World	2
Ambulance	1	Rose	1
Heaven	2	Beauty	1
Flower	1	Carnation	1
Grass	3	Home	1
Teacher's opinion			
Twinkle in the eye	1		

that, opinions of 47% of the participant teachers, related to their schools, are in tune with this category. With regard to those from the students, 9.6% of the participants express opinions within the scope of this category. Despite being lesser in number among the total of the participants of this study, it is noteworthy that, participant teachers apply to metaphors in tune with the image of negativity. Opinions, representing this category, are as follows:

"Like a chatterbox, because no one does its work on time" (Student).
"Like a prison; because you cannot get out of there as you like" (Student).
"Like a malfunctioned car; because it cannot accommodate itself to modern technology" (Teacher).
"Like an ingrown living thing; because it is preferred to maintain education with same old materials" (Teacher).

While 14 students suggest 10 metaphors with regard to the category of "image of love", one teacher suggests one metaphor respectively. Suggested metaphors and their frequency distributions are displayed on Table 11.

Upon reviewing the respective opinions, it is noteworthy that, one teacher and 14 students suggest opinions in tune with this category. Definitions from students with regard to the metaphors, representing the category of school health as "the image of love" are as follows:

"Like world; because it encompasses all the beauties" (Student).
"Like home; Because I feel like I am at home" (Student).

While 24 students suggest 10 metaphors with regard to the category of "well of life", 4 teachers suggests 4 metaphors respectively. Metaphors, suggested by students and teachers, and their frequency distributions are displayed

Table 12. Metaphors under the category of well of life, and their frequency distributions.

Student's opinion			
Metaphors	**f**	**Metaphors**	**f**
Tree	7	Oxygen	1
Living thing	3	Water	5
Cell	1	Food	3
Heart	1	Drugstore	1
Fruit	1	Bag	1
Teacher's opinion			
Living organism	1	Sowed seed	1
Mental health of employees	1	Maintaining our culture	1

Table 13. Metaphors under the category of directive and instructive, and their frequency distributions.

Student's opinion			
Metaphors	**f**	**Metaphors**	**f**
Blank sheet	1	Most important moment in life	1
Discipline	1	Life	1
Electricity	3	Bridge	2
Philosophy	1	Bus	2
Ship	1	Compass	1
Good behavior	1	Board	1
Hospital	4	Blackboard	1
Teacher's opinion			
Cargo ship	1	Clean Pool	1
Bus	2		

on Table 12.

Upon reviewing the statements from the participants under this category, a consideration as being the basic need of life, such as water, oxygen, etc., is seen. Opinions related with this category are as follows:

"Like a tree; because it produces the oxygen for our living" (Student)
"Like a seed sowed in soil; because it grows healthily, while being fed with water and sun" (Teacher)

While 21 students suggest 14 metaphors with regard to the category of "directive and instructive", four teachers suggest three metaphors respectively. Respective metaphors and their frequency distributions are displayed on Table 13.

Upon reviewing the respective opinions from the participants, they describe the school health as a guide, paving the path to success. Related opinions are as follows:

"Like a ship; because its route decided" (Student).
"Like a cargo ship; because with its experience derived from its captain, it sails confidently to its specified destination." (Teacher)

RECOMMENDATIONS

In the eastern provinces of Turkey with lower industrial development, statuses of vocational schools reveal differences in comparison with those in other provinces. While vocational schools in industrial regions provide opportunities for easier employment, in industrially undeveloped regions, children, or their parents see vocational schools as the last chance to obtain a degree. We may discern such a tendency among the metaphors on school health, being suggested by the participant teachers of this study.

Metaphors from students and teachers are classified under 10 different conceptual categories. Conceptual categories of "image of love, means of knowledge and illumination, hope of the future, directive and instructive, well of friendship, image of negativity, image of assiduousness, well of life, and well of joy", composed in terms of this study.

Upon reviewing opinions in tune with the conceptual category of “means of knowledge and illumination”, while teachers suggest two metaphors of this kind related to their schools, students suggest 22 opinions respectively. Difference between the numbers of metaphors being suggested in tune with this category by the students and teachers is thought-provoking. Metaphors under the conceptual category of image of assiduousness are suggested only by students. Upon reviewing these opinions, working is seen to be taken into consideration as the basic condition for success. Under the conceptual category of “well of friendship”, suggested only by students, opinions, pointing to the creation of an environment suitable for developing new ties of friendship, come to the fore. Under the conceptual category of “well of joy”, metaphors of which again suggested only by students, it is agreed upon the opinion that, educational activities are maintained at a joyful environment. In tune with the conceptual category of hope of the future, the common opinion, derived from 11 metaphors from students, and five from the teachers, is that, school health is an important asset for the individuals in their developments towards their future lives. Students, suggesting the two metaphors under the title of well of peace, describe school health as a concept, in which they may feel content. Image of negativity is a conceptual category worthy of consideration. Majority of the teachers describe school health by suggesting metaphors in tune with image of negativity. This is the most noteworthy point throughout the entire study. Metaphors, in tune with the conceptual category of image of love, are suggested mostly by the students. 14 metaphors, out of the total 15, under this category come from students. Thus, it may be suggested that, students approach to school health more endearingly than the teachers. While 24 of the metaphors in tune with the conceptual category of well of life come from students, teachers suggest four metaphors in kind. Upon reviewing these metaphors, the opinion, that school health is under a constant development hand in hand by students and teachers, comes to the fore. While 21 of the metaphors in tune with the conceptual category of directive and instructive come from students, teachers suggest four metaphors in kind. Common point among the opinions of the participants is that, school health is a “guide” on the road to success.

In accordance with the outcomes, attained from this study, metaphors being suggested by students with regard to school health as per their schools, are more optimistic than those being suggested by teachers. While 47% of the metaphors being suggested by teachers are concentrated under the title of the image of negativity, such a fact may arise from the heavy workload burdened on them, or from their economical discomforts, or from the level of their professional exhaustion.

While enrolments to technical and industrial vocational high schools were conducted via centralized examination system by MEB (Ministry of National Education) until 2000’s, nowadays students may enroll to these schools without being subjected to examination. Such a development has eased the enrolment of students with lower levels of knowledge capacity to these schools, and negatively affected the effective instructing environment of teachers. It is also thought that, this has caused most of the metaphors being suggested by teachers with regard to school health tending to concentrate under the image of negativity.

At this point, decision-takers are to conduct studies on assessing the professional exhaustion levels of teachers, and to take precautions to eliminate such a problem accordingly. Provided that a more selective attitude is to be assumed in the enrolments to vocational high schools, it is anticipated that, teachers’ negative opinions on this issue may certainly subside.

Teachers and students may be asked to bring out metaphors with regard to different concepts and facts (school, school health, student and teacher, etc.) on “school health”, and do so by assembling various workgroups. For instance, students, teachers, and administrators may form separate groups. Having the outcomes of such studies dealt with and discussed in routine assemblies of teachers, or in seminars on assessment of educational processes, will provide great benefit in developing, and examining the perspectives of teachers and students with regard to the concept of school health, as well as in the professional behaviors of teachers.

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Full Length Research Paper

Consumer perceptions of private label brands within the retail grocery sector of South Africa

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This exploratory study serves to investigate the perceptions of fast moving private label brands in the South African grocery food sector. Successful positioning of these brands has been achieved globally, most notably in developed markets. However, in a South African context this does not appear to be the case. To this end, research has been undertaken in order to better understand the current position these brands occupy in the minds of South African consumers. Included in the study is the consideration of critical branding elements such as trust, availability, pricing, packaging, etc. The knowledge gained through this research should ideally facilitate the process of advancing private label brand research in an academic context and improving brand positioning, increasing market share and optimizing profit extracted from private label brands in a managerial context.

Key words: Private label, store brand, own label, supermarket, grocery, perceptions, South Africa.

INTRODUCTION

Private label brands, also known as store brands, refer to those brands that are owned by, and sold through, a specific chain of stores. These products are typically manufactured by a third party (contract manufacturer) under licence. The private label revolution was first observed in Europe and Canada. Private label brands then appeared in South Africa in 1956 when Raymond Ackerman introduced a no-frills brand to the market through his fledgling chain of Pick n Pay stores (Prichard, 2005). This range offered commodities to the market at lower prices than was possible through manufacturer brands. This served the purpose of defeating the regime of a small number of powerful retailers and suppliers who had been engaging in price fixing as the order of business.

Originally, manufacturer brands dwarfed retailer brands in size and, through extensive marketing, led sales by suggesting their brands were synonymous with “trust, quality and affluence” (Nirmalya, 2007). However, in the early 1970s the balance of power began to shift in favour of retailers. Due to rapid expansion, retailers seized this power advantage and the inevitable negotiating prowess. With this size advantage, private label brands began to gain a stronger foothold in the market.

Walker (2006) concedes that private label brands are often viewed as lower priced and hence inferior quality alternatives to manufacturer brands. Verhoef et al. (2002), however, contend that this perception appears to be changing. Certain retailers are attempting to reposition their private label brands as premium offerings which aim to compete directly with manufacturer brands. The first successful attempt at introducing a premium private label brand was achieved by a talented group of food specialists in Canada when they developed the “President’s Choice” chocolate chip cookie. They offered a premium product that no other retailer could imitate and thus consumers would come from all over the country to purchase these particular cookies. Owing to the phenomenal quality of these cookies, an entire range of “President’s Choice” products was incepted. It is reported that “President’s Choice” cola is the only private label brand to have out-sold Coca-Cola in a particular retail outlet (Loblaw’s Inc, 2007).

Internationally, private label brands constitute an average of 19% of total retail market share, with some European countries (e.g. Switzerland and the United Kingdom) fast approaching a 50/50 split in market share between manufacturer and private label brands. In contrast, South Africa’s private label brand penetration rate is a mere 8% (Planet Retail, 2008). The remainder of Africa fares even less favourably. Figures 1 and 2 illustrate the private label brand market share achieved

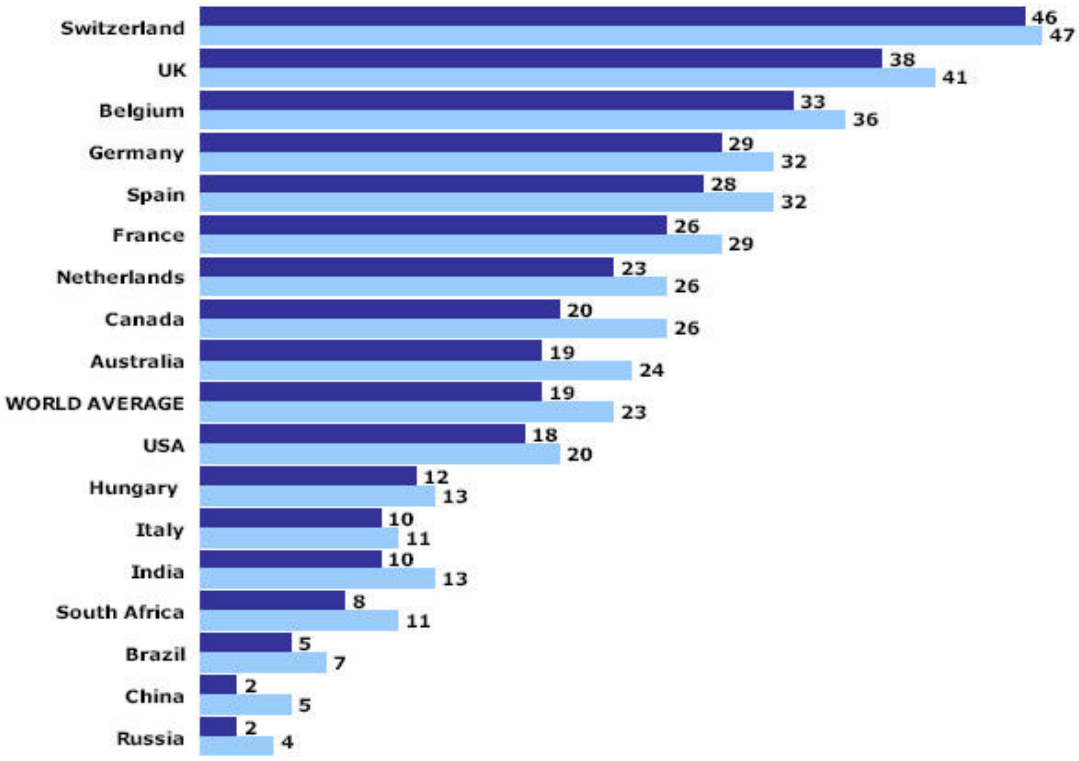


Figure 1. Private label share of market, by value in percentage terms – 2007e (dark) versus 2012e (light). Source: Planet Retail, 2008.

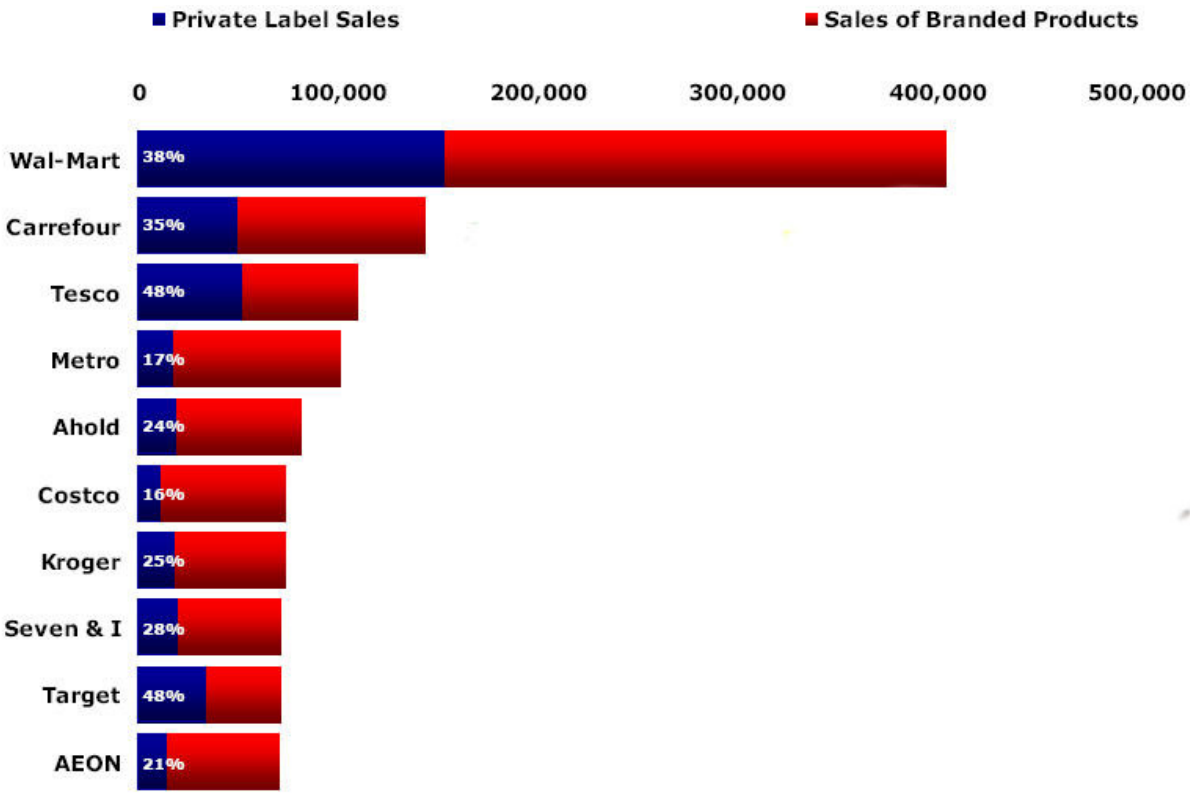


Figure 2. Share and volume of private label brand sales, as indicated by leading global retailers. Source: Planet Retail, 2008.

by a host of countries and the share of volume enjoyed by leading global retailers. It is clearly evident that European and North American retailers excel in this respect. Emerging markets such as South Africa, Brazil, China and Russia experience penetration rates below the international average and are therefore playing 'catch up'.

Two anomalies present themselves in terms of penetration of private label brands in South Africa (Nielson, 2006). Firstly, it has been concluded that retail concentration (essentially an oligopoly scenario in the retail sector) is highly correlated with success of private label brands. Yet, in South Africa, despite high retail concentration enjoyed by the major supermarket chains, private label brands have not achieved the successes of their global counterparts. Secondly, lower income groups tend to be the most common purchasers of private label brands due to higher levels of affordability. In South Africa, despite a much larger population of lower income consumers, it is the higher Living Standards Measures (LSM) categories, particularly LSM 6-10, which appear to purchase these brands (ibid). Research suggests that as consumers become increasingly affluent, they are more willing to try various alternatives to trusted brands (Mawers, 2006). In general, consumers with limited financial resources are likely to purchase trusted (that is manufacturer) brands in which quality is well established and thus confidence is high (Rusch, 2002). Another factor contributing to this phenomenon has been identified as accessibility. In South Africa, lower income groups frequently do not have direct access to the large retail stores where private label brands are available. This leads these consumers to shop at local 'spaza' outlets which are similar to convenience stores, albeit present in the informal sector (that is township) areas. These stores tend to charge higher prices due to their location, as well as not being able to benefit from larger economies of scale (Klemz et al., 2006). It is estimated that between ten and twenty percent of fast moving consumer goods, sales are estimated to occur through the informal sector (Blottnitz, 2007), therefore representing a lost opportunity for private label brands.

RESEARCH STATEMENT

This paper aims to uncover current consumer perceptions of, and attitudes towards, private label brands in the South African grocery sector. In doing so, the research will ascertain the impact of various demographic factors (with particular reference to ethnicity, gender and income) on consumption of private label brands. Furthermore, it aims to shed lights on the effect that pricing, accessibility, packaging, retail communications, shelf positioning and in-store promotions have on shopping behaviour with reference to purchasing food-based private label brands.

LITERATURE REVIEW

Brand building fundamentals

According to Dick et al. (1997), consumers base judgement of brand quality on direct and indirect factors. Direct attributes include ingredients, taste and texture, whilst indirect factors are represented by price and brand name. Direct factors are usually difficult for consumers to test without consuming the product, or completing various tests. Hence, reliance on indirect quality indicators such as brand name and price are more heavily relied upon. The authors thus suggest that a thorough understanding of how these indirect cues impact different consumer groups in their purchasing decisions may help retailers to improve success of private label brands. Through further investigation, they identified brand, package and advertising as indirect factors which impact consumer perceptions and hence influence purchasing decisions.

The success of a brand in the long term is not based on the number of consumers that buy it once-off, but on the number of consumers who become regular buyers of the brand. Thus, repeat purchases and customer loyalty are prioritised by retailers (Odin et al., 1999). Chaudhuri and Holbrook (2001) suggest that consumers become brand loyal when they perceive some unique value in the brand that no alterative can satisfy. This uniqueness may be derived from a greater trust in the reliability of a brand or from a more favourable experience when a customer uses the brand. Schoenbachler et al. (2004) take this further, stating that not only does the brand loyal customer buy the brand but (s)he also refuses to switch, even when presented with a better offer. Bayus (1992) proposes that maintaining brand loyalty is becoming a critical component in the development of competitive strategy, thus highlighting the importance of developing methods to measure and evaluate brand loyalty.

Davis (2002) identified further positive repercussions resulting from a strong brand other than simply increased sales. Effective brands have been correlated with increasing market share; lending credibility to new product developments; giving a clear, valued and sustainable point of difference as well as commanding a premium. Most importantly, consumers appear less price-sensitive and more trusting towards these brands.

Private label branding

Private label brands are available in a multitude of formats. There are, essentially, three varieties of private label brands. The first being a representative brand, which is a private label brand that through its name and packaging announces that it is produced and solely owned by the retailer. The second being an exclusive private label brand, which is owned and produced by the retailer, yet this fact is not explicitly conveyed to the

consumer through brand name and packaging. The last type is confined labels. These are brands that are not owned by the retailer but are found exclusively in their stores. This type of private label brand has not been incorporated in this research study. Manufacturer brands on the other hand are controlled and produced by manufacturers and sold through a plethora of retailers. In terms of branding, the general consensus appears to be that private label brands are considered "every bit as much a brand as manufacturer's" (Murphy, 1987).

Ailawadi and Keller (2004) identify at least four tiers of private label brands. These include low quality generics; medium quality private labels; somewhat less expensive but comparable quality products; and premium quality private labels that are priced in excess of competitor manufacturer brands. Whilst the nature of a store's private label brand(s) should be guided, first and foremost, by its target market, the authors suggest that successful retailers will adopt more than one tier of private label brand if they are to achieve wide scale market coverage.

According to Kumar and Steenkamp (2007), half of private label brands are copycat brands. These brands essentially attempt to imitate the packaging and content of first tier manufacturer brands. Retailers analyse the contents of leading brands, and then re-create the product, through a process known as reverse engineering (ibid). Thus, since there are minimal research and development costs, and the retailers have already recognised that there is a potentially lucrative market available, these products are more often than not successful. The retailers use in-store promotions to aggressively promote the brands, using a "me-too at a cheaper price" strategy (Kumar and Steenkamp, 2007). This type of strategy involves producing an almost identical product and offering it at a reduced price relative to competitors. As the examples in Figures 3 and 4 reveal, packaging is nearly indistinguishable from competitor brands.

The copycat strategy is not without complications – pursuing this approach may well result in legal tussles. Actions of trademark infringement and "passing off" because of consumer confusion, unfair misappropriation of brand owners' intellectual property can have legal implications (Mitchell and Kearney, 2002).

Benefits and drawbacks of selling private label brands

Fernie et al. (2003) have identified various advantages to retailers for the development of a private label brand: (1) increased profitability through cost saving and increased margins; (2) increased store loyalty and creation of a distinct corporate identity; (3) opportunities to seize new market ventures; and (4) increased bargaining leverage with suppliers.

The first relates to potential increases in profitability, which stems from the higher average price margins these brands generate for retailers. These price margins could be higher due to the fact that private label brands require minimal advertising expenditure; lower research and development costs; reduced costs of testing products prior to launching nationally; and, usually, reduced packaging costs. Furthermore, according to Herstein and Gamliel (2006), private label brands can assist in developing loyalty to a retailer and in the creation of a distinct corporate identity for a business. Veloutsou et al. (2004) support this view, yet emphasise that as a result, careful managerial practices for these brands should be implemented in order to maintain retailer brand equity. Consumers tend to associate the retailer with its respective private label brand. Therefore negative perceptions of the retailer may impact negatively on its fascia (that is store) brand and vice versa (Ailawadi and Keller, 2004).

Labeaga et al. (2007) contend that private labels assist building loyalty by differentiating the retailer. These brands are available at one retailer exclusively whilst manufacturer brands are available at many competing outlets. Regular consumers of private label brands are confronted with psychological costs when switching retailers as their preferred private label choice is no longer available. As a result, consumers who change retailers undergo demanding cognitive processes by evaluating other brands, including unfamiliar store brands, in choosing a new product. Thus, research indicates that consumers who purchase private label brands regularly do not only become loyal to that particular brand but also to the retailer through which it is sold (Collins and Burt, 2003).

Raju et al. (1995) assert that retailers have become more proficient at managing their private label brands. Kumar and Steenkamp (2007) add that over the last decade, private labels have become omnipresent and have achieved enormous success, thus providing a base for the improvement in branding activities. The authors contend that private labels have changed from inferior generics to brands in their own right with value beyond functional attributes. Figure 5 demonstrates examples of premium quality private label tea brands that are available at Woolworths. The attractively packaged items are, arguably, addressing consumer needs of esteem and status. According to the retailer, it aims to make its brand synonymous with innovation, excellence and value for money, pitching it as being of the highest quality, equivalent to (if not better than) the category leaders.

Retailers should also acknowledge potential pitfalls in offering private label brands. Firstly, such brands in many product categories may expose the retailer to undue business risk. This essentially arises from the retailer extending its reach into unfamiliar markets with esta-blished competitors (Fernie et al., 2003). Secondly, the private label brand's reputation may tarnish consumer''s

Figure 3. Manufacturer 'copycat' brands. Captured: Pick n Pay, Pinelands, Cape Town.

Figure 4. Private label 'copycat' brand. Captured: SPAR, Rondebosch, Cape Town.

Figure 5. Premium tea brands at Woolworths. Captured: Woolworths, Pinelands, Cape Town.

perceptions of the retailer if it fails (Veloutsou et al., 2004). Thirdly, the profitability per square metre generated by private label brands may not be on a par with that of manufacturer brands. This may be attributable to the fact that most private label brands are priced below their manufacturer brand counterparts (Kumar and Steenkamp, 2007). Consumers who are heavy purchasers of private label brands may not prove to be more profitable in the long run (ibid). This could be accredited to the fact that these consumers may be substituting a more expensive manufacturer brand with the less expensive private label option. The authors argue that this is sometimes considered an outdated theory as pricing differentials between private label and manufacturer brands have been reduced. In the past, private label products tended to be lower priced generics. However, more recently, sophisticated private label products have become available and relative prices have increased accordingly. A local example of this is the Pick n Pay Choice brand which, according to Prichard (2005), is usually priced only marginally below most manufacturer brands.

Consumer perceptions and private label brand proneness

Jin and Yong (2005) note that the success of private label brands is dependent on factors such as the country's retail structure, the level of retailer concentration, the advertising rate of manufacturer brands, economies of scale, management, and even imagination. Baltas (1997) notes that whilst past behaviour, demographic variables, socio-economic factors as well as personality traits have been found to influence private label brand purchasing behaviour; perceptions, attitudes and behavioural variables are more effective in this regard. Richardson et al. (1996), as cited by Baltas (1997), identified familiarity, extrinsic cues, perceived quality, perceived risk, perceived value for money and income level as the primarily influencing factors of private label proneness. Interestingly, younger consumers appear to have a more favourable view towards private label brands than older generations (Veloutsou et al., 2004). Moschis (2003) echoes this sentiment, suggesting that older consumers are more brand loyal and are likely to prefer brands with which they are more familiar. Younger consumers, on the other hand, are more willing to try new or unfamiliar brands and products.

Walker (2006) suggests that due to relatively lower prices, consumer quality perceptions are negatively impacted. Private label brands are thus frequently seen as inferior quality alternatives. This is reiterated by De Wulf et al. (2005) who suggest that consumers perceive manufacturer brands to be superior to private label brands. Yet, Verhoef et al. (2002) present a contrasting opinion on consumer quality perceptions of private label brands, contending that consumers do indeed foster a

positive attitude towards these brands. Smith and Sparks (1993) appear to view the situation in a similar light, proposing that the perceptual gap between private label and manufacturer brands is narrowing. Whilst debate is certainly present in the literature with regards to trends in consumer perceptions of private label brands, these brands do seem to represent value to hard pressed consumers. According to Quelch and Harding (1996), private label share is inversely related to economic strength. Therefore, when the economy is thriving, a smaller proportion of private label brand products are purchased. Additionally, Nandan and Dickinson (1994) inferred that during economic recessions, popularity of private label products increases. Lamey et al. (2007) note, however, that the effects of economic fluctuations are non-symmetrical in terms of growth versus contractions. By way of explanation, the authors comment that the rate at which consumers adopt private label brands during a recession is faster than the reverse process which occurs after the economic downturn has ceased. Thus, once the economy has stabilised, consumers do not rapidly change consumption habits that were created during the recession. The authors highlight that levels of private label consumption do not return to the levels that existed before the advent of the recession.

Pricing and in-store promotion of private label merchandise

Price represents an extrinsic cue and provides one of the most important forms of information available to consumers when making a purchasing decision (Jin and Sternquist, 2002). According to the authors, price constitutes 40% of the average consumer's information search. Avlonitis and Indounas (2005) underline the importance of pricing decisions in terms of a company's long term profitability. The authors emphasise the flexibility of pricing – pricing strategies can be adapted more quickly than other marketing facets. As alluded to previously, this is particularly applicable with regard to private label brands as they are under full control of the retailer, and are free from the manufacturer's pricing strategies and considerations (Uusitalo and Rokman, 2007).

Manufacturer and private label brand prices tend to vary among different retailers and certain products types. Davies and Brito (2004) suggest that although price elasticities have a large effect on pricing decisions, generally the price advantage of private label brands is inclined to have approximately 20 to 44% higher gross profit margins. A variety of reasons are suggested as to why private label brands tend to be more cost effective. Firstly, as previously mentioned, this can be attributed to private label brands often being imitations of manufacturer brands. Thus the limited associated research and development costs result in the retailers' ability to charge a reduced price (ibid). Furthermore, the authors argue that new private label brand products can be at a lower cost by test marketing in a few of their own retail stores. This again contributes to lower research and development costs. In addition, packaging of private label brands tends to be marginally less expensive, as the raw materials used are often of a slightly lower quality. However, the factor that has the greatest impact on overall variable costs is the reduction in advertising expenses. Field (2006) concur that the majority of retailers have little or no advertising expenditure with respect to their private label brands.

Kumar and Steenkamp (2007) note that over use of promotions by manufacturer brands may condition consumers to become price sensitive and this may, eventually, result in a "trade down" to a private label item. Therefore deal seekers become regular purchasers of private label brands over time. Putsis and Dhar (2001) contrastingly note that promotions of manufacturer brands based on price are more likely to attract sales away from lower quality private label competitors, whilst the price promotion of private label brands does not seem to have an equal level of success in this regard.

Advertising of private label brands

In the case of supermarket retailers, communications are becoming an increasingly important tool for product differentiation (Uusitalo, 2001). These retailers operate in a slow-growth market and products are becoming increasingly homogenous, hence the importance of communications as a means of distinguishing one retail brand from another.

According to Kim and Parker (1999), it is difficult to measure the success of private label brand advertising. This is attributed to the manner in which advertising costs are internalised within the retailing organisation. Berry (2000) adds that brands, such as private labels, which fall under the "umbrella image" of a company, are essentially promoted in conjunction with all company promotions. For example, based on Berry's argument, it would appear that Pick n Pay No Name brand is promoted through all Pick n Pay advertising and promotions due to the manner in which these brands are associated with one another by consumers.

Figure 6 illustrates an advertisement for "Pick n Pay's" foremost private label - No Name brand. The blue and white colour theme clearly brings to mind associations for both fascia and private label brands.

Abe (1995) queries whether high quality producers should advertise more than low quality producers or if low quality producers should advertise more in order to compensate for their relative product disadvantage. Private label brands are generally assumed to be of an inferior quality to manufacturer brands and thus represent

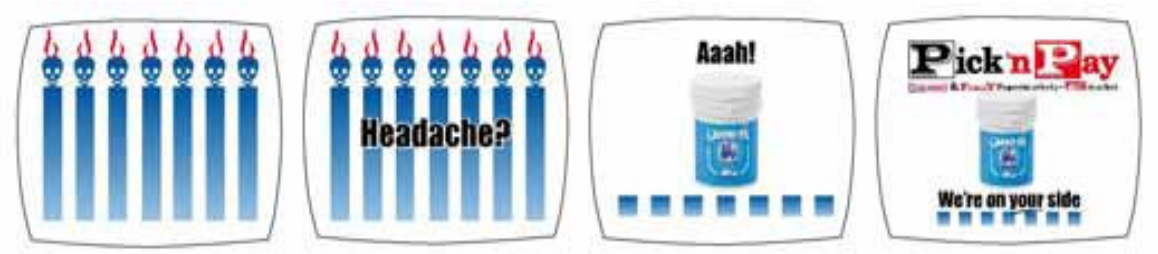


Figure 6. Pick n Pay branding advertisement. Source: Pick n Pay website.

these two quality alternatives for the purposes of this argument (De Wulf et al., 2005). Advertising accentuates predilections for a brand, thus differentiating it from competitors. It would appear that increased advertising does not increase sales at a rate that would make this expenditure more lucrative for private label brands. Therefore, Abe (1995) asserts that private label brands' potentially inferior quality does not necessitate a larger advertising budget than manufacturer brands in order to compete. Baltas (2003), on the other hand, suggests that manufacturer brands cannot often compete with private label brands in terms of pricing and thus advertising plays a vital role in product differentiation for manufacturer brands. Retailers are therefore challenged to promote their range of private label brands without large scale advertising. This is often achieved through placement of one or two private label products – alongside their manufacturer-branded counterparts – in a newspaper insert or the co-branding of both fascia and private label brands in a television advert. Nonetheless, retailers are mindful that private label brands need to be self promoted to some degree and that excessive advertising thereof is almost certainly unwarranted.

The effect of packaging

Underwood et al. (2001) state that there has been an emerging trend to use packaging as a brand communications vehicle. The authors describe the primary role of product packaging as a means to captivate consumer attention by breaking through the competitive clutter. According to Ampuero and Villa (2006), packaging plays a crucial role, especially from the consumer's perspective. This is due to the fact that a product's packaging is what first attracts a consumer. The author asserts that as self-service sales environments have increased, the role of packaging has gained momentum. Thus, packaging has become the "salient salesman" as it informs consumers of the qualities and benefits of a product. This substantiates Fielding's (2006) argument that packaging plays the lead role in building a private label brand. The author takes this one step further, suggesting that packaging has a long-lasting effect in the minds of consumers and is thus a manner in which to blur manufacturer brands' distinctiveness. Building upon this, Ampuero and Vila (2006) consider packaging to be the most important communications medium for the following reasons: (1) it reaches almost all buyers in the category; (2) it is present at the crucial moment when the decision to buy is made; and (3) buyers are actively involved with packaging as they examine it to obtain the information they need. It is interesting to note that, according to one particular study, nine out of ten purchasers occasionally buy on impulse, and these unplanned purchases are generally as a result of striking packages or in-store promotions (Nancarrow et al., 1998).

Meyer and Gertsman (2005) argue that differences in packaging between private label and manufacturer brands have been reduced over time. Quality improvements and decreases in price differentials between private label and manufacturer brands have led to an increase in the importance placed on packaging – the authors identify this form of communication as a key source of product and brand differentiation. According to Nogales and Gomez (2005), packaging by private label brands is specifically selected in order to facilitate product comparison. "Pick n Pays" No Name brand is immediately identifiable by its blue and white packaging, and likewise for Checkers' Housebrand through its teal, white and magenta packaging.

Halstead and Ward (1995) highlight the fact that retailers have re-evaluated the importance of packaging for their private label brands. Thus retailers are placing more emphasis on adding colour or modifying packaging to appear more like competing manufacturer brands. Furthermore, in some instances, packaging quality is of an excellent standard (Suarez, 2005), making it somewhat difficult to distinguish between private label and manufacturer brands on shelf. Copy-cat branding often involves utilizing the colour of the brand leader in the category. For example, private label cola brands are often featured in red to associate themselves with Coca-Cola.

Apportioning shelf space

Amrouche and Zaccour (2006) describe shelf space as "one of the retailer's most important assets". This vital resource is limited and therefore allocations can play a

key strategic role. Retailers ultimately hold this trump card with respect to negotiations. Allocations to private label have been known to be as sizable as twice that apportioned to manufacturer brands (Nogales and Gomez, 2005). In addition, Suarez (2005) notes that retailers purposefully allocate their private label brands to more advantageous positions on the shelves, such as placing their own brands directly to the right of the manufacturer brands they are competing against. This being due to the fact that 90% of the population are right handed and are thus theoretically more likely to reach for the private label alternatives (ibid).

According to Hwang et al. (2004) the level on which the product is displayed has a significant effect on sales. For instance, a product which is located at eye-level falls within the average consumer's line of vision, attracting his/her attention, and hence increasing the likelihood of the product being chosen. De Wulf et al. (2005) concurs with this premise and emphasises the influential role that shelf positioning of a private label brand can play with regard to sales of these products.

METHODOLOGY

Insights into the industry were gleaned through four experience interviews with marketing professionals across the retail and supply platforms. This included representatives from the two largest supermarket groups in South Africa. The findings from these interviews informed the quantitative research design.

A non-probability, convenience sampling technique was used to administer a consumer survey. Although predefined quotas were not strictly set, the researchers endeavoured to obtain a sample which was somewhat representative of supermarket shoppers in South Africa. 163 questionnaires were deployed using the self-administered, mall intercept method at local shopping centres in Johannesburg, Durban, Limpopo and Cape Town. This approach was adopted so as to facilitate expedient questionnaire completion. A preliminary check was done in the field, to identify and remedy any inconsistencies, omissions or obvious mistakes with the questionnaire. A central office check was thereafter performed to alleviate less glaring errors. An online questionnaire was also setup, from which a further 178 respondents contributed their views. This administrative method was extremely efficient as respondents were unable to electronically submit the questionnaire if there were any technical errors at the time of completion. The data from both online and self-administered questionnaires was then captured, cleaned, coded and analysed. Finally, the data was tested for normality and this was confirmed to be in order.

EMPIRICAL FINDINGS

Composition of the sample

The sample is deemed to be somewhat representative of the urban supermarket shopping population in South Africa. In terms of gender, slightly more females (55.1%) completed the questionnaire than males (44.9%). The predominantly comprised black and white respondents with a 41 and 39% share, respectively. Coloured, Indian and Asian consumers constitute the remaining 20%. The majority of the sample falls into the 26 to 35 year old age category, reflecting 42% of respondents. The 16 to 25 and 36 to 45 year old age categories represent similar numbers of respondents with approximately 19% each. Individuals of 46 years of age and older constitute the remainder (20%) of the total sample. Thus, a relatively broad spread of age categories is achieved. However, representation is skewed towards the younger segments. Over half of the sample is currently married, whilst approximately 44% are unmarried. Less than 4% of the sample is either divorced or widowed. The majority of the sample (52%) lives in households consisting of between three and five people. A further 38% live with two or less people and a mere 10% live with more than six people in their homes. The majority of the respondents (55%) speak English as their mother tongue. Xhosa-speaking individuals represent a further 24% of responses with the remaining 21% are spread between Afrikaans, Sotho, Zulu and other language groups. The largest proportions of employment represented in the sample are clerical, casual and executive with 22, 16 and 17% respectively. A mere 6% of the sample is unemployed, a further 9% are students and 2% are retired. Hence, a total of 17% of the sample are currently not actively working.

The sample is largely in keeping up with 2008 All Media and Product Survey (AMPS) data with respect to urban supermarket shoppers in South Africa. However, it is acknowledged, that the sample is slightly biased towards higher income earners, in part due to the completion of a number of questionnaires online. Nonetheless, this was not seen as a serious impediment to the credibility of the study.

Quality and price perceptions of private label brands

The proportion of private label brand purchasers in the sample is notably high with 84% of respondents confirming that they have purchased these brands before. This would suggest that there is a substantial potential market for private label brands in the South African environment. Furthermore, this serves to authenticate the perceptions and attitudes revealed in the survey as the majority of respondents have experience in this respect.

Walker (2006) revealed varying perceptions in the literature with regard to the quality of private label brands. However, for the most part, these were empirically found to be negative. According to the survey findings, the majority of consumers (66%) were either relatively neutral or negative in their attitude towards private label brand quality levels. Only one in three respondents expressed a positive view concerning their perceptions of private label brands. This is depicted in Figure 7. It is clear that South Africans are still somewhat sceptical about the quality of private label brands which may partially explain why

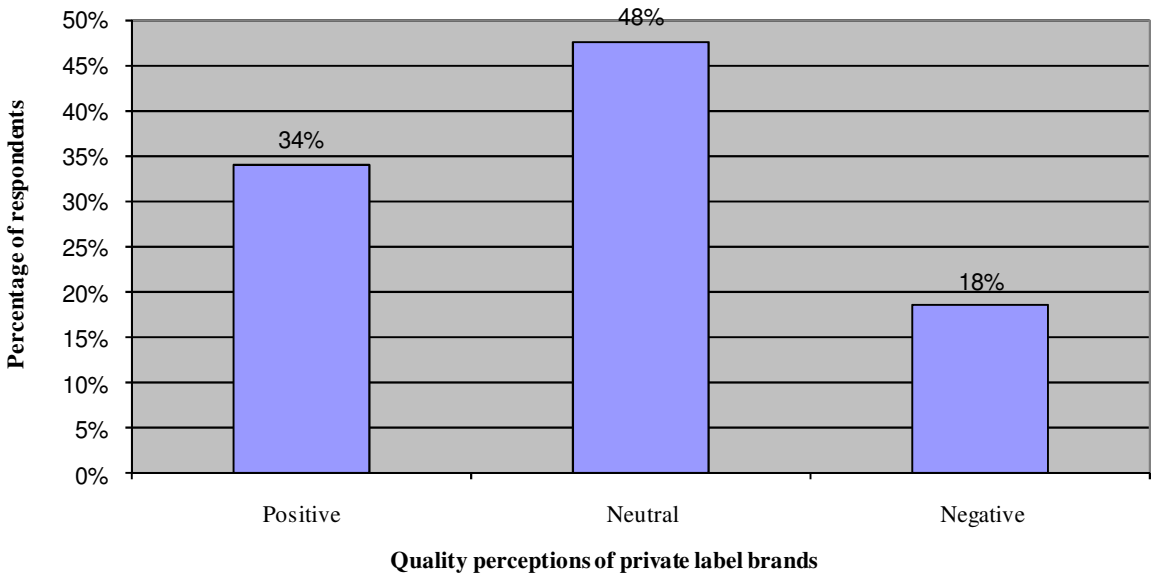


Figure 7. Quality perceptions of private label brands in South Africa.

penetration of private label brands in the grocery sector is relatively poor. The silver lining here may be that 60% of respondents felt that private label brands had improved in quality since their introduction. Should advancement of such brands persist, perceptions may well be radically different in the future.

Respondents did however display an association between quality and price. To this end, price does appear to be a leading indicator of quality. Figure 8 suggests that low prices and low quality are paired, as are medium quality and medium prices.

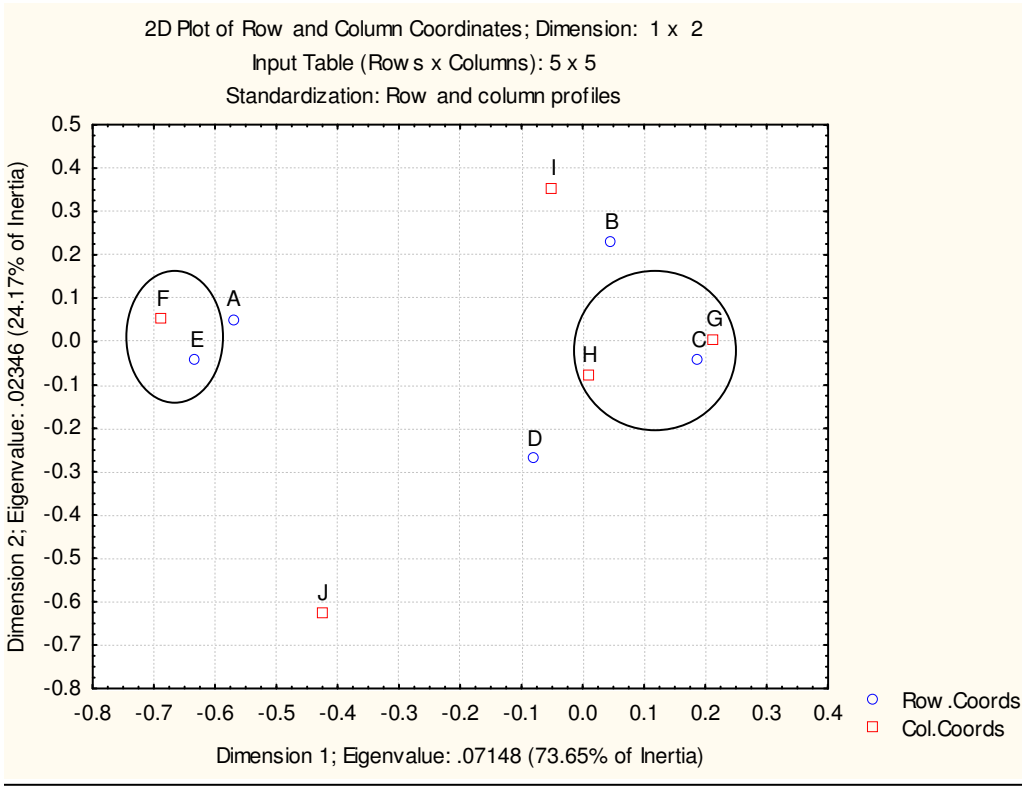
Somewhat surprisingly, high quality and high prices are not strongly associated. This may be due to the nature of private label brands which offer favourable quality to consumers and, due to being more competitively priced than mainstream manufacturer brands, offer superior value for money. Additionally, the clustering of high quality, low quality and low price may be attributed to variability in the market whereby some private label brands offer much better value than others. This is investigated below.

Figure 9 represents the analysis of a comparison of each retailer in terms of their customers' views towards their range of private label brands. Respondents with positive perceptions, as would be expected, purchase greater quantities of these brands in most cases. Respondents who consider private label brands as good quality tend to purchase the Woolworths (78%), Pick n Pay Choice (67%) and Pick n Pay No Name (70%) brands. It is interesting to note that these retailers cater predominantly to the LSM 6 to 10 market segment. Shoprite 'Ritebrand' is the only brand with converse results - respondents who indicated negative quality associations purchased more of this brand than those with positive quality connotations. It appears that Shoprite shoppers (LSM 4-7) do not purchase the 'Ritebrand' out of preference, but rather necessity. Retailer profiles may be found in the appendix.

These findings are congruent with the split between manufacturer and private label brands sold by the respective retailers. This is represented in Figure 10 on the following page. Just over half the numbers of respondents (52%) who shop at Pick n Pay are consumers of their private label brands. And eight out of ten Woolworths shoppers (78%) purchase their own label products. Shoprite, Checkers and SPAR feature far less prominently in this respect. Again, this underscores the fact that higher LSM shoppers are more inclined to buy private label brands when available. It may be inferred that their propensity for risk is somewhat higher than less affluent shoppers, who may not be in a financial position to make a 'mistake' with an unfamiliar (or less trusted) brand.

T-tests were conducted to ascertain whether purchasers of private label brands tend to perceive these brands differently to non-purchasers. The results are included in Table 1.

Perceptions around quality, price and reliability differed remarkably between purchasers and non-purchasers. These attributes were all highlighted at the 1% significance level, revealing a very high degree of significance. Location and packaging were not seen as differentiating factors between purchasers and non-purchasers. The former is unlikely to be a differentiating factor as the major supermarket chains have achieved ubiquitous coverage of South African urban areas. All supermarket retailers included in this study stocked at least private label brand, therefore making these



Blue
A = high quality
B = medium to high quality
C = medium quality
D = medium to low quality
E = low quality

Red
F = low price
G = medium to low price
H = medium price
I = medium to high price
J = high price

Figure 8. Correspondence map - quality versus price perceptions.

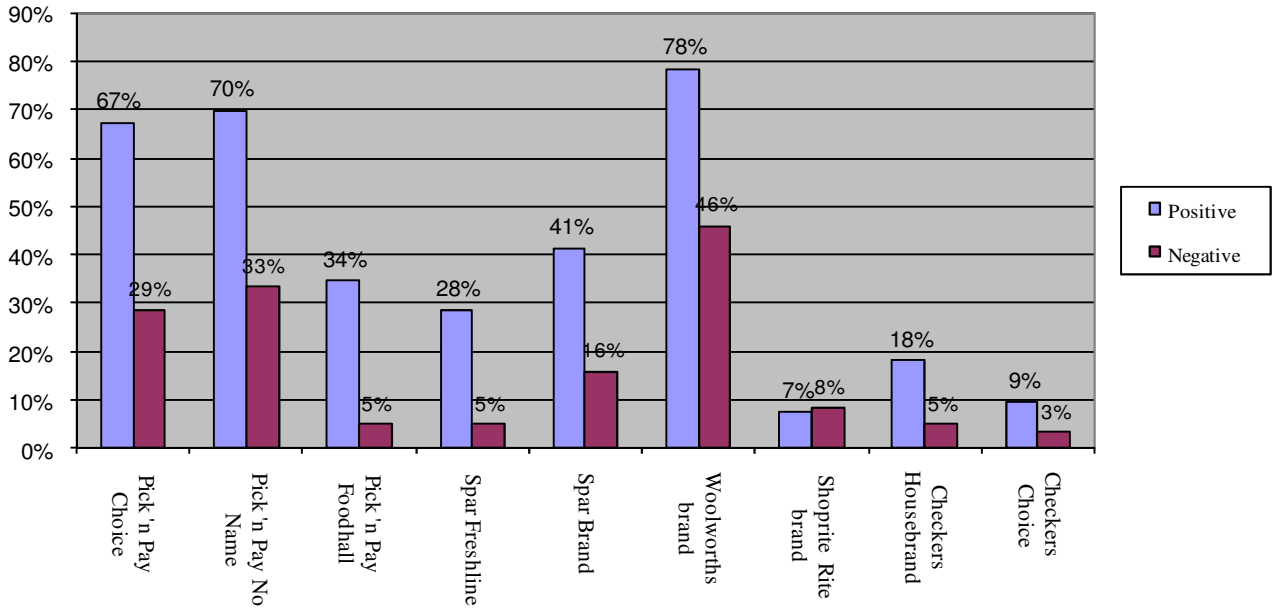


Figure 9. Retailer comparison - percentage of purchasers by perception classification.

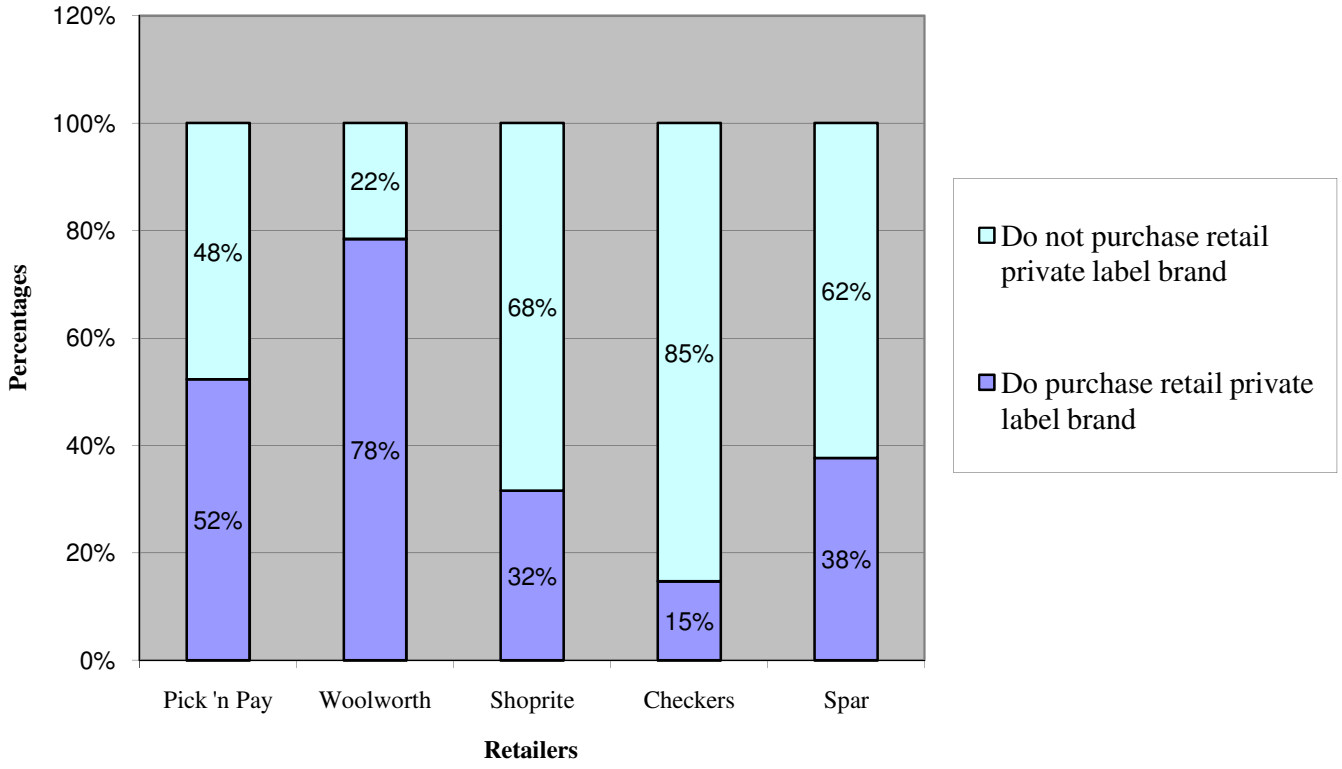


Figure 10. Retailer comparison - share of manufacturer versus private label brands.

Table 1. T-tests determining differences in perceptions between private label brand purchasers and non-purchasers.

Variable	T-tests; Grouping: do you purchase private label brands?		
	t-value	df	p
Quality	-5.72436	339	0.000000
Price	2.70262	339	0.007226
Reliability	-3.34567	339	0.000913
Attractive packaging	-0.26027	339	0.794813
Location	-1.17171	339	0.242138

easily accessible. As explained later in this discussion, packaging was found to be substandard, across the board, therefore reducing its impact as a differentiating factor between purchasers and non-purchasers of private label brands.

The most important criteria in the purchasing of private label brands were probed. Here, respondents were asked to indicate the most important aspect in the decision process. The ranked results are displayed in Table 2 below, along with the percentage of respondents who indicated that to be the case.

Perceived quality of the product was considered to be of the utmost importance, followed by accessibility of the product, trust in the brand and, thereafter, the price tag. This illustrates that consumers are not completely fixated with the price charged and therefore points of differentiation do exist beyond this single criterion.

Demographic variables affecting loyalty to existing manufacturer brands

The majority of respondents (77%) preferred to visit retailers where their brands of preference were readily available and well stocked. Brand loyalty towards leading manufacturer brands was probed on a demographic

Table 2. Key factors in the private label brand decision process.

Rank	Factor	Percentage of respondents
1	Perceived quality	30%
2	Accessibility of products	21%
3	Trust in brand	20%
4	Price charged	12%
5	Various other	17%

Table 3. Levels of brand loyalty with respect to ethnicity.

	Black (%)	White (%)	Coloured (%)	Indian (%)
Yes	80.00	72.73	91.43	74.19
No	20.00	27.27	8.57	25.81
Total	100.00	100.00	100.00	100.00

Table 4. Levels of brand loyalty with respect to gender.

	Male (%)	Females (%)
Yes	74.03	80.21
No	25.97	19.79
Total	100.00	100.00

Table 5. Levels of brand loyalty with respect to income.

	1 less than 100 (%)	2 1000-3000 (%)	3 2001-3000 (%)	4 3001-5000 (%)	5 5001-7000 (%)	6 7001-10000 (%)	7 10000-20000 (%)	8 20000+ (%)
Yes	82.35	78.05	84.44	72.97	74.19	76.92	76.19	70.59
No	17.65	21-95	15.56	27.03	25.81	23.08	23.81	29.41
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

basis in order to ascertain the likelihood of these consumers converting to, or at least trialling, a private label brand alternative. The demographic variables were each considered so as to establish which segments classified themselves as loyal with respect to a particular brand. The question was therefore posed: "*When you visit a retailer is it important to you that specific brands are offered at that store? For example do you choose one store above another based on the availability of your preferred brands*?" The results are displayed in Tables 3, 4 and 5.

In terms of gender, a marginally greater degree of brand loyalty was observed in females. In terms of ethnicity, Coloured respondents appeared extremely loyal to manufacturer brands, followed by black, Indian and white respondents. A trend was evident when considering brand loyalty based on income levels. Here, less affluent consumers (earning below R 3 000 per month) recorded the highest levels of brand loyalty. A decrease in loyalty was evident as monthly income increased. The highest earners (above R 20 000 per month) were also the least loyal to manufacturer brands. This finding supports the assertion of Frank Dell, a management consultant for retailers, wholesalers and manufacturers in the United States, who suggests that lower income earners are more inclined to buy a trusted brand than potentially waste money trying unknown brands (Rusch, 2002).. This reservation was likewise found to be true in this study.

Product packaging

Product packaging was highlighted in the literature as an important component of conveying a signal of quality to consumers. The following graph (Figure 11) illustrates that perceptions of private label brand packaging are most often negative. Almost two thirds of respondents (63%) felt that packaging was unattractive and a mere 16% responded positively with regard to this product characteristic. Furthermore, it would appear that the

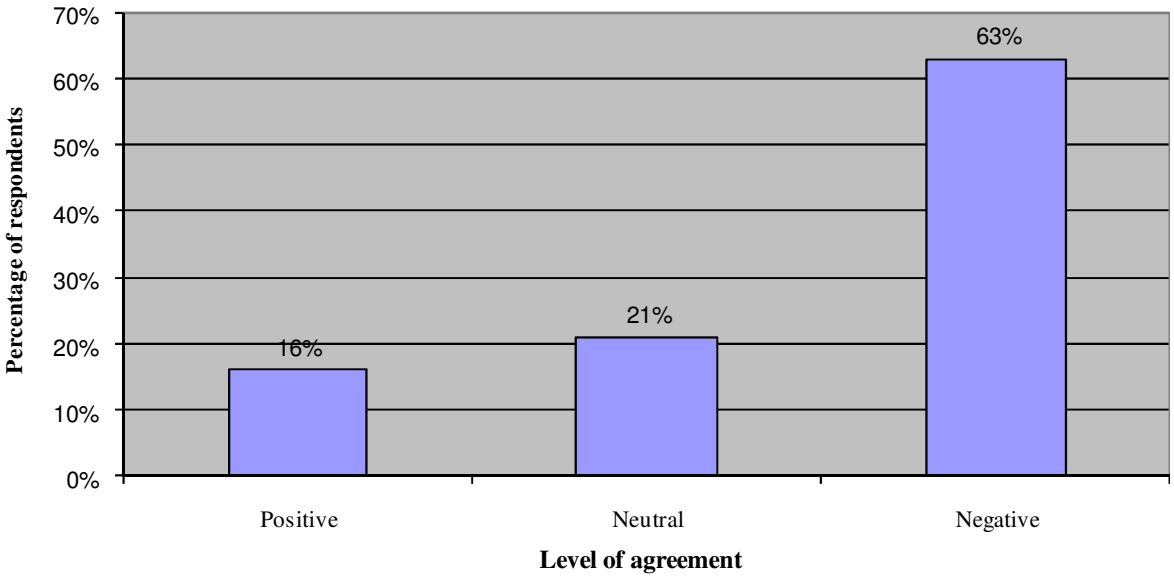


Figure 11. Packaging perceptions of private label brands.

majority of private label brand packages do not visually display the actual product contents. In a society with high rates of illiteracy, this may prove detrimental to product sales by failing to encourage conversion from the mass market.

Relationships between perceived quality of the product and the packaging thereof were investigated. The correspondence map (Figure 12) suggests strong associations between attractive packaging and inner product quality, as well as strong associations between unattractive packaging and low to medium quality inner contents.

It would therefore seem that attractive packaging is essential to persuade the target market that the core content is of similar quality to other manufacturer brands in that product category.

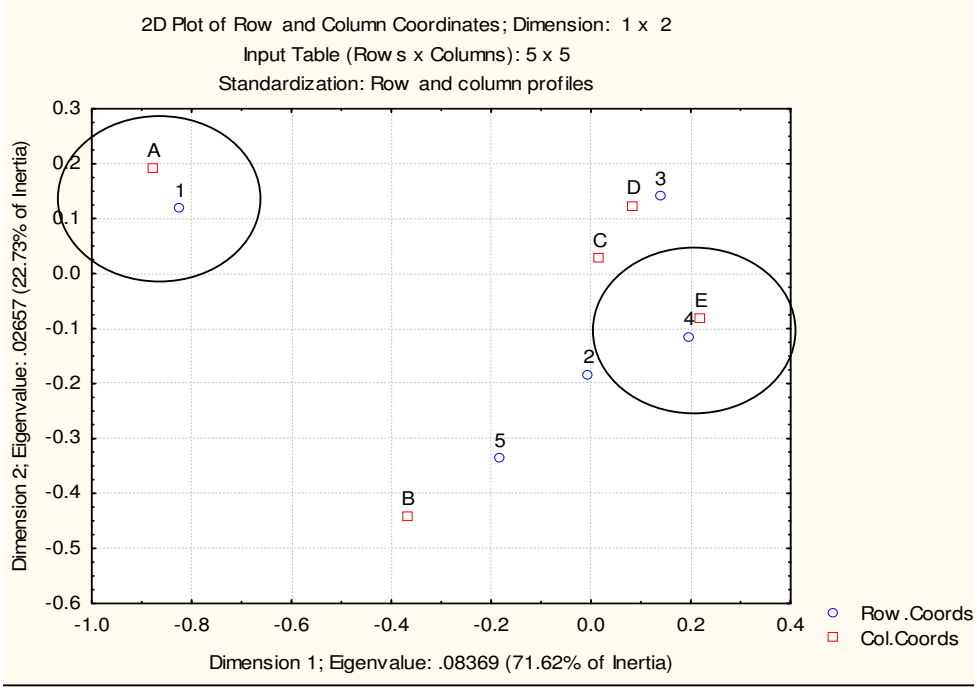
External influences affecting purchasing decisions

Purchasing of groceries in a supermarket is influenced by a number of extrinsic cues. As seen in Table 6, black and white respondents tend to rely considerably more on the opinions of family than do their Indian and coloured counterparts. On the other hand, Indian and coloured consumers are considerably more influenced by advertising than their black or white counterparts.

Respondents indicated that television, newspapers and pamphlets were the most effective means of communicating the benefits of private label brands to grocery shoppers. Table 7 illustrates that the majority of respondents consistently feel that television is the most effective way of communicating the advantages offered by these brands. The media found to be least effective at conveying private label brand benefits were billboards, magazines and internet/online methods. It would therefore appear that the media that it is consumed within the home, the same environment in which grocery products are consumed, work best.

Conclusions

South African consumers seem hesitant to embrace private label brands to the full. There appears to be scepticism surrounding the quality of the entire spectrum of such brands, with significant heterogeneity between specific private label brands. South African retailers have taken varying stances in terms of positioning their private label brands, which can principally be categorised into two contrasting approaches. Firstly, private label brands can be positioned as premium quality products with price levels ranging from marginally below to above prices of category-leading manufacturer brands. Examples of these private label brands include the Woolworths and the Pick n Pay Choice private label brands. On the hand, retailers can position their private label brands based on pure value for money. This equates to average quality products at very affordable prices. Private label brand communication strategies have successfully reached a large proportion of the South African market. However, overall effectiveness in terms of influencing perceptions appears to be unsuccessful and the direct impact on volume share appears negligible. Home-based media, wherein grocery retailers are known to advertise their wares, were found to be the most effective in relaying the message to consumers. Demographic variables were largely ineffective in determining an individual's propensity



A = attractive packaging
B = above average
C = average
D = below average
E = unattractive packaging

1 = high quality
2 = medium to high quality
3 = medium quality
4 = medium to low quality
5 = low quality

Figure 12. Correspondence map - product quality versus packaging attractiveness perceptions.

Table 6. Influencers based on ethnic profiles.

	Black (%)	White (%)	Coloured (%)	Indian (%)
Friends	10.30	13.01	7.69	8.79
Family	21.93	19.92	14.29	13.19
Sales personnel	5.32	5.69	7.69	7.69
In-store	8.97	6.10	9.89	12.09
Store atmospherics	8.97	6.50	9.89	10.99
Past experience	35.88	41.87	35.16	30.77
Advertising	8.64	6.91	15.38	16.48

Table 7. Advertising techniques deemed most effective for private label brands..

	Percentage of respondents	Percentage of respondents who considered the medium least effective
In-store promotions	19.06	10.19
Internet	9.68	20.18
Magazines	9.09	19.20
Newspapers	57.77	4.70
Television	74.49	3.92
Word of mouth	47.51	3.43
Direct mail	19.35	9.50
Billboards	5.87	25.86
Pamphlets	57.77	3.04

to buy private label brands. However, income was found to be the most prominent of all variables, revealing a direct relationship between income and affinity towards private label brands, although presumably premium private label options. Unfortunately, private label brand packaging was considered, for the most part, to be unattractive and failed to convey a sense of high product quality. Packaging is regarded by many marketers to be a 'salient salesman' and is thus thought to have evolved into an important facet of product differentiation. Sadly, South African retailers appear to lag behind their European counterparts rather drastically in this respect.

AREAS FOR FUTURE RESEARCH

This is an exploratory study which only scratched the surface of private label branding in the retail grocery sector. A number of pivotal issues did however come to the fore which were not explicitly covered in this study. These are listed below for possible further research projects.

The manufacturer-retailer relationship was revealed to be a hindrance to effective private label brand growth in the South African market. Due to a very limited number of major suppliers in South Africa (notably Unilever, Procter and Gamble, Nestle and Tiger Brands), retailers have limited bargaining power in persuading such manufacturers to supply content for their private label brands. Hence, this interaction should be further investigated in an attempt to uncover means through which both sets of parties can achieve a symbiotic relationship in the long term.

The black emerging middle class, who seemingly have exponential spending power, may present a future lucrative market for private label brands. Therefore, investigations into this rapidly growing market segment may reveal insightful and beneficial findings in order for retailers to effectively position and differentiate their private label brands.

The effectiveness of in-store promotions could be probed to determine how brand conversions may be achieved at the point of sale. This is a complex matter and certainly merits further investigation.

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Appendix – Retailer and private label brand profiles

Supermarkets are medium to large food-driven retail chains. The South African supermarket industry contains a handful of large supermarket chains which dominate the local retailing space. In this respect, Shoprite, Pick n Pay, Spar, Checkers and Woolworths are thought to control the supermarket trading environment in South Africa and are often referred to as the 'Big Five'. Each of these chains has one or more private label brands. In the case of Woolworths, the retailer traditionally only sold private label products but, since the turn of the millennium, has diversified into manufacturer brands as well. A brief overview of each chain is included below.

The Shoprite brand is well known throughout South Africa. It began as a small chain of supermarkets in 1979 and now operates 301 stores within South Africa. It draws its customers from the middle-income consumers in LSM 4-7 (Shoprite, 2009). It has two store formats, namely the supermarkets and the large-format superstores. Shoprite's slogan is: 'Lower prices you can trust!' (Shoprite, 2009). The Shoprite chain has been excluded from this student as the majority of its customers are not considered to be in the middle class.

Pick n Pay is a family controlled business that began in South Africa with four small stores in 1967. It has since grown into a powerful brand which offers customers food, clothing and general merchandise through its' various store formats. Pick n Pay is currently undergoing a strategy to expand Pick n Pay into LSM 4-7 as well to defend and continue to grow in LSM 8-10 (Fast-Moving, 2007). Pick n Pay's slogan reads: 'Inspired by you'.

Table 1. Characteristic breakdown of Pick n Pay private label brands

Private Label Brand	Target Market	Packaging	Characteristics
Pick n Pay 'No Name' Brand	LSM (5 - 7)	Simplistic blue and white. Emulates retailer's brand colours Consumers may assume that this design reduces variable costs	Value for money slogan Low price connotations
Pick n Pay 'Choice' Brand	LSM (8-10)	Generally a Copycat brand Packaging is of a higher standard and is similar to rival manufacturer brands	High quality Medium to high price
Pick n Pay 'Foodhall'	LSM (8-10)	Attempts to emulate a more premium private label, such as Woolworths	Health orientated Convenience focused Medium to high price High quality

Please note: In 2008, Pick n Pay amalgamated the PnP 'Choice' and 'Foodhall' brands into a single entity – the PnP brand.

Checkers, whose slogan is "Better and Better!", is a fast moving consumer goods retailer that is currently owned by Shoprite Holdings. At present Checkers operates 24 Checkers Hyper Stores and 111 supermarkets within South Africa and employs over 16000 employees (Checkers, 2009). Checkers came about as a result of a split of the well-known ShopriteCheckers brand. The Checkers brand has recently been repositioned to cater for customers in the upper-income groups and targets living standards measurement 7 to 10. It focuses more strongly on fresh produce and offers a wider range of choice food items to a more affluent clientele. Today, this chain of supermarkets provides a product range suitable for the discerning shopper in a world-class retail environment (Checkers, 2009).

SPAR is an international, leading global brand and is one of the world's largest food retailers. In 1963, a group of 8 wholesalers acquired the exclusive rights to the SPAR name, which allowed them to service 500 small retailers in South Africa. Spar has three store formats, which are SPAR which is designed for neighbourhood shopping; SUPERSPAR for one-stop, competitively priced, bulk shopping and KWIKSPAR for everyday convenience (SPAR, 2009). AMPS data for 2008 revealed that SPAR had a significant influence in both the LSM 5-7 and LSM 8-10 markets, with 13.9 and 32.4% of the market

(SAARF, 2009). Spar's slogan reads 'Good for you'.

Table 2. Characteristic breakdown of Checkers 'Housebrand' and 'Choice' brand

Private label brand	Target market	Packaging	Characteristics
Checkers Housebrand	LSM (6-7)	Simplistic colours and design Signifying retailer's brand colours Consumer may assume that this design allows for costs to be saved	Value for money slogan Low price connotations
Checkers Choice brand	LSM (7-10)	Generally a Copycat brand Packaging similar to product it is emulating	High quality medium to high Cost

Table 3. Characteristic breakdown of the 'SPAR' brand and the 'Freshline' brand

Private label brand	Target market	Packaging	Characteristics
SPAR Brand	Higher LSM (8-10)	Generally a Copycat brand Packaging similar to product it is emulating	High quality High cost All dry goods, such as tinned good, flour and sugar.
SPAR Freshline	Higher LSM (8-10)		Health orientated Convenience focused High price High quality

Woolworths commenced trading in South Africa in 1931. According to the Woolworths media office, since its inception, the Woolworths brand has become synonymous with innovation, quality and value for money. With their wide appeal, Woolworths' goods are now sold through 149 corporate stores, 51 international franchise stores throughout the rest of Africa and the Middle East and 69 South African franchise stores nationwide. Woolworths is a respected retail chain that offers men, women and children's clothing of exceptional quality and durability, a stylish and contemporary collection of home ware, an assortment of organic foods as well as a newly launched range of beauty products all under its own brand name (Woolworths, 2009). It offers shoppers a better supermarket experience with exceptional customer services, a limited variety of financial services, and an in-store restaurant (Farquhar, 2007). The Woolworths target market comprises of shoppers in the LSM 9 and 10 categories as well as aspirant shoppers from the LSM 6 to 8 markets (Noble and Davey, 2008). Woolworths' slogan is "The Difference" as the stores continually strive to make the difference in customers' lives (Woolworths, 2009).

Table 4. Characteristic breakdown of the 'Woolworths' brand

Private label brand	Target market	Packaging	Characteristics
Woolworths Brand	Higher LSM (8-10)	Elegant design Aspirational May be considered superior to manufacturer brands	High Price High Quality Lots of health orientated items Numerous Convenience food options Perceived as being of a higher calibre.

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Full Length Research Paper

Applying the theory of planned behavior to explore the independent travelers' behavior

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This study analyzes the behavior of Independent traveler participators on the basis of projected behavior theory. The results are as follows: (1) key person's opinion to the participator is the most significant to the participator's willingness to spend time to actively learn related knowledge before joining in the Independent traveler. (2)The greater confidence and capability the participator has during Independent traveler, the more measures are taken involved in the Independent traveler. (3)The more measures taken involving the Independent traveler by the participator, it is more likely the participator to join the Independent traveler. (4) The opinion from other key persons has impact on the participator's willingness to promote or recommend others to join the Independent traveler. (5)The greater confidence and capability the participator has, it is more likely the participator to join the Independent traveler. (6)The more thoughts the participator has, the more frequent the participator actually joins the Independent traveler. (7)The greater confidence and capability the participator performed during the Independent traveler, the more frequent the participator joins the Independent traveler.

Key words: Theory of planned behavior, travel behavior, independent travel.

INTRODUCTION

In recent years, the average annual income of Taiwanese has regularly increased. The quality of life of Taiwanese has also continuously improved. With the implementation of the 'two days-off a week' policy, Taiwanese have started to engage in more travel activities, given more leisure time and money. The growing trend of traveling has resulted in a significant increase in travel expenditure. In this rapidly changing society, Taiwanese now have more travel alternatives available in diverse forms.

According to the 2006 Survey of Travel by R.O.C. Citizens (Tourism Bureau, Rep., 2007), 90% of Taiwanese travel on their own itinerary with travel information largely gathered from family, friends and colleagues. The majority choose "traveling on their own itinerary" (95.6%) in their domestic travels. Thus, for the airline, hotel and bed-and-breakfast industries, identifying those factors influencing individuals to engage in independent travel is essential in seeking out business opportunities. Independent travel is a growing trend in domestic travels in Taiwan. An investigation into past research on independent travel reveals a focus on the experiences of independent traveler (Hsu and You, 2005); the perceived constraints of outbound travel for individuals engaged in independent travel (Yang et al., 2007a); and, the relationship between purchase motives, purchase involvement and purchase intention of independent travel (Huang, 2005). On predicting the probability of a behavior, the Theory of Planned Behavior proposed by (Ajzen, 1991) has been applied extensively. It suggests that there are three factors that determine behavioral intention: attitude, subjective norm and perceived behavioral control. These can be used to predict the probability of a successful behavior attempt. There has been relatively little research done on independent travel behavior using TPB. Thus, this study uses TPB as its theoretical foundation in analyzing independent travelers' behavior patterns of Taiwanese. It also examines the factors affecting their behavioral intention towards independent traveler participation and the interactive effects between behavioral intention and actual behavior.

LITERATURE REVIEW

Independent travel

Chen (1987) define independent travel as: “travel characterized by the complete involvement of individuals in its design, allocation of resources, control and execution throughout the course of travel from the planning of the itinerary to the actual travel experience and until its conclusion”.

Theory of planned behavior

To overcome the limitation of dealing with behaviors over which individuals have incomplete volitional control in theory of reasoned action (TRA), Ajzen (1987) added another antecedent to the theory called perceived behavioral control, representing other irrational factors, which led to the development of theory of planned behavior (TPB).

TPB supposes (Ajzen, 2001) that individual behavior is influenced by behavioral beliefs, normative beliefs and control beliefs. Behavioral beliefs can generate the attitude of an individual towards a behavior. Normative beliefs lead to the subjective norms of an individual. Control beliefs are the perceived behavioral control of an individual.

Attitude

Attitude refers to a relatively persistent and consistent behavioral inclination of individuals based on their recognition and likes and dislikes of people, event objects and the environment (Olson and Zanna, 1993). Lippa (1990) considered attitude as a kind of evaluative response (like or dislike) towards a particular object. He emphasized it as an intervening variable in social psychology research and a hypothetical construct that can be inferred but cannot be directly observed.

Subjective norms

Ajzen and Fishbein (1991) regarded subjective norm as the product of normative belief and motivation to comply. Normative belief reflects the pressure perceived by individuals to perform or not to perform a behavior in relation to those persons or organizations important to them. Motivation to comply refers to the willingness of individuals to comply with important others’ expectations when deciding whether to perform a certain behavior or not. Subjective norms are normally the influence of those persons or organizations important to individuals when performing a certain behavior (Ajzen, 1991).

Perceived behavioral control

If an individual is to actually perform a behavior, he must be able to control the objective situations, such as resources, time and money. Perceived behavioral control is a composition of control belief or the beliefs about the factors facilitating or impeding the behavior and the control power individuals have over these factors (Ajzen, 1985). The intention of individuals is affected by attitude, subjective norm and perceived behavioral control. Perceived behavioral control not only influences intention, but it may also directly influence the behavior of an individual. For example, a person needs to have time and the economic conditions that will allow him to engage in leisure activities. Otherwise, no matter how passionate about leisure this individual is and no matter how society has commended the significance of leisure travel towards a person’s life, if this individual has little money and no spare time, his leisure intention will be constrained and thus harder for an actual behavior to manifest.

Behavioral intention

Ajzen (1991) defined intention as a person’s subjective probability of performing a behavior. It reflects the willingness of an individual to engage in a certain behavior. In the study of leisure and recreation, behavioral intention refers to the intention of an individual to participate again within a year of having traveled and the willingness to expend more for travel (Baker and Crompton, 2000). Measuring behavioral intention is mainly conducted using such indicators as the intention to travel again, a positive word of mouth and the willingness to recommend (Woodside et al., 1989; Ross, 1993; Baker and Crompton, 2000; Bigné et al., 2001; Kozak, 2001).

Behavior

Hsing (2002), defined behavior as the performance of an action at a certain time in a certain context and with a certain purpose. For this study, behavior refers to the frequency of actual occurrences of independent travel conducted under various possible circumstances and purposes within the past three years.

Hypothesis

The relationship of subjective norms towards attitudes

Wu and Lin (2007) revealed that Subjective norm can directly influence attitude. Both have a significant relationship with each other. As the positive support received by individuals from other persons or organizations important to them becomes greater, their attitude also becomes more positive (Yu et al., 2005). Kuo (1998) shows an interactive effect among intervening variables such as usage attitude and subjective norm during path

analysis. When the subjective norms of respondents are more positive, their attitudes also become more positive. Research of (Yu et al., 2005) into the behavior patterns of downloading MP3 shows that the subjective norm of users on downloading MP3 positively influences their attitude. In view of these, this study presents its first hypothesis: there exists a significant relationship between subjective norm and participation attitude.

The relationship of perceived behavioral control towards attitudes

The TPB proposed by Ajzen (1985; 1991) does not consider that perceived behavioral control influences attitude. However, attitude can be an intervening variable of the subjective norm when influencing behavioral intention. Thus, in the causal model constructed by (Yu et al., 2005) specifying the behavioral tendencies of Taiwanese tourists in Kinmen, attitude was made an intervening variable. Results of this study show attitude as an intervening variable in the effect of perceived behavioral control towards behavior intention. From this, it can be said that perceived behavioral control has a positive effect on attitude. Yu et al (2005) Research of the behavior patterns of downloading MP3 shows that the perceived control behavior of users on downloading MP3 positively influences their attitude. Taking these into account, this study gives its second hypothesis: there exists a significant relationship between perceived control behavior and participation attitude.

The relationship of attitudes towards behavioral intentions

Ghen and Liu (2004) attitude is a main factor influencing behavioral intention. Attitude can be used to predict behavioral intention (Ajzen and Driver, 1992). When attitude is used to predict behavioral intention, attitude serves as an important predictive factor (Huang, 2002). Bock and Kim (2002) maintained that individual attitude influences behavioral intention. Research shows that the attitude on participation in eco-travel through the use of the Internet has a positive significant relationship with the behavioral intention to participate in eco-travel (Chan and Yu, 2008). Thus, this study presents its third hypothesis: there exists a significant relationship between participation attitude and behavioral intention towards independent traveler.

The relationship of subjective norm towards behavioral intentions

Ajzen and Driver (1992) proposed that the subjective norm can predict behavioral intention. It is the most important predictive factor of behavioral intention (Chao, 1998). Bock and Kim (2002) and Ryu et al (2003) presented that individual subjective norm can influence behavioral intention. Moreover, as subjective norm becomes more positive, behavioral intention to participation also becomes more positive (Kuo et al., 2007). It is with these findings that this study states its fourth hypothesis: there exists a significant relationship between subjective norm and behavioral intention.

The relationship of perceived behavior control towards behavior intention

Ajzen and Driver (1992) stated that perceived control behavior can predict behavioral intention. Perceived control behavior is an important factor. It not only influences the intention of an individual towards engaging in leisure activities, but it also directly affects the individual's actual leisure behavior (Blue, 1996). Ryu and Han (2003) on the knowledge sharing behavior of physicians in hospitals show that perceived control behavior directly influences intention to share. Perceived control behavior had a significant contribution in predicting behavioral intention and had greater influence than attitude (Hsu, 1998). Among the factors influencing the behavioral intention of citizens towards participation, the factor, perceived control behavior, has the most influence (Yang et al., 2007b).

As the perceived control behavior of an individual becomes more positive, the behavioral intention to participate also becomes more positive (Kuo et al., 2007). This study thus presents its fifth hypothesis: there exists a significant relationship between perceived control behavior and behavioral intention.

The relationship of behavioral intention towards behavior

Ajzen and Driver (1992) and Hrubes et al. (2001) stated that behavioral intention can effectively influence behavior. Bock and Kim (2002) employed the TRA to examine knowledge sharing behaviors which showed that behavioral intention directly influences actual behavior. Willingness is an important predictive factor and behavioral intention is an important factor influencing behavior (Blue, 1996; Gopi and Ramayah, 2007). From these, this study gives its sixth hypothesis: there exists a significant relationship between behavioral intention and behavior.

The relationship of perceived behavior control towards behavior

Ajzen (1985) identified perceived control behavior as influencing behavioral intention and directly influencing actual behavior. Perceived control behavior is an important factor. It not only influences behavioral intention of an individual towards engaging in leisure activities,

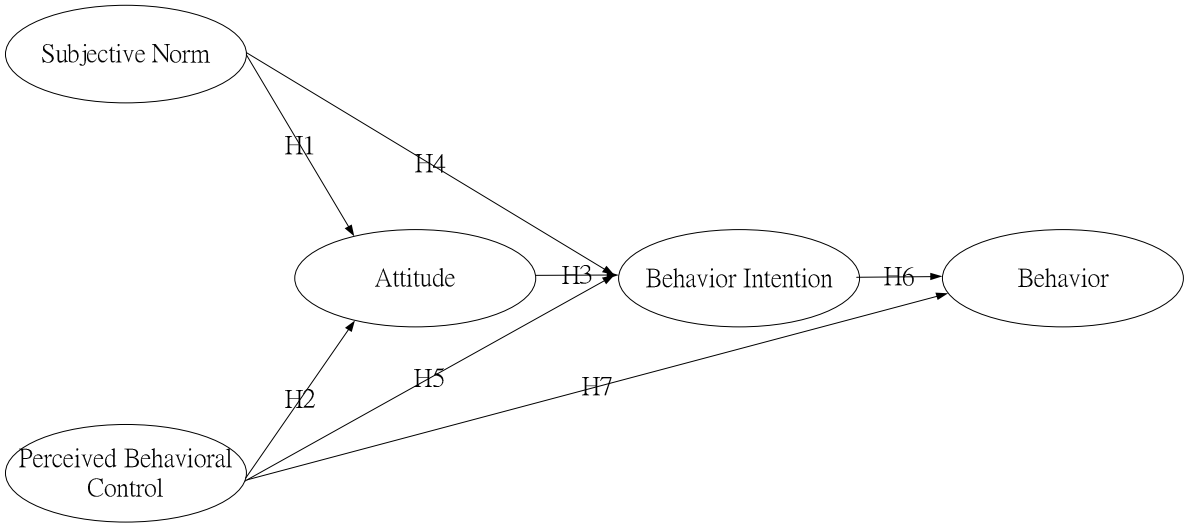

Figure 1. Research framework

but it also directly influences actual leisure behavior (Blue, 1996). Godin (1994) stated that perceived control behavior can increase the explained variance towards behavioral intention (Huang, 2002). Information gathered from the Internet can cause perceived control behavior towards eco-travel participation to have a positive significant relationship with behavior (Chan and Yu, 2008). This study then presents its seventh hypothesis: there exists a significant relationship between perceived control behavior and behavior.

METHODS

Research framework

The main purpose of this study is to examine the behaviors of Taiwanese in independent travel participation. Based on existing theoretical literature, belief factors influencing behavioral intention can be examined using three aspects: attitude, subjective norm and perceived control behavior. Under various circumstances, the factors influencing intention will also be different. The framework for this study can be seen in Figure 1.

Data collection

Convenient sampling method was employed in this study with a focus on those Taiwanese who had experiences in independent travel. In considering the limitation that participation in independent travel requires individuals to have certain economic conditions, sample subjects were required to be at least 18 years old. To increase the response rate of the questionnaire, respondents were first asked whether or not they had previous experience in independent travel. Consent was sought only when conditions for sample subjects were met.

Questionnaire design

The questionnaire for this study consisted of five parts which included: (1) attitudes towards independent traveler participation using the leisure attitude scale developed by Ragheb and Beard (1982); (2) subjective norms on independent traveler using items given by Fan (2002) to measure subjective norm; (3) perceived behavior on independent traveler participation using the items created by Bandura (1977) to measure perceived control behavior; (4) behavioral intention on independent traveler participation using items proposed by Zeithaml, Berry and Parasuraman (1996) to measure behavioral intention; and, (5) individual characteristics. Items for the first four parts were measured on the 5-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree) with a higher number representing greater importance.

RESULTS

Describes statistical

Out of a total of 408 questionnaires distributed, 398 were returned from which 316 were valid. According to data gathered on the individuals engaged in independent travelers, 62% were females and 38% were males. 6% were 6 years old and below, 25% were 21 - 25 years old, 23% were 26 - 30 years old, 18% were 31 - 35 years old, 15% were 36 - 40 years old and 12% were 41 years old and over. 65% were married and 35% were single. 1% had at most a junior high school education, 13% had finished senior high school education, 20% had attained junior college education, 54% had a university education while 12% had attained a graduate degree or above. 23% were students, 2% worked in the industrial sector, 12% worked in business, 27% worked in services, 27% worked as public servants and 10% worked in other sectors. 20% resided in northern Taiwan, 14% resided in central Taiwan, 43% resided in the south, 21% resided in the outlying islands and 1% resided in other areas. 50% earned 15,000 NTD monthly and below, 29% earned between 15,000 - 30,000 NTD, 11% earned between

30,000 - 45,000 NTD, 3% earned between 60,000 - 75,000 NTD, 2% earned between 75,000 - 100,000 NTD and 1% earned more than 100,000 NTD.

Factor analysis and reliability analysis

This study employed the principal components analysis to extract meaningful factors. A criterion for extraction should be that factors must have eigenvalues greater than 1. These were then rotated using the varimax method. Factor loadings with absolute values greater than 0.5 were retained as factors for this study. These were then assigned labels based on the definitions of the variables.

A factor analysis of attitude revealed five dimensions. Its cumulative percentage of variance was 62.96%. Cronbach's α was 0.933 for "autonomy", 0.882 for "preference", 0.852 for "well-being", 0.764 for "interaction" and 0.784 for "planning". "Autonomy" is the degree of freedom and control individuals have over what they want to do during independent travel. "Preference" is defined as the preferred actions during independent travel. "Well-being" refers to the belief that independent traveler can rejuvenate an individual's health and mind and improve work efficiency. "Interaction" is the belief that independent travel participation can widen an individual's circle of friends and improve the individual's social skills. "Planning" refers to whether a participant will spend time in classes on independent travel.

Through factor analysis, two dimensions were identified for subjective norm: "primary group" and "secondary group". Its cumulative percentage of variance was 66.04%. Cronbach's α was 0.847 for the "primary group" and 0.777 for the "secondary group". "Primary group" refers to those persons important to the participant, such as parents, siblings and relatives. "Secondary group" refers to those organizations relevant to independent travel, such as government institutions and travel providers.

Factor analysis revealed two factors of perceived behavioral control: "facilitating conditions" and "self-efficacy". Its cumulative percentage of variance was 68.60%. Cronbach's α was 0.849 for "facilitating conditions" and 0.814 for "self-efficacy". "Facilitating conditions" are the degree of external resources needed by an individual to perform a behavior. An example can be an ample amount of time and money to independent travel whenever desired. "Self-efficacy" is the belief in one's capability to engage in a particular behavior. This can be the knowledge of independent travel, confidence towards engaging in independent travel, sufficient independent travel itinerary information and adequate knowledge and skills needed for independent travel participation.

Two dimensions for behavioral intention were discovered using factor analysis: "intention to recommend to others" and "intention to participate". Its cumulative percentage of variance was 81.44%. Cronbach's α was 0.914 for "intention to recommend to others" and 0.831 for "intention to participate". "Intention to recommend to others" refers to whether an individual will recommend to others to engage in independent travel and promote its advantages. "Intention to participate" refers to the opinions of individuals towards engaging in independent travel. Tables 1, 2, 3 and 4.

Path analysis

This study utilized the regression analysis method to facilitate a path analysis of participation attitude, behavioral intention and actual behavior. This path analysis (shown in Table 5) further examined the effects between the various variables.

Participation attitude

The direct effect of subjective norm towards participation attitude was 0.188. The direct effect of perceived control behavior towards participation attitude was 0.482. There were no indirect effects found; thus, direct effects were equal to the total effects.

Behavior Intention

The direct effect of participation attitude towards behavior intention was 0.511, there were no indirect effects found; thus, direct effects were equal to the total effects. Subjective norm were no indirect effects found towards behavior intention, there indirect effects was 0.096, the total effects was 0.096. The direct effect of Perceived Behavioral Control towards behavior intention was 0.326, there indirect effects were 0.246 and the total effect was 0.572.

Behavior

Subjective norm and participation attitude were no indirect effects found towards behavior, there, indirect effects were 0.013 and 0.073 and direct effects were equal to the total effects. The direct effect of perceived control behavior towards behavior was 0.220, indirect effect was 0.083 and the total effect was 0.303. The direct effect of Behavior Intention towards Behavior was 0.144, there was no direct effect and direct effects were equal to the total effects.

CANONICAL CORRELATION ANALYSIS

Analysis on subjective norm towards attitude

This study employed the canonical correlation analysis to examine whether there exists a significant relationship

Table 1. Factor analysis of Attitude.

	Autonomy	Preference	Well being	Interaction	Planning
Engage in self-travel, allows you to get involved or rapture.	0.521				
Do you think engaging in self- travel is good for you?	0.555				
Engage in self-travel, you feel very comfortable	0.578				
Engage in self- travel, you feel time flies	0.580				
Do you think tourism is a waste of time engaging in self-travel.	0.586				
You are in favor of increasing leisure time to engage in self- travel.	0.612				
If you have enough money and time, you will engage in more self-travel.	0.621				
Do you think tourism can bring you to engage in pleasure?	0.631				
Do you think engaging in self-travel allows you to travel an enjoyable experience?	0.636				
Do you think engaging in self-travel, you enjoy at your own pace?	0.644				
Do you think engaging in self- travel, not a waste of time?	0.660				
If you choose, you will increase the time to engage in self- travel.	0.669				
You like self- travel.	0.688				
Do you think engaging in self-travel is new and interesting?	0.705				
Compared to other activities, self-travel is a top priority in your choice of leisure.		0.626			
Even if the busy, you still go to engage in self-travel?		0.654			
You think it is appropriate to regularly self-travel?		0.686			
Engage in self-travel is important to you.		0.746			
Do you have self-travel in travel demand?		0.748			
How often do you engage in self-travel?		0.789			
Do you think engaging in self-travel can increase the individual's happiness.			0.623		
Do you think engaging in self-travel can improve the efficiency of the individual?			0.686		
Do you think engaging in self-travel will help relax?			0.723		
Do you think engaging in self-travel benefits to personal health?			0.745		
Do you think engaging in self-travel will help to restore energy?			0.813		
Do you think engaging in self-travel is a great opportunity for social contact.				0.834	
Do you think engaging in self-travel can to develop friendship with people?				0.823	
Do you think engaging in self-travel is a way of self-growth.				0.582	
Do you think engaging in self-travel is a wise use of time means.				0.561	
You will go to participate in relevant seminars or courses to enhance their ability to engage in self-travel.					0.704
You will invest time to learn and ready to engage in self-travel.					0.697
You will spend enough time and effort to enhance the ability to engage in self-travel.					0.727
Reliability α	0.933	0.882	0.852	0.764	0.784
Constraints the overall reliability	0.948				

Table 1. Contd

Eigen value	6.807	4.509	3.920	2.585	2.329
Explained variance%	21.271	14.091	12.249	8.079	7.278
Total explained variance %	62.967				
KMO Kaiser-Meyer-Olkin	0.928				
Bartlett Spherical Test	6478.506				

Table 2. Factor analysis of subjective norm.

	Primary group	**Secondary group**
Your parents are to participate in can affect your important factor in independent travel.	0.833	
Your brothers and sisters to participate in influencing your important factor in independent travel.	0.880	
Your relatives are affecting your independent travel to participate in an important factor.	0.825	
Your Classmates or colleagues are to participate in can affect your important factor in independent travel.	0.667	
Your friends are to participate in can affect your important factor in independent travel.	0.540	
Business independent travel industry is to participate in can affect your important factor in independent travel.		0.803
Introduced by the Government Tourism Policy is to participate in can affect your important factor in independent travel?		0.837
Tourist information providers (such as: Internet, television, magazines, newspapers, etc.) is to participate in can affect your important factor in independent travel.		0.750
Reliability α	0.847	0.777
Constraints the overall reliability	0.840	
Eigenvalue	3.000	2.284
Explained variance (%)	37.497	28.546
Total explained variance (%)	66.043	
KMO（Kaiser-Meyer-Olkin	0.784	
Bartlett Spherical Test	1212.361	

between the subjective norm (independent variable) and the participation attitude (dependent variable) of individuals engaging in independent travel. Subjective norm was comprised of two sub-dimensions serving as criterion variables: “primary group” and “secondary group”. On the other hand, attitude consisted of five sub-dimensions serving as predictor variables: “autonomy”, “preference”, “well-being”, “interaction” and “planning”.

Canonical correlation analysis revealed that the canonical correlation coefficients of the two variables both reached significant levels.

The first had a canonical correlation of $\rho 12=0.151$ ($p<0.05$). The second had a canonical correlation of $\rho 22=0.053$($P<0.05$). Results showed that the first subjective norm canonical factor ($\lambda 1$) can explain 15.1% of the total variance of the first participation attitude canonical factor ($\eta 1$). The second subjective norm canonical factor ($\lambda 2$) can explain the 5.3% of the total variance of the second participation attitude canonical factor ($\eta 2$). The two subjective norm canonical factors ($\lambda 1$, $\lambda 2$) can explain 20.4% of the total variance of the two participation attitude canonical factors ($\eta 1$, $\eta 2$).

Results showed that there exists a close overall correlation between subjective norm and participation attitude, thereby supporting the H1 (Table 6).

Structurally, the first subjective norm canonical factor

Table 3. Factor analysis of perceived behavioral control.

	Facilitating conditions	Self-efficacy
You can participate in independent travel when you want to participate.	0.583	
You have enough the resource and the knowledge to participate in independent travel.	0.658	
You have enough hardware (professional clothes, shoes) to participate in independent travel.	0.804	
You have time to participate independent travel.	0.825	
You have money to participate independent travel.	0.862	
You have enough sources of information for reference in independent travel.		0.769
You understand what independent travel is.		0.843
You have confidence to participate in independent travel		0.864
Reliability(α)	0.849	0.814
Constraints the overall reliability	0.862	
Eigen value	2.964	2.524
Explained variance (%)	37.055	31.551
Total explained variance (%)	68.606	
KMO（Kaiser-Meyer-Olkin	0.847	
Bartlett Spherical Test	1170.105	

Table 4. Factor analysis of behavioral intention.

	Intention to recommend to others	Intention to participate
You will be encouraged Friends and family involved in independent travel.	0.861	
You will be promoted the advantages of independent travel to your Friends and family.	0.889	
You will be promoted independent travel to your Friends and family.	0.907	
If you want to tourism activities, self- travel is your preferred.		0.786
If has the opportunity now, you will be able to participate in self- travel.		0.801
Even if the participation of independent travel to pay a higher price, you are still willing to participate.		0.882
Reliability(α)	0.914	0.831
Constraints the overall reliability	0.879	
Eigenvalue	2.651	2.236
Explained variance (%)	44.181	37.260
Total explained variance (%)	81.441	
KMO（Kaiser-Meyer-Olkin	0.837	
Bartlett Spherical Test	1212.809	

(λ1) has a high correlation with the primary group whose structural coefficients are -0.779 respectively. The correlation of the first participation attitude canonical factor (η1) with planning whose structural coefficients is -0.869 respectively, is higher than with autonomy, preference, well-being and interaction whose structural coefficients are 0.324, -0.021, -0.297 and -0.143 respectively. Therefore, with a representative canonical factor, it is revealed that through λ1 and η1, the observable variables of primary group have a stronger correlation with the observable variables of planning attitude.

The “primary group” of “Subjective Norm” influenced “planning” under Attitude, which suggests that the opinions of the family members and friends impacted the

Table 5. Path Analysis.

Effect / Path	direct effect	indirect effects		Total Effects
		participation attitude	behavior intention	
subjective norm =>participation attitude	0.188			0.188
perceived behavioral control =>participation attitude	0.482			0.482
participation attitude =>behavior intention	0.511			0.511
subjective norm =>behavior intention		0.096		0.096
perceived behavioral control =>behavior intention	0.326	0.246		0.572
participation attitude =>behavioral			0.073	0.073
subjective norm =>behavioral			0.013	0.013
perceived behavioral control =>behavioral	0.220		0.083	0.303
behavior intention =>behavioral	0.144			0.144

Table 6. Analysis on subjective norm towards attitude.

	Subjective Norm			Attitude	
	λ1	λ2		η1	η2
primary group	-0.779*	0.789	autonomy	0.324	0.992
secondary group	-0.377	-1.040	preference	-0.021	-1.449
			well-being	-0.297	0.024
			interaction	-0.143	0.303
			planning	-0.869*	-0.090
Variance Extracted	0.268	0.078	Variance Extracted	0.694	0.306
Redundancy	0.041	0.004	Redundancy	0.105	0.016
			ρ^2	0.151	0.053

participants' activeness towards and frequency of participating in the backpack tour.

Analysis on perceived behavioral control towards attitude

This study employed the canonical correlation analysis to examine whether there exists a significant relationship between the perceived behavioral control (independent variable) and the participation attitude (dependent variable) of individuals engaging in independent travel. Perceived behavioral control consisted of two sub-dimensions serving as criterion variables: "facilitating conditions" and "self-efficacy". On the other hand, participation attitude comprised of five sub-dimensions serving as predictor variables: "autonomy", "preference", "well-being", "interaction" and "planning".

Canonical correlation analysis revealed that the canonical correlation coefficients of the two variables both reached significant levels. The first had a canonical correlation of ρ12=0.332($p<0.05$). The second had a canonical correlation of ρ22=0.046($P<0.05$). Results showed that the first subjective norm canonical factor (λ1) can explain 33.2% of the total variance of the first participation attitude canonical factor (η1). The second subjective norm canonical factor (λ2) can explain the 4.6% of the total variance of the second participation attitude canonical factor (η2). The two subjective norm canonical factors (λ1, λ2) can explain 37.8% of the total

Table 7. Analysis on perceived behavioral control towards attitude.

	Perceived Behavioral Control			Attitude	
	λ1	λ2		η1	η2
facilitating conditions	-0.552*	-1.030	autonomy	-0.085	1.398
self-efficacy	-0.596*	1.005	preference	-0.888*	-0.519
			well-being	0.029	-0.234
			interaction	-0.103	-0.784
			planning	-0.009	0.225
Variance Extracted	0.758	0.242	Variance Extracted	0.420	0.091
Redundancy	0.252	0.011	Redundancy	0.139	0.004
			ρ^2	0.332	0.046

variance of the two participation attitude canonical factors (η1, η2). Results showed that there exists a close overall correlation between subjective norm and participation attitude, thereby supporting H2 (Table 7).

Structurally, the first perceived behavioral control canonical factor (λ1) has a high correlation with both the facilitating conditions and the self-efficacy whose structural coefficients are -0.552 and -0.596 respectively. The correlation of the first participation attitude canonical factor (η1) with preference whose structural coefficients is -0.888 respectively, is higher than with autonomy, well-being, interaction and planning whose structural coefficients are -0.085, 0.029, -0.103 and -0.009 respectively. Therefore, with a representative canonical factor, it is revealed that through λ1 and η1, the two observable variables (facilitating conditions and self-efficacy) have a stronger correlation with the observable variable of preference attitude. “Facilitating conditions” and “self-efficacy” of Perceived Behavioral Control influenced “preference” under Attitude, which suggests that the confidence demonstrated by participants during the backpack tour impacted their actions during the trip.

Analysis on attitude towards behavior intention

This study employed the canonical correlation analysis to examine whether there exists a significant relationship between the participation attitude (independent variable) and the behavioral intention (dependent variable) of individuals engaging in independent travel.

Participation attitude was comprised of five sub-dimensions serving as criterion variables: “autonomy”, “preference”, “well-being”, “interaction” and “planning”. On the other hand, behavior intention consisted of two sub-dimensions serving as predictor variables: “intention to recommend to others” and “intention to participate”.

Canonical correlation analysis revealed that the canonical correlation coefficients of the two variables both reached significant levels. The first had a canonical correlation of $\rho 12=0.536(p<0.05)$. The second had a canonical correlation of $\rho 22=0.127(P<0.05)$. Results showed that the first participation attitude canonical factor (λ1) can explain 53.6% of the total variance of the first participation attitude canonical factor (η1). The second participation attitude canonical factor (λ2) can explain the 12.7% of the total variance of the second behavior intention factor (η2). The two participation attitude canonical factors (λ1, λ2) can explain 66.3% of the total variance behavior intention of the two canonical factors (η1, η2). Results showed that there exists a close overall correlation between participation attitude and behavior intention, thereby supporting H3 (Table 8).

Structurally, the first participation attitude canonical factor (λ1) has a high correlation with the autonomy attitude and preference attitude whose structural coefficients are 0.426 and 0.549 respectively. The correlation of the first behavior intention canonical factor (η1) with intention to participate whose structural coefficients are 0.761 respectively, is higher than with intention to recommend to others whose structural coefficients is 0.35 respectively. Therefore, with a representative canonical factor, it is revealed that through λ1 and η1, the two observable variables (autonomy and preference) have a stronger correlation with the observable variable of intention to participate.

“Autonomy” and “preference” under Attitude influenced “intention to participate” under Behavior Intention, which indicates that the relevant actions undertaken by participants during the backpack tour impacted the probability of them returning to participate in the tour.

Analysis on subjective norm towards behavioral intention

This study employed the canonical correlation analysis to examine whether there exists a significant relationship between the subjective norm (independent variable) and the behavior intention (dependent variable) of individuals engaging in independent travel. Subjective norm was comprised of two sub-dimensions serving as criterion variables: “primary group” and “secondary group”. On the other hand, behavior intention consisted of two sub-

Table 8. Analysis on attitude towards behavior intention.

	Attitude			Behavior Intention	
	λ1	λ2		η1	η2
autonomy	0.426*	-0.166	intention to recommend to others	0.350	-1.155
preference	0.549*	0.788	intention to participate	0.761*	0.937
well-being	-0.129	-0.408			
interaction	0.179	-0.274			
planning	0.175	-0.601			
Variance Extracted	0.480	0.209	Variance Extracted	0.759	0.241
Redundancy	0.257	0.027	Redundancy	0.407	0.031
			ρ^2	0.536	0.127

Table 9. Analysis on subjective norm towards behavioral intention.

	Subjective norm			Behavioral Intention	
	λ1	λ2		η1	η2
primary group	0.893*	-0.653*	intention to recommend to others	1.106*	-0.484*
secondary group	0.207	1.087*	intention to participate	-0.219	1.187*
Variance Extracted	0.567	0.343	Variance Extracted	0.564	0.436
Redundancy	0.028	0.004	Redundancy	0.024	0.006
			ρ^2	0.042	0.013

dimensions serving as predictor variables: “intention to recommend to others” and “intention to participate”.

Canonical correlation analysis revealed that the canonical correlation coefficients of the two variables both reached significant levels. The first had a canonical correlation of ρ12=0.042(p<0.05). The second had a canonical correlation of ρ22=0.013(P<0.05). Results showed that the first subjective norm canonical factor (λ1) can explain 4.2% of the total variance of the first behavioral intention canonical factor (η1). The second subjective norm canonical factor (λ2) can explain the 1.3% of the total variance of the second behavior intention factor (η2). The two subjective norm canonical factors (λ1, λ2) can explain 5.5% of the total variance behavior intention of the two canonical factors (η1, η2). Results showed that there exists a close overall correlation between subjective norm and behavior intention, thereby supporting H4 (Table 9).

Structurally, the first subjective norm canonical factor (λ1) has a high correlation with the primary group whose structural coefficients are 0.893 respectively. The correlation of the first behavior intention canonical factor (η1) with intention to recommend to others whose structural coefficients is 1.106 respectively, is higher than intention to participate whose structural coefficients is -0.219 respectively. Therefore, with a representative canonical factor, it is revealed that through λ1 and η1, the observable variables of primary group have a stronger correlation with intention to recommend to others.

The “primary group” of “Subjective Norm” influenced “intention to recommend to others” under Behavior Intention, which indicates that the opinions of family members and friends impacted the probability of whether participants publicized or recommended the backpack tour to others.

Analysis on perceived behavioral control towards behavioral intention

This study employed the canonical correlation analysis to examine whether there exists a significant relationship between the perceived behavioral control (independent variable) and the behavior intention (dependent variable) of individuals engaging in independent travel. Perceived behavioral control was comprised of two sub-dimensions serving as criterion variables: “facilitating conditions” and “self-efficacy”. On the other hand, behavior intention consisted of two sub-dimensions serving as predictor variables: “intention to recommend to others” and “intention to participate”.

Canonical correlation analysis revealed that the canonical correlation coefficients of the one variable reached significant levels. It had a canonical correlation of ρ12=0.352(p<0.05). Results showed that the perceived behavioral control canonical factor (λ1) can explain 35.2% of the total variance of the behavioral intention canonical factor (η1). Results showed that there exists a close overall correlation between perceived behavioral control and behavior intention, thereby supporting H5

Table 10. Analysis on perceived behavioral control towards behavioral intention.

	Perceived Behavioral Control		Behavioral Intention
	λ1		η1
facilitating conditions	0.545*	intention to recommend to others	0.312
self-efficacy	0.603*	intention to participate	0.791*
Variance Extracted	0.758	Variance Extracted	0.752
Redundancy	0.267	Redundancy	0.264
		ρ^2	0.352

Structurally, the first perceived behavioral control canonical factor (λ1) has a high correlation with the facilitating conditions and self-efficacy whose structural coefficients are 0.545 and 0.603 respectively (Table 10).

The correlation of the first behavior intention canonical factor (η1) with intention to participate whose structural coefficients is 0.791 respectively, is higher than intention to recommend to others whose structural coefficients is 0.312 respectively. Therefore, with a representative canonical factor, it is revealed that through λ1 and η1, the two observable variables (facilitating conditions and self-efficacy) have a stronger correlation with the observable variable of intention to participate. “Facilitating conditions” and “self-efficacy” under Perceived Behavioral Control influenced “intention to participate” under Behavior Intention, which suggests that the confidence demonstrated by participants during the backpack tour impacted the probability of them returning to participate in the tour.

Analysis of behavioral intention towards behavior

In this study, regression analysis, behavior intention is taken as independent variables, and behavioral variables, as dependent. From Table 11 we can see that behavioral intention is significantly related to the behavior. Results showed that there exists a close overall correlation between behavioral intention and behavior, thereby supporting H6. Therefore, in further analysis, "intention to participation" affect independent travel behavior high than the "recommendation of the intentions of others".

* P<0.1** P<0.05*** P<0.01

Analysis on perceived behavioral control towards behavior

This study adopts regression analysis method, perceived behavioral control as independent variables and behavioral variables as dependent. In Table 12, perceived behavioral control on behavior was significantly related. Results showed that there exists a close overall correlation between perceived behavioral control and behavior, thereby supporting H7.

Therefore, in further analysis, "self-efficacy" affect independent travel behavior high than the "facilitating conditions".

Table 11. Regression analysis of behavioral intention towards behavior

		Behavior
		β
Behavioral Intention	intention to recommend to others	0.043
	intention to participate	0.231*
	Adjust R^2	0.060
	F	11.068**

Table 12. Regression analysis of Perceived behavioral control towards behavior.

		Behavior
		β
Perceived Behavioral Control	facilitating conditions	0.036
	self-efficacy	0.296*
	Adjust R^2	0.094
	F	17.382**

DISCUSSION

This study adopted the TPB to examine the behavior of individuals engaged in independent travel. It also observed the relationship of latent variables within the model and the degree of effect these variables had towards behavioral intention on independent travel participation. Through these, it aimed to understand the psychological factors influencing the participation behavior of individuals engaged in independent travel. Results of this study are as follows:

On the factors influencing the participation attitude of individuals on independent travel, the results of this study show that there exists a significant relationship between subjective norm and perceived behavioral control. Between them, the effect of perceived behavioral control

is greater than subjective norm. The likes and dislikes of an individual towards independent travel activities are mainly determined by the degree of control over the objective situation. In other words, as an individual is more able to control the objective condition, the degree of the individual's inclination towards independent travel becomes greater. Moreover, on the relationship between perceived behavioral control and participation attitude, facilitating conditions has a stronger, significant relationship with self-efficacy. In other words, as individuals are more able to control factors such as time and money, their actions before engaging in independent travel (such as the gathering of information) also increase. Lastly, from the relationship between subjective norm and attitude, it can be observed that primary and secondary groups have a stronger, significant relationship with planning and autonomy. In other words, the degree of approval and recognition towards independent travel and the willingness to attend classes on independent travel are influenced positively by family, friends and relevant organizations.

On the behavior intention influencing participants of independent travel, this study discovered that participation attitude, subjective norm and perceived behavioral control all have significant effects. Among these, perceived behavioral control is the greatest and participation attitude is the second greatest. The willingness of an individual to participate in independent travel is mainly determined by the degree of control over the objective situation and the degree of like or dislike towards independent travel. In other words, as the degree of control of the objective conditions and the degree of inclination towards independent travel become greater, the willingness to engage in independent travel also increases. Secondly, on the dimensions of perceived behavioral control and behavior intention, both facilitating conditions and self-efficacy have a stronger, significant relationship with the intention to participate and the intention to recommend to others. In other words, self-confidence and external resources such as time, money and facilities influence a willingness to participate again and an intention to recommend to others. Thirdly, on participation attitude and behavior attitude, autonomy and preference have a stronger, significant relationship with the intention to participate and intention to recommend to others. In other words, the degree of approval and recognition towards independent travel and the willingness to attend classes on independent travel influence the willingness to participate again and intention to recommend to others. Lastly, on subjective norm and behavior intention, the primary group has a stronger significant relationship with the intention to recommend to others. In other words, the encouragement of family and friends to participate in independent travel influences the intention of an individual to recommend others to engage in independent travel.

On the participation behavior influencing participants of independent travel, this study shows that participation attitude, subjective norm, perceived behavioral control and intention to participate all have significant effects. Among them, perceived behavioral control has the greatest effect. The participation to independent travel is mainly determined by the degree of control of an individual over the objective situation. In other words, as an individual is more able to control the objective condition, the behavior to participate in independent travel activities also becomes greater. On a further analysis of perceived behavior, the effect of self-efficacy is the most significant. In other words, as the self-confidence of an individual towards participation in independent travel becomes greater, the itinerary information and the knowledge and skills of the individual will be sufficient and thus, the frequency of participation in independent travel also increases. Path analysis revealed that subjective norm has no direct effect on behavioral intention. However, subjective norm through participation attitude has an indirect effect on behavioral intention. On the effects of behavioral intention, the total effect of perceived behavioral control is the greatest; attitude, second highest and subjective norm, the smallest. On behavior, it is the perceived behavioral control which has the most effect followed by behavioral intention. In other words, as the recommendations of family and friends are stronger and the self-confidence and abilities of the participants are greater, their preparations before engaging in independent travel increases. One example of this will be the initiative to spend time learning relevant knowledge and gathering information by attending classes. Both the views of participants on their independent travel and the frequency of their actual participation in independent travel will relatively increase. This study presents the following recommendations to the airline, hotel and bed-and-breakfast industries to serve as reference when implementing independent travel itineraries:

First, establish a favorable perception. The attitude of participants on independent travel is influenced by the opinions of those who are important to them. Moreover, the opinions of family and friends can influence their opinion on engaging in independent travel. Thus, a major task is to know how to promote the advantages of independent travel, such as allowing participants to learn various things or to better experience local customs than by group travel.

Second, provide more details and information on travel. The assessments of participants on independent travel, their views on their engaging in independent travel and their behavior during actual participation are influenced by the degree of self-confidence they have when participating in independent travel. Making more detailed travel information available to participants allows them to strengthen their confidence towards independent travel.

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Full Length Research Paper

Competency-based human resource practices in Malaysian public sector organizations

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Malaysian public service started to use competency-based human resource practices at the end of year 2002 as the response to increase the level of service quality. In Malaysian public service, out of six competency-based human resource practices, only five practices were implemented. They were recruitment and selection, training and development, career development, performance management and reward. From 300 copies of questionnaire distributed using simple random technique, 140 were useable. The data was analyzed further using factor analysis and it was found out that training and development items had combined with a reward practice. This new dimension was labeled as organizational development. Others remain the same dimensions. It was also found out that competency-based performance management, organizational development and career development were practiced to a high extent. Meanwhile, competency-based reward and recruitment and selection were practiced to a moderate extent.

Key words: Human resource practices, service quality, competency, Malaysia, public service.

INTRODUCTION

Globalization has influenced very much the way organizations manage their human resources. Competency is looked upon as the answer to globalization. Through its integration with human resource practices, competent workers who possess competencies (skill, knowledge and abilities) as needed by the organizations will be hired and more of their capabilities will be boosted further through training and then rewarded for their demonstrated and potential competencies. These kinds of workers are very much of an asset.

Malaysian public service started to use competency-based human resource practices at the end of year 2002 as the response to increase the level of service quality. In Malaysian public service, out of six competency-based human resource practices, only five practices are implemented. They are recruitment and selection, training and development, career development, performance management and reward. After five years of implementation, there is a need to determine the dimensions of competency-based human resource practices in Malaysian public service. Thus, this is the reason why this study is carried out. There are also quite a few studies that were done on competency-based human resource practices.

Literature review

Competency-based human resource practices have long way been practiced by public services of other countries like US (Hood and Lodge, 2004), UK (Horton, 2000a; 2000b; Farnham and Horton, 2002), Netherland (van der Meer and Toonen, 2005; van Vulpen and Moesker, 2002; Hondeghem and Vandermeulen, 2000), Germany (Loffler, Busse and Hoppe, 2002), France (Jeannot and Lichtenberger, 2002), Italy (Cerase, 2002), Belgium (Hondeghem and Parys, 2002; Brans and Hondeghem, 2005), Sweden (Moqvist, 2002), Finland (Virtanen, 2002) and Poland (Mikulowski, 2002) since 1980s. However, the implementation was decentralized to the departments and thus, was not holistic. The reason why they started to adopt the practices was due to either dissatisfaction involving the staff or the customers due to inconsistencies in the staff management (Lodge and Hood, 2005).

Competency-based human resource practices used competency framework (competencies that distinguish high performer from average performers in all areas of organizational activity) as the foundation for recruitment, selection, training and development, rewards and other aspects of employee management (Horton, 2000).

Competency-based human resource practices provide two types of integration which are vertical and horizontal integration. Vertical integration ties individual employees and their behaviour to the strategic objectives of the organization while the horizontal integration ties each human resource practice closely together in one frame of reference and language (Brans and Hondeghem, 2005). Thus, competency-based human resource practices are more like a control system in ensuring there are coherence and standardization in the system and thus, the end results expected and targeted by the organizations could be fully achieved.

Moreover, in competency-based human resource practices, competency is tied to every human resource practice either at the input or output level. At the input level, competencies which are vital for the organizations in achieving their goals are identified. This list of competencies is known as competency frameworks (Hondeghem and Parys, 2002; Mikulowski, 2002). The competencies could be of five different types which are psychomotor, cognitive, affective, personality and social (Moqvist, 2002) which could be classified further into two which are hard and soft or generic and specific (Brans and Hondeghem, 2005). These competencies will be the base for every human resource practices such as in selecting and recruiting, training, career developing, appraising performance and rewarding the employees. By doing this, organizations can ensure that competency at the output level or in other words, performance is more measurable and easier to be obtained. This is important as output produced by the public sector organizations is much more difficult to measure (Hondeghem and Vandermeulen, 2000). This is due to the many roles that they have to play e.g. facilitator, pace setter, authority and developer (Ilhaamie, 2009).

Malaysian Public Service has been receiving high number of complaints from the public since the 1990s in regards to delays in public service delivery (PCB, 1999 - 2006). Out of reformation or organizational change in order to increase the level of service quality, it started to implement competency-based human resource practices at the end of 2002. From six competency-based human resource practices, only five are implemented which are competency-based recruitment and selection, training, career development, performance management and reward (PSDM, 2004).

Competency-based recruitment and selection is defined by Malaysian public service as the extent of screening methods that are used to select a small number of strong candidates from a large group of applicants quickly and efficiently. Competency-based recruitment and selection start with the identification of the competencies needed by an organization to achieve its goals, missions and objectives which are known as selection competency template. Some competencies that are important for service provision in the public sector in order to enhance service quality are emotional intelligence, customer service orientation, interpersonal communication and team player skills. Meanwhile, some instruments which are needed in order to ensure that the best or competent candidates are selected and recruited are competency-based application form, competency-based advertisement; competency based behavioral interview, competency test, simulation and assessment centers. Just noticeable difference scales and IT are used to determine the candidates that match the selection competency template that was set up earlier (PSDM, 2004). Consequently, qualifications which are more restricted to educational knowledge and titles are now of little value for effective executive search and executive resource planning (Brans and Hondeghem, 2005). Instead skills, knowledge, behaviors and capabilities are of priorities in order to eliminate the gap between the competencies requested with the competencies possessed. Once the best candidate is identified, competency gaps form the basis for an initial new hire learning plan (Draganidis and Mentzas, 2006).

On the other hand, competency-based training and development is defined as an attempt to bridge the gap between current demonstrated competencies levels to target levels of job profile. In order to close the gap, individual employees have to prioritize development needs which would produce the greatest impact on performance (PSDM, 2004). Thus, closer alignment between training and desired competencies leads to workers who become more competent and capable in the workplace (Holton et al., 2006).

Meanwhile, competency-based career development practice is defined as the extent of development template used to enhance the employee performance in their jobs or to prepare improvements in their future tasks. The competency model is used to identify types and level of competencies required by different jobs in the service. Moreover, career ladders are developed for individual workers to match their competencies with the most suitable job competency profile. These workers have to take their own initiatives to conduct competencies gap analysis to identify the competencies they are lacking. On the other hand, the employers too, have to play their part in developing their employees' careers. Examples of activities that employers can undertake include conducting career development program to gauge employees' potential, strengths and weaknesses, developing job assignments for employees to improve their performance in their existing jobs, training and preparing employees to advance to other assignments in the future as well as providing structured mentoring program for employees (PSDM, 2004).

Competency-based performance management is defined as the extent of performance planning, facilitation and study done between the managers and the workers in order to track and increase individual and organization performance and to provide information for other human resource management practices. In this practice, goals

and objectives are set based on competency-based performance appraisal form (e.g. Annual Work Targets form) before the present and future performance is being discussed with the workers. The performance appraisal is based on objective measure of individual performance produced by the competencies that are important for the success of the organization. In order to ensure the appraisal is just and fair, the employers have to inform employees on the standards used to evaluate job performance. The employers may receive feedback on employees' job performance from multiple sources (e.g. superiors, customers, etc.) to monitor their progress. Behavioral anchored scales which range from one to six is used to enable individuals to assess how much of the required skill/competency/behavior they have been demonstrating. Finally, performance review process is documented by using the Annual Work Performance Report (PSDM, 2004).

Lastly, competency-based reward is defined as the extent of paying for competencies or performance. This could be done by paying the employees that use or demonstrate their current level of competencies that represent high performance in their jobs or their potential to deliver in future (PSDM, 2004). It is a type of pay that rewards employees of their skills, behavior and attitude in performing job roles and not because of their jobs, functions, knowledge, responsibility, age and seniority (Hondeghem and Vandermeulen, 2000; Jahja and Kleiner, 1997). Thus, competency-based reward is inevitable for compensating highly skilled, competent and professional workforce. It provides an incentive for employees to grow and enhance their capabilities (Risher, 2000). It was proposed due to dissatisfaction with the traditional reward in terms of its ability to reflect and reward performance (PSDM, 2004).

METHODOLOGY

The population of the study consisted the public organizations that provide services to the external customers such as the Department of Registration, Immigration and others. Based on the listing by the Malaysian Public Services Department, 444 public organizations that comprise of federal and state agencies were identified. Mail survey was employed using simple random sampling technique in order to ensure that each public organization located throughout Malaysia has the equal chance to be selected as the respondents. Approval from the Chief of Country Secretary was obtained prior to the distribution. Then, 300 copies of questionnaires together with the self returned envelopes were posted to the top management. Items on competency-based human resource practices were constructed from PSDM manual (2004). All these items were prepared in English language as the top officers who are responsible for the implementation of the competency-based human resource practices are educated workers. A seven Likert scale was used to measure the extent of the implementation of these practices (1 = to no extent at all and 7 = Practiced to a full extent).

Data collected were further analyzed for descriptive statistics. Principle Component Factor Analysis was employed to summarize a big number of original variables to a small number of factors. Furthermore, Varimax Rotation technique was used to obtain simpler and more interpretable factor solutions (Hair et al., 2006).

DISCUSSION OF FINDINGS

A total of 140 useable responses were obtained, giving a response rate of 46.67%. Table 1 shows the profile of the public organizations. Majority of them were local authorities (27.10%), federal departments (23.60%) and land and district offices (22.90%). Majority of them too, were located in Kuala Lumpur (18.60 %).

The data obtained from the questionnaires was subjected to factor analysis in order to validate the instruments. The Bartlett test value is significant indicating that the factor analysis is suitable. Basing on Eigen value more than one, five factors were extracted. From the results, training and development items had combined with an element of reward practice. This new dimension was labeled as organizational development. Meanwhile, other dimensions remained as the original dimensions (Table 2).

Factor one is competency-based performance management practice. The coefficient values vary from 0.64 to 0.86. There are five practices of competency-based performance management factor which are setting performance appraisal based on objective measure of individual performance, using competency-based performance appraisal form (e.g. the Annual Work Targets form) to set objectives and goals for employees in advance before discussing with them, assessing employees of the competencies important for organization's success by using performance appraisal process, informing employees about standards used to evaluate job performance and documenting the performance review process by using the Annual Work Performance Report.

Factor two is competency-based reward. The coefficient values vary from 0.80 to 0.86. There are three practices of competency-based reward dimension which are to reward employees' job behaviors required to accomplish specific job tasks, individual employee's current level of competence, top performer more than average performer and employees' potential to deliver in the future.

Factor three is competency-based career development. The coefficient values vary from 0.65 to 0.82. There are four items in the competency based career development dimension which are developing job assignments for employees to improve their performance in their existing jobs, training and preparing employees to advance to other assignments in the future, providing a structured mentoring program for employees and conducting career development program to gauge employees' potential, strength and weaknesses.

Factor four is the competency-based recruitment and selection practice. The coefficient values vary from 0.6 to

Table 1. Organizational profile.

	Public Agency Category	Number of Respondents	Percentage (100)
1	Local Authorities	38	27.10
2	Federal Department	33	23.60
3	Land and District Office	32	22.90
4	Federal Statutory Bodies	15	10.70
5	State Federal Agencies	6	4.30
6	State Statutory Bodies	6	4.30
7	Land Office	4	2.90
8	Federal Ministries	3	2.10
9	District Office	2	1.40
10	State Secretarial Office	1	0.70
	Location		
1	Kuala Lumpur	26	18.60
2	Putrajaya	14	10.00
3	Selangor	14	10.00
4	Kelantan	13	9.30
5	Negeri Sembilan	11	7.90
6	Terengganu	10	7.10
7	Johor	10	7.10
8	Perak	10	7.10
9	Kedah	7	5.00
10	Pahang	7	5.00
11	Melaka	7	5.00
12	Pulau Pinang	6	4.30
13	Sarawak	3	2.10
14	Sabah	2	1.40

0.8. Competency-based recruitment and selection dimension comprise of four practices which are administering simulations in the assessment center to assess level of competencies demonstrated, using psychological tests e.g. cognitive ability tests to support the interviewing process, using computer if there are more than two candidates in finding the closest match to the job's competency requirements and conducting competencies gap analysis to identify the competencies employees are lacking. Thus, this factor is a combination of three original items from competency-based recruitment and selection dimension and one item from competency-based career development dimension.

The final factor is organizational development. The coefficient values vary from 0.64 to 0.83. The items are awarding cash incentive for individuals on top of base pay (e.g. excellent service reward) for their demonstrated competencies relevant to the organization, sending employees for training in the development areas important to organization and providing formal training programs to enhance employees' capabilities to hold a higher post.

Table 3 features the reliability of the main variables. The reliability of the main variables were high as the Cronbach alphas were higher than 0.70. These show that the instrument developed was valid.

Table 4 exhibits the mean and standard deviation values of the main variables. Competency-based performance management, organizational development and career development were practiced to a high extent. Meanwhile, competency-based reward and recruitment and selection were practiced to a moderate extent.

Conclusion and Implications

From the factor analysis conducted, training and development items had combined with an element of reward practice. This new dimension was labeled as organizational development. This shows that competency-based training and development as practiced in Malaysian public service was more towards to increase the level of rewards of the public servants. Three practices were implemented to a high extent such as

Table 2. Loading factors for competency-based human resource practices.

Items	Factor				
	1	2	3	4	5
Set performance appraisal based on objective measure of individual performance.	.86	.09	.12	.20	.11
Set objectives and goals for employees in advance using a competency-based performance appraisal form before discussing with them (e.g. the Annual Work Targets form).	.82	.09	.08	.16	.17
Use the performance appraisal process to assess employees in the competencies important for organization's success.	.73	.07	.32	.03	.20
Always inform employees about standards used to evaluate job performance	.70	.13	.20	.13	.27
Document the performance review process by using the Annual Work Performance Report.	.64	.19	.25	.12	.09
Determine pay based on employees' job behaviors required to accomplish specific job tasks.	.13	.86	.05	.16	.09
Determine pay based on the current level of individual's competence.	.15	.84	.18	.16	.12
Pay top performer more than average performer.	.03	.82	.16	.10	.13
Pay for competency in the form of potential to deliver in the future.	.15	.80	.02	.14	.17
Develop job assignments for employees to improve their performance in their existing jobs.	.28	.07	.82	.13	.07
Train and prepare employees to advance to other assignments in the future.	.34	.11	.79	.11	.21
Provide a structured mentoring program for employees.	.17	.32	.65	.22	-.04
Conduct career development program to gauge employees' potential, strength and weaknesses	.10	.03	.65	.45	.34
Administer simulations in the assessment center to assess level of competencies demonstrated.	.20	.22	.17	.80	-.09
Use psychological tests e.g. cognitive ability tests to support the interviewing process.	.10	.12	.19	.75	.18
Use computer if there are more than two candidates in finding the closest match to the job's competency requirements.	.08	.28	-.02	.75	.18
Conduct competencies gap analysis to identify the competencies employees are lacking	.25	-.03	.35	.60	.18
Award cash incentive for individuals on top of base pay (e.g. excellent service reward) for their demonstrated competencies relevant to the organization.	.30	.07	.07	.04	.83
Send employees for training in the development areas important to organization.	.16	.30	.06	.10	.73
Provide formal training programs to enhance employees' capabilities to hold a higher post.	.26	.21	.38	.02	.64
Eigen value	3.42	3.22	2.78	2.61	2.09
Variance Percentage	17.10	16.10	13.88	13..04	10.45
Bartlett Value	.00***				
KMO Value	.90				

Note: Factor 1: Performance Management, Factor 2: Reward, Factor 3: Career Development, Factor 4: Recruitment and Selection, Factor 5: Organizational Development

competency-based performance management, organizational development and career development. However, two practices were implemented to a moderate extent which are competency-based reward and recruitment and selection. Difficulties in implementing these two practices is the main reason of the moderate extent. Some measures should be taken to increase the level of the practices in order to achieve the goal of their

Table 3. Reliability coefficients for main variables.

Variables	Items	Cronbach Alpha (α)
Performance Management	5	.87
Rewards	4	.89
Career Development	4	.84
Recruitment and Selection	4	.78
Organizational Development	3	.76

Table 4. Mean and standard deviation of main variables.

Variables	Mean	Standard Deviation	Maximum	Minimum
Performance Management	5.18	1.02	7.00	1.80
Reward	4.06	1.58	7.00	1.00
Career Development	4.88	1.06	7.00	1.75
Recruitment and Selection	4.00	1.39	7.00	1.00
Organizational Development	5.48	1.12	7.00	1.67

Note: All items used Likert scale 7 points (1 = to no extent at all; 7 =Practiced to a full extent)

implementation that is to increase the level of service quality. For example, competency-based reward that is currently in practice should be used to reward employees' potential to perform in future and their current level of competencies in fulfilling specific job tasks. This will motivate them to work harder and perform especially in delivering quality services to the customers. Furthermore, every public organization should be given the authority to select and recruit employees according to the competencies needed which are vital for their organizations. Thus, quality services will be consistently provided to the public and this will assure their satisfaction and loyalty to the government.

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Full Length Research Paper

The analysis of the effects of derivatives exchange (DE) transactions on the market efficiency of Istanbul stock exchange (ISE) national 100 index and on spot market transaction prices

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The objective of this work is to study the ISE National 100 market efficiency on the forward transaction and option exchange and its effect on the spot transaction prices by considering in-depth the contracts being carried out on the basis of (DE) Istanbul Stock Exchange (ISE) National 100 index in the Futures Transaction and Option Exchange in Turkey and the ISE National 100 index. Within the context of this work, the analysis was concluded by using the contractual prices being carried out in the futures market as well as ISE National 100 index closing values within the scope of the period of 01.11.2005 – 30.06.2009. At the end of the analysis, it has been determined that both the futures market and also the ISE National 100 index are efficient in a weak form and do not have any effect to increase the market efficiency. Furthermore, during this work, it has been established that, while it is expected that the futures market would affect the spot market price, the spot market price has affected the futures market price.

Key words: Spot market, futures market, co-integration, granger causality.

INTRODUCTION

Many researches are available as related with the studying of the relationship between the futures market transactions and the spot market transactions. In the study carried out by Floros and Vougas (2007), it is analyzed whether the feedback relationship exists between the spot index and index futures contract traded in the Athens Derivatives Exchange (ADEX) in Greece making use of a Bivariate GARCH Model with a time span ranging from 1999 to 2001. The empirical findings reveal that there are both long-run and lead-lag connection between spot market and futures market. Further they find that the futures market leads spot market due to holding lower transaction costs and higher liquidity.

Maslyuk and Smyth (2008) investigate the stationarity of the crude oil spot and futures prices based on a unit root with structural breaks using weekly data from January 1991–December 2004. In the light of the empirical evidence the authors report that, forecasting future movements in crude oil prices based on past prices is impractible for this timeframe owing to the fact that oil spot markets and oil futures markets are efficient in the weak form with having a random walk behaviour.

Chang and Lee (2008), in their study on both spot market and futures market in Taiwan based on the intraday data in January 2001-May 2005 period, show that a bidirectional causality relationship exists between the spot market and futures market in the short-term. The causal effect of both markets is measured by the computation of the bivariate Granger Causality tests by applying the threshold error-correction model (TECM).

Liu et al. (2008) put to use TGARCH and GARCH models in order to assess the VaR(Value at Risk) of the Chinese copper futures market and spot market. Futhermore, they employ a linear Granger causality test

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to study the information spillovers between the futures market and the spot market and a kernel function for the relationship between the two markets. The main empirical findings of the study focus on the existance of a strong relationship between the futures market and the spot market. In other words, there is a two-way Granger causality between the copper futures market and the copper spot market. They also find that information and risk spillovers from the futures market to the latter are much more powerful due to the fact that futures market has a dynamo character for price discovery.

Bekiros and Diks (2008) examine whether linear and nonlinear causal lead–lag relationships exist between daily spot and futures prices of West Texas Intermediate (WTI) crude oil covering cover two periods, October 1999 and November 1999– October 2007. The econometric tests done in the study exhibit some empirical findings that a strong bi-directional Granger causality exists between spot and futures prices in both periods. Apart from that, the linear causality for the five-variate implementation occurrs to be uni- directional.

So as to observe the existence of linkage between National Stock Exchange (NSE) spot and futures markets in India, Srinivasan and Bhat (2009) utilize Johansen's Cointegration and Vector Error Correction Model (VECM) focusing on the daily data set of spot and stock futures on 21 banking stocks traded in National Stock Exchange (NSE) in May 2005 -May 2008. Their paper exhibits how well the two markets are connected having combined findings. They observe that besides the bi-directional feedback between the two markets exits, spot market has a leading effect on futures market and vice versa.

Having the main purpose of testing causal relationships among prices for crude oils from North America, Europe, Africa, and the Middle East on both spot and futures markets, Kaufmann and Ullman (2009) use a dataset of daily prices for crude oils traded in spot and future markets with their starting date, disregarding the prices of refined petroluem products in their study. The results of their empirical tests indicate that the connections between spot and futures markets are feeble.They also find that alterations in market fundementals and speculation give rise to the increase in oil prices .

In another recent study on daily crude oil spot and future prices for the period January 1991–November 2008 by Maslyuk and Smyth (2009), it is provided some evidence that the purpose of this study is to examine whether crude oil spot and futures prices of the same and different grades are cointegrated. The sample used in the analysis compiled the US WTI and the UK Brent crudes.

MATERIALS AND METHODS

In this work, an in-depth study of the relationship that exists between the contracts being carried out based on the ISE National 100 index in the Izmir Derivatives Exchange and the ISE National 100 market efficiency of the Derivatives Exchange, and whether or not it has any effect on the spot market transaction prices. In line with this objective, the daily closing prices of the ISE National 100 index between 01.11.2005 – 30.06.2009, and the closing prices of the contracts being carried out in the Futures Transaction Market have been analyzed. The analysis commenced in 01.11.2005 because it is the first initial date of the demand option contracts based on the ISE National 100 index. First of all, within the scope of the analysis, the basic statistical values concerning the data thus considered have been calculated. Then, before any analysis of causality to be concluded for determining what kind of effect the Derivatives (DE) 100 has on the ISE National 100, the Unit Root test was performed for determining the stability of the data, and also the Co-integration test was performed in order to find out if there is any relationship between the DE 100 and the ISE National 100. During the stage of designing the work, the work (2008) of Özen was made use of. The basic hypothesis tested in the work is presented here below. Relevant data have been gathered from the web pages of is Investment and Securities Inc. and Izmir Derivatives Exchange. Eviews and SPSS for Windows software have been used for arranging the data and making the analyses. The basic hypothesis tested in the study is given below:

Hypothesis 1

H_0: The DE 100 Futures transactions have no effect on the market efficiency of the ISE National 100 index.
H_1: The DE 100 Futures transactions have some effects on the market efficiency of the ISE National 100 index.
The most important problem being faced in the time series is the emergence of false regressions, and as a result of this, it seems that the obtained testing results such as t and F are meaningful, whereas they are not true. In order to put forth the real relationships between the series being free from the influence of time, above all, the series should be made stable. In this line, at the first stage of the process of the analysis, first of all, it has been researched whether or not the series are stable. Therefore, the ADF unit root test has been used for the ISE National 100 and also DE 100. In the event that the statistics t as found at the end of the test is smaller than Dickey-Fuller critical values, the hypothesis H_0 will be accepted. Dickey and Fuller (1981) have formulated the ADF test as follows, which is used to determine the stability of the series:

$$\Delta X_t=\mu + \alpha t + \delta X_{t-1} + \sum_{i=1}^{k} \delta i \Delta X_{t-1} + \varepsilon_t \quad (1)$$

$\Delta X_t = X_t - X_{t-1}$
t: trend variable
ε_t: stochastic error term
for ε_t;
$E(\varepsilon_t) = 0$
$Var(\varepsilon_t) = \sigma^2_{\varepsilon t}$
$cov(\varepsilon_t, \varepsilon_{t-s}) = 0$
$s \neq 0$

At the second stage of the analysis, with the aim to show if there is any relationship between the series of the first differences, which has been noted, and that if they are stable, Engle-Granger (1987) Co-integration test was applied. If the absolute value of the statistics t thus found at the end of the test is smaller than the critical value as determined by Engel and Yoo (1987), the hypothesis H_0 will be accepted; in the other words, it will be concluded that there is not any co-integration. Such co-integration test can be expressed through the following equation:

$$\Delta e_t = \alpha_0 + \sum_{i=1}^{k} \alpha_i \Delta e_{t-i} + \beta e_{t-i} + \varepsilon_t \quad (2)$$

At the third stage of the analysis, after it has been shown that there is a relationship between the series, a Granger causality test will be made in order to determine the direction of such a direction. In respect of Granger causality test, three situations are considered; thus, there is a unilateral causality from X to Y or from Y to X, and there is a correlation between X and Y, and X and Y are independent from each other. Granger test is performed through the estimation of the following equations with the method of the smallest squares. Such equations can be expressed as follows:

$$X_t = \alpha + \sum_{j=1}^{J} b_j X_{t-j} + \sum_{i=1}^{I} c_i Y_{t-i} + \varepsilon_t \quad (3)$$

$$Y_t = \alpha + \sum_{j=1}^{J} b_j Y_{t-j} + \sum_{i=1}^{I} c_i X_{t-i} + \varepsilon_t \quad (4)$$

THE RESULTS OF THE ANALYSIS

Descriptive statistical results

At the first stage of the analysis, the basic statistical values have been calculated as directed by the DE 100 and the ISE National 100; and the results relating to the DE 100 are given in Table 1 below. In Table 1 it is seen that index (DE) average, standard deviation and kurtosis have been calculated as 22.76, 20.70 and 1.301 respectively, and that such a situation indicates that the series is oblate as compared to normal. Distortion has been founded as -0.022. This result shows that the series is distorted towards left (negative). In this series, Jargue Bera statistics has been calculated as 110.00 (P<0.00) and it has been found out that the series does not have normal distribution. According to the basic statistical data thus studied, the DE series is not normally distributed.

In Table 2, it is seen that index (ISE) average, standard deviation and kurtosis have been calculated as 39.92, 8.19 and 2.714, respectively, and that such a situation indicates that the series is oblate as compared to normal. Distortion has been founded as -0.022. This result shows that the series is distorted towards left (negative). In this series, Jargue Bera statistics has been calculated as 5.628 (P<0.00) and it has been found out that the series does not have normal distribution. According to the basic statistical data thus studied, the ISE series is not normally distributed.

Table 1. Descriptive statistical results of DE 100.

Statistics	Values
Mean	22.76
Median	28.00
Maximum	61.00
Minimum	0.00
Std. Dev	20.70
Skewness	-0.022
Kurtosis	1.301
Jargue-Bera	110.00
Probability	0.000
Observations	914

Table 2. Descriptive statistical results of ISE 100.

Statistics	Values
Mean	39.92
Median	40.00
Maximum	58.00
Minimum	21.00
Std. Dev	8.19
Skewness	-0.128
Kurtosis	2.714
Jargue-Bera	5.628
Probability	0.059
Observations	916

Unit root test results

In a time series model, it should be known whether or not the obtained probabilistic (stochastic) process changes depending on time. If the quality of the probabilistic process varies throughout time, then the time series is not static. It is impossible to express past and future structure of a non-static time series with an algebraic model. If the stochastic process is static throughout time, a static-coefficient model of the series can be obtained using the past values of the series (Kutlar, 2005).

Granger and Newbold have stated that false regressions will appear in any estimation to be made in cases where the series are not stable. Although the results of the tests to be performed with unstable series are non meaningful, they can be considered meaningful (Gujarati, 2005). For this reason, the taking of the first differences of the series is to be a good way. In this line, the first differences of the series were taken, and Augmented Dickey Fuller (ADF) unit root test was carried out for both the DE 100 and also the ISE National 100. The hypotheses as created for the test are presented here below:

Hypothesis 2

H_0: The DE 100 series is not stable and has auto-correlation, and is not market-efficient.

H_1:The DE 100 series is stable, and there is not any correlation, and it is market-efficient.

Hypothesis 3

H_0: The ISE National 100 series is not stable and has auto-correlation, and is not market-efficient.

H_1: The ISE National 100 series is stable, and there is not any correlation, and it is market-efficient.

In Table 3 are shown the results of the unit root test as

Table 3. DE 100 unit root test.

Augmented Dickey-Fuller Test Equation			
Null Hypothesis: D(DE 100) has a unit root			
		t-Statistic	Probability*
Augmented Dickey-Fuller Test Stat.		-20.29473	0.0000
Critical Value	%1*	-3.4402	-
	%5	-2.8651	-
	%10	-2.5687	-
*MacKinnon (1996) one way p-value			

*** represent the statistical significance levels of 1%.

Table 4. ISE 100 unit root test.

Augmented Dickey-Fuller Test Equation			
Null Hypothesis: D(ISE National 100) has a unit root			
		t-Statistic	Probability*
Augmented Dickey-Fuller Test Stat.		-13.15033	0.0000
Critical Value	%1*	-3.4402	-
	%5	-2.8651	-
	%10	-2.5687	-
*MacKinnon (1996) one way p-value			

***represent the statistical significance levels of 1%.

performed for the DE 100 series. As seen in Table 3, in the tests of stability, the absolute value of the ADF statistics of the DE 100 series, the difference of which has been taken, has been found as -20.29473, and since the critical values of the meaning levels of 1, 5 and 10% are greater than their absolute values, the DE 100 series is in a stable position. In line of this finding, the hypothesis H_0 has been rejected, and hence, it has been understood that the market is efficient. The ADF unit root test as carried out after the first differences of the DE 100 series have been indicated that the series, the difference of which has been taken, has a random walk nature; and as a result of this, it can be said that the DE 100 index is efficient in weak form.

In Table 4 are shown the results of the unit root test as performed for the ISE National 100 series. As seen in the table, in the tests constant stability, the absolute value of the ADF statistics of the ISE National 100 series, the difference of which has been taken, was found as -13.15033, and since the critical values of the mean levels of 1, 5 and 10% are greater than their absolute values, the ISE National 100 series is in a stable position. In line of this finding, the hypothesis H_0 has been rejected, and hence, it has been understood that the market is efficient. The ADF unit root test as carried out after the first differences of the ISE National 100 series indicated that the series, the difference of which has been taken, has a random walk nature; and as a result of this, it can be said that the ISE National 100 index is efficient in weak form.

It has been observed, upon drawing the figures (Figures 1-2) of static series, that the data floated around a fixed average and that the fluctuation variance remained fixed throughout time for DE 100 and ISE National 100 indices. This observation demonstrates that the series are static.

Cointegration test results

Whether or not there is any relationship between the DE 100 and the ISE National 100 can be hardly determined at the end of the co-integration test. At the end of the test to be thus performed, if the conclusion that there is not any relationship between the series is found out, the application of the causality test which is made for determining the direction of such a relation between the series will not be required. The test results as obtained in the work, which concern whether or not there is any relationship between the series, are given in Table 5.

As seen in the table studied, both Trace and also Maximum Eigen statistics indicate there is 1 (one) co-integrated equation between the variables at the level of 1% meaningfulness. In this line of this result, it can be said that there is a relationship between these two series. After it is determined that the ISE National 100 series and the DE 100 series are co-integrated (say, that there is a relationship between them), the direction of this relationship will be determined in next stage. So, the following

Table 5. Cointegration test.

Hypothesis	Eigen value	Trace statistic	Max. eigen statistic	5% critical value		1% critical value	
				Trace	Max	Trace	Max
Model	0.158792	160.2137	157.7000	15.41	14.07	20.04	18.63
	0.002752	2.513738	2.513738	3.76	3.76	6.65	6.65

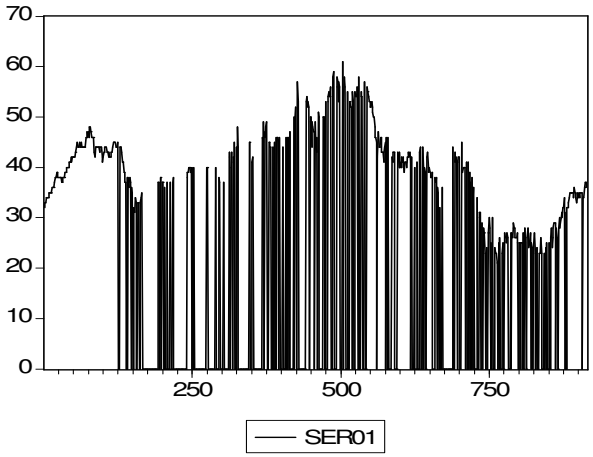

Figure 1. DE 100 graph.

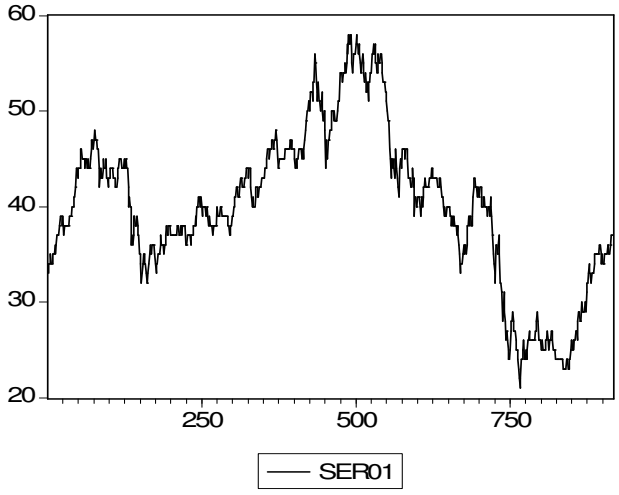

Figure 2. ISE 100 graph.

will be found out respectively: the direction of the relationship between two series, and which series affects the other one first, that means, which series is the conclusion of which series and why.

Causality test results

After it is found out that the ISE National 100 series and the DE 100 series are co-integrated, in this stage, the direction of the relation will be determined. So, the following will be found out respectively: the direction of the relationship between two series, and which series affects the other one first, that means, which series is the conclusion of which series and why. The hypotheses as created for the test of causality as well as the analysis findings thus obtained are presented here below:

Hypothesis 4
H_0: There is not any relationship of causality between the DE 100 and the ISE National 100.
H_1: There is a relationship of causality between the DE 100 and the ISE National 100.

Hypothesis 5
H_0: The DE 100 is not the Granger reason of the ISE National 100.
H_1: The DE 100 is the Granger reason of the ISE National 100.

Hypothesis 6
H_0: The ISE National 100 is not the Granger reason of the DE 100.
H_1: The ISE National 100 is the Granger reason of the DE 100.

The values obtained from the Standard Granger Causality test as applied to the variables of the ISE National 100 and the DE 100 are shown in Table 6. According to this Table, the zero hypothesis accepting that there is not any relationship of causality between the ISE National 100 and the DE 100 has been rejected (Hypothesis 4). In the first of the other hypotheses thus created, the hypothesis H_0 has been accepted (Hypothesis 5), and in the second one, the hypothesis H_0 has been rejected (Hypothesis 6). Hence, in line of the results thus obtained, at the level of 1% statistical meaningfulness, while the ISE National 100 is the Granger reason of the DE 100, the DE 100 is not the Granger reason of the ISE National 100.

According to the results thus obtained, it has been found that there is a unilateral Granger causality relationship towards the DE 100 from the ISE National 100. When it is looked at the Granger relationship, the causality relationship between the two series has been by the direction of the DE 100 to the ISE National 100. Therefore, in the main hypothesis as created in the work, the hypothesis H_0 has been accepted (hypothesis 1).

Table 6. Pairwise Granger causality tests.

Null hypothesis	Obs	F-statistic	Probability
ISE 100-ISE 100 does not Granger Cause DE 100-DE 100(-1)	913	15.7087	0.00008***
DE 100-DE 100 does not Granger Cause ISE 100-ISE 100(-1)		0.01626	0.89857

***represent the statistical significance levels of 1%.

While it is expected that the futures price would determine the spot price, the spot price has been effective in determining the futures price. In the other words, while it is expected that the DE 100 would be effective on the price movements of the ISE National 100 index, it has been observed that the ISE National 100 index has directed the price movements of the DE 100 index.

DISCUSSION

In the work as realized within the scope of the period of 01.11.2005 – 30.06.2009 in Turkey, the impact of the DE transactions on the efficiency of the ISE National 100 market as well as on the spot market transaction prices has been studied. In line of the work, the following tests have been performed: the unit root test as related with the stability of the series, and the co-integration test as related with the understanding of whether or not there is any relationship between the ISE ad DE series, and the test of causality for determining the direction of the relationship between the existence of which has been proven. At the end of the work, it has been concluded that the DE and ISE markets are both efficient in weak form, and that the futures market price is not effective on the spot market price. On the contrary of expected, the spot market price is effective on the futures market price. These results are parallel to the outcomes of the study conducted by Özden (2008) based on ISE National 30 index. An examination of obtained results will tell that the DE market could not provide the expected efficiency. Therefore, in order to be able to increase the level of efficiency, we may conclude that development of the DE market and increasing the volume of transactions, and doing not only speculative but also risk-hedging transactions in the market will contribute positively.

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Full Length Research Paper

Are educational background and gender moderator variables for leadership, satisfaction and organizational commitment?

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In this study the causal effects of transformational and transactional leadership and the mediating role of trust on follower outcomes are examined. Study data were collected from 150 employees who worked within 12 organizations in the IT Department of Research and Development in Shanghai, China. Data were analyzed based on path analysis and proposed research model. The results indicate that the level of education affects subordinate job satisfaction for both transformational leadership and transactional leadership. Undergraduate and graduate levels of education affect trust in relation to subordinate job satisfaction as well as organizational commitment. Gender also impacts subordinate's job satisfaction in cases of transactional leadership, as well as trust and job satisfaction in relation to the subordinate's organizational commitment.

Key words: Educational background and gender, transformational and transactional leadership behavior, trust, job satisfaction, organizational commitment, IT Department of Research and Development, Shanghai, China.

INTRODUCTION

Statement of the problem

In these unstable social and economic times, organizational environments are changing rapidly, particularly in the high tech industries. Only organizations that can adapt to this fast-changing environment can survive. Kotter (2001) states that while management copes with complexity, leadership copes with change. Management and leadership are both essential for the creation of a successful environment in an enterprise of today. Organizational leaders face many significant challenges in their jobs and how to manage leadership roles becomes increasingly complex (Zaccaro and Klimoski, 2001).

According to Bass (1985, Bass, 1998; Bass and Avolio, 1994, 1997) there are several types of leadership, such as transformational, transactional and laissez-faire leadership. They have shown considerable interest in testing transformational and transactional leadership. Since 1990, there have been about 200 theses and doctoral dissertations devoted to such testing (Bass and Avolio, 1997). In this current study, we focus on such problems as subordinate trust, empowerment, self-esteem, employee job satisfaction, organizational commitment and employee decisions to stay or leave, in relation each to both transformational and transactional leadership styles. It is well-known that in Chinese culture there is particular insistence on building trust through improving personal relationships, an empahsis which it is often difficult for westerners to comprehend (Child and Mollering, 2003).

Purpose of the study

The purpose of this study is to examine the demography of a group of individuals to determine the effect of such things as gender and education level on the latent

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variables - transformational and transactional leadership styles, trust, job satisfaction, organizational commitment and turnover intention. The Structural Equation Modeling (SEM) tool of AMOS 5.01 (Arbuckle, 2003) is adopted to analyze the relations in the proposed model. The survey data are gathered from the IT Department of Research and Development professionals in Shanghai, China.

Limitations

Only two leadership styles, transformational leadership and transactional leadership are considered here. Laissez-faire leadership is excluded. The influence of the different leadership styles on the subordinate's job satisfaction, commitment and intention to leave the organization are explored. The factor of organizational culture is ignored. The survey data is limited as stated above and does not cover the entire Mainland China or other regions.

LITERATURE REVIEW

Leadership theory

A leader is defined as the person who influences a group to attain the group's goals (Yukl, 1989). According to Kirkpatrick and Locke (1991), effective leaders continually push themselves and others toward their goals and are not tolerant of those who reject the vision or repeatedly fail to attain reasonable goals. Burns (1978) distinguishes transformational leadership from transactional leadership by concentrating on morals and ethics. Transformational leadership is a process that motivates followers by appealing to their higher ideals and moral values, while transactional leaders rely on rewards and punishment to influence employee performance. The difference between these two types of leadership has been clarified in numerous studies. Bennis and Nanus (1985) expounded a "visionary" theory where they identified four fundamental strategies (attention through vision, meaning through communication, trust through positioning and deployment of self) employed by transforming leaders. Yukl (1989) suggested that the Leader-Member Exchange (LMX) was an example of transactional leadership because ithe reliance on rewards. Antonakis and House (2002) adapted Bass and Avolio's (1994, 1997) full-range leadership theory (FRLT) to develop the Bass transformational/ transactional theory. A full range of leadership styles that cover transformational, constructive transactional and corrective transactional leadership are included in this model. The leaders must get to know their followers' individual needs, capabilities and aspirations to develop into more effective leaders; the development of both leaders and followers is important. The four models are summarized in Table 1 (Cox, Pearce and Sims, 2003, p 165).

Job satisfaction

Job satisfaction is defined as the emotional state resulting from the evaluation of one's job and can be negative, positive, or neutral. Maslow (1954) discussed a hierarchy of needs in which one progresses including physiological, security, social, self-esteem and self-actualization needs.

According to Gibson, Ivancevich, Donnelly and Konopaske (2003) when the crucial mental states are good and work motivation and job satisfaction are high, then there is a strong correlation between job performance and job satisfaction. Gibson et al. (2003) discussed five crucial characteristics:

1. Pay: Amount received and the perceived equity.
2. Job: Extent to which job tasks are considered interesting and provide opportunities for learning and accepting responsibility.
3. Promotion opportunities: Availability of opportunities for advancement.
4. Supervisors: Supervisor's abilities to demonstrate an interest in and concern about employees.
5. Co-workers: Extent to which co-workers are friendly, competent and supportive.

Organizational commitment

According to Nijhof, De Jong and Beukhof (1998, p. 243), organizational commitment refers to "acceptance of organizational values and to the willingness to stay". Allen and Meyer (1990) proposed a three component model of organizational commitment with two other foci: supervisor and work-group. The dimensions are as follows:

1. Affective commitment refers to employees' emotional attachment to, identification with and involvement with the organization (or supervisor).
2. Continuance commitment is based on the costs that employees associate with leaving the organization (or supervisor).
3. Normative commitment refers to employees' feelings of obligation to remain with the organization (or supervisor) (p. 4).

Trust

Brown (1993) defines *trust* as "Faith or confidence in the loyalty, strength, veracity, etc., of a person or thing; reliance on the truth of a statement etc. without examination". This is consistent with a measurement tool used to assess interpersonal trust in a work culture. Rousseau, Sitkin, Burt and Camerer (1998) explain that trust is "a psychological state comprising the intention to accept weakness based upon positive expectations of the intentions or behavior of another". Trust is the foundation for building effective collaborative and organizational

Table 1. Theoretical and research bases for historically derived models of leadership types.

Leadership Type	Theoretical and Research Bases
Directive leadership	Theory X leadership (McGregor, 1960). Initiating structure from Ohio State studies (e.g., Fleishman, 1953). Task-oriented behavior from Michigan studies (e.g., Katz, Maccoby and Morse, 1950). Punishment research (e.g., Arvey and Ivancevitch, 1980).
Transactional Leadership	Expectancy theory (e.g., Vroom, 1964). Path-goal theory (e.g., House, 1971). Equity theory (e.g., Adams, 1963). Exchange theory. Reinforcement theory (e.g., Luthans and Kreitner, 1985; Sims 1977; Thorndike, 1911). Reward research (Podsakoff, Todor and Skov, 1982).
Transformational Leadership	Sociology of charisma (e.g., Weber, 1946). Charismatic leadership theory (e.g., House, 1977). Transformational leadership (e.g., Bass, 1985; Burn, 1978).
Empowering Leadership	Behavioral self-management (e.g., Thorenson and Mahoney, 1974). Social cognitive theory (e.g., Bandura, 1986). Cognitive behavior modification (e.g., Meichenbaum, 1977). Participative management and participative goal-setting research (e.g.,Likert, 1961,1967; Locke and Latham, 1990). Mentoring research (e.g., Ensher and Murphy, 1997; Zey, 1988).

relationships (Lewicki, McAllister and Bies, 1998). In parison with the western world, China is often described as an economically developing country. It is characterized as a low trust society, whereas trust is of the highest importance in organizations (Fukuyama, 1995; Redding, 1993).

Turnover

Price (1977) describes turnover is the movement of members across the boundary of an organization. Most research on turnover has been focused on members leaving rather than entering the organization, especially voluntarily leaving. The body of theory on which the turnover literature is based is primarily rooted in the disciplines of psychology, sociology and economics (Barak, Nissly and Levin, 2001). There are three major categories of turnover antecedents that emerge from empirical studies of human service workers (Barak et al., 2001): "(1) Demographic factors, both personal and work-related; (2) Professional perceptions, including organizational commitment and job satisfaction and (3) Organizational conditions, such as fairness with respect to compensation and organizational culture vis-a-vis diversity".

METHODOLOGY

Population sample

Questionnaires were first distributed to leaders and subordinates in person. Participants included 150 full-time employees working in the IT department of the Department of Research and Development in an Industrial Park in Shanghai, China. Surveys were administered to participants on the job during working hours. The survey consisted of 87 items. It covered the variables of transformational leadership, transactional leadership, trust, job satisfaction, organizational commitment, turnover and demographics.

Measures

Operational definitions

a) Transformational leadership behaviors

The components of transformational leadership have been identified in a number of studies (Bass (1985), Howell and Avolio (1993), Bycio, Hackett and Allen (1995), Avolio, Bass and Jung (1999)). Leadership is defined as charismatic when a follower seeks to identify with the leader and imitate him or her. A leader inspires the follower with challenges and persuasion and by providing meaning and understanding. In addition, the leader is intellectually stimulating, strengthening the follower's abilities. Finally, the leader individually tailors his/her behavior, providing the follower with support, mentoring and coaching. The measure used here was the

Table 2. The Cronbach Alpha (α) of Multifactor Leadership Questionnaires (MLQ 5x-short-form). IIA, Idealized Influence (Attributed); IIB, Idealized Influence (Behaviors); IM, Inspirational Motivation; IS, Intellectual Simulation; IC, Individualized Consideration; CR, Contingent Reward; MBE-A, Management-by Exception (Active); MBE-P, Management-by-Exception (Passive).

Style / Research	Transformational Leadership Behaviors					Transactional Leadership Behaviors		
	IIB	IIA	IM	IS	IC	CR	MBE-A	MBE-P
Bass and Avolio (1995)	.86	.87	.91	.90	.90	.87	.74	.82
Ehrhart (2004)	.61	.61	.53	.53	.56			
Sosik, Potosky, and Jung (2002)	.71	.71	.82	.70	.76	.77	.72	.64
Zohar (2002						.69	.75	.72
Gellis (2001)	.78	.81	.80	.89	.77	.74	.70	.75
Felfe and Schyns (2004)	.70	.70	.83	.71	.67	.83	.80	.79

Multifactor Leadership Questionnaire (MLQ 5x-short-form) (Bass and Avolio, 1995). The MLQ has high factor validity and reliability (Howell & Avolio, 1993). We searched for 20 items from 45 questions about transformational leadership. The respondents were asked to indicate the frequency of behaviors exhibited by their leader on a scale ranging from 1 = not at all to 5 = frequently, if not always. The Cronbach's alpha is shown in Table 2.

b) Transactional leadership behaviors

In this type of leadership, the leader rewards or disciplines the follower depending on the adequacy of the follower's performance. The factors include the Contingent Reward, Management-by-Exception (Active) and Management-by-Exception (Passive). The survey questions pertaining to the measurement of Contingent Reward (CR) (4 items) are listed as 1, 9, 14, 31 from the revised MLQ-5x scale. For Management-by-Exception (Active) (MBE-A), they are 4, 20, 22, 25 and for Management-by-Exception (Passive) (MBE-P), they are 3, 10, 15, 18. The Cronbach's alpha is shown in Table 2.

c) Trust

Although a number of current conceptualizations of trust exist (e.g., Butler, 1991; Byham, 1992; Child and Mollering, 2003; Cook and Wall, 1980; Currall and Judge, 1995; Dansereau, Graen and Haga, 1975; Gabarro, 1978; Giffin, 1967; Gomez and Rosen, 2001; Hosmer, 1995; Marlowe and Nyhan, 1992; Mishra and Spreitzer, 1994; Rotter, 1967), there is no clear agreement as to which one of these is best. In this study, trust is conceptualized as faith in and loyalty to the leader. It is thus a necessary requirement for employee empowerment. The six items developed by Podsakoff, MacKenzie, Moorman and Fetter (1990) are used to define these dimensions. The variable was measured using a five-point Likert-type scale ranging from "strongly agree" to "strongly disagree," with "strongly agree" given a ranking of 5. Trust was measured with six items. The Cronbach's alpha was .90. The Cronbach's alpha is also shown in Table 3.

d) Job satisfaction

In the Minnesota Satisfaction Questionnaire (MSQ) (Ironson, Brannick, Smith, Gibson and Paul, 1989; Quinn and Staines, 1979; Weiss, et al., 1967) job satisfaction is assessed with 20 items or job facets where separate composites are computed for Intrinsic, Extrinsic and General Job Satisfaction. The alpha reliability coefficient was 0.9. According to Weiss et al. (1967), the reliability coefficients obtained for Intrinsic Satisfaction are high. The coefficients ranged from 0.84 to 0.91. The coefficients for Extrinsic Satisfaction varied from 0.77 to 0.82. All constructs were measured with multiple-item scales drawn from previous research. In this approach, three constructs are typically derived: a measure of general satisfaction (20 items) on a five-point Likert-type scale, with response alternatives ranging from "Very Dissatisfied" (weighted 1) to "Very Satisfied" (weighted 5). The Cronbach's alpha is shown in Table 4.

Table 3. The Cronbach Alpha (α) of Trust

Trust / Researcher	Cronbach Alpha (α)
Pdesakoff et al. (1990)	.90
Lee (2003)	.90
Menguc (2000)	.85
Rich (1997)	.94

e) Organizational commitment

Meyer and Allen (1991) developed a multi-dimensional model of organizational commitment, where affective commitment (a desire), continuance commitment (a need) and normative commitment (an obligation) are identified as unique and distinct types of commitment that exist organizationally. Allen and Meyer (1996) examined the construct validity of the three component organizational commitment scales (that consisted of 18 items). Their study summarized data from over 40 employee samples representing more than 160,000 employees from a wide variety of organizations and occupations. In their findings, using the coefficient alpha, they obtained a median of 0.85 for Affective Commitment, 0.79 for Continuance Commitment and 0.73 for Normative Commitment. Furthermore, confirmatory factor analysis was conducted for each of the organizational commitment scales. Results indicated that each factor loading was independent of the other and demonstrated satisfactory reliability (Cooke, 1997) and validity (Beck and Wilson, 2000). The alpha coefficient for this sample was 0.88. In this current study, all constructs were measured with multiple-item scales drawn from previous research. The Organizational Commitment Questionnaire (OCQ) is a five-point Likert-type scale, ranging from strongly disagree (1) to strongly agree (5). The Cronbach's alpha is shown in Table 5.

Table 4. The Cronbach Alpha (α) of Minnesota Satisfaction Questionnaire (MSQ). INS. Intrinsic Satisfaction; EXS, Extrinsic Satisfaction; GS, General Satisfaction

Satisfaction / Researcher	INS	EXS	GS
Weiss et al. (1967)	.86	.80	.90
Luna-Arocas and Tang (2004)	.84	.80	
Dirks and Ferrin (2002)			.87
Cook, Hepworth, Wall, and Warr (1981)	.84-.091	.77-.82	
Davy, Kinicki, and Scheck (1997)	.82	.70	

Table 5. The Cronbach Alpha (α) of Organizational Commitment Questionnaire (OCQ). AC, Affective Commitment; CC, Continuance Commitment; NC, Normative Commitment.

Commitment / Researcher	AC	CC	NC
Allen and Meyer (1996)	.85	.79	.73
Kickul, Lester, and Belgio (2004)	.86	.70	.86
Wasti (2003)	.79	.58	.75
Kent and Sullivan (2003)	.73	.78	.76
Kuehn and Al-Busaidi (2002)	.74	.75	.49

Table 6. The Cronbach Alpha (α) of Turnover

Turnover / Researcher	Cronbach alpha (α)
Kim et al. (1996)	.87

f) Turnover

One facet of turnover is subordinate's turnover intention. This variable was measured with four items, two of which were reverse scored and developed by Kim, Price, Mueller and Watson (1996), who found a Cronbach's alpha of .87. The variable was measured using a five-point Likert-type scale ranging from "strongly agree" to "strongly disagree" with "strongly agree" being a 5. The scores for the items were averaged to obtain the final value. Price (2001) utilized the questionnaire format in their examination of the employee's Intent to Stay. The Cronbach's alpha is shown in Table 6.

A summary of the relationships between the observed and latent variables in the hypothetical model is shown in Figure 1.

Instrument translation

The five instruments for measuring transformational and transactional leadership, trust, job satisfaction, organizational commitment and turnover, were combined into one instrument for this study. All of them were originally written in English. Thus, it was necessary to translate into Chinese. One teacher and three graduate students were invited to make up a team for this work. Language translation software was first used to translate into simplified Chinese characters and this rough translation was then revised to ensure consistency of meaning. In order to ensure that the Chinese translation correctly reflected the meaning and distinction of the original instruments, back-translation was conducted to English. After completing the Chinese translation, bilingual reviewers who had not previously been involved in the project were asked to determine whether the semantics were clear.

Pilot test

The English language questionnaires were translated into simplified Chinese language. Pilot tests of the survey questionnaire were tested on ten randomly selected external employees of an electronics company in Shanghai. They were given the MLQ, TRUST, MSQ, OCQ, TURNOVER and DEMOGRAPHIC tests. The amount of time required to complete the entire questionnaire by the respondents was also measured. After finishing this step, the survey was then evaluated for reliability and validity according to the understanding of the questionnaire's directions. If there were critical or ambiguous questions, they were modified or replaced. The Cronbach's alpha is shown in Table 7.

Data collection

Five questionnaires were used in this study: the transformational leadership and transactional leadership (MLQ-5x short-form) developed by Bass and Avolio (1995); job satisfaction (MSQ) adapted from Weiss, Allen and Smith (1967); organizational commitment (OCQ) adapted from Meyer, Allen and Smith (1993); trust questionnaire (TRUST) adapted from Podsakoff et al. (1990) and turnover questionnaire (TURNOVER) adapted from Kim et al. (1996).

The questionnaire was distributed by the investigators and the collected from the Department of Intelligent Technology, a special economic zone in Shanghai. For convenience, 12 companies throughout the special economic zone were contacted and almost 150 questionnaires were returned. The participants were asked to

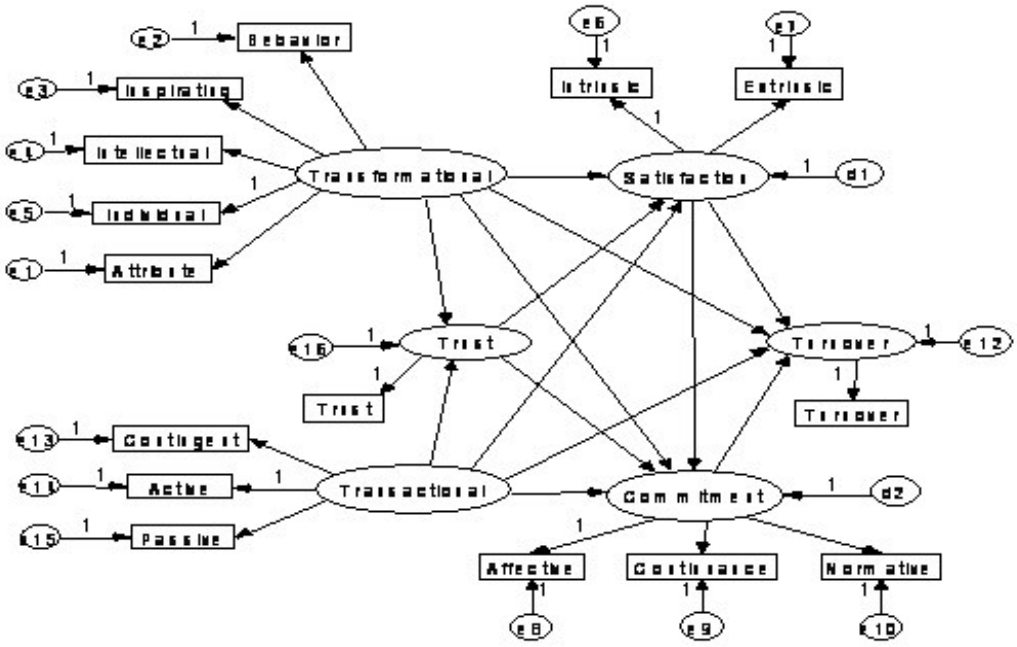

Figure 1. The relationship of the hypothesized model.

Table 7. The Cronbach Alpha (α) of Pilot Test

Observed Variables	Items	α
Idealized Influence (Attributed)	8,16,19,23	.54
	Delete 23	.83
Idealized Influence (Behaviors)	5,12,21,30	.83
Inspirational Motivation (IM)	7,11,24,32	.69
Intellectual Stimulation (IS)	2,6,27,29	.64
Individualized Consideration (IC)	13,17,26,28	.13
	Delete 17	.66
Contingent Reward (CR)	1,9.14,31	.65
Management-by-Exception (Active) (MBE-A)	4,20,22,25	.46
	Delete 25	.66
Management-by-Exception (Passive) (MBE-P)	3,10,15,18	.50
	Delete 15	.65
Trust	1,2,3,4,5,6	.85
Intrinsic Satisfaction	1,2,5,6,9,10,12,13,16,18,19,20	.32
	Delete 9,12,13	.67
Extrinsic Satisfaction	3,4,11,14,15,17	.59
	Delete 4	.64
General Satisfaction	All (1 to 20)	.75
Affective Commitment	1,4,7,10,13,16	.77
Continuance Commitment	2,5,8,11,14,17	.39
	Delete 11,14	.67
Normative Commitment	3,6,9,12,15,18	.82
Turnover	1,2,3,4	.77

complete the survey and return it to the assistant researcher. All of the questionnaires were returned. Three questionnaires had some blank answers giving a total of 147 valid questionnaires.

Reliability and validity analysis

Reliability of the measures used in the study was confirmed by

Table 8. The Statistic of Sample

Item	Category	Frequency	Percent
Genger	Male	105	71.4%
	Female	42	28.6%
Age	15-24	20	13.6%

acceptable inter-item correlation, where each scale exceeded the .30, as suggested by Robinson, Shaver and Wrightsman (1991). In addition, Cronbach alpha (α) values for each of the scales were computed. The values ranged between .76 and .93, indicating high internal consistency. If the value is less than .3, then the item needs to adjust or eliminated item(s) (Nunnally, 1978). The summary of Cronbach alpha (α) values are shown in Tables 7.

Hypotheses

The relationship between transformational leadership and transactional leadership behavior, trust, job satisfaction, organizational commitment and turnover is explored using data from the IT Department of Research and Development.
$H_0$1a: Level of education is not a moderator for job satisfaction.
H_a1a: Level of education is a moderator for job satisfaction.
$H_0$1b: Level of education is not a moderator for organizational commitment.
H_a1b: Level of education is a moderator for organizational commitment.
$H_0$2a: Gender is not a moderator for job satisfaction.
H_a2a: Gender is a moderator for job satisfaction.
$H_0$2b: Gender is not a moderator for organizational commitment.
H_a2b: Gender is a moderator for organizational commitment.

RESULTS OF FINDINGS

Sample structure

A total of 147 of 150 respondents completed all the information. Of the 147 participants, approximately 71% (105) were males and 29% (42) females. In addition 28% (41) completed leader questionnaire surveys and the remaining 72% (106) completed subordinate rater surveys. The average age of the participants in the sample was approximately 30 years old and the average tenure in the organization was 5 years. Of those, about 5% (8) of the participants had only completed high school, 71% (104) had a college bachelor's degree and the remaining 24% (35) had a graduate degree. The demographics are provided in Table 8.

Data analysis

Hypothetical model

The results of the AMOS 5.01 analysis of the hypothetical model with the Regression Weights for the variables investigated in this study are presented in Figure 2 and Table 9.

Correlations of the variables

The correlation matrix for the observed variables as computed by SPSS 11 software is presented in Table 10 by SPSS 11 software.

Is the level of education a moderator related to organizational commitment?

Based on Tables 9, 11 and 12, under different influence conditions on organizational;

1. The null hypothesis: The level of education is not a moderator between transformational leadership and organizational commitment. The findings indicate undergraduate ($r = - 0.008$, $p > 0.052$, two-tailed test) and graduate ($r = 0.073$, $p > 0.056$, two-tailed test) have the same significance. There is support to accept the null hypothesis against the alternate hypothesis. Thus, the level of education is not a moderator between transformational leadership and organizational commitment. In other words, with the transformational leadership style, employees will have the same organizational commitment whatever their level of education.
2. The null hypothesis: The level of education is not a moderator between transactional leadership and organizational commitment. The findings indicate that undergraduate ($r = - 0.034$, $p > 0.052$, two-tailed test) and graduate ($r = 0.117$, $p > 0.056$, two-tailed test) have the same significance. There is support to accept the null hypothesis against the alternate hypothesis. Thus, the level of education is not a moderator between transactional leadership and organizational commitment. In other words, with the transactional leadership style, employees will have the same organizational commitment regardless of to their level of education.
3. The null hypothesis: The level of education is not a moderator between trust and organizational commitment. The findings indicate that undergraduate ($r = 0.382$, $p < 0.052$, two-tailed test) and graduate ($r = 0.734$, $p < 0.056$, two-tailed test) have the same significance. There is support to accept the null hypothesis against the alternate hypothesis. Thus, the level of education is not a moderator between trust and organizational commitment. In other words, whether there is trust or not, employees will have the same organizational commitment regardless of their level of education.
4. The null hypothesis: The level of education is not a moderator between job satisfaction and organizational commitment. The findings indicate that undergraduate ($r = 0.304$, $p < 0.052$, two-tailed test) and graduate ($r = 0.001$, $p > 0.056$, two-tailed test) do not have the same significance. There is support to reject the null hypothesis in favor of the alternate hypothesis. Thus, the level of education is a moderator between job satisfaction and organizational commitment. After obtaining job satisfaction, the employees will have different levels of organizational commitment according to their level of education.

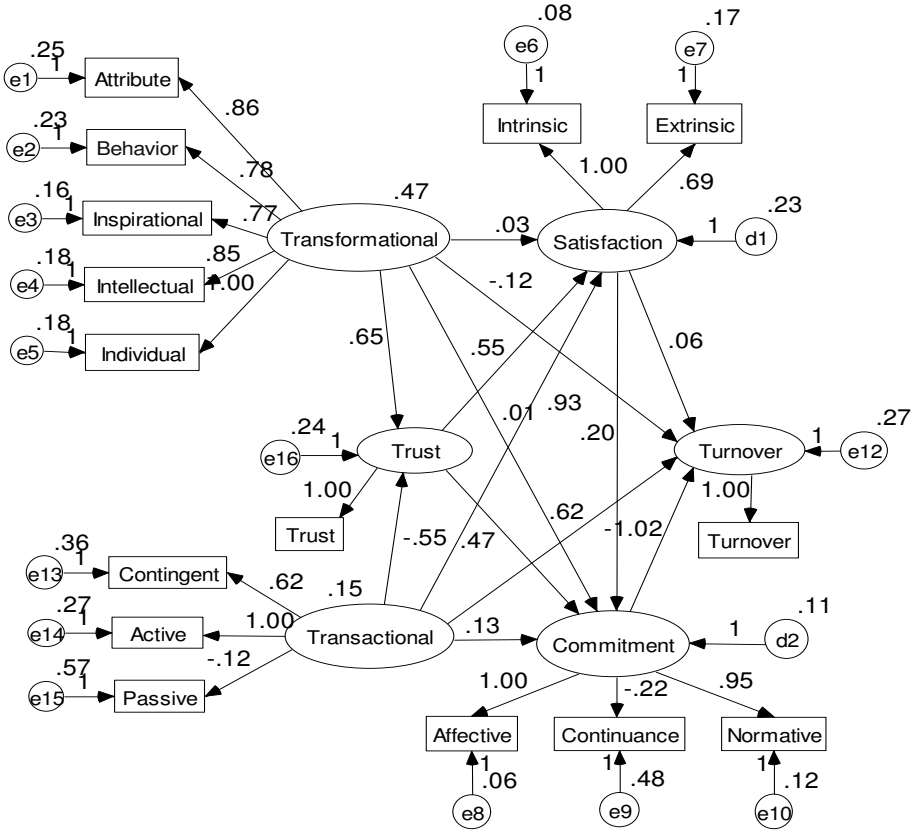

Figure 2. Hypothetical Model of Relations between Observed and Latent Variables

Table 9. Direct effect, indirect effect and total effect of latent variables.

Direct effects	**Transactional**	**Transformational**	**Trust**	**Satisfaction**	**Commitment**
Trust	- 0.545	0.652	0.000	0.000	0.000
Satisfaction	0.934	0.031	0.548	0.000	0.000
Commitment	0.134	0.008	0.473	0.204	0.000
Turnover	0.624	- 0.121	0.000	0.056	- 1.015
Indirect effects	**Transactional**	**Transformational**	**Trust**	**Satisfaction**	**Commitment**
Trust	0.000	0.000	0.000	0.000	0.000
Satisfaction	- 0.299	0.357	0.000	0.000	0.000
Commitment	- 0.128	0.388	0.112	0.000	0.000
Turnover	0.030	- 0.380	- 0.563	- 0.208	0.00
Total effects	**Transactional**	**Transformational**	**Trust**	**Satisfaction**	**Commitment**
Trust	- 0.545	0.652	0.000	0.000	0.000
Satisfaction	0.635	0.388	0.548	0.000	0.000
Commitment	0.006	0.396	0.585	0.204	0.000
Turnover	0.654	- 0.501	- 0.563	- 0.152	- 10.015

Table 10. Intercorrelations matrix of observed variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Attribute	1.000														
2. Behaviour	0.496**	1.000													
3. Inspirational	0.613**	0.608**	1.000												
4. Intellectual	0.565**	0.655**	0.651**	1.000											
5. Individual	0.698**	0.644**	0.665**	0.671**	1.000										
6. Contingent	0.548**	0.557**	0.669**	0.557**	0.590**	1.000									
7. Active	0.204*	0.370**	0.323**	0.447**	0.348**	.254**	1.000								
8. Passive	0.422**	0.325**	0.365**	0.358**	0.332**	0.297**	-.063	1.000							
9. Intrinsic	0.416**	0.285**	0.412**	0.479**	0.410**	0.376**	.335**	0.201*	1.000						
10. Extrinsic	0.231**	0.226**	0.230**	0.361**	0.277**	0.241**	.313**	0.164*	0.702**	1.000					
11. Affective	0.374**	0.326**	0.412**	0.393**	0.394**	0.314**	.192*	0.361**	0.498**	0.388**	1.000				
12. Continuance	- 0.061	- 0.004	- 0.125	- 0.059	- 0.188*	- 0.007	-.016	0.189*	- 0.233**	- 0.129	- 0.214**	1.000			
13. Normative	0.305**	0.238**	0.342**	0.343**	0.331**	0.219**	.186*	0.156	0.466**	0.395**	0.736**	- 0.119	1.000		
14. Trust	0.521**	0.373**	0.427**	0 .477**	0.444**	0.311**	.090	0.426**	0.449**	0.371**	0.630**	0.025	0.599**	1.000	
15. Turnover	- 0.29**	- 0.27**	- 0.26**	- 0.29**	- 0.183*	- 0.201*	.024	-.41**	- 0.27**	- 0.129	- 0.61**	- 0.047	- 0.53**	- 0.56**	1.000

** Pearson Correlation is significant at the .01 level (2-tailed).
* Pearson Correlation is significant at the .05 level (2-tailed).

Table 11. Level of Education - Undergraduate (N=112).

Default Model			Estimate	S.E	C.R.	P
Satisfaction	<---	Transactional	0.753	0.869	0.867	0.386
Satisfaction	<---	Transformational	0.437	0.108	4.036	***
Satisfaction	<---	Trust	0.171	0.125	1.376	0.169
Commitment	<---	Trust	0.382	0.084	4.575	***
Commitment	<---	Transactional	- 0.034	0.477	- 0.072	0.943
Commitment	<---	Transformational	- 0.008	0.082	- 0.093	0.926
Commitment	<---	Satisfaction	0.304	0.095	3.211	0.001

Commitment, the level of education examined whether it was a moderator.

Is the gender a moderator related to job satisfaction?

Gender is separated into two groups: male (N = 105) and female (N = 42). AMOS 5 provides a simultaneous equations model for two sets of data at once (Appendix A). The two group's data are compared on the same path to find the Regression Weights and determine whether it they are significant or not.

Tables 9, 13 and 14 show the different influence conditions examined to determine whether gender is a moderator for job satisfaction.

1. The null hypothesis: Gender is not a moderator between transformational leadership and job satisfaction. The findings indicate that male ($r = 0.365$, $p < 0.052$, two-tailed test) and female ($r = - 0.751$, $p < 0.055$, two-tailed test) have the same significance. There is support for accepting the null hypothesis against the alternate hypothesis. Thus, gender is not a moderator between

Table 12. Level of education - graduate (N = 35).

Default model			Estimate	S.E.	C.R.	P
Satisfaction	<---	Transactional	0.787	0.295	2.669	0.008
Satisfaction	<---	Transformational	- 0.050	0.198	- 0.253	0.800
Satisfaction	<---	Trust	0.703	0.175	4.008	***
Commitment	<---	Trust	0.734	0.111	6.604	***
Commitment	<---	Transactional	0.117	0.142	0.822	0.411
Commitment	<---	Transformational	0.073	0.099	0.741	0.458
Commitment	<---	Satisfaction	0.001	0.080	0.010	0.992

Table 13. Gender- male (N = 105).

Default model			Estimate	S.E.	C.R.	P
Satisfaction	<---	Transactional	- 0.330	0.707	- 0.466	0.641
Satisfaction	<---	Transformational	0.365	0.105	3.488	***
Satisfaction	<---	Trust	0.220	0.103	2.140	0.032
Commitment	<---	Transactional	- 0.394	0.503	- 0.782	0.434
Commitment	<---	Trust	0.452	0.069	6.566	***
Commitment	<---	Satisfaction	0.172	0.084	2.042	0.041
Commitment	<---	Transformational	0.102	0.072	1.421	0.155

Table 14. Gender- female (N = 42).

Default model			Estimate	S.E.	C.R.	P
Satisfaction	<---	Transactional	1.228	0.318	3.863	***
Satisfaction	<---	Transformational	- 0.751	0.307	- 2.448	0.014
Satisfaction	<---	Trust	1.353	0.337	4.011	***
Commitment	<---	Transactional	0.172	0.353	0.487	0.626
Commitment	<---	Trust	0.416	0.397	1.048	0.295
Commitment	<---	Satisfaction	0.342	0.229	1.491	0.136
Commitment	<---	Transformational	- 0.255	0.271	- 0.944	0.345

transformational leadership and job satisfaction. With the transformational leadership style, employees have the same job satisfaction regardless of gender.

2. The null hypothesis: Gender is not a moderator between transactional leadership and job satisfaction. The findings indicate that male ($r = - 0.330$, $p > 0.052$, two-tailed test) and female ($r = 1.228$, $p < 0.055$, two-tailed test) do not have the same significance. There is support for rejecting the null hypothesis in favor of the alternate hypothesis. Thus, gender is a moderator between transactional leadership and job satisfaction. With the transactional leadership style, employees derive job satisfaction according to gender.

3. The null hypothesis: Gender is not a moderator between trust and job satisfaction. The findings indicate that male ($r = 0.220$, $p < 0.052$, two-tailed test) and female ($r = 1.353$, $p < 0.055$, two-tailed test) have the same significant. There is support to accept the null hypothesis against the alternate hypothesis. Thus, gender is not a moderator between trust and job satisfaction. In other words, trust is sufficient; employees obtain the same job satisfaction regardless of gender.

Is the gender a moderator for organizational commitment?

Tables 9, 13 and 14 show the different conditions of influence on organizational commitment; gender is examined as to whether it is a moderator.

1. The null hypothesis: Gender is not a moderator between transformational leadership and organizational

commitment. The findings indicate that male ($r = 0.102$, $p > 0.052$, two-tailed test) and female ($r = - 0.255$, $p > 0.055$, two-tailed test) have the same significance. There is support to accept the null hypothesis against the alternate hypothesis. Thus, gender is not a moderator between transformational leadership and organizational commitment. With the transformational leadership style, employees will have the same organizational commitment regardless of gender.

2. The null hypothesis: Gender is not a moderator between transactional leadership and organizational commitment. The findings indicate that male ($r = - 0.394$, $p > 0.052$, two-tailed test) and female ($r = 0.172$, $p > 0.055$, two-tailed test) have the same significance. There is support to accept the null hypothesis against the alternate hypothesis. Thus, gender is not a moderator between transactional leadership and organizational commitment. With the transactional leadership style, employees have the same organizational commitment regardless of gender.

3. The null hypothesis: Gender is not a moderator between trust and organizational commitment. The findings indicate that male ($r = 0.452$, $p < 0.052$, two-tailed test) and female ($r = 0.416$, $p > 0.055$, two-tailed test) do not have the same significance. There is support to reject the null hypothesis in favor of the alternate hypothesis. Thus, gender is a moderator between trust and organizational commitment. In other words, trust is sufficient and employees will have different organizational commitment according to gender.

4. The null hypothesis: Gender is not a moderator between job satisfaction and organizational commitment. The findings indicate that male ($r = 0.172$, $p < 0.052$, two-tailed test) and female ($r = 0.342$, $p > 0.055$, two-tailed test) do not have the same significance. There is support to reject the null hypothesis in favor of the alternate hypothesis. Thus, gender is a moderator between job satisfaction and organizational commitment. After obtaining job satisfaction, employees have different organizational commitment according to gender.

Conclusion

The findings indicate that:

1. The level of education has an impact on subordinate job satisfaction for both transformational leadership and transactional leadership relations. In addition, undergraduate and graduate levels of education affect trust relations with subordinate job satisfaction. Therefore, the leadership style and trust lead to differences job satisfaction needs. These different expectations vary with different levels of education.

2. Undergraduate and graduate levels of education do not influence trust relationships and organizational commitment with transformational and transactional leadership. The level of education does interfere with job satisfaction in relation to the subordinate's organizational commitment. Therefore, the subordinate's job satisfaction leads to differences in perceptions of organizational commitment and these different perceptions vary with different level of education.

3. Gender does not influence subordinate job satisfaction with transformational leadership and trust relationships. Gender does, however, have an impact on subordinate job satisfaction with transactional leadership relations. Transactional leadership leads to difference in needs for job satisfaction. These different expectations vary with gender.

4. Gender does not influence the subordinate's organizational commitment with transformational leadership and transactional leadership's relation. Gender does interfere with trust and job satisfaction in relation to the subordinate's organizational commitment. Therefore, sufficient trust and subordinate job satisfaction affect organizational commitment. These different perceptions vary with gender.

Recommendations for future research

The data were limited to employees from the Department of Research and Development. It is recommend that in future, data be collected and examined from different sources, such as the departments of financial, manufacture, marketing, education, military, public administration and so forth. Observations from different regions or countries should be compared to discover differences in culture and background and to explore the suitability of this model. It also needs to be determined whether trust influences subordinate turnover. Transformational leadership is related to trust, both directly and indirectly, according to this model. Finally, in future, cultural differences should be examined as an influencing factor.

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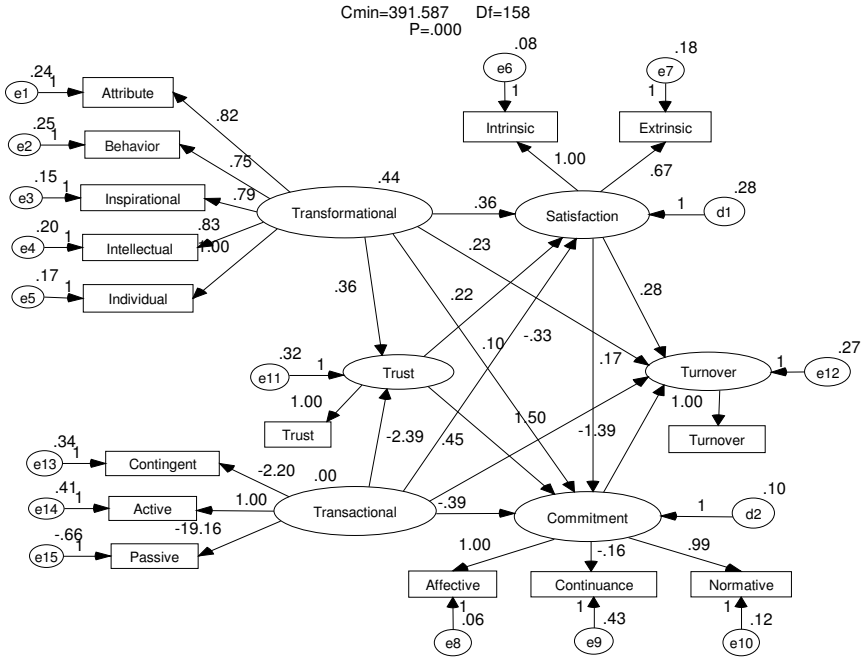
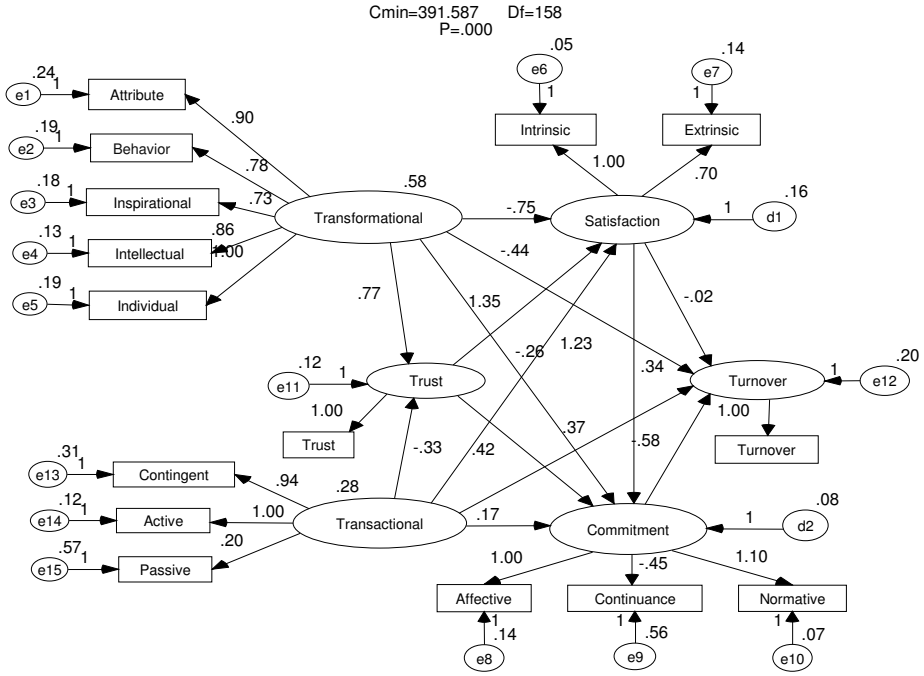
Appendix A

Male



Female



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Full Length Research Paper

An application of Thirlwall's law to the South African economy: Evidence from ARDL bounds testing approach

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This paper applies Thirlwall's basic balance-of-payments constraint growth model to South Africa economic growth for the period of 1984:1 - 2006:1 by using Autoregressive Distributed Lag (ARDL) Bounds Testing approach. The empirical results reveal that import is cointegrated with relative price and income, and the equilibrium growth rates coincide with actual growth rates. Our empirical results also support the Thirlwall's hypothesis which states that balance of payments position of the South African economy is the main constraint on its economic growth. As a policy implication, a successful economic growth policy will permit South Africa to have a rapid growth in demand and supply without suffering deterioration in its balance of payments.

Key words: Growth, balance of payments, Thirlwall´s Law, bounds testing approach, South Africa.

INTRODUCTION

The balance of payments constrained growth model, originally due to Thirlwall (1979), has generated considerable interest among Post Keynesians. Post-Keynesian authors have emphasized in the last decades that the balance of payments constitutes the main constraint to growth. In this respect, Post-Keynesians have refuted neoclassical views that assume a supply-constrained economy and have extended Keynes's principle of effective demand into the long run. Hence, growth is seen as being demand-led (Razmi, 2005).

The balance of payment constrained growth model states that the rate of growth in an individual country is restrained by the balance of payment as the economy cannot grow faster than what is consistent with the balance of payment equilibrium, or at least consistent with a sustainable deficit in the balance of payments. The theoretical basis for this relationship is that if a country's growth rate results in a rate of import growth exceeding that of exports, the resulting deterioration in the balance of payments, impedes the process of economic growth and consequently reduces economic growth. The interpretation of this result is that balance of payments deficits restrict the rate of growth to a level consistent with a sustainable position in the external sector. The resulting rate of economic growth is called the balance of payments equilibrium growth rate to distinguish it from the actual rate of economic growth. The fact that the two growth rates differ provides an explanation of why growth rates differ between countries (Thirlwall, 1979). In this case overall economic growth can be accelerated by manipulating Harrod's foreign trade multiplier.

Thirlwall's model emphasizes that the Dynamic Harrod foreign multiplier determines long-term economic growth. While the neoclassical approach links variations in growth rates among countries to differences in the growth of factor supplies and productivity, Thirlwall's model stresses that demand factors induce economic growth. In an open economy, the dominant constraint upon demand is the balance of payment (BOP). The basic idea of Thirlwall's approach highlights how BOP affects the growth

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performance of countries (Jayme JR, 2003:67). He introduced a simple analytical model to show that if a country's external indebtedness cannot expand indefinitely then its long-run rate of economic growth will be restricted by its foreign trade performance, more precisely by the size of the income elasticity of its imports relative to the pace of expansion of its exports. In its simplest expression the model is referred to as Thirlwall's law. His analytical contribution here referred to as the balance of payments constrained growth (BPCG) model was later extended to allow for the influence of foreign capital flows on economic growth (Thirlwall and Hussain, 1982). In recent years it has been further revised to ensure that the economy's long-run growth is consistent with a sustainable path of foreign indebtedness (McCombie and Thirlwall, 1994; Moreno-Brid, 2003).

Several researchers have attempted to test Thirlwall's law empirically, see McGregor and Swales (1991), Bairam (1988), Andersen (1993), Atesoglu (1993), McCombie (1997), Moreno-Brid and Perez (1999), Christopoulos and Tsionas (2003) and Perraton (2003). Single country studies which are supportive for Thirlwall's law are for Mexico (Moreno-Brid, 1999; Lopez and Cruz, 2000; Pacheco-Lopez and Thirlwall, 2005); for Brazil (Ferreira and Canuto, 2003); and for India (Razmi, 2005), among others. With a few exceptions (ex. McGregor and Swales, 1991; Acaravci and Ozturk, 2009) all these studies do not reject the hypothesis that a country's economic growth is not subject to the long-run balance of payments constraint.

Nowadays, balance of payment deficit become very important issue for developing countries. The purpose of this paper is to analyze the prospects for economic growth in South Africa on the basis of the balance of payment constrained growth theory for the period of 1984:1 - 2006:1. This study has explored elasticities of demand for imports for South Africa using Autoregressive Distributed Lag (ARDL) Bounds Testing method and tested the Thirlwall's hypothesis of balance of payments constrained growth.

The remainder of the paper is organized as follows: the model, data and methodology are presented in Section 2; the empirical results are discussed in Section 3 and last section summarizes the findings of the paper.

MODEL SPECIFICATION, DATA AND METHODOLOGY

Model and data

A traditional version of Thirlwall's (1979) model can be presented in the following three equations.

$$m = \alpha(p_f - p_d) + \pi y \quad (1)$$

$$x = \phi(p_d - p_f) + \sigma z \quad (2)$$

$$p_d + x = p_f + m \quad (3)$$

Equations (1) and (2) are export and import demand functions, respectively. Equation (3) is current account equilibrium. where *x* and *m* are the growth rates of real export and real import, *y* and *z* are the growth rates of domestic and world income, respectively. $(p_d - p_f)$ is the growth rate of relative prices and $\alpha, \pi, \phi, \sigma$ are elasticities. We have restrictions $\alpha, \phi < 0$ and $\pi, \sigma > 0$. Substituting (1) and (2) into (3), we have the following equilibrium rate of growth equation:

$$y^* = \frac{(1 + \phi + \alpha) \cdot (p_d - p_f) + \sigma z}{\pi} \quad (4)$$

Substituting (2) into (4), we get following equation:

$$y^{**} = \frac{x + (1 + \alpha) \cdot (p_d - p_f)}{\pi} \quad (5)$$

Supposing that the Marshall-Lerner condition holds or that relative prices do not change in the long-run, then equation (4) and (5) become:

$$y^{**} = \frac{x}{\pi} \quad (6)$$

Equations (5) and (6) represent the basic form of Thirlwall's hypothesis. Following the empirical literature, we start from an import demand equations in level.

$$\ln M_t = a + \alpha \ln(P_t) + \pi \ln(Y_t) + \varepsilon_t \quad (7)$$

Where M_t and Y_t are the volumes of import and GDP (2000=100), respectively; P is the relative prices for import as (P_M / P_X) respectively. Here, P_M is import unit value and P_X is export unit value. ε_t is error term. α and π are the long-run elasticities. Estimates of α is expected to be negative and π is expected to be positive.

The quarterly time series data for South Africa are taken from the IMF's International Financial Statistics (IFS) database for 1984:1 - 2006:1 period. All variables are employed with their natural logarithms form.

Methodology

This study employs a recently developed autoregressive distributed lag (ARDL) cointegration procedure by Pesaran and Shin (1999) and Pesaran et al. (2001). They argue that the ARDL cointegration procedure has several advantages over the commonly practiced cointegration procedures like Engle-Granger (1987) and Johansen (1988), and Johansen and Juselius (1990). First, the ARDL procedure can be applied whether the regressors are I(1) and/or I(0). This means that the ARDL procedure has advantage of avoiding the classification of variables into *I*(1) or *I*(0) and no need for unit root pre-testing. Second, while the Johansen cointegration techniques require large data samples for validity, the ARDL procedure is the more statistically significant approach to determine the cointegration relation in small samples. Third, the ARDL procedure allows that the variables may have different optimal lags,

while it is impossible with convential cointegration procedures. Finally, the ARDL procedure employs a single reduced form equation, while the convential cointegration procedures estimate the long-run relationships within a context of system equations. Equations (7) may be presented at the following ARDL form:

$$\Delta \ln M_t = a + \sum_{i=1}^{n1} \theta_i \Delta \ln(M_{t-i}) + \sum_{i=0}^{n2} \alpha_i \Delta \ln(P_{t-i}) + \sum_{i=0}^{n3} \pi_i \Delta \ln(Y_{t-i}) + \delta_1 \ln M_{t-1} + \delta_2 \ln P_{t-1} + \delta_3 \ln Y_{t-1} + \mu_t \quad (8)$$

Where μ_t and Δ are the white noise term and the first difference operator, respectively. The ARDL method estimates $(p + 1)^k$ number of regressions in order to obtain the optimal lag length for each variable, where *p* is the maximum number of lags to be used and *k* is the number of variables in the equation. An appropriate lag selection based on a criterion such as Akaike Information Criterion (AIC) and Schwarz Bayesian Criterion (SBC). The null of no cointegration, $H_0 : \delta_1 = \delta_2 = \delta_3 = 0$, is tested against the alternative of $H_1 : \delta_1 \neq 0, \delta_2 \neq 0, \delta_3 \neq 0$. Two sets of critical values are generated, the upper bound critical values refers to the I(1) series and the lower bound critical values to the I(0) series. If the calculated *F*-statistics lies above the upper level of the band, the null is rejected, indicating cointegration. If the calculated *F*-statistics is below the upper critical value, we cannot reject the null hypothesis of no cointegration. Finally, if it lies between the bounds, a conclusive inference cannot be made without knowing the order of integration of the underlying regressors. The upper limit of the critical values for the F-test (all I(1) variables) can be obtained from Pesaran *et a*l. (2001). Recently, the set of critical values for the limited data (30 observations to 80 observations) were developed originally by Narayan (2005). If there is a cointegration between the variables, the following long-run model (equation 9) is estimated:

$$\ln M_t = a_1 + \sum_{i=1}^{n1} \theta_{1i} (\ln M)_{t-i} + \sum_{i=0}^{n2} \alpha_{1i} (\ln P)_{t-i} + \sum_{i=0}^{n3} \pi_{1i} (\ln Y)_{t-i} + \mu_t \quad (9)$$

The short-run dynamics can be derived by the following model (equation 10):

$$\Delta \ln M_t = c_2 + \sum_{i=1}^{n1} \theta_i \Delta (lnM)_{t-i} + \sum_{i=0}^{n2} \alpha_i \Delta (\ln P)_{t-i} + \sum_{i=0}^{n3} \pi_i \Delta (\ln Y)_{t-i} + \psi ECM_{t-1} + \xi_t \quad (10)$$

Where ψ is the coefficient of error correction model (ECM). ECM is defined as:

$$ECM_t = \ln M_t - c_1 + \sum_{i=1}^{n1} \beta_{1i} \ln(M_{t-i}) - \sum_{i=0}^{n2} \alpha_{1i} (lnTT_{t-i}) - \sum_{i=0}^{n3} \pi_{1i} (\ln Y_{t-i}) \quad (11)$$

The coefficient of ECM, ψ, shows how quickly variables converge to equilibrium and it should have a statistically significant coefficient with a negative sign.

EMPIRICAL RESULTS

Estimated long-run coefficients

According to Pesaran and Shin (1999), the SBC is generally used in preference to other criteria because it tends to define more parsimonious specifications. The ARDL (2,0,2) models selected here are based on SBC for the long-run import demand equation (Table 1). After selecting the ARDL model, we estimated the long-run coefficients with their asymptotic standard errors and the ECM term. The estimated model has passed several diagnostic tests that indicate no evidence of serial correlation, heteroscedasticity and any specification errors for models. Besides this, F-test results indicate that there is evidence of a long-run relationship between the variables at 5% significance level. The estimated ECM coefficient is negative and statistically significant at 1% significance level. Any deviation from the long-run equilibrium of import demand is corrected about 27% for each period and takes about 4 periods. Finally, the ADF unit root test for the residuals revealed that they are stationary.

The relative price elasticity of demand for import is negative (-0.77), the income elasticity of demand for import is positive (1.80), and ECM is negative (-0.27). These coefficients are statistically significant at 1% confidence level. ECM term for long-run import demand equation is also negative (-0.27) and statistically significant at 1% confidence level. ECM indicates that any deviation from the long-run equilibrium of import demand is corrected about 27% for each period and takes about 4 periods to return the long-run equilibrium level.

Tests of Thirlwall's hypothesis

Table 2 presents the equilibrium growth rate, actual growth rates and difference between the two growth rates. The equilibrium growth rate (y^{**}) calculated from equation (7) for the test of Thirlwall's hypothesis. If equilibrium growth rates coincide with actual growth rates or difference between two growth rates, (y^{**}-y) close to zero, Thirwall's law holds. The other way to explore the validity of Thirlwall's law is to regress equilibrium growth rates as a function of the actual growth rates. If Wald test cannot reject the joint hypothesis that intercept coefficient is zero and the slope coefficient is unity, the Thirlwall's law holds. McCombie and Thirlwall (1994, ch.5) suggest that it is more appropriate to regress predicted growth rates as a function of actual growth rates. Because, the predicted growth rate is derived from estimates of the parameters, it is subject to errors.

The results derived from Table 2 and Table 3 support the Thirwall's law for the South African economy. The estimated income elasticities of demand for imports and demand for exports are high, but the calculated export growth rate is very low. The differences between two growth rates are close to zero (-0.0006). On the other hand, equilibrium growth rates regressed against the actual growth rates and the Wald test cannot reject the joint hypothesis that intercept coefficient is zero and the slope coefficient is unity. All results support that the balance of payments position of the South African economy is the main constraint on its economic growth.

Table 1. Estimated long-run coefficients of the import demand equation.

Model: ARDL (2,0,2)					
Regressor	**Coefficient**		**Standard Error**	**T-Ratio [Prob]**	
lnP	-0.7727		0.1630	-4.7403 [0.000]	
lnY	1.7951		0.1927	9.3137 [0.000]	
a	-3.7176		0.8608	-4.3189 [0.000]	
ECM	-0.2728		0.0692	-3.9430 [0.000]	
R-Squared	= 0.3771	LM	= 6.6743 [0.154]	ADF	= -9.4379 (-4.9152)
R-Bar-Squared	= 0.3298	RESET	= 0.4217 [0.516]	F-test	= 4.1488

Notes:
LM is the Lagrange multiplier test for serial correlation. It has χ^2 a distribution with four degrees of freedom.
RESET is Ramsey's specification test. It has a χ^2 distribution with only one degree of freedom.
P-values are in [ ].
ADF is unit root test statistics for residuals and its %5 critical value is in ().
F-test is the ARDL cointegration test. The upper limits of the critical values based on Narayan (2005) are 4.053 and 3.453 for %5 and %10 significance levels, respectively.

Table 2. Test of Thirlwall's hypothesis.

σ	**π**	**y**	**x**	**x / π**	**y^{**} -y**
1.5563	**1.7951**	**0.0054**	**0.0087**	**0.0048**	**-0.0006**
	Income elasticity of demand for exports				
σ	Income elasticity of demand for imports				
π	Actual economic growth rate				
y	Export volume growth				
x	Predicted economic growth rate				
$x / \pi = y^{**}$	Differences between predicted and actual economic growth rates				
y^{**} -y	All growth rates computed as the first differences of logarithm of series.				

Table 3. Regressions of equilibrium growth rates.

$y^{*} = - 0.0007 + 1.0185\ y$	
(0.8956) (0.00853)	
R^2 =0.034	Adjusted R^2=0.022
SEE= 0.040	Wald (2) = 0.0206 (0.9897)

Notes: p-values are in ( ).
Wald is joint test that constant term is zero and the slope coefficient is unity. It has a χ^2 distribution with two degrees of freedom.

Conclusion

This study has explored elasticities of demand for imports for the South African economy using Autoregressive Distributed Lag (ARDL) Bounds Testing method and tested the Thirlwall's hypothesis of balance of payments constrained growth. The main findings of the paper can be summarized as follows: i) Import is cointegrated with relative price and income, ii) the estimated income elasticities of demand for imports and demand for exports are high, but the calculated export growth rate is very low, iii) the equilibrium growth rates coincide with actual growth rates, and iv) results from Wald test support the Thirlwall's hypothesis for South Africa. As a policy implication, a successful economic growth policy, which reduces income elasticity of imports and promotes export, will permit South Africa to have a rapid growth in demand and supply without suffering deterioration in its balance of payments.

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Full Length Research Paper

A field study to determine the satisfaction levels of the candidate teachers attending the machine drawing and construction program at the faculty of technical education in Turkey

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The purpose of this study is to determine the satisfaction levels of the students studying at technical education faculties to become Machine Drawing and Construction teachers. The study has been devised as a survey and its scope consists of candidate teachers attending the machine drawing and construction education program of the technical education faculty of seven universities in Turkey. Sampling has been done among randomly chosen 319 students studying in the machine drawing and construction program at the Faculty of Technical Education (FTE). The findings obtained in the study have revealed that the satisfaction levels of the students regarding the administration of their faculties, social activities in their faculties, educational activities and applied studies are at a medium level. Moreover, it has been found out that although the opinions concerning the school and the reason for choosing the department show significant discrepancies at certain levels, no such discrepancies have been revealed according to the high schools that the students have graduated from. In the study, following the evaluation of the tables drawn as a result of the analysis, some implications and suggestions have been offered.

Key words: Machine drawing and construction candidate teachers, satisfaction level, technical education faculty.

INTRODUCTION

With the global economic crisis that has been going on for some time, today, the whole world has been looking for ways to get out of this crisis and governments have been seeking remedies to get over it with minimum damage. In our country, too, there has been an increase in the unemployment rate due to the economic shrinkage that has been continuing in employment. (13%) (Turkish Statistics Institute, 2009). Alvin Toffler, in his book "The Third Wave", makes a classification of the global Industrial development and states that property of land in the agricultural societies that make up the first wave and capital accumulation in the industrial societies that make up the second wave are the two important factors of success. He notes that the most important factor in the information society that makes up the third wave will be the quality of the human capital (Toffler, 1981).

In today's informatics age, where technology develops rapidly, qualified human force (human capital) is the most significant factor in an arena where there is fierce competition among countries. It must be one of the main goals of the educational systems of these countries to educate individuals that can meet the current requirements of economy and technology, that can make innovations and that can adapt to ongoing developments. This situation shows how important vocational and technical education actually is.

Increasing competitive force by adapting to information society and technological developments and training

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labor force with the qualifications required by the labor market so as to reduce unemployment have steadily been gaining importance. Industrial corporations present such qualifications as knowledge and skills in production and keeping close track of technology as their basic requirements to be known beforehand (Binici and Ari, 2004). It can be stated that the basic method to realize this is to provide vocational and technical education to train this labor force.

Vocational education is a process in which the individual obtains certain knowledge, skills and work habits and expands his or her talents and abilities; on the other hand, technical education is a process which requires advanced scientific and mathematical knowledge as well as applied technical skills, and which develops the knowledge, skills and work habits required for a position at a level between a qualified worker and an engineer (Sezgin, 2000). In Western countries, vocational education is described as a process which aims at providing a career through artisanship or practical activities (Öçal, 2008). However, the goal of vocational technical education is generally to educate and train workforce to enable them to become qualified enough to be employed in industrial, commercial and service sectors, and to give them the basic education they need to transfer to a department to continue their vocational education at a university level (Eşme, 2007). Vocational and technical education system is responsible for preparing human resources for the production system, as a result of which human capital that takes on a locomotive role in progress and development has been trained (Özgüven, 2001).

UNESCO (1999) points out to the fact that in order to receive the desired outcome from vocational and technical education, it is necessary that it should be compatible with the social values and attitudes, encompass new technology, promise new policies and financial benefits and should take into consideration local, regional and global opportunities and interests.

At present, vocational technical education is being provided at a high school and university level. While the purpose at the high school level is to meet the needs of intermediary staff in vocational high schools and technical high schools, it is to educate technical and vocational candidate teachers in technical education faculties and vocational education faculties at a higher education level. In addition to this, apprenticeship and vocational education is also provided for those who start working after elementary school (Şahin et. al., 2007). The 16th National Education Council has assembled in order to discuss the problems as regards vocational and technical education and propose some solutions to these problems. It has been decided at this meeting that the vocational and technical education in this country will be restructured within the framework of elementary education (Ministry of Education, 2009).Universities play an important role in a society's economic, social, cultural, scientific, technological, ethical and intellectual development (Gençyılmaz and Zaim, 1999). The ultimate goals of universities should be to contribute to their students' education in the best way they can and to maintain student satisfaction with the education they provide (Yenen and Gözlü, 2003, Taşçı, 1995; Eroğlu, 2002). Students who are satisfied with the facilities and opportunities provided by their universities show regular attendance and higher graduate rates (Student Life Studies, 1999). Elliot and Shin (2002) assert that taking into consideration student satisfaction, expectations and wishes will provide multitudinal benefits to these institutions.

Recently, parallel to the decline in the rate of students who prefer to study at vocational high schools, the Ministry of Education has been allotting either very low or no contingency for technical teachers to work at these schools. In the program where the study has been conducted there has been no employment of technical teachers for a long time. Although such teachers are not employed, in newly opened FTEs the education gets started and new graduates enter the arena on top of the old ones. Those candidate technical teachers that cannot be employed by the Ministry of Education look for job opportunities in the industrial sector. Such problems experienced upon graduation have adverse effects on students' success and motivation. This study aims at determining the factors affecting students' satisfaction level and at assisting in their being considered for any modifications or innovations that are necessary.

MATERIALS AND METHODS

Research goals

The purpose of this study is to determine the satisfaction level of the students attending the machine drawing and construction education program at the faculty of technical education. In line with the general aim of the study, the following problems have also been addressed:

-Do the satisfaction levels of the students vary according to gender?
-Do the satisfaction levels of the students vary according to the university they are attending?
-Do the satisfaction levels of the students vary according to the high school they have graduated from?
-Do the satisfaction levels of the students vary according to the reason why they have chosen the program they are attending currently?

Methodology and data analysis

The study has been carried out as a survey. The subjects of the study consist of 319 senior students attending the machine drawing and construction program in the 2008-2009 academic year at the Faculty of Technical Education at Afyon Kocatepe University, Gazi University, Duzce University, Suleyman Demirel University and Karabuk University. Although all these education programs, where the survey was conducted, provide the same education as regards the content, the programs at Karabuk University, Mersin University FTE in Tarsus, Marmara University, Suleyman Demirel University and Duzce University are called Design and Construction Edu-

cation whereas the ones at Afyon Kocatepe University and Gazi University are called Machine Drawing and Construction Education (The Student Selection and Placement Center, 2009).

The data in this survey have been collected by a measuring scale developed by the researchers. To this end, first, the researchers have looked into some literature related to the issue and interviewed students attending the department of machine construction and drawing. The study has been carried out on a voluntary basis. The scale used in Erdoğan and Uşak's (2005) study has been made use of in order to create the items on the scale. Following this, a draft scale consisting of 41 items has been prepared, and some expert opinion has been sought for regarding this scale, after which necessary changes and editing have been made to the items on the scale. The preliminary application of the scale has been carried out on 148 students from the department of automotive technology. Factor analysis has been made to check the validity of the scale and Cronbach's Alpha internal consistency coefficient has been calculated to check the reliability of the scale. The data collected though the questionnaires have been analyzed using SPSS 12.0 (SPSS, Inc., Chicago, Illinois). In order to evaluate the findings obtained from the responses, frequency, mean ($\overline{X}$), and standard deviation (S.D.) have been made use of. In the study, to determine the level of defference of satisfaction levels of the students according to their genders, independent groups t-test analysis has been used. Moreover, to determine whether there are any discrepancies among the satisfaction levels of the students according to the university they are attending, the high schools they have graduated from and the reasons why they have chosen this program, one-way analysis of variance (ANOVA) has been carried out. In order to determine which possible discrepancies occur among which groups, Tukey-HSD Test has been used. The significance level has been taken as $p<.05$ to test the difference levels among groups. A five-degree preference scale has been used in responses to the items on the data collection material. The range of the responses has been designed as follows: (1-strongly disagree, 2- disagree, 3-neither agree nor disagree, 4-agree, 5-strongly agree).The distribution of scale ranges are: 1.00-1.80-none, 1.81-2.60-a little, 2.61-3.40-a reasonable amount 3.41-4.20- a great deal, 4.21-5.00-complete (Tekin, 1993).

Validity tests

For the survey, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, a test to assess the appropriateness of using descriptive factor analysis on data, is 0.81. It is desirable that the KMO value be above 60% (Tabachnic and Fielda, 2001). Barlett test of sphericity ratio, which implies that significant factors can be drawn from the database, is ($p<.00$). These ratios show that the questionnaire form is valid (Hoxley, 2000, Mitchell, 1994). In order to test the validity of the questionnaire, varimax rotation has been used in the factor analysis of the 41 items. As a result, the intrinsic values of the items on the scale range from 7.45 to 25.09%. It has been noted that four factors explain 57.83% of the variation. There are seven items in the first factor which is composed of items related to the administration. Their factor loadings range from .36 to .58. There are four items in the second factor which consists of items related to social activities, and their factor loadings range from .44 to .59. The third factor which is related to educational activities includes 21 items, the factor loadings of which range from .33 to.67. Finally, in the fourth factor, which is related to applied studies, there are nine items with factor loadings ranging from .34 to .65.

Reliability tests

Cronbach's Alpha coefficients have been used to check the reliability and internal consistency of the scale. Cronbach's Alpha tests the internal consistency and reliability of the scale when the discrepancies are measured (Cronbach, 2004). In the reliability study carried out, the Cronbach's Alpha coefficient regarding the first factor, the administration aspect, has been calculated as .81. The total item correlations are between .46 and .61. While the Cronbach's Alpha coefficient concerning the second factor (social activities) has been calculated as .74, the total item correlations have been found to be ranging from .51 to .65. The Cronbach's Alpha coefficient of the third factor (educational facilities) has been calculated as .85, and the total item correlations range from .33 to .67. The Cronbach's Alpha coefficient of the fourth factor (applied studies) has been calculated as .87, and the total item correlations have been found to range from .50 to .68. For the whole scale, the Cronbach's Alpha coefficient has been calculated as .91, and the total correlation of the items have been found to range from .32 to .64. According to this, it can be stated that the measurements obtained from the scale in the preliminary application have yielded quite reliable results. ($0.60\leq\infty<0.80$ the scale is quite reliable; $0.80\leq\infty<1.00$ the scale is highly reliable) (Özdamar, 2002). According to the Hotelling T2 test, which is used to test the hypothesis whether the means of the questions are equal to each other, the hypothesis stating that "means of the questions are equal to each other" is rejected ($p<0.05$). Therefore, it can be said that the difficulty level of the questions are different from each other, which is a desirable characteristic. The results have been presented in Table 1.

RESULTS AND DISCUSSIONS

Demographic profiles of respondents

The demographic profiles of the subjects can be seen in Table 2. Of the students who participated in the survey, 25.7% are from Gazi University, 21.% are from Afyon Kocatepe University, 20% are from Karabuk University, 16.3% are from Duzce University and 16% are from Suleyman Demirel University. When the numbers and the percentages of the participants studying at the automotive department at the faculty of technical education are taken into consideration, it can be said that there is quite an even distribution. When the high schools that the participants have graduated from are examined, it can be observed that approximately 59% are graduates of schools giving vocational and technical education and 41% are graduates of general high schools. Considering the fact that students from all types of high schools can choose to go to FTEs, it can be clearly seen that the percentage of graduates of general high schools who choose to attend this department is significantly high. Taking into consideration the fact that there exists a program at this department directed towards the enhancement of the knowledge and skills learned in vocational high schools, students coming from normal high schools can encounter some problems especially in vocational courses. When the reasons why students have chosen this department are examined, it can be seen that 52.4 % of the students have made compulsory choices as to attend this program because of the University exam system and their university placement exam points. Consequently, this is an important matter which may

Table 1. Hotelling's T-Squared Test.

Hotelling's T-Squared	F	df1	df2	Significant
621.595	11.417	40	108	.000

Table 2. Demographic information of students (N=319).

Variables		Frequency	Percentage
Universities	Afyon K.T. University	69	21.6
	Gazi University	82	25.7
	Suleyman Demirel University	51	16.0
	Karabuk University	65	20.4
	Duzce University	52	16.3
Total		319	100.0
Gender	Male	216	67.7
	Female	103	32.3
Total		319	100.0
Level of Education	High school	130	40.8
	Vocational school	80	25.1
	Technical high school	45	14.1
	Anadolu technical high school	64	20.1
Total		319	100.0
Reason for prefer of program	Guidance (Family or School)	56	17.6
	To be a technical teacher	34	10.7
	To take vocational training	62	19.4
	ÖSS score (Coefficient effect)	167	52.4
Total		319	100.0

influence the satisfaction level of the students attending the department.

In this section, opinions of the participants concerning the sub dimensions of the scale and findings of ANOVA regarding the discrepancies among the opinions are presented.

Findings regarding the participants' opinions concerning the sub dimensions of the scale

Table 3 shows students' assessments of their satisfaction level related to the administration in their faculties.

When the findings in Table 3 are examined, it can be observed that students do not have an opinion of the school administration in general; ($\overline{X}$ =2.97). According to the table, the item which has received the highest "I agree" opinion is "professors and students can interact easily"($\overline{X}$ =3.47). The item with which the students have agreed the least is "In my faculty, my opinions are taken into consideration and are made use of"($\overline{X}$ =2.49); they have marked "I disagree" for this statement.

Table 4 shows students' assessments of their satisfaction level related to the social activities in their faculties. When the findings in Table 4 are examined, it can be observed that students' satisfaction level related to the social activities at school is quite low ($\overline{X}$ =2.20). According to the table, students have marked "disagree" for the following two items: "In my faculty, I have the opportunity to join the sports activities I'm interested in" ($\overline{X}$ =2.25) and "student representative of the department is effective in defending the rights of the students" ($\overline{X}$ =2.22).

Table 5 shows students' assessments of their satisfaction level related to the education they are receiving in their faculties. When the findings in Table 5 are examined, it can be observed that the students generally have no opinion of the education they receive in their faculties.($\overline{X}$ =2.98) According to the table, students have marked "agree" for the following three items: "If there is something I do not understand, I can easily ask it to my professors" ($\overline{X}$ =3.56), "I believe that what I learn at the faculty will be beneficial to me now and in the future"($\overline{X}$ =3.47),"I am content with the physical condi-

Table 3. Opinions about their satisfaction level related to the faculty administration of students.

Opinions	N	Mean	S.D.	S.E.
When students need to talk with the faculty administration, can meet unconstrained.	319	3.14	1.29	.07
To solute any the problems submitted to the faculty administration are shown efforts.	319	2.86	1.11	.06
Professors and students can meet easily	319	3.47	1.11	.06
Commute of Faculty student affairs gives adequate support on my problems	319	2.82	1.21	.06
Communication with students of Department management is satisfactory.	319	3.10	1.15	.06
I feel that I belong to the Faculty of Technical Education	319	2.96	1.31	.07
My opinions are taken into consideration and are made use in my faculty.	319	2.49	1.12	.06
Total	319	2.97	1.18	.06

Table 4. Opinions regarding their satisfaction level related to the social activities of students.

Opinions	N	Mean	S.D.	S.E.
I have the opportunity to join the sports activities which interest's me in my faculty.	319	2.25	1.15	.06
Faculty of Physical facilities are enough to (canteen, indoor facility etc.) meet to my demands.	319	2.15	1.18	.06
Social and cultural activities are sufficient in my faculty.	319	2.19	1.10	.06
Student representative of the department is effective in defending the rights of the students.	319	2.22	1.14	.06
Total	319	2.20	1.14	.06

tions in which the lessons are carried out (cleanliness, comfort, appearance, etc.) ($\overline{X}$ =3.42).

Students have marked "disagree" for the following three items: "If I were given a chance, I would choose this faculty again"($\overline{X}$ =2.36), "Exam questions and assessments made measure my true performance." ($\overline{X}$ =2.55) And"E6" (X=2.50). As regards the equipment, tools and devices in the faculties, it seems that student satisfaction is very low.

Table 6 shows students' assessments of their satisfaction level related to the applied studies in their faculties. When the findings in Table 6 are examined, it can be observed that the students generally have no opinion of the application studies they receive in their faculties ($\overline{X}$ =2.88). It can be said that except for only one item, students seem to be without an opinion about all the other items in the questionnaire, which implies that student satisfaction as regards applied studies in the faculties is at a medium level. Students have disagreed with the item "Technology used in the workshops is in tune with the age of technology" ($\overline{X}$ =2.57) and agreed with the following items: "Instructors have sufficient knowledge of applications" ($\overline{X}$ =3.24), "Instructors provide students with sufficient theoretical information on applications" ($\overline{X}$ =3.05) and "Applications in the workshops have been chosen to represent real life circumstances" ($\overline{X}$ =3.03). In the light of the responses, it can be understood that student satisfaction regarding current applications is low. The fact that there is insufficient technological equipment in FTEs, where education is given both in theory and practice, causes students to graduate with a lack of adequate practice.

Findings as to whether students' opinions about the sub dimensions of the satisfaction scale differ according to their genders.

Table 7 displays whether students' opinions related to the sub dimensions of the student satisfaction scale differ according to their genders.

When the findings in Table 7 are examined, sub dimensions of "Administration" [t(317)= -2.265; p<.05], "Social activities" [t(317)= -2.031; p<.05] and "Applied studies" "[t(317)= -3.170; p<.05] show significant discrepancies whereas no such difference has been found in "educational facilities" "[t(317)= -.993; p<.05] sub dimension. The significant discrepancies that have emerged have occurred in favour of women. It has been found out that the satisfaction level of female students is higher regarding the administration, social activities and applied studies when compared to male students. It can be said that male students' expectation levels of satisfaction are higher than those of female students. No difference has been found between the genders in their evaluation of the

Table 5. Opinions regarding their satisfaction level related to the training-teaching activities of students.

Opinions	N	Mean	S.D.	S.E.
Courses are performed suitable with our level	319	3.12	1,05	.05
I believe that what I learn at the faculty will be beneficial to me now or in the future	319	3.47	1.09	.06
If I were given a chance, I would choose this faculty again.	319	2.36	1.21	.06
I think that theoretical knowledge's acquired in the Faculty would work in practice	319	3.39	1.07	.05
Course content is organized to attract my attention	319	2.75	1.03	.07
If there's something I do not understand, I would easily ask it my professors.	319	3.56	1.14	.06
Course materials and equipments are used appropriate to the issue	319	3.02	1.08	.06
Sufficient tool and device is existed in the classes, laboratories and workshops	319	2.60	1.09	.06
Assessments of exam and questions are made to measure my true performance	319	2.55	1.03	.05
I want to to receive master of science training in this department	319	3.00	1.37	.07
I am content with the physical conditions in which the lessons are carried out (cleanliness, comfort, appearance, etc.)	319	3.42	1.17	.06
I can easily reach related resources course	319	3.26	.97	.05
I recommend to my acquaintances the department.	319	3.05	1.27	.07
Given at the department of education is appropriate in my future goals	319	3.05	1.13	.06
I'm getting adequate counselling services from my consultant	319	2.57	1.22	.06
Computer services provided by my faculty meets my needs.	319	2.91	1.23	.06
Faculty library is enough for my expectances	319	3.01	1.27	.07
Diversity of the courses given within the program is satisfactory level	319	3.19	1.02	.06
The number of elective courses given within the program is sufficient.	319	2.65	1.17	.06
Teaching method of the courses of the teaching staff is satisfactory.	319	2.81	1.02	.05
I think that professions of teaching formation courses are useful	319	2.87	1.34	.07
Total	319	2.98	1.14	.06

Table 6. Opinions regarding their satisfaction level related to the applied studies of students

Opinions	N	Mean	S.D	S.E.
Given the application of theoretical knowledge (experiments, projects, assignments, etc.. methods) is made in the practical courses.	319	2.87	1.25	.07
Technology used in the workshops is proper the age of technology.	319	2.57	1.07	.06
Instructors have sufficient knowledge of about applications.	319	3.24	.97	.05
Instructors of workshop courses gives practical courses perceptible	319	3.10	1.03	.05
Applications in the workshop have been chosen to represent real life circumstances	319	3.03	1.07	.05
Technology in the workshops is used effectively.	319	2.61	1.05	.05
Tools and materials which are used workshop are sufficient.	319	2.72	1.09	.06
Instructors provide students with sufficient theorical information on applications	319	3.05	1.03	.05
Theorical information in the courses is adapted application in the workshops	319	2.73	1.11	.06
Total	319	2.88	1.07	.05

educational facilities in their faculties.

Findings as to whether students' opinions about the sub dimensions of the satisfaction scale differ according to the university they are attending

Table 8 displays the findings as to whether students' opinions of the sub dimensions of the scale differ according to the university being attended.

Significant discrepancies have been found in the evaluation of the students for all the sub dimensions of the satisfaction scale in terms of the university variable. As a result of the ANOVA analysis, it has been discovered that there is a difference among the opinions of the students regarding their levels of satisfaction related to the

Table 7. Results of t-test according to their differ genders of opinions related to the sub dimensions of the students satisfaction scale.

Items	Gender	N	Mean	S.D.	t	Sig.
Administration	Male	216	2.90	.84	-2.265	.024*
	Female	103	3.13	.81		
Social activities	Male	216	2.14	.82	-2.031	.043*
	Female	103	2.35	.96		
Training–teaching activities	Male	216	2.96	.60	-.993	.321
	Female	103	3.03	.55		
Application studies	Male	216	2.79	.69	-3.170	.002*
	Female	103	3.07	.84		

*The mean difference is significant at the .05 level.

Table 8. Findings as to whether students' opinions about the sub dimensions of the satisfaction scale differ according to the university they are attending.

Scales	Universities	N	Mean	S.D.	F	Sig.	Difference Tukey-Hsd
Administration	Afyon K.T. University	69	2.15	.76	32.573	.000*	(2-1, 3-1,
	Gazi University	82	3.37	.66			4-1, 5-1)
	S.D. University	51	3.03	.61			
	Karabuk University	65	3.27	.69			
	Duzce University	52	3.03	.79			
	Total	319	2.97	.70			
Social activity	Afyon K.T. University	69	1.93	.87	4.911	.001*	(3-1, 4-1, 3-5)
	Gazi University	82	2.18	.77			
	S.D. University	51	2.57	.88			
	Karabuk University	65	2.35	.90			
	Duzce University	52	2.07	.86			
	Total	319	2.22	.85			
Training–teaching activities	Afyon K.T. University	69	2.60	.55	11.736	.000*	(2-1, 3-1,
	Gazi University	82	3.19	.51			4-1, 5-1)
	S.D. University	51	3.02	.65			
	Karabuk University	65	3.10	.50			
	Duzce University	52	2.97	.56			
	Total	319	2.97	.55			
Application studies	Afyon K.T. University	69	2.47	.75	14.671	.000*	(2-1, 4-1,
	Gazi University	82	2.87	.61			5-1, 4-2,
	S.D. University	51	2.70	.75			4-3)
	Karabuk University	65	3.35	.58			
	Duzce University	52	3.03	.81			
	Total	319	2.88	.70			

1. Afyon KT. University 2. Gazi. University 3. Isparta S.D. University 4. Karabuk University 5. Duzce University
*The mean difference is significant at the .05 level.

administration sub division on the scale depending on the university they are attending ($F_{(4:314)}$=32.573, p<.05). In order to determine among which groups this difference has occurred, Tukey-HSD multiple comparison test has been applied. According to the results of this test and the arithmetic means in the table, the satisfaction levels of the students at Gazi University and Karabuk University regarding the administration are higher than those attending Afyon Kocatepe University, Duzce University and Suleyman Demirel University.

As a result of the ANOVA analysis, it has been discovered that there is a significant difference ($F_{(4:314)}$=4.911,

p<.05) among the opinions of the students regarding their level of satisfaction related to the second sub division of the scale, social activities, according to the university they are attending. According to the results of the Tukey-HSD test there are significant discrepancies among the students attending Karabuk University, Suleyman Demirel University and Afyon Kocatepe University. It can be noted that regarding social activities, the satisfaction level of the students attending Karabuk University and Suleyman Demirel University are higher than that of the students attending Afyon Kocatepe University. On the other hand, there is also a significant difference between the satisfaction levels of the students attending Suleyman Demirel University and Duzce University. In terms of social activities, the satisfaction level of the students attending Duzce University is low.

As can be seen in the table, depending on the university they are attending, the satisfaction levels of the automotive students show significant discrepancies in terms of the educational facilities in their faculties ($F_{(4:314)}$=11.736, p<.05). According to the results of the Tukey-HSD test, there is a significant difference between Afyon K. University and the other universities taking part in the study. It has been discovered that the satisfaction level of the students attending Afyon K. University is lower than that of the students attending Gazi University, Isparta SD University, Karabuk University and Duzce University.

Significant discrepancies have been found as a result of the ANOVA test, carried out to determine whether the satisfaction levels of the students regarding the educational activities vary depending on the university they are attending ($F_{(4:314)}$=14.6713, p<.05). According to the results of the Tukey-HSD test, as regards the applied studies in their faculties, the satisfaction levels of the students attending Gazi University, Karabuk University, and Duzce University are higher than those of the students attending Afyon K. University. On the other hand, the satisfaction level of the students regarding applied studies at Karabuk University is higher than that of the students attending Gazi University and Isparta SD University. Thus, the university that is being attended is so effective a factor as to create significant discrepancies among the satisfaction levels of students in terms of administration, social activities, educational facilities and applied studies.

Findings as to whether students' opinions about the sub dimensions of the satisfaction scale differ according to the high school they have graduated from

As can be seen in Table 9, no significant discrepancies have been found as a result of the ANOVA test in the four sub divisions of the satisfaction scale among the opinions of the students depending on the high school they have graduated from. Those students who have graduated from Anatolian technical high schools have a higher satisfaction level regarding administration as opposed to those who have graduated from other high schools ($\overline{X}$=3.06). In terms of social activities, the satisfaction level of vocational high school graduates is higher than that of the others ($\overline{X}$=2.27). As regards educational facilities, the satisfaction level of general high school graduates is higher than that of the others and as for applied studies; the satisfaction level of vocational high school graduates is higher than that of the others. In the light of these results, it can be concluded that the high school from which a student has graduated does not play a significant role in the satisfaction level of the student concerning the program he or she is attending.

Findings as to whether students' opinions about the sub divisions of the satisfaction scale differ according to the reason why they have chosen the program they are attending

According to the results of the ANOVA analysis in Table 10, it can be seen that there is a significant difference among the students' opinions of their level of satisfaction regarding educational facilities depending on the reason why they have chosen the program they are attending. However, no significant discrepancies have been found in terms of administration, social activities and applied studies according to the reason why they have chosen the program they are attending. According to Tukey-HSD test, which has been carried out to determine among which groups there are significant discrepancies, the groups with discrepancies have been identified as the students who have chosen the program to become technical teachers, students who have chosen it through guidance, those who have chosen it because of the coefficient and those who have chosen it to receive vocational education. The students who have chosen the program to become technical teachers have a higher satisfaction level as regards the educational facilities when compared to those who have chosen it with the guidance of their families. The satisfaction level of those students who have chosen the program to receive vocational education is also higher than that of the students who have chosen it because of their coefficient. Consequently, it can be concluded that the reason why a student chooses a program is an effective variable on the satisfaction level of the students regarding educational facilities.

Conclusions

It has been seen that the satisfaction level of the students

Table 9. Findings as to whether students' opinions about the sub dimensions of the satisfaction scale differ according to the high school they have graduated from.

Scales	Graduated high school	N	Mean	S.D.	F	Sig.
Administration	High school	130	2.99	.83	.747	.525
	Vocational school	80	2.98	.79		
	Anadolu technical high school	64	3.06	.82		
	Technical high school	45	2.82	.95		
	Total	319	2.97	.84		
Social activities	High school	130	2.21	.83	.441	.724
	Vocational school	80	2.27	.85		
	Anadolu technical high school	64	2.10	.90		
	Technical high school	45	2.21	1.00		
	Total	319	2.19	0.89		
Training–teaching activities	High school	130	3.03	.55	1.282	.281
	Vocational school	80	3.01	.66		
	Anadolu technical high school	64	2.93	.57		
	Technical high school	45	2.85	.56		
	Total	319	2.95	.58		
Application studies	High school	130	2.90	.76	.382	.766
	Vocational school	80	2.93	.75		
	Anadolu technical high school	64	2.81	.71		
	Technical high school	45	2.83	.80		
	Total	319	2.86	.75		

1. High school 2. Vocational school 3. Anadolu technical high school 4. Technical high school
* The mean difference is significant at the .05 level.

Table 10. Findings as to whether students' opinions about the sub divisions of the satisfaction scale differ according to the reason why they have chosen the program they are attending.

Scales	Reason for preference to department	N	Mean	S.D.	F	Sig.	DifferenceTukey-Hsd
Administration	Guidance (Family or School)	56	3.01	.82	.677	.567	
	To be a technical teacher	34	3.10	.88			
	To take vocational training	62	3.04	.86			
	OSS score (Coefficient effect)	167	2.92	.82			
	Total	319	3.01	.84			
Social activities	Guidance (Family or School)	56	2.17	.85	.704	.550	
	To be a technical teacher	34	2.41	.85			
	To take vocational training	62	2.20	.87			
	OSS score (Coefficient effect)	167	2.17	.88			
	Total	319	2.23	.86			
Training–teaching activities	Guidance (Family or School)	56	3.03	.56	4.120	.007*	(2-1, 3-4)
	To be a technical teacher	34	3.17	.74			
	To take vocational training	62	3.12	.58			
	OSS score (Coefficient effect)	167	2.88	.54			
	Total	319	3.05	.60			
Application studies	Guidance (Family or School)	56	2.92	.71	.174	.914	
	To be a technical teacher	34	2.92	.79			
	To take vocational training	62	2.89	.71			
	OSS score (Coefficient effect)	167	2.85	.78			
	Total	319	2.89	.74			

1. Guidance. 2. To be a technical teacher 3. To take vocational training 4. OSS score
* The mean difference is significant at the .05 level.

regarding the faculty administration is at a medium level. The rate of making use of students' opinions in the faculties is very low. It can be concluded that the fact that students cannot share their expectations and suggestions with the administration is an important element affecting their feelings of "belonging". This is revealed by the fact that the level of attachment to the faculty is medium level according to students' responses. In contrast to their dissatisfaction with the administration, the students seemto have a high level of satisfaction as regards communication they have with the professors. In a study conducted by Yeşilyaprak et.al. (2001), it has also been found out that vocational education faculty students, similarly, have a low satisfaction level regarding the administration. The faculty needs to enhance the opportunities of communication with students to increase the satisfaction level of the students. They have to be in constant contact with the student representatives so as to learn about the expectations and the wishes of the students. Those which can be realized should be addressed in order to try to increase the satisfaction level of the students.

It has been found out that the satisfaction level of the students regarding the social activities in their faculties is quite low. Apart from Gazi University, considering the fact that the other universities have been newly opened, it can be said that they have not become institutionalized yet. Parallel to the fact that the university campuses are still in the process of physical development, social facilities offered to students are limited.

As for the educational activities, students seem to be indecisive about their satisfaction level. It has been noted that laboratories and workshops have insufficient equipment. Except for Gazi University, it can be presumed that this situation has occurred due to the fact that these universities have started to provide education relatively new. Despite these drawbacks, students express that they can easily communicate with their professors. It can be concluded that although there is a lack of equipment, academics increase the student satisfaction level with their dedicated work. Lamport (1993) and Wilson and Gaff (1975) have pointed out that friends and academic personnel have a great impact on student satisfaction. In general, as a result of the assessment, student agreement on the opinions stating that they would choose the same faculty again or they would recommend it to their close relatives is low, which is a clear sign of their satisfaction level. The reasons leading to this result could be that they choose this faculty compulsorily; they receive wrong vocational guidance after elementary school or the facilities in the faculty or university are inadequate. Ekinci and Burgaz (2007) in a study they have carried out at Hacettepe University, have found out that the students' satisfaction level regarding the education in the faculty is at a medium level. On the other hand, in a study carried out by Erdoğan et al. (2005), it has been found out that the level of satisfaction is low.

The students seem to be indecisive about the application studies carried out in their faculties. Their satisfaction level concerning practical lessons given in the workshops appears to be at a medium level. It is known that in the curriculum followed by FTEs, not only theoretical information but also practical skills are also targeted. Therefore, in terms of the equipment available in labs and workshops, it is important that technology be followed closely. In a study they have conducted, Akpınar and Özer (2003) have stated that they have found the syllabus, program, application facilities and the instructors to be insufficient. It can be said that in an age where technology advances rapidly, faculties fail in updating their labs and workshops at such a great pace and fall behind industry. The majority of the graduates of this program start to work in the industrial sector as intermediary personnel because they cannot be appointed to teaching positions. This fact emphasizes once more that laboratories are of utmost importance in this field. Due to these reasons, the satisfaction level of the students regarding the applied studies has yielded low results.

In the program where the study was carried out, as regards the satisfaction level, significant discrepancies have been found in the three sub-levels (administration, social activities, and applied studies) depending on the gender of the students. In this evaluation, it has been observed that the satisfaction level of females is higher than that of the male students. No significant difference has been found in the evaluation of education. Both genders seem to have a common point of view.

It has been found out that the university that is being attended is an important variable in determining the satisfaction level of the students in terms of administration, social activities, educational facilities and applied studies. It can be said that the high school which a student has graduated from is not a significant factor in affecting student satisfaction of the program being attended. It can be stated that the reason why this program has been preferred is a significant factor affecting the student satisfaction regarding educational activities/facilities.

As a result of the findings obtained in this study, the following suggestions can be made:

(i) After their elementary education, students should receive counseling and guidance in accordance with their abilities. Making the correct choice in their occupational preferences would increase the level of satisfaction they would get from their education.
(ii) Students should be given informational guidance about professions in general before they make university preferences so that chances of wrong preferences are lowered.
(iii) To meet students' expectations and wishes, faculty administrations should adopt a horizontal administrative

approach, developing a system encompassing the student representatives.
(iv) Identification problems of the faculty graduates should be solved and difficulties related to their employment should be overcome.
(v) Programs to which no appointments are made in terms of technical teachers should be revised by the Ministry of Education and modified in such a way as to educate individuals equipped with the knowledge and skills to meet the needs and requirements of the industry.
(vi) Programs which have been designed to add to the knowledge acquired in vocational high schools should be revised to allow students coming from general high schools to adjust.
(vii) In the newly opened universities, the shortage of equipment and tools in laboratories and workshops should be overcome.
(viii) Industrialists should be consulted and programs should be revised In order to enable the graduates who have not been appointed to teaching positions to graduate from value added programs and become types of employers who are highly sought after in the industrial sector.
(ix) The funds allocated to vocational and technical education should be increased throughout the country.
(x) Collaboration between schools and industry should be intensified and it should be in their best interest to try to provide graduates with employment opportunities.

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Full length Research Paper

Clarifying spiritual values among organizational development personnel

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Values lie at the core of all human behavior. Initially, it was believed that human behavior could be best explained in terms of one's personality system, including needs, motives, beliefs, goals and attitudes. But eventually, the emphasis shifted towards values, as there are many aspects of human behavior that cannot be attributed to the former concepts, but where values play an important role. The authors believe that values make personnel life more meaningful and give them a sense of direction for organizational performance and development. In this article, the authors have discussed the sources of values, early assumptions about values, a value based approach to organizations and value assessment. Recommendations have also been offered for the human resource managers to inculcate spiritual values among personnel that may in turn be fruitful for organizational development.

Key words: Spiritual values, organizational development.

INTRODUCTION

Industrial organizations are mainly concerned for productivity and quality by personnel. Spiritual values of the personnel are the prerequisites for the organizational health and development. Surprisingly, spiritual values of the personnel are treated casually in organizations. This fact has made many organizations to think that personnel's spiritual values should be viewed as a potential resource in organization rather than as something to be ignored. According to Mohamed et al. (2001), organizational theories and models that ignore the spiritual dimension will remain deficient. They said in this context: "our current models of micro and macro behavior do not account for spirituality and its effects and, as such, some of these models may be misleading or incomplete" (p. 647). Values of the personnel may improve quality of products and services and a better workplace. To achieve the organizational goal, that is, a satisfied workforce, spiritual values must be owned and practiced by all the personnel.

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Spiritual leadership and values

Earlier studies has established link between spiritual values and leadership. For example, Fry (2003) defines spiritual leadership as "the values, attitudes, and behaviors necessary to intrinsically motivate one's self and others so that they have a sense of spiritual survival through calling and membership" (p. 694-695). He says that spiritual leadership is treated more as an observable phenomenon occurring when a person in a leadership position embodies spiritual values such as integrity, honesty and humility, creating the self as an example of someone who can be trusted, relied upon and admired.

A research on effective leadership traits and behaviors (Den Hartog et al., 1999) claims that attributes and practices widely associated with spirituality have been found to have a global appeal. More than half of the universally endorsed leader attributes (14 out of 22) may be considered to be associated with spirituality, values and ethics: "positive, trustworthy, just, win-win problem solver, encouraging motive arouser, communicative, excellence-oriented, confidence builder, honest, dynamic, team builder, motivational and dependable" (Den Hartog

et al., 1999, p. 239). Leaders who view their own work as a means of spiritual growth have also been shown to increase organizational performance (Himmelfarb, 1994). Mitroff and Denton (1999) found that many individuals are looking for ways to express their spirituality in their work. Workers who are able to express their spirituality through their work, find work more satisfying.

Realizing the importance of incorporating spiritual values in the workplace and the possession of spiritual values in spiritual leaders and workers, we considered that organizations should consider the value system, particularly the spiritual ones, among personnel to facilitate their job performance and productivity that in turn may be important for organizational development in a number of ways. This article also discuss sources of values, some early assumptions about values, value based approach to organizations and value assessment.

The sources of values

In an ancient tradition like India, the spiritual values as embodied in its religion and philosophy can claim to be the primary and original source of all derived social values (Ganguli, 1989). Sinha (1972) pointed out that "the moral and social qualities that are valued in a society have their roots in religion, philosophy and tradition and are relatively more enduring facets of our existence" (p.153).

There are empirical evidences that the transcendental and spiritual values that Indians hold is acquired from their religions and philosophies (Kakar, 1978; Mukerjee, 1949; Nehru, 1946, 1981; Radhakrishnan, 1968; Roy and Srivastava, 1986; Sinha, 1988; Sinha, J.B.P, 1982; Tandon, 1981; Tripathi, 1988; Verma, 1987).

Hinduism, Islam and Buddhism have been the mother religions and the sources of values for millions of people around the world. They are the underlying religious traditions for the systems of Yoga, Sufism and Zen, and are the basis of Eastern psychologies and philosophical thought.

Yoga, Sufism, Buddhist teachings have been originated from a common need to understand the relationship between religious practices and everyday life. All these three viewed morals and values in an iconoclastic and practical way. Furthermore, each of them emphasized transpersonal growth and experiences of the adherent. The value systems of most cultures and societies described as profoundly religious, have emphasized the meditative and ecstatic experiences of the willing individual and has meticulously outlined the process of transpersonal growth of the self (Angyal, 1956).

Modern psychology began late in the 19th century. To escape religion's influence, behavioral scientists have adopted a number of assumptions about reality that directly conflicted with traditional religious views of the world (Richards and Bergin, 1997). The following assumptions about values, particularly naturalism, ethical relativism, ethical hedonism and positivism seem to be closely linked to the organizational development.

Early assumptions about values

Naturalism

It is the belief that the "universe is self-sufficient, without supernatural cause or control" (Honer and Hunt, 1987, p.225). Naturalists assume that human beings and the universe can be understood without restoring to spiritual explanations and that "the explanation of the world given by the sciences is the only satisfactory explanation of reality" (Honer and Hunt, 1987, p.225). This assumption led many behavioral scientists to conclude that all moral values are ephemeral and of human origin.

Ethical relativism

This is the belief that "there are no universally valid principles, since all moral principles are valid relative to cultural and individual values" (Percesepe, 1991, p.572). Thus, "whatever a culture or society holds to be right is therefore right or at least, right for them" (Solomon, 1990, p.235). Values are considered as relevant to professsionals and organizations. Ethical relativism led to conclude that, if values are relative, then organizations should lay emphasis on the values of the personnel.

Ethical hedonism

This is the belief that "we always ought to seek our own pleasure and that the highest good for us is the most pleasure together with the least pain" (Honer and Hunt, 1987, p.222). According to some behavioral scientists (Hillner, 194; Lundin, 1985; Watson 1924/1983), human beings are basically hedonistic and reward seeking. This is the reason for contradicting the assumptions of ethical relativism by endorsing hedonistic ethical values. Relying on this assumption, organizations should encourage their personnel to "throw off the shackles" of religion and be more accepting of their hedonistic tendencies.

Positivism

It holds that "knowledge is limited to observable facts and their interactions" (Honer and Hunt, 1987, p.226), and that the scientific theories can be "shown to be true on the basis of evidence" (Bechtel, 1988, p.18). Positivists assume that it is possible for scientists to be objective,

impartial observers and that their empirical observations will eventually lead to a complete understanding of reality. Logical positivists sharply distinguished facts and values. They have advocated that only scientific thinking and logical assertions were to be cognitively meaningful (Tolmin and Leary, 1992) values (understood in ethical terms) and were regarded as intellectually meaningless (O' Donahue, 1989; Putnam, 1993).

The assumptions discussed above could bring the major influence on organizations' beliefs about how personnel values should be managed. In the light of the above mentioned assumptions, it hardly need to be emphasized that the ultimate objective of the organization-quality and productivity will be influenced by the values of the personnel which in turn would improve interpersonal relationships and pave the way for smooth organizational change and rapid development.

Although values were excluded from mainstream psychology for nearly a century, this normlessness is ending. Many organizations are now incorporating value system into practice. It is believed that, spiritual values of the personnel could increase the organizational performance in the right perspective. We therefore, suggest that the organizations should pay full attention to the clarification of spiritual values among personnel.

Spiritual values are built in the universe that is eternal and beneficial. Spiritual values promote spirituality, health and harmonious relationship. According to Richards and Bergin (1997), humans should "often forego their own rewards (pleasure) for the welfare of others. Responsibility, self-sacrifice, suffering, love, and altruistic service are values above personal gratification (p.30). Personnel cannot keep their values out of work domain, such as performing organizational roles, taking part in training, productivity, nor should they always change or try. When appropriate, organizations should explicitly endorse and respectfully teach healthy values. It is the responsibility of the organizations to explore the personnel values, especially spiritual values, to promote growth and well-being.

Value-based approach to organizations

The most ethical and effective approach for organizations is to assess the value of the personnel and to adopt a valuing style. The spiritual valuing style may be the best way for organizational performance and development and consequently to improve quality of work life and satisfaction of the personnel.

Value based approach should consider the following assumptions.

1. Organizations' theoretical orientations, goals, assessment methods and training of the personnel should be well grounded in spiritual values.
2. The most ethical way for organizations is to assess values of the personnel during in-job training. Value imposition should not occur when training is imparted to the employees.
3. Personnel should be encouraged to have their personal value system while disagreeing with their superiors on certain issues.
4. Spiritual values and beliefs affect personnel's goals, lifestyle, physical, social, mental, emotional, and spiritual health. When appropriate, organizations should let personnel know that values have personal and organizational consequences and help them increase the quality and productivity.
5. Teaching, training, and modeling spiritual values should be the desirable and honorable activity for the organizational development personnel. Trainers should accept the fact that they are value agents and purposely attempt to model and teach value systems to their personnel.
6. Personnel's spiritual values can have a significant impact on their mental, physical, social, emotional and spiritual health. Organizations should help the personnel to utilize their values and resources to assist them in their efforts to grow and develop, as fully functioning persons.

Value assessment

We believe that, there are some spiritual values that should be cultivated among personnel through training to promote the organizational development. Organizations can appeal to both the human resource managers and personnel for developing insights to the spiritual values. Miller and C'de Baca's (1994) list, includes a sizable number of spiritually-oriented values that we believe is more suitable for organizational development personnel. Examples of values are as follows: achievement, attractiveness, career, caring for others, equality for all, fame, family, forgiveness, fun, God's will, growth, happiness, healthy, honesty, intimacy, justice, knowledge, loving, pleasure, popularity, power, rationality, romance, self-control, self-esteem spirituality and wealth.

Organizations can use several techniques to assess, explore and modify their personnel's values and life style. For example, organizations can simply ask to the personnel value-related questions such as the following:

1. Are you spiritually oriented?
2. Do you believe in God or a supreme being?
3. What is purpose of your life?
4. What gives your life meaning?
5. What is most important to you in life?
6. What spiritual values do you use to guide your life?
7. What are your goals and aspirations?
8. Do you feel that your behavior is consistent with the values you profess?

9. Do you feel that your values and behavior are congruent?
10. What other personal, moral or ethical values are most important?

These questions can give organizations considerable insight into their personnel's worldviews and spiritual values, and whether their values are healthy for the organizational development. Organizations can ask personnel to explore how these values are expressed or manifested in their family and work lives. Once personnel have identified their spiritual values, it then becomes more feasible for them to set long and short term goals that will help them regulate their behavior in harmony with their values and the organizational development.

Recommendations

When working with personnel who are spiritually inclined, human resource managers may promote better functioning by appealing to adopt more spiritually oriented values to guide their work and productivity. Spiritual practices such as praying, meditating, reciting Holy Books and scriptures, performing yoga, making pilgrimages to Holy Shrines, attending religious services, reading books of poetry and philosophy and seeking direction from spiritual leaders can also be valuable interventions for helping spiritually oriented personnel clarify and affirm their spiritual values.

Organizations should make greater efforts to use spiritual values to bring organizational change. Organizations can facilitate spirituality into organizational change and development by asking personnel whether they can think of ways that their spiritual beliefs and values might help them cope with their organizational and extraorganizational stressors. It would be of practical interest for organizations to examine the ways in which spiritual values influence personnel's activity directly and have wider impact on family and social life.

Organizations would need to do this in a way that guarantees freedom of thought to everyone, whether they are Muslim, Buddhist, Hindu, Taoist, Jewish, Christian, secular humanist, ethical hedonist, positivist, etc.

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Full Length Research Paper

Mobile trading experiences and the endogenous trading signal system

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An important topic of financial and investment service provider is how to offer clients more attractive services to increase their psychological switching costs. Mobile trading services bring investors freedom from site restrictions, which may have impact on their trading behaviors and judgment patterns. This study employs expert knowledge analysis to explore whether there is any difference between investors with experience using MTS (mobile trading systems) (Type I) and investors without such experience (Type II) in terms of individual trading signal systems when buying/selling stocks. The research findings suggest that the two types of investors differ significantly in trading signal judgment patterns. Type I investors attach greater importance to information integration and performance of individual stocks relative to the general market; whereas, Type II investors are in favor of analysis of insider share holdings and the general performance of the industry for the composition method of decision-making. With regards to factorial relationships that affect the overall decision-making judgment of the two types of investors, the trading judgments of Type I investors are centered on the cross-analysis of information with share hold changes as the key factor of investment signals. The trading judgments of Type II investors are mainly centered on the cross-analysis of share ownership changes, taking advantage of share hold changes as the overall judgment basis, which is a rather simple method of forming a trading signal judgment system. Financial and investment service providers may use the findings of this study to adjust the content of mobile trading programs in order to create better benefits.

Key words: Mobile trading, e-banking, financial marketing, trading signal, investors' behavior.

RESEARCH BACKGROUND AND MOTIVES

In the financial service industry, under the industrial characteristic of high regulation compliance, competitors sell financial products and services of high regulation compliance demands, which lead to relatively short intervals of competitive advantage as successful operating patterns will soon be copied.

Ehrlich (2004) suggested that a considerably important topic in financial service industries concerns providing clients with more attractive services that would develop their trading needs, which in turn, would increase their psychological switching costs. Banking and investment firms attempt to develop and adopt a variety of strategies of innovative service modes to strengthen their competitive edges. Kim et al. (2009) and Gu et al. (2009) argued that mobile banking services can be regarded as a newly emerging mobile commercial application, owing to the characteristics of no site restrictions, high convenience and high interactivity. In recent years, mobile banking services have attracted the attention of banking, investment service providers and consumers.

Mobile banking and investment services are approaches that create client identity by service advantages. At present, the trading volume conducted through electronic systems by investors in stock markets accounts for about 70% in Korea, 35% in the US and 25% in Japan of the total stock market turnover and continues to show a fast growing trend. In response to market developmental trends, investment service providers are bound to invest more energy and resources in information technology-assisted financial product transaction technologies and management. Shih (2009) analyzed the assessment elements of the four trading patterns of investors including "conventional telephone order submissions", "voicemail order submissions", "access point (AP) soft-

ware order submissions," and "mobile trading systems (MTS) trading".

The research results suggested that investors cared more about site benefits and information system risks, while relatively neglecting performance risks when using a MTS order submission platform in comparison with the other three trading patterns. Investors using the innovative mobile trading system (MTS) seem to differ considerably, in terms of trading behaviors and cognitive patterns, from the conventional investors who attach great importance to information accuracy and timeliness. According to past researches, investors used fundamental parameters {(Lewellen, 2004; Edirisinghe, and Zhang (2008); Yu and Kim, 2009; Simlai, Pradosh (2009)}, corporate governance parameters (Wang et al., 2008; Jackson et al., 2008; Bokpin and Isshaq, 2009), technical parameters (Lo et al., 2000; Dawson and Steeley, 2003; Schulmeister, 2009; Marshall et al., 2009) and informational parameters (Asquith et al.,2005; Holland, John, 2006; Chiao et al., 2009) to construct buying/selling stock signal systems.

Tenner (2004) suggested technology may remake humanity and discussed the impact of the development and use of innovative science and technology products on human behavior and customs. The innovation and development of mobile science and technology brings investors freedom from site restrictions, and provides them with convenient trading information channels. However, whether the use of such scientific and technological services will have any impact on investors' trading behaviors and judgment patterns is the focus of this study, which analyzes whether there are any differences between investors with experience using MTS order submission platforms and investors without such experience, in terms of indicators of concern in the construction of buying/selling stock trading signal systems. In addition, this study discusses the characteristics of the trading signal judgment systems of the two types of investors. The research findings can serve as reference to financial investment service providers in the analysis of client behavior, the establishment of suitable operations, and developing marketing strategies.

TRADING SIGNAL JUDGMENT SYSTEM

Investors collect factors that affect stock prices as indicators for the construct of individual trading signal judgment systems. The investors' strategies of buying and selling stock are reflected in stock prices, and thus, affect the value of the stocks. By summarizing the results of past investment-related studies, it is found that individual investors use fundamental parameters, technical parameters, news, and industrial informational parameters as the main basis for the construction of their trading signal judgment system. This study summarizes past fundamental information related to stock issuing companies and the general economy, and technical analysis and information aspect-related research findings as the major perspectives in the construction of trading signal judgment systems, and discusses the above mentioned three perspectives, as follows:

Fundamental parameters

Fundamental concepts of stock selection strategies are often discussed from four aspects, including general economy and industrial overview, financial indicators, corporate governance, and linkage to international stock markets. First, with respect to the overall economic and industrial overview, Kwon and Shin (1999) proposed a co-integrated relationship between the Korean stock market and the overall economic variables. Compared with Japan and the US, the South Korean stock market is more sensitive towards exchange rate variables, as South Korea is a foreign-trade oriented economy.

Caporale et al. (2002) indicated that, between 1987 and 2000, stock prices in Japan and South Korea were negatively leading foreign exchange rates, while stock prices in Indonesia and Thailand were positively leading foreign exchange rates. In addition, inflation caused by loose money supply is highly related to stock returns (Fifield et al., 2002; Kim, 2005). Conover et al. (2005) discussed the relativity of the monetary polices of Fed and global stock markets between 1963 and 2001. The research findings suggested that higher excess returns existed when expansionary monetary policies were implemented. However, the market returns were relatively lower when tight monetary policies were in place. Companies with smaller equities are relatively more sensitive to changes of monetary policies.

Regarding discussions from the perspective of financial indicators, Foster (1986) used 12 indicators of 4 perspectives, including liquidity ratio, leverage/capital structure ratio, profitability ratio, and turnover ratio as a financial analysis structure. Bernstein (1988) conducted financial analysis using 25 indicators of 6 perspectives, including the short-term liquidity ratio, cash flow ratio, capital structure and long-term solvency ratio, return on investment, asset use efficiency ratio, and operating performance ratio. Lewellen (2004) found that stock dividends can be used to predict the total revenue of stocks. Edirisinghe and Zhang (2008) proposed the "RFS" index after integrating financial indicators, and confirmed that it could improve the investment portfolio performance of the mean numbers and variance numbers. In cases of long-term and short-term investment portfolios, growth type stocks are profitable, and company size and book-to-market ratio are relatively more important indicators. In addition, some scholars found that volatility will significantly affect the performance of the book-to-market ratio (Simlai, 2009; Yu and Kim, 2009). This study summarizes studies relating to finan-

Table 1. Fundamental aspect factors and related studies.

Researchers	Factors	Conclusions
Mukherji et al. (1997)	Book/price, sales/price ratio, debt/asset	Positively correlated
	Company size	Negatively correlated
	EPS/price, β	Insignificantly correlated
Dhatt et al.(1997)	Dividends	Company with higher dividends have higher stock prices
Dechow et al.(2001)	Cash flow/price, EPS/price, book/price	For reference of short sellers
Barber et al.(2003)	Degree of appreciation of company, three-year ROA, five-year growth on sales, expenditure on advertising/sales, market capitalization, book/price	Companies highly appreciated have relatively significant importance
Lewellen(2004)	EPS/price, book/price, dividend yield	Highest dividends yield predictability
Edirisinghe and Zhang (2008)	Science and technology stocks' financial indicators	The stock picking strategy can effectively enhance the returns of investment portfolios.
Yu and Kim (2009)	Growth type stocks' financial indicators	Able to create excess returns of long-term /short-term investment portfolios.
Simlai (2009)	Stock returns, size, book-to-market ratio	Able to create excess returns of investment portfolios

cial indicators, as shown in Table 1.

Regarding corporate governance, in order to avoid losses, companies will have earnings management of higher frequency and degree (Wang et al., 2008). Wei and Varela (2003) identified a negative relationship between the official stock ownership ratio and company value of private companies in China during 1994 to 1996. Klapper and Love (2004) analyzed 495 companies from 25 emerging markets, and their findings suggested that companies from countries with poorer legal systems would have higher corporate governance rating if they were listed in US stock exchanges at the same time. In addition, companies with better corporate governance rating would have better operating performance and market value. The research results are in line with those of Drobetz et al. (2004). Jackson et al. (2008) used companies listed on the Toronto Stock Exchange as samples to conduct empirical studies relating to insider information and found that high-level officials' payments were related to insider trading, which was relatively significant in cases of large companies. In addition, Bokpin and Isshaq (2009) also found that corporate information disclosure mutually affected foreign equity ownership in cases of companies listed on the Ghana Stock Exchange. Corporate governance related studies are summarized, as shown in Table 2.

Technical parameters (technical analysis)

According to the viewpoint of Fama (1970), efficient market hypothesis, market information would be fully reflected in the stock market in an efficient market. Hence, excessive returns can only be obtained in markets without efficiency by the use of stock picking strategies through technical analysis methods, which can be divided according to characteristics into chart patterns displaying price variations and technical indices of numerical judgments.

Ratner and Leal (1999) tested 10 types of variable-length moving average rules (VMA) in the emerging markets of Latin America and Asia. The study found that, during 1982 to 1995, the average returns of trading according to signals were higher than the returns of the selling signals. Lo et al. (2000) employed 10 technical patterns, including head-and-shoulders, inverse head-

Table 2. Corporate governance-related studies.

Researchers	Factors	Conclusions
Wei and Varel (2003)	Governmental equity ratio, privatized enterprises.	Governmental equity ratio has negative impact on corporate values
Klapper and Love (2004)	Corporate governance, business performance, market value	Companies listed on the US market have higher corporate governance levels. Companies with better corporate governance levels can display better business performance and market values
Drobetz et al. (2004)	Corporate governance commitment, equity, transparency, issues of board of directors, auditing.	Buy companies of higher corporate governance rating and sell companies of lower corporate governance rating to obtain excess returns.
Wang et al. (2008)	Earning management frequency and degree, zero earnings, and prior earnings	Compared with report earning increase, higher earning management frequency and degree can be created when earnings are lowered.
Jackson et al. (2008)	Insider trading, information strategy	The payment of CEO and insider trading has no correlation in cases of large, medium, and small sized companies. The risk of insider trading is from corporate governance.
Bokpin and Isshaq (2009)	Foreign equity, corporate disclosure	Free cash flow and financial leverage are significantly related to foreign equity. Company disclosure and foreign equity are correlated.

and-shoulders, broadening tops, broadening bottoms, triangle tops, triangle bottoms, rectangle tops, rectangle bottoms, double tops and double bottoms to analyze stocks listed on the New York Stock Exchange and NASDAQ during 1992 to 1996, and found that, using five technical patterns, including head-and-shoulders, broadening bottoms, rectangle tops, rectangle bottoms, and double tops in trading can obtain considerable returns. However, these 10 technical patterns can obtain significant returns in the NASDAQ market. Dawson and Steeley (2003) analyzed the British stock market, during 1986 to 2001, by extending the study model of Lo et al.(2000), and obtained similar findings to the research results of Lo et al.(2000), proving that technical patterns were of reference value in the British stock market. Gunasekarage and Power (2001) also found that the moving average line trading method could predict excess returns in four emerging markets, including Bangladesh, India, Pakistan, and Sri Lanka.

Individual investors often use margin trading as a method to expand credit; therefore, margin-trading changes would affect stock picks and operating strategies of investors. Hardouvelis and Peristiani (1992) found that, investors reacted rapidly to Type I stocks when the Japanese stock market credit conditions changed; while their reaction to Type II stocks were relatively weaker and slower. When credit is tightened, trading turnovers, financing, lending, and lending transaction accounts would drop in percentage; and variations of daily stock prices and daily return conditions would increase. In addition, there is a two-way cause and effect relationship between the balance of margin purchases and short sales and changes of stock prices. Bekaert and Harvey (1997), Karolyi (1999), and Wang and Shen (1999) found that, the entry and exit of foreign investments in the stock market would significantly affect the psychological state of investors. Schulmeister (2009) pointed out that the intraday trading data implied information of follow-up changes to stock prices, and proved that such a method may create abnormal returns. Marshall et al. (2009) found by using the method of Schulmeister (2009) that there was little evidence regarding the profitability of stock markets during 1990 to 2004.

However, in the long run, using the moving average technical trading method would create abnormal returns. Studies relating to the technical aspects are summarized, as shown in Table 3.

Informational aspect

Nofsinger (2001) investigated the impact on the trading behaviors of institutional investors and individual investors of 465 press releases regarding 120 US companies between January 1, 1990 and January 1, 1991. The findings suggested that the nature of news would affect the trading motives of investors. News releases concerning companies would lead to abnormal trading volumes in the stock market. Reports on stock dividends, assets, earnings, and other news would also induce relatively higher trading volumes. With regard to news visibility, compared with individual investors, institutional investors had relatively no response. In addition, the release of good news would result in a change of market returns, amounting to 5.35% on average for three days, as well as positive abnormal trading activities. However, the release of bad news would not necessarily result in abnormal trading of individual investors. In the aspect of investment behaviors, the institutional investors would rather conduct abnormal trading according to news

Table 3. Technical factors and related studies.

Researchers	Factors	Conclusions
Ratner and Leal (1999)	Test 10 VMAs in 10 stock markets in emerging countries in Latin America and Asia.	During 1982 to 1995, the average return of buying signals of VMA trading rules is greater than selling signals.
Lo et al.(2000)	10 technical patterns	5 of the 10 technical patterns are applied in the New York Stock Exchange: head-and-shoulders, broadening bottoms, rectangle tops, rectangle bottoms, and double tops patterns, to win excess returns. In the NASDAQ market, the 10 technical patterns can create excess returns.
Gunasekarage and Power (2001)	Means reversion methods, contrary-opinion rules, follow the smart money rules, other market environment indicators, stock price, and volume techniques	VMA trading methods have predictability in countries such as Bangladesh, India, Pakistan, and Sri Lanka.
Hardouvelis and Peristiani (1992)	Financing amount, daily price and returns, efficiency of margin requirements	It is found that investors reacted rapidly to Type I stocks, while relatively slow and weak to Type II stocks, when the credit conditions of the Japanese stock market changed. The turnover, margin trading, and margin trading accounts would drop, and the variance of daily prices and returns would increase. There is a mutual cause-effect relationship between Margin Purchase and Short Sale balance and price changes.
Karolyi (1999)	Company, individual, foreign, securities company, life insurance company, finance company, and trust.	Entry/exit of foreign investment will create significant impact on the operation of investors.
Schulmeister, (2009)	Apply trend-following models in S&P500 market and contrary models in futures markets.	On such a basis, technical trading with intraday data can improve investment returns.
Marshall et al. (2009)	1850 companies traded in New York Stock Exchange and NASDAQ during 1990 to 2004.	VMA can create excess returns

stories, regardless of good or bad. However, upon the release of information regarding the general economy, both institutional investors and individual investors would conduct abnormal trading.

Chan (2003) tested the stock price changes of 4200 cases of companies in the US market, both with and without news releases, during 1980 to 2000. The findings suggested that, investors reacted moderately to well-known information but would have significant reaction to news not released as expected. In addition, the normal monthly information release and returns had a very weak positive relationship, while news headlines were strongly correlated to turnover ratio. Boyd et al. (2005), using the monthly unemployment information during February 1957 to December 2000, combined with the expansion and contraction of the economy as samples of good and bad news, studied the reaction of stock markets to unemployment rates. The findings suggested that, the stock returns would be better in an expanding economic environment. In an expanding economy, when bad news appeared in the labor market, the stock prices would rise. On the contrary, in a contracting economic environment, bad news of the labor market would lead to a drop of stock prices.

Asquith et al. (2005) tested the relationship between market reaction and the release of stock analysis reports against the US analysts' reports of "institutional investors" as the subjects.

The study findings suggested that the market reaction toward the price targets of analysts were greater than the reaction to earning predications. It thus can be seen that investors may refer to the recommendations of stock analysts. In addition, investors were found to rely more on the reports of stock analysts when the market was in a downturn trend. Schadler and Eakins (2001) tested the market reaction and performance of holding time of

stocks recommended by Merrill Lynch during February 13, 1990 to December 15, 1998. The findings suggested that, abnormal returns would appear one day prior to the announcement of a selected focus stock of Merrill Lynch. If a company was removed from the focus stock list in advance, then unexpected negative abnormal returns would appear two days before the release of the information. Jaffe and Mahoney (1999) analyzed the performance of investment recommendations by investment newsletters during 1980 to 1996.

The research conclusions pointed out that, investment newsletters tended to recommend stocks of low market value of equity ratio, and the performance of the recommended stocks were not lasting, and usually underperformed the market. Mikhail et al. (2004) discussed the stock picking capabilities of stock analysts. The conclusions pointed out that considerable excess returns would be possible if investors followed the instructions of analysts, when there was a positive relationship with the previous performance of the analysts. In addition, the previous recommendation performance and experience of the analysts can distinguish the recommendation performance regarding the future market. Analysts with more than 5 years of market winnings were better than analysts with good short-term performances.

Holland (2006) pointed out in interviews with the UK's leading fund mangers that, they were faced with unknown and uncertain problems of picking stocks and asset allocations, which were partly due to the limitations arising from financial theories and corporate disclosures, as well as other public information domains. In addition, there are discussions by scholars regarding whether institutional investors have any informational advantages. Chiao et al. (2009) applied intraday data to examine the linkage between investors' order submission behaviors and the opening prices of the top net-trade stocks of professional institutional investors. They found that mutual funds exhibit a more persistent and aggressive trading pattern than foreign investors. The order submissions behaviors of aggressive individuals, closely following mutual funds' trades, mainly drive the observed informational differences. Informational parameters and relevant researches are summarized, as shown in Table 4.

RESEARCH DESIGN

Proposed by the Battelle Association of Geneva in 1971, the method of Decision Making Trial Evaluation Laboratory (DEMATEL) can analyze complex relations of a variety of management problems for the solution and clarification of correlated problems. The purpose of this study is to explore the trading behaviors and judgment patterns of investors using MTS. In addition, this study explores whether indicators of concern are different when investors are constructing trading signal systems for buying/selling stocks by comparing investors using MTS and conventional investors. All indicators are deduced from the definitions of various perspectives based on literature reviews. Indicators between perspectives are on the premise of the assumption of independence.

To establish research perspectives and indicators, this study first constructs an expert questionnaire. The DEMATEL questionnaire indicators are established based on the significance ratings of three experts (with more than 5 years of MTS experience and more than 10 years of portfolio investment experience. One is a manager of securities trader and two are professional investors). The scores of the three questionnaires are calculated by average score, with scoring standards of 0 (no impact), 1 point (low impact), 2 points (moderate impact), 3 points (high impact) and 4 points (very high impact). Each respondent conducts a significance assessment on 29 perspectives, which indicators include, 1) general economic conditions, 2) industry's overall performance, 3) company's future revenue expectations, 4) company's future profitability expectations, 5) company's future growth expectations, 6) company's past financial indicators performance, 7) company's past profitability, 8) company's past growth, 9) broader market performance, 10) international stock market performance, 11) corporate governance performance, 12) relative market position, 13) price-quantity relative performance, 14) technical indicator performance, 15) technical linear pattern, 16) domestic institutional investors holdings, 17) foreign institutional investors holdings, 18) credit trading standards, 19) directors, supervisors, and corporate insider holdings, 20) treasury shares, 21) proportion of to date write-offs against total volume, 22) personnel adjustments, 23) transfer submissions, 24) news and information, 25) media recommendations, 26) market expert recommendations, 27) investment consultant reports, 28) security dealer analysis reports, and 29) insider news. The operational definitions are defined, as shown in Table 5.

This study is based on the perspectives and indicators above, and applies the DEMETAL method to conduct the expert questionnaire to interview 2 groups of professional securities investors. The 10 professional investors of Group 1 all have more than 3 years using MTS and more than 10 years portfolio investment experience. In the expert sample structure, 4 of mangers of the securities industry, with an average industrial experience of 14 years and 6 are professional portfolio investors. The investment experts of Group 1 are aged on average 44 years old, with an average 12 years of investment experience. The 10 professional investors of Group II have no experience using MTS, but have more than 10 years portfolio investment experience. Two are managers in the securities industry, with an average 16 years of experience and the remaining 8 are professional portfolio investors. The investment experts are aged on average 47 years old with an average 16 years of investment experience.

The DEMATEL method is commonly used to analyze phenomena of high complexities and irregularities in social sciences and studies (Tamura, Nagata, and Akazawa, 2002; Hung, Chou and Tzeng, 2007). It is a significant research tool able to illustrate complex relational structures (Seyed-Hosseini, Safaei and Asgharpour, 2006; Wu and Lee, 2006; Wu, 2007). The DEMATEL method uses expertise to design the framework of a system (Liou, Yen and Tzeng, 2008), and constructs inter-relationships for a variety of variables, according to the specific characteristics of each item (Hung, Chou and Tzeng, 2007), to determine solutions to many problems and strategic selections. The responses and developmental trends in various perspectives of an entire system can be integrated by the DEMATEL method (Hung, Chou and Tzeng, 2007). In this study, the DEMATEL method is applied to determine the characteristics of the trading signal judgment systems of the two types of investors. The DEMATEL method is more appropriate to analyze an expertise based questioner than a large sample survey. The reason is simple, if we focused on an exploratory question. Experienced experts who have acquired sufficient knowledge regarding the discussed issues would be a better group rather than the non-experienced large sample. As an initial effort, the sample size may make sense in an effort to "fine- tune" the model.

Referring to the studies of (Hung, Chou and Tzeng, 2007; Seyed-Hosseini, Safaei and Asgharpour, 2006; Wu and Lee, 2006; Liou, Yen and Tzeng, 2008; Lin and Wu, 2006; Gabus and Fontela,

Table 4. Informational aspect factor-related studies.

Researchers	Factors	Conclusions
Nofsinger (2001)	Stock market trading volumes, security derivatives market trading volumes, corporate-related news, dividends, assets, earning reports, overall economic information.	The nature of the news affects the trading motives of investors. The publication of earning reports can induce higher trading volumes. Institutional investors are relatively insensitive to news coverage.
Chan (2003)	Monthly corporate information, headline(headline news), stock price returns	It is found that investors have relatively less reaction to well-known information, and have overreactions to unexpected information publications. In addition, monthly positive information is slightly positively correlated to returns. However, headline (headline) is strongly correlated to turnover ratio.
Mikhail et al. (2004)	Trading strategy, buy-and-hold strategy, company size, analyst report, stock picking capabilities	The stock picking method recommended by analysts can create excess returns and make profits continuous.
Boyd et al. (2005)	Monthly unemployment, stock returns, and economic outlook signals	In an expanding economy, the stock returns are better. The stock prices will go up when bad news of the labor market appears in an expanding economy. In a contracting economy, the stock prices will go down if bad news in labor market appears.
Asquith et al. (2005)	The content of analyst's reports published in "Institutional investor ", market reaction, publication timing, the reaction to the target prices of the analysts, earning predication.	Reaction of the market to a target price greater than that of the earning predication. In a downturn trend, investors will more trust the reports of analysts.
Holland (2006)	Information, intangible assets, tangible assets, intelligence costs, intelligence advantages	Insider news can significantly create better returns
Chiao et al. (2009)	Institutional investor order submission behavior	Mutual funds exhibit a more persistent and aggressive trading pattern than foreign investors. The order submission behavior of aggressive individuals, follows closely mutual funds' trades, and mainly drives the observed informational differences.

1972), the definition and steps of the DEMATEL method are as follows:

Step 1: Generate a direct-relation matrix. Invite experts and scholars to compare the factors in pairs, in order to understand the relationships between the factor sets, which they designate as having "no impact relationship", "low impact relationship", "moderate impact relationship", "high impact relationship", or "very high impact relationship", which are represented by 0, 1, 2, 3, and 4, respectively. Establish an *n×n matrix* to represent the relationship strength points. If a_{ij} denotes the impact relationship of (criterion *i*) and (criterion *j*), then $A=[a_{ij}]_{n\times n}$ will illustrate the precise relationship between the paired factors.

$$A = \begin{bmatrix} 0 & a_{12} & \cdots & \cdots & a_{1n} \\ a_{21} & 0 & \cdots & \cdots & a_{2n} \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ a_{n1} & a_{n2} & \cdots & \cdots & 0 \end{bmatrix}$$

Step 2: Normalize the direct-relation matrix. Normalize Matrix *A* to produce the normal matrix of *X*, $X=[x_{ij}]_{n\times n}$, and $0 \le x_{ij} \le 1$. By Eq. (1) and Eq. (2) treat the diagonal lines of the matrix as 0.

$$s = \frac{1}{\max\limits_{1\le i\le n}\sum\limits_{i=1}^{n} a_{ij}, \max\limits_{1\le j\le n}\sum\limits_{j=1}^{n} a_{ij}} \quad (1)$$

$$X = s\times A \quad (2)$$

In this study, *X* is termed as a normal matrix, as $\lim\limits_{k\to\infty} X^k = [0]$

Step 3: Attain a total-relation matrix. By Eq. (3), add all the relational matrices to produce the total-relation matrix *T*, then the lower *I* denote the identity matrix.

$$T = X+X^2+\ldots+X^k = X(I-X)^{-1} \quad (3)$$

Step 4: Produce a causal diagram. Add the columns and rows of the relational matrix *T*, respectively.

$$T=[t_{ij}],\ i,j\in\{1,2\ldots n\}, \quad (4)$$

$$r = [r_i]_{n\times 1} = \left[\sum_{j=1}^{n} t_{ij}\right]_{n\times 1} \quad (5)$$

$$c = [c_j]_{1\times n} = \left[\sum_{i=1}^{n} t_{ij}\right]_{1\times n}. \quad (6)$$

Where *r* and *c* vectors denote the addition of rows and columns, respectively.

Step 5: Obtain the inner dependence matrix. Matrix *r* denotes the addition of the column values, from the total-relation matrix *T* and its impact factor is derived from the impact relation between factors *i* and *j*. Similarly, matrix *c* denotes the addition of the row values from the total-relation matrix *T* and its impact factor is derived from the

Table 5. Assessment Indicators and Operating Definitions.

Number	Assessment Indicators	Assessment Indicators' Definitions
1	general economic conditions	Overall economic situation, such as foreign exchange, interest rate, and employment rate
2	industry's overall performance	Overall industrial outlook and future development expectations
3	company's future revenue expectations	Future business turnover changes
4	company's future profitability expectations	Company's future profitability expectations
5	company's future growth expectations	Company's future growth expectations
6	company's past financial indicators	Company's past financial indicators
7	company's past profitability	Company's past profitability record
8	company's past growth	Company's past growth record
9	broader market performance	Broader market performance
10	international stock market performances	Concurrent international stock market performance
11	corporate governance	Corporate governance recognition, such as the qualifications and legitimacy of the board of directors, independence, and operations .
12	relative market position	Relative position of individual stocks and the market
13	price-quantity relative performances	Price-turnover performance
14	technical indicator performances	Numerical technical index such as RSI, KD, and MACD
15	technical linear patterns	Technical patterns, such as head-and-shoulders, rectangle tops, wave theory, and double tops
16	domestic institutional investors holdings	Increase/decrease of holdings of domestic professional investment institutions, such as securities dealers
17	foreign institutional investors holdings	Increase/decrease of holdings of foreign professional investment institutions
18	credit trading standards	Level of credit trading, such as margin trading by investors
19	directors, supervisors, and corporate insiders holdings	Directors, supervisors, and corporate insiders holdings changes and relative levels
20	treasury shares	Buying treasury shares
21	proportion of date write-off against total volume	Percentage of Day trade
22	personnel adjustments	Adjustment of directors, supervisors, or high-level officials
23	transfer submissions	Transfer submission of directors, supervisors, and insiders
24	news and information	News release concerning individual companies, such as dividend, earning reports.
25	media recommendations	Recommendations of specific stocks by TV, newspapers, or magazines
26	market expert recommendations	Recommendation of well-known investment experts
27	investment consultant reports	Non-security dealer's investment consultant reports
28	security dealer analysis reports	Investment analysis reports by securities dealer
29	insider news	Self-learnt insider news

impact relations between factors *i* and *j*. In addition, when *i*=*j*, then (r_i+c_j) denotes the impact strength. If (r_i - c_j) is positive, it means that factor *i* tends to impact other factors. Contrarily, if (r_i - c_j) is negative, it means that factor i tends to be affected by other factors. In fact, the value of (r_i - c_j) has more functions and applications than the value of (r_i+c_j), as the value of (r_i - c_j) is a good judgment value in the priority sequencing of multiple choice.

RESEARCH RESULTS

Type I investors

By integrating information of expert and scholar questionnaires, the total impact relationship matrix of Type I investors trading signal judgment system, T1, is shown in Table 6. This study uses the quarter potentiometer of total impact relationship matrix T1 of the trading signal judgment system (0.07) as the threshold value and delete the items with values below the threshold values, including 8: company's past growth, and 22: personnel adjustments. The related calculation of D, R, D+R, and D-R of trading signal judgment factors of Type I investors is as shown in Table 7.

Type I investor D+R centrality

Greater D+R-values represent greater significance of the

item in the overall assessment factors. There are 16 items having D+R-values greater than the total average of (3.33). The assessment priority sequence of trading signal judgment factors in the case of Type I investors is 5: company's future growth expectations, 4: company's future profitability expectations, 18: credit trading standards, 16: domestic institutional investors holdings, 12: relative market position, 13: price-quantity relative performance, 3: company's future revenue expectations, 15: technical linear pattern, 17: foreign institutional investors holdings, 24: news and information, 25: media recommendation, 14: technical indicator performance, 21: proportion of date write-off against total volume, 9: broader market performance, 26: market expert recommendation, and 19: directors, supervisors and corporate insiders holdings. In addition, the last three items in the D+R (central value) sequence are 10: international stock market performance, 6: company's past financial indicators performance, and 7: company's past profitability. The findings suggest that the relative impact of these three assessment factors on other factors is smaller. Thus, these factors can be regarded as factors of less concern in the stock pick decision-making systems of investors.

Type I investors D-R cause-effect degree

Subtract the row sum from the column sum to determine the D-R value. Greater D-R values represent that the item will directly affect other factors. Otherwise, this item is affected by other factors. The item D-R value sequence indicates the D-R value of 2: industry's overall performance" as 2.39, which is the greatest, positive and most significant value of the overall measurement indicators. This indicates that the item affects others more than being affected. Other indicators of relatively great cause-effect degrees, according to D-R values, are 1: general economic conditions, 9: broader market performance, 7: company's past profitability, and 10: international stock market performance. Indicator with the smallest D-R value is 29: insider news, with a D-R value of 2.59, which represents that the item is, affected the most by other factors.

Type I investors trading signal judgment system assessment factors relationships

According to the total impact relationship matrix of Type I investors trading signal judgment systems, as shown in Table 6 and the relational positions of various items, the relationships of assessment factors of Type I investors trading signal judgment systems are shown in Figure 1. Where, Tij is the impact of Ci on Cj. If Tij<0.15, then no line is drawn, if 0.15 Tij<0.1, then an arrow line is used to represent the relationship, if Tij 0.16, then a bold arrow line is used to represent the relationship. In the structure of the assessment factors affecting the stock picks of investors, items 4, 5 and 18, as shown in the bold frame in Figure 1, due to their Type I investors D+R (central) being the top three, as shown in Table 2, indicate that 4: company's future profitability expectations, 5: company's future growth expectations, and 18: credit trading standards, are the most important key decision-making assessment factors.

Type 2 investors

By analyzing expert and scholar questionnaires of Type II investors, the total impact relationship matrix of Type II investors trading signal judgment system T2, is shown in Table 8. In this study, the relationship matrix T2 uses the quarter potentiometer (0.07) as the threshold value. The related calculations of D, R, D+R and D-R of trading signal judgment factors of Type II investors, are as shown in Table 9.

Type II investor D+R centrality

Greater D+R-values represent greater significance of the item in the overall assessment factors. There are 14 items having D+R-values greater than the total average of (1.37). The assessment priority sequence of trading signal judgment factors, in cases of Type II investors, are 16: domestic institutional investors holdings, 19: directors, supervisors, and corporate insiders holdings, 17: foreign institutional investors holdings, 5: company's future growth expectations, 4: company's future profitability expectations, 13: price-quantity relative performance, 18: credit trading level, 12: relative market position, 15: technical linear pattern, 14: technical indicator performance, 21: proportion of date write-off against total volume, 3: company's future revenue expectations, 23: transfer submission, and 2: industry's overall performance. In addition, the last three items in the D+R (central value) sequence are 22: personnel adjustments, 29: insider news, and 28: security dealer analysis reports. The findings suggest that the relative impacts of these three assessment factors on other factors is smaller, and thus, these factors can be regarded as factors of less concern in the stock pick decision-making systems of the investors.

Type II investors D-R cause-effect degree

Subtract the row sum from the column sum to determine the D-R value. Greater D-R values represent that the item will directly affect other factors. Otherwise, this item is affected by other factors.

The item D-R value sequence indicates the D-R value of 2: industry's overall performance, as 1.17, which is the greatest, positive and the most significant in the overall measurement indicators. This indicates that the item affects others more than being affected. Other indicators of relatively great cause-effect degree D-R values are 1:

Table 6. The total impact relational matrix T1 of Type I investors stock picking style.

Number	1	2	3	4	5	6	7	8*	9	10	11	12	13	14	15	16	17	18	19	20	21	22*	23	24	25	26	27	28	29
1	0.00	0.04	**0.09**	**0.12**	**0.12**	0.01	0.00		**0.07**	0.00	0.04	**0.09**	**0.09**	**0.08**	**0.09**	**0.11**	**0.08**	**0.11**	**0.07**	**0.07**	**0.09**		0.05	**0.07**	**0.07**	**0.08**	**0.08**	**0.07**	**0.08**
2	0.02	0.00	**0.12**	**0.14**	**0.14**	0.01	0.01		**0.08**	0.02	0.06	**0.11**	**0.12**	**0.11**	**0.12**	**0.15**	**0.11**	**0.15**	**0.09**	**0.09**	**0.11**		**0.07**	**0.11**	**0.11**	**0.12**	**0.12**	**0.11**	**0.12**
3	0.00	0.00	0.06	**0.13**	**0.13**	0.01	0.01		0.05	0.01	0.04	**0.10**	**0.10**	**0.10**	**0.11**	**0.14**	**0.10**	**0.14**	**0.07**	**0.08**	**0.11**		**0.06**	**0.10**	**0.10**	**0.11**	**0.11**	**0.10**	**0.12**
4	0.00	0.00	**0.08**	**0.09**	**0.14**	0.01	0.01		0.05	0.00	0.05	**0.12**	**0.13**	**0.12**	**0.13**	**0.15**	**0.10**	**0.15**	**0.09**	**0.09**	**0.12**		0.06	**0.12**	**0.12**	**0.13**	**0.13**	**0.12**	**0.14**
5	0.00	0.00	**0.12**	0.14	**0.10**	0.01	0.01		0.05	0.00	**0.07**	**0.12**	**0.13**	**0.13**	**0.14**	**0.16**	**0.11**	**0.16**	**0.11**	0.06	**0.14**		**0.09**	**0.13**	**0.13**	**0.14**	**0.14**	**0.12**	**0.15**
6	0.00	0.00	0.05	0.05	0.06	0.00	0.02		0.02	0.00	0.04	0.06	0.06	0.05	0.05	**0.07**	0.04	0.06	0.06	0.06	0.04		0.02	0.06	**0.07**	0.05	**0.08**	0.05	**0.07**
7	0.00	0.00	0.04	0.07	0.06	0.06	0.00		0.02	0.00	0.05	0.05	0.05	0.04	0.05	**0.09**	0.03	**0.08**	**0.07**	0.05	0.04		0.02	**0.08**	**0.08**	**0.07**	**0.07**	0.06	**0.09**
8*																													
9	0.04	0.03	**0.09**	**0.10**	**0.11**	0.01	0.01		0.04	0.03	0.04	**0.11**	**0.11**	**0.11**	**0.12**	**0.13**	**0.10**	**0.13**	**0.10**	**0.10**	**0.13**		0.06	**0.12**	**0.12**	**0.12**	**0.11**	**0.10**	**0.12**
10	0.04	0.03	0.06	0.06	0.06	0.00	0.00		0.06	0.00	0.02	0.05	**0.07**	0.06	**0.07**	0.06	**0.08**	0.06	0.04	0.03	0.04		0.02	0.05	0.06	0.06	0.05	0.05	0.06
11	0.00	0.00	0.04	0.04	**0.09**	0.03	0.00		0.02	0.00	0.02	0.03	0.04	0.04	0.04	**0.07**	**0.08**	0.06	0.05	0.06	0.04		0.05	**0.07**	**0.07**	0.05	0.05	0.06	**0.09**
12	0.00	0.00	**0.12**	**0.14**	**0.14**	0.01	0.01		0.06	0.00	0.03	**0.07**	**0.13**	**0.13**	**0.14**	**0.15**	**0.10**	**0.16**	**0.08**	**0.10**	**0.11**		**0.09**	**0.13**	**0.13**	**0.14**	**0.14**	**0.12**	**0.15**
13	0.00	0.00	**0.10**	**0.12**	**0.13**	0.01	0.01		0.06	0.00	0.03	**0.11**	**0.07**	**0.12**	**0.13**	**0.14**	0.06	**0.14**	**0.08**	**0.10**	**0.13**		0.04	**0.12**	**0.12**	**0.13**	**0.13**	**0.09**	**0.14**
14	0.00	0.00	0.06	**0.08**	**0.09**	0.00	0.00		0.03	0.00	0.02	0.04	**0.08**	0.05	**0.10**	**0.11**	0.04	**0.10**	0.05	0.04	**0.10**		0.02	0.04	0.05	**0.10**	**0.10**	**0.07**	**0.09**
15	0.00	0.00	**0.09**	**0.10**	**0.10**	0.01	0.00		0.04	0.00	0.02	**0.09**	**0.11**	**0.11**	0.06	**0.12**	0.05	**0.13**	0.05	0.05	**0.11**		0.04	0.06	**0.08**	**0.11**	**0.11**	**0.09**	**0.11**
16	0.00	0.00	**0.10**	**0.10**	**0.11**	0.01	0.01		0.05	0.00	0.03	**0.10**	**0.10**	**0.09**	**0.10**	**0.08**	0.06	**0.13**	0.06	**0.07**	**0.09**		0.04	**0.08**	**0.10**	**0.10**	**0.10**	**0.08**	**0.12**
17	0.00	0.00	**0.11**	**0.13**	**0.13**	0.01	0.00		**0.07**	0.00	**0.07**	**0.11**	**0.12**	**0.11**	**0.13**	**0.14**	0.05	**0.12**	0.06	0.06	**0.09**		0.04	**0.12**	**0.12**	**0.13**	**0.13**	**0.11**	**0.11**
18	0.00	0.00	**0.07**	**0.09**	**0.10**	0.04	0.04		0.05	0.00	0.05	**0.08**	**0.10**	**0.10**	**0.10**	**0.12**	**0.07**	**0.08**	0.06	0.05	**0.12**		0.03	**0.11**	**0.11**	**0.12**	**0.09**	**0.08**	**0.12**
19	0.00	0.00	**0.07**	**0.11**	**0.11**	0.01	0.00		0.05	0.00	**0.07**	**0.08**	0.06	0.06	0.06	**0.09**	**0.09**	**0.09**	0.04	**0.09**	0.06		**0.08**	0.05	0.05	0.06	0.05	**0.07**	**0.09**
20	0.00	0.00	**0.07**	**0.08**	0.06	0.00	0.00		0.03	0.00	0.04	0.05	0.06	0.05	0.06	**0.09**	0.03	**0.08**	0.06	0.03	0.06		0.06	**0.08**	0.06	**0.07**	**0.07**	0.05	**0.10**
21	0.00	0.00	0.05	**0.07**	**0.07**	0.00	0.00		0.04	0.00	0.01	0.06	**0.08**	**0.08**	**0.07**	**0.09**	0.03	**0.10**	0.04	0.03	0.04		0.02	0.06	0.05	0.06	0.05	0.05	0.06
22*																													
23	0.00	0.00	**0.08**	**0.10**	**0.10**	0.00	0.00		0.03	0.00	0.03	0.06	0.06	0.05	0.05	**0.11**	0.04	**0.09**	**0.07**	**0.07**	**0.07**		0.03	**0.07**	**0.07**	**0.08**	**0.07**	0.06	**0.09**
24	0.00	0.00	**0.07**	**0.10**	**0.10**	0.01	0.00		0.04	0.00	0.02	**0.08**	**0.09**	**0.09**	**0.10**	**0.12**	0.05	**0.12**	0.05	0.05	**0.11**		0.03	0.05	**0.09**	**0.09**	**0.08**	0.06	**0.11**
25	0.00	0.00	0.06	**0.09**	**0.09**	0.00	0.00		0.03	0.00	0.02	**0.07**	**0.07**	**0.07**	**0.07**	**0.10**	0.03	**0.11**	0.05	0.03	0.10		0.02	**0.07**	0.05	**0.09**	**0.07**	0.05	**0.09**
26	0.00	0.00	0.03	0.06	0.06	0.00	0.00		0.02	0.00	0.01	0.04	0.05	0.04	0.06	0.06	0.02	**0.08**	0.05	0.02	**0.08**		0.02	0.04	0.04	0.03	0.04	0.04	**0.07**
27	0.00	0.00	0.04	0.06	0.06	0.00	0.00		0.01	0.00	0.01	0.04	0.04	0.04	0.05	0.06	0.02	**0.07**	0.03	0.02	0.04		0.01	0.04	0.04	0.04	0.03	0.04	0.06
28	0.00	0.00	0.03	0.05	0.05	0.00	0.00		0.02	0.00	0.01	0.03	0.04	0.04	0.05	0.05	0.02	**0.07**	0.02	0.02	0.04		0.01	0.02	0.02	0.03	0.04	0.02	0.04
29	0.00	0.00	**0.12**	**0.14**	**0.14**	0.01	0.01		0.04	0.00	0.03	**0.10**	**0.13**	**0.11**	**0.12**	**0.15**	**0.10**	**0.15**	**0.10**	**0.10**	**0.12**		**0.09**	**0.12**	**0.12**	**0.13**	**0.13**	**0.12**	**0.09**

Note: indicating that both column and row are larger than threshold value 0.07; the bold indicating being larger than the threshold value 0.07.

general economic conditions and 10: international stock market performance. Indicators with the smallest D-R values are 12: relative market position, 16: domestic institutional investor's holdings and 18: credit-trading standards, with a D-R value of -0.73, representing that the items are the most affected by other factors.

Type II investors trading signal judgment system assessment factors relationship

According to the total impact relationship matrix of the Type II investors trading signal judgment system, as shown in Table 8, as well as the relational position of various items, the relationships of assessment factors of Type II investors trading signal judgment system are shown in Figure 2. Where, Tij is the impact of Ci on Cj. If Tij<0.15, then no line is drawn, if 0.15 Tij<0.1, then an arrow line is used to represent the relationship, if Tij 0.16, then a bold arrow line is used to represent the relationship. In the structure of the assessment factors affecting the stock picks of investors, items 16, 19 and 17, as shown in the bold frame in Figure 1, due to D+R (central) values being the top three, as shown in Table 2, indicate that 16: domestic institutional investors holdings, 19: directors, supervisors and corporate insiders holdings, and 17: foreign institutional investors holdings, are the most important key decision- making assessment factors.

This study uses MTIS experience as criteria to compare the trading signal judgment system composition factors (Table 10). It can be found from the research results that, Type I investors, familiar with MTIS systems compare the trading

Table 7. Type I investors trading signal judgment system D+R and D-R summary.

Column Sum (D)		Row Sum (R)		Correlation D+R		Cause-effect degree D-R	
Item sequence	Value	Item sequence	Value	Item sequence	Value	Item sequence	Value
5	2.67	16	3.02	5	5.44*	2	2.39
12	2.61	18	2.99	4	5.15*	1	1.74
2	2.52	29	2.80	18	5.02*	9	1.26
4	2.50	5	2.77	16	4.95*	7	1.17
9	2.42	4	2.65	12	4.76*	10	1.14
17	2.31	26	2.51	13	4.66*	6	0.94
13	2.30	15	2.44	3	4.32*	8*	0.70
3	2.20	27	2.44	15	4.31*	22*	0.65
18	2.03	21	2.41	17	4.08*	17	0.54
16	1.93	13	2.36	24	4.00*	12	0.46
1	1.88	25	2.35	25	3.81*	23	0.27
15	1.87	24	2.27	14	3.73*	11	0.21
24	1.73	14	2.25	21	3.62*	3	0.08
19	1.61	12	2.15	9	3.58*	13	-0.06
23	1.50	3	2.12	26	3.49*	5	-0.10
14	1.48	28	2.10	19	3.39*	4	-0.15
25	1.46	19	1.78	27	3.31	19	-0.17
20	1.36	17	1.77	20	3.03	20	-0.31
7	1.35	20	1.67	29	3.01	24	-0.54
10	1.25	23	1.23	28	2.84	15	-0.57
6	1.22	9	1.16	23	2.73	14	-0.77
11	1.21	11	1.00	2	2.65	25	-0.89
21	1.21	6	0.28	11	2.21	18	-0.96
26	0.98	8	0.27	1	2.02	16	-1.09
8	0.97	7	0.18	7	1.53	21	-1.20
27	0.87	1	0.14	6	1.50	28	-1.36
22	0.79	22	0.14	10	1.36	26	-1.53
28	0.74	2	0.13	8**	1.24	27	-1.57
29	0.21	10	0.11	22**	0.93	29	-2.59

Note: **indicating that both column and row are not larger than the threshold value 0.07; * indicating that average value is larger than total average value 3.3.

signal judgment system composition factors (Table 10). It can be found from the research results that, Type I investors, familiar with MTIS systems experience, are more concerned with the growth and profitability expectations of individual companies, as well as credit trading standards, as the relatively important factors for consideration. Type II investors, totally unfamiliar with MTIS systems experience, are more concerned with the share holding levels of institutional investors and corporate insiders. Relatively important composition factors of the trading signal judgment systems of the two types of investors include (Table 11), 5: company's future growth expectations, 4: company's future profitability expectations, and other factors of the shareholding aspect. This indicates that the differences in consideration factors of forming trading signals are not significant. However, after cross-checking the first 14 items of trading signal factors of the two types of investors (Table 12), those with values greater than the average threshold values, there are three factors with differences after removing 11 factors in full compliance. From the perspective of relative importance of composition factors, it is found that the trading signal judgment patterns of the two types of investors differ significantly. Type I investors are relatively more concerned regarding factors of informational aspects, such as 24: news and information, 25: media recommendation and 9: broader market performance; while Type II investors are more concerned about factors of shareholding aspects, including 19: directors, supervisors, and corporate insiders holdings, 23: transfer submission, and 2: industry's overall performance. The results indicate that the two types of investors differ greatly in the fact that Type I investors are greatly concerned over the integration of information, as well as

Table 8. Type II investors trading signal judgment system impact matrix T2.

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	0.00	0.04	0.07	0.08	0.08	0.04	0.04	0.03	0.05	0.00	0.01	0.08	0.05	0.05	0.05	0.08	0.06	0.06	0.04	0.06	0.04	0.00	0.04	0.04	0.04	0.03	0.03	0.03	0.03
2	0.02	0.00	0.07	0.07	0.08	0.04	0.04	0.03	0.03	0.01	0.03	0.06	0.07	0.05	0.05	0.09	0.04	0.05	0.06	0.05	0.04	0.03	0.04	0.03	0.05	0.05	0.03	0.03	0.05
3	0.00	0.00	0.01	0.05	0.03	0.00	0.00	0.00	0.01	0.00	0.00	0.06	0.03	0.02	0.02	0.05	0.02	0.03	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.03	0.02	0.05	0.00	0.00	0.00	0.01	0.00	0.01	0.04	0.05	0.04	0.04	0.07	0.03	0.05	0.04	0.03	0.05	0.00	0.04	0.00	0.00	0.01	0.00	0.00	0.01
5	0.00	0.00	0.06	0.06	0.02	0.00	0.00	0.00	0.02	0.00	0.01	0.05	0.05	0.04	0.04	0.07	0.04	0.04	0.04	0.04	0.03	0.00	0.04	0.00	0.01	0.01	0.00	0.00	0.01
6	0.00	0.03	0.05	0.05	0.03	0.00	0.02	0.01	0.01	0.00	0.01	0.05	0.04	0.04	0.05	0.06	0.01	0.05	0.05	0.05	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01
7	0.00	0.01	0.04	0.05	0.04	0.05	0.00	0.03	0.02	0.00	0.01	0.05	0.05	0.05	0.05	0.07	0.01	0.05	0.05	0.04	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01
8	0.00	0.00	0.03	0.03	0.05	0.04	0.04	0.00	0.01	0.00	0.00	0.04	0.05	0.05	0.05	0.05	0.01	0.05	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
9	0.02	0.00	0.02	0.03	0.03	0.00	0.00	0.00	0.01	0.01	0.01	0.06	0.04	0.04	0.04	0.05	0.05	0.05	0.04	0.05	0.05	0.00	0.04	0.00	0.01	0.01	0.00	0.00	0.01
10	0.04	0.01	0.04	0.05	0.05	0.00	0.00	0.00	0.04	0.00	0.01	0.03	0.05	0.04	0.05	0.06	0.06	0.03	0.03	0.02	0.04	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01
11	0.00	0.00	0.02	0.05	0.06	0.00	0.01	0.00	0.01	0.00	0.01	0.02	0.02	0.02	0.02	0.05	0.06	0.03	0.06	0.06	0.03	0.04	0.05	0.01	0.05	0.03	0.04	0.05	0.06
12	0.00	0.00	0.02	0.03	0.03	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.05	0.05	0.05	0.04	0.02	0.05	0.03	0.04	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
13	0.00	0.00	0.03	0.05	0.04	0.00	0.00	0.00	0.03	0.00	0.01	0.05	0.02	0.05	0.06	0.07	0.03	0.06	0.02	0.02	0.04	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01
14	0.00	0.00	0.02	0.03	0.03	0.00	0.00	0.00	0.03	0.00	0.00	0.03	0.04	0.01	0.05	0.06	0.02	0.05	0.02	0.02	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
15	0.00	0.00	0.02	0.02	0.03	0.00	0.00	0.00	0.02	0.00	0.00	0.05	0.05	0.06	0.02	0.06	0.02	0.05	0.02	0.02	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
16	0.00	0.00	0.05	0.07	0.07	0.00	0.00	0.00	0.03	0.00	0.05	0.07	0.06	0.06	0.06	0.03	0.02	0.06	0.05	0.04	0.06	0.00	0.01	0.00	0.03	0.03	0.03	0.03	0.06
17	0.00	0.00	0.07	0.08	0.08	0.00	0.00	0.00	0.06	0.01	0.05	0.08	0.08	0.07	0.08	0.09	0.02	0.06	0.06	0.03	0.08	0.00	0.02	0.04	0.04	0.04	0.04	0.04	0.05
18	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.04	0.00	0.01	0.05	0.06	0.06	0.06	0.06	0.02	0.02	0.04	0.03	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
19	0.00	0.00	0.05	0.08	0.07	0.05	0.05	0.05	0.02	0.00	0.05	0.05	0.06	0.05	0.05	0.07	0.05	0.05	0.03	0.06	0.04	0.04	0.04	0.01	0.01	0.01	0.01	0.01	0.06
20	0.00	0.00	0.01	0.04	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.01	0.01	0.01	0.03	0.01	0.02	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
21	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.06	0.05	0.05	0.05	0.05	0.01	0.06	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
22	0.00	0.00	0.02	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.05	0.01	0.01	0.01	0.01	0.03	0.03	0.01	0.02	0.02	0.01	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.02
23	0.00	0.00	0.05	0.06	0.07	0.00	0.00	0.00	0.02	0.00	0.01	0.06	0.06	0.03	0.03	0.08	0.02	0.05	0.06	0.06	0.04	0.00	0.01	0.05	0.04	0.05	0.02	0.02	0.06
24	0.00	0.00	0.05	0.04	0.04	0.00	0.00	0.00	0.02	0.00	0.00	0.03	0.03	0.03	0.03	0.06	0.02	0.05	0.01	0.01	0.05	0.00	0.00	0.00	0.05	0.05	0.03	0.02	0.03
25	0.00	0.00	0.02	0.02	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.04	0.02	0.02	0.05	0.00	0.05	0.01	0.01	0.05	0.00	0.00	0.00	0.00	0.05	0.04	0.01	0.03
26	0.00	0.00	0.05	0.04	0.04	0.00	0.00	0.00	0.03	0.00	0.00	0.04	0.05	0.04	0.04	0.06	0.01	0.05	0.01	0.01	0.05	0.00	0.00	0.00	0.05	0.01	0.04	0.03	0.03
27	0.00	0.00	0.03	0.05	0.05	0.00	0.00	0.00	0.01	0.00	0.00	0.04	0.05	0.04	0.04	0.05	0.01	0.04	0.01	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03
28	0.00	0.00	0.04	0.03	0.03	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.02	0.02	0.02	0.03	0.01	0.02	0.01	0.01	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.01
29	0.00	0.00	0.06	0.07	0.07	0.00	0.00	0.02	0.01	0.00	0.01	0.03	0.06	0.04	0.06	0.08	0.03	0.07	0.06	0.05	0.07	0.00	0.01	0.02	0.03	0.04	0.04	0.02	0.01

the relative performance of individual stocks against the market; while Type II investors have relatively greater concerns regarding the share holding changes of corporate insiders, as well as the overall industrial performance as the decision-making method. However, the two types of investors differ insignificantly from the perspective of decision-making composition of cause-effect degree, as both regard 2: industry's overall performance, and 1: general economic conditions, as contributing factors of investment judgment decision-making. However, Type I investors are

Table 9. Stock market investors stock picking styles' D+R and D-R summary.

Column Sum (D)		Row Sum (R)		Correlation degree D+R		Cause-effect degree D-R	
Item sequence	Value	Item sequence	Value	Item sequence	Value	Item sequence	Value
17	1.29	16	1.69	16	2.66*	2	1.17
2	1.27	18	1.33	19	2.05*	1	1.14
1	1.23	4	1.32	17	2.01*	10	0.67
19	1.10	13	1.30	5	1.96*	17	0.57
16	0.97	5	1.27	4	1.95*	23	0.53
23	0.97	12	1.24	13	1.92*	11	0.52
11	0.89	15	1.19	18	1.92*	7	0.50
7	0.73	14	1.13	12	1.75*	8	0.39
10	0.72	21	1.12	15	1.73*	24	0.39
9	0.70	3	1.05	14	1.62*	6	0.38
5	0.69	19	0.94	21	1.56*	22	0.22
26	0.68	20	0.88	3	1.44*	26	0.22
6	0.64	17	0.72	23	1.42*	19	0.16
24	0.64	29	0.66	2	1.38*	27	0.10
4	0.63	9	0.61	1	1.33	9	0.09
13	0.61	25	0.46	9	1.31	25	0.02
18	0.60	26	0.45	11	1.25	28	-0.01
8	0.59	23	0.44	20	1.18	5	-0.58
15	0.53	27	0.41	26	1.13	20	-0.58
12	0.51	11	0.36	7	0.96	29	-0.63
27	0.51	28	0.36	25	0.94	14	-0.64
14	0.49	6	0.26	27	0.92	3	-0.66
25	0.48	24	0.25	6	0.90	15	-0.66
21	0.44	7	0.23	24	0.89	21	-0.67
3	0.39	8	0.20	8	0.79	4	-0.69
22	0.35	22	0.14	10	0.77	13	-0.69
28	0.35	1	0.10	28	0.71	12	-0.73
20	0.30	2	0.10	29	0.69	16	-0.73
29	0.03	10	0.05	22	0.49	18	-0.73

Note: *indicating that the average value is larger than total average value 1.37.

relatively in favor of 9: broader market performance, as the core factor for forming the trading signal (D+R, D-R are both relatively important factors); while Type II investors are more concerned about 10: international stock market performance.

By analyzing the decision-making judgment T matrix factorial relationships that affect the two types of investors, it can be found that, 29: insider news, is a key factor in the trading signal judgment systems of Type I investors (Figure 1). In addition, in the overall consideration of factors, investors regard 16: domestic institutional investors holdings, and 18: credit-trading standards, as factorial indices of trading judgments. Type 2 investors (Figure 2) regard 16: domestic institutional investor's holdings, as a key factor; and regard 17: foreign institutional investor's holdings, 19: directors, supervisors, and corporate insider's holdings for overall considerations of factors. It can be found from results analysis that the trading judgments of Type I investors are mainly centered on the cross-analysis of information and shareholding changes of institutional and individual investors as key factors of trading signals. The trading judgments of Type II investors are mainly centered on the cross-analysis of shareholding changes, which mainly take advantage of the holding changes of domestic, foreign institutional investors and corporate insiders and form relatively simple trade signal judgment systems.

CONCLUSION AND SUGGESTIONS

The main purpose of this study is to explore whether investors with experience using the MTS order submission platform differ from those investors without such

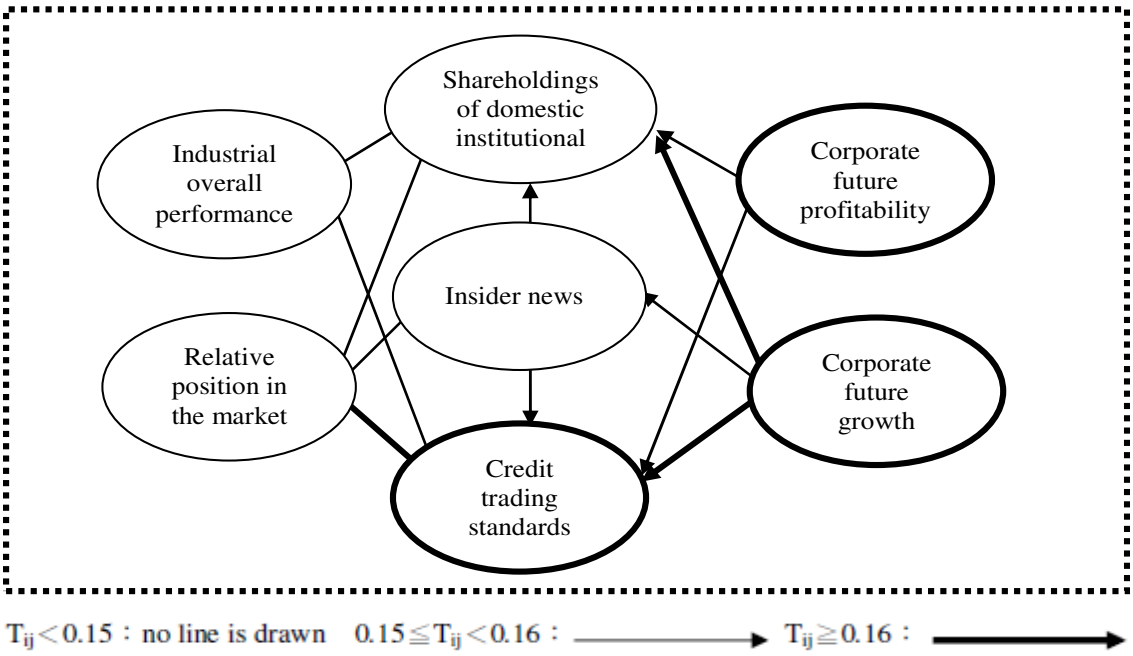

Figure 1. Type I investors trading signal judgment system assessment factorial relationship.

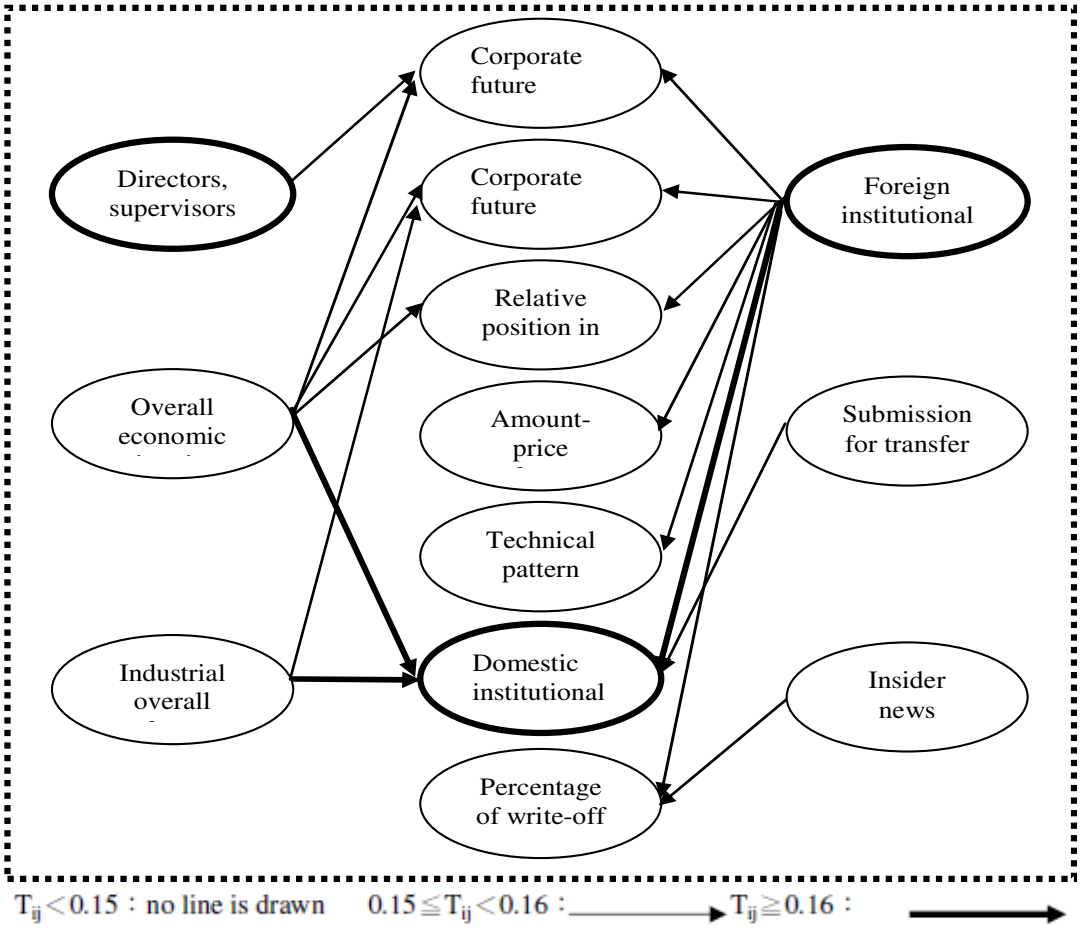

Figure 2. Type II investors trading signal judgment system assessment factorial relationship.

Table 10. Comparison of D+R (centrality) of Type I and Type II investors.

Type I investors		Type II investors	
(D+R) >0 first three items	(D+R) >0 last three items	(D+R) >0 first three items	(D+R) >0 last three items
5: company's future growth expectations	10:international stock market performance	16: domestic institutional investors holdings	22:personnel adjustments
4: company's future profitability expectations	6:company's past financial indicators	19: directors, supervisors and corporate insiders holdings	29:insider news,
18: credit trading standards	7:company's past profitability	17: foreign institutional investors holdings	28: security dealer analysis reports

Table 11. Comparison of D+R (centrality) of Type I and Type II investors.

Type I investors		Type II investors	
(D-R) >0 first three items	(D-R) <0 last three items	(D-R) >0 first three items	(D-R) <0 last three items
2:industry's overall performance*	29: insider news	2: industry's overall performance*	12: relative market position
1:general economic conditions*	27: investment consultant reports	1: general economic conditions*	16: domestic institutional investors holdings
9:broader market performance	26: market expert recommendation	10: international stock market performance	18: credit trading standards

Note: * indicating having same factors in case of (D-R) >0

Table 12. Comparative study of Type I and Type II investors' first 14 (larger than average (threshold) value) signal factors.

	Type I investors	Type II investors
1	5: company's future growth expectations	16: domestic institutional investors holdings
2	4: company's future profitability expectations	19: directors, supervisors and corporate insiders holdings*
3	18: credit trading standards	17: foreign institutional investors holdings
4	16: domestic institutional investors holdings	5: company's future growth expectations
5	12: relative market position	4: company's future profitability expectations
6	13: price-quantity relative performance	13: price-quantity relative performance
7	3: company's future revenue expectations	18: credit trading standards
8	15: technical linear pattern	12: relative market position
9	17: foreign institutional investors holdings	15: technical linear pattern
10	24: news and information*	14: technical indicator performance
11	25: media recommendation*	21: proportion of date write-off against total volume
12	14: technical indicator performance	3: company's future revenue expectations"
13	21: proportion of date write-off against total volume	23: transfer submission*
14	9: broader market performance*	2: industry's overall performance*

experience, in terms of indicators for the construction of individual selling/buying stock trading signal systems. The characteristics and judgment pattern factors of the trading signal judgment systems of the above two types of investors are explored.

The research findings suggest that the two types of investors differ considerably in trading signal judgment patterns. Type I investors are relatively more concerned regarding factors of informational aspects, while Type II investors are relatively more concerned regarding factors

of the share-holding aspect. The greatest difference of the two types of investors is that Type I investors are very concerned about information integration and the relative performance of individual stocks while Type II investors attach more importance to the changes of corporate insider share ownership and the overall industrial performance as a decision-making basis. The two types of investors differ insignificantly in the cause-effect degree of decision-making factor composition. Regarding the factorial relationship affecting the overall decision-making of the two types of investors, the trading judgments of Type I investors are centered on information cross-analysis and changes of share ownership as key factors for trading signals. The trading judgments of Type II investors are mainly centered on the cross-analysis of share ownership changes, which they use as the basis for overall judgments, forming relatively simple trade signal judgment systems.

The use of mobile technologies has brought investors freedom from site restrictions and easy access to trading information. The use of such technologies by investors affects their trading behaviors and judgment patterns. Investment service providers have substantially developed mobile trading systems in order to enhance the client-end psychological switching costs, as proposed by Ehrlich (2004). Regarding the development and promotion of system services, service providers may take advantage of these research findings and develop better software and analysis systems, as well as more complete and suitable intelligent mobile trading systems by cross-analyzing the needs of investors, in particular, the special needs of news media, media recommendations and share holding changes. Attracting more investors to mobile trading systems would be facilitated by increased and improved client development programs by investment service providers. Conventional investors attach importance to shareholding changes of institutional investors and corporate insiders when making stock buying/selling decisions. It is recommended to strengthen the real time shareholding analysis intelligent software characteristics to attract inexperienced investors in the development of mobile trading systems. In addition, the cause of the differences in the decision-making judgment systems of two types of investors is a combination of considerations of investment decision-making factor sequences and cross-analysis of factors, as the information system has the function of rapid analysis of a large amount of complex factors. Financial consultants may design appropriate training and communication programs for clients that would induce investors to use such mobile trading systems. Hence, providing investors with convenience would result in long-term revenue and profits.

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