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Examination of the dimensionality of business strategy among the manufacturing organizations

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Abstract

The purpose of this paper is to test the dimensionality of the integrated business strategy in the Malaysian context. The effectiveness of the dimensional scale of integrated business strategies was investigated with a sample of 113 manufacturing organizations. Results of exploratory and confirmatory factor analyses showed that the 4-subscale structure of integrated business strategy was valid. In addition, the results verified that the integrated business strategy scale has high internal reliability. These results indicate that the integrated business strategy scale can be used in research related to manufacturing organizations in Malaysia.

Keywords: Business Strategy, Construct Validity, Convergent Validity, Discriminant Validity, Reliability.

1. Introduction

Interest in the research area of business strategy has increased significantly in over many years. In fact there has been a renewed interest in many of business strategy typologies which were proposed in the 1970s and 1980s. The term strategy has been defined in various ways. Chandler (1962) defines strategy as the determination of the basic long-term goals and objectives of the enterprise and the adoption of courses of action and the allocation of resources necessary for carrying out these goals. Miles and Snow (1978) view business strategy as the consistent pattern in the decision that guides an organization in competing in a given business. Porter (1980) posits that business strategy as the steps taken by an organization to ensure or protect its competitive

position in the market. Meanwhile, Mintzberg (1990) defines it as a set of decisions about direction of an organization where organization selects business strategies in accordance with evaluations they make about their distinctive competencies and the environment in which they wish to compete.

It can be deduced that, most definitions of strategy revolves around the process of decision making that leads an organization in a direction that ensures its survival in the competitive market as well as its continuous adaptation to the changes happening in the organization's environment. To operationalize the construct of business strategy, the term typology is used to refer to a classification scheme. The field of strategic management has focused increased attention on the development of typologies as a means to study the concept of strategy (Porter, 1980). Numerous typologies of business strategy have evolved as researchers sought to characterize business strategies in different ways.

2. Literature Review

2.1 Business Strategy

The field of strategic management has increased its focus on the development of typologies as a means of studying the concept of strategy (Porter 1980). Currently there are a number of identifiable business strategy typologies being developed, each involving a different pattern of competitive position objectives and competitive advantage. Business strategy typology developed by Miles and Snow (1978) is, by far, the most popular and frequently cited (Parnell 2000). This typology developed from the theory of strategy, structure and process, typifies organizations by their adaptive decision patterns, ranging from being a prospector, analyzer, and defender to the least adaptive category, that of a reactor. In similar vein, Porter (1980) posits business strategy as being classified into four major components that comparable to the categories developed by Miles and Snow (1978). Hence, cost leadership is of the same kind to the defender strategy; differentiation, the prospector strategy; focus, the analyzer strategy; and stuck-in-the-middle, the reactor strategy. Porter (1980) also argues that the nature and extent of competition within an industry is dependent on the business strategies used by the organizations to compete.

In contrast to the above two typologies, Schuler and Jackson (1987)'s typology categorize business strategy into three types, namely, cost reduction, innovation and quality enhancement. In addition, they also designate different types of employee behavior and HRM methods that are best suited to each competitive strategy. Miller (1986) explores the theme that the generic business strategies identified by Porter (1980) can directly influence external environment by changing competitive conditions. The typology developed by Miller (1988) includes cost leadership, innovative differentiation, and marketing differentiation. Miller (1988) then, extends the works of Miles and Snow (1978), Miller (1986) and Porter (1980) and posits that there are at least two different types of differentiation strategies: those based on product innovation and those based on intensive marketing and image management. These types of innovation is crucial to create the most up-to-date and attractive products by leading competitors in quality, efficiency, and design innovation or style.

Even though there are a wide variety of business strategies developed in the literature, the typologies by Miles and Snow (1978), Porter (1980), Schuler and Jackson (1987) and Miller (1986) discussed above are the most appropriate to operationalize business strategy concept in the manufacturing industry (e.g. Bird and Beechler 1995; Huang 2001). Additionally, these typologies are commonly accepted and recognized (e.g. Parnell 2000; Christman et al. 1988; Zahra and Pearce 1990). In fact these typologies are most popular in terms of simplicity, accuracy and generalizability through empirical analysis (Miller and Friesen 1983; Parnell 2000).

2.2 Integrated Business Strategy

Although some of the business typologies mentioned above are almost similar to one another, they are described in different ways. Moreover, some strategies proposed by one typology may not be reflected in another typology. Therefore, this study attempts to reconcile the typologies into an integrated business strategy. The integration is possible due to a number of reasons.

Firstly, there are overlaps among several of the other strategy components. Therefore, to avoid overlapping, it is important to arrange the characteristics of the business typologies based on their similarities, difference and the relationship to one another as determined by their most fundamental characteristics. Secondly, the integration is to provide generalization among the

business typologies. Generalization is needed to provide consistency and comparability among future research using integration of business strategies. Another issue is to store and retrieve information of integrated business strategies to facilitate the use of future comparable studies. Finally, this study use integrated business strategy to move beyond the examination of single business typology as the major constructs in this study.

Although, it may not be wholly possible to reconcile all model differences, a number of common underlying elements across these models are identified. Therefore, in trying to capture the dynamic difference of the term, business strategy in this study integrates typologies of Miles and Snow (1978), Porter (1980), Schuler and Jackson (1987) and Miller (1987) resulted to four distinct strategies namely: 1) Quality-based; 2) Proactive; 3) Breadth; and 4) Reactive.

Quality-based focuses on producing and delivering the highest quality of the products. Organizations that espouse quality based strategy attempts to produce and deliver products and services with the highest quality possible (Schuler and Jackson 1987). Conversely, proactive strategy concentrates on innovation and differentiation of the products that attempts to differentiate products through unique designs and features (Miles and Snow 1978; Porter 1980). This is in contrast to breadth strategy that focuses on many product lines with bases of customers (Miller 1987; Miles and Snow 1978; Porter 1980). Finally, reactive strategy strives to produce products cheaper than competitors. These are organizations that stress efficient scale facilities, cost reduction, minimization of expenses of production, R&D, services, selling and advertising (Porter 1980; Miles and Snow 1978; Miller 1987). They do little product innovation and differentiation as this is disruptive of efficiency.

3. Methodology

This study used mail survey questionnaire. The questionnaires were targeted to the general manager of Malaysian manufacturing organizations. The mailing list was obtained from Federation of Malaysian Manufacturers Directory (FMM). The survey yielded 12 percent response rate resulting in 113 respondents useable responses from an eligible sample of 900 organizations. The data collected was restricted to large and established manufacturing organizations only. Large organizations with 150 employees (SMIDEC 2005) and above and organizations that have been in operation for at least five years were selected because these organizations are presumed to have well developed and established business strategies (Youndt

and Snell 1996). Organization size and years of establishment are often good indicators of an organization's likelihood to design and adopt different types of business strategies. Small and medium organizations are quite different from large and established organizations since they are inherently flexible and nimble (Corbet 2001). Additionally they seldom have a well defined business strategy.

T-tests were performed to examine possible non-response bias. Respondents were divided into two groups based on whether they responded to the first mailing and the follow-up. The results revealed that there was no significant difference between the two groups on business strategies, organizations establishment period and size and thus there was no evident of systematic non-response bias. In addition, all variables were tested for normality and linearity in order to be used for subsequent analysis.

3.1 Measurements

3.1.1 Business Strategies

All the measurement items were generated from established researchers. Business strategies are composed of four strategies namely proactive, breadth, quality-based and reactive. In attempting to examine this perspective, the measuring items were compiled from works of various scholars (e.g. Huang 2001; Covin and Selvin 1989; Lee and Chee 1996; Parnell and Hershey (2005) who analyzed their business strategies based on the typologies of Miles and Snow (1978), Porter (1980), Schuler and Jackson (1987) and Miller (1988).

However, following the feedback gained from the pre-testing, minor modifications were made to the items to suit the language, cultures and business environment of the respondents. These minor modifications however did not alter the content of the constructs. 32 questions on business strategies were measured on a six-point semantic differential-likert scale. For the purpose of data interpretation, the descriptive phrases for the main side of the six-point scale are (1) "strongly agree", (2) "moderately agree", (3) "slightly agree", (4) "slightly disagree", (5) "moderately disagree", and (6) "strongly disagree". The scale contains a series of bipolar items for the various properties of the construct. An even-numbered six-point scale was used in order to avoid the clustering of responses at the neutral point, which will make the result unreliable (Ling, 1998).

Most respondents use a neutral response as a dumping ground when they prefer not to choose, do not care or have no opinion. Therefore, the validity of the question will be improved by using a six-point scale. Although Kinnear and Taylor (1996) conclude that there is no significant difference in the results between scales, a six point-scale is more reliable than five or three-point scales as scale reliability increases with the number of intervals. This study used the bipolar scale since it offers respondents with an opportunity to view alternatives at the other side of the continuum (Green, Tull and Albaum, 1988). According to Green et al. (1988), this scale enables the researcher to probe into both directions as well as the intensity of the respondents' absolute perceptions. Moreover, it also specifies more precisely the dimension rather than allowing one pole of the scale to be interpreted idiosyncratically (Goldberq and Kilkowski, 1985).

4. Results

The profile of the manufacturing organizations is discussed and all the items are recapitulated in Table 1.

(Insert Table 1)

Most of the respondents (15%) are from the machinery and equipment industry. Almost 41 percent of the organizations employ 301 to 1000 employees, and about 47 percent employ five to 20 HR employees. Next, 36.3 percent of these organizations have been in business for at least 20 years. In terms of the position of the respondents, almost 56 percent of them are the managers and about 61 percent of respondents have less than five years of working experience.

4.1 Testing Validity and Reliability of Integrated Business Strategy

Validity and reliability are the tools used to evaluate the characteristics of a good measurement and these tools involved a measurement of accuracy and applicability (Malhotra, 2004; Cooper and Schindler, 2001). The main concern for performing validity and reliability is the reduction of measurement errors which make the most of the model testing in the hypotheses. In other words, the idea is to develop a measurement that reflects a true score of the variables being measured (Churchill and Iacobucci, 2002).

4.2 Content Validity

Content validity is the extent to which there is a need for the adequate coverage of all the domains of the constructs being examined (Cooper and Schindler, 2001). Content validity cannot be examined using statistical analysis and thus, a thorough exploration of the literature and an extensive search of measures used in the literature must be applied. Moreover, pre-testing is used to check on the validity of the constructs. In this case, the measures used will be reviewed by experts, academicians or professionals on the relevancy and adequacy of the constructs (Zikmund, 2003). For this study, content validity was also applied for the constructs in which the items were reviewed by several academicians in the management field and the practitioners in the manufacturing organizations.

4.3 Construct Validity

Construct validity is “the extent to which the constructs or a set of measured items actually reflects the theoretical latent construct those items are designed to measure” (Hair et al, 2006:776). Therefore, construct validity deals with the accuracy of the measurement in which that item measures selected from a sample represent the actual true score that exists in the population (Hair et al., 2006). In fact, Bagozzi, Youjae and Phillips (1991:422) posit that “without assessing construct validity one cannot estimate and correct for confounding influences of random error and method variance, and the results of the theory testing may be ambiguous.”

Each measurement scale for this study was evaluated by analyzing its convergent and discriminant validity, using factor analysis. Nunnally (1978) asserts that factor analysis has a role in testing those aspects of validity. Two types of factor analyses, i.e., the exploratory factor analysis and followed by the confirmatory analysis were used in this study to measure construct validity of the scales. Below are the discussions on the results of constructs validity checking based on factor analysis.

4.3.1 Factor Analysis

The underlying principle of factor analysis is data parsimony and data interpretation (Zikmund, 2003). In this case, items are reduced to common interrelated and meaningful dimensions with a very small amount of information loss (Hair, et al., 2006). Therefore, the pattern of association assists the researcher to establish the interrelationship of variables that belong together. Factor analysis, can be categorized into exploratory and confirmatory factor analysis. In most research

which uses scales with a priori assumptions about construct validity, confirmatory factor analysis is the preferred method in confirming the measure, whereas, with a newly developed scale, exploratory factor analysis is deemed more appropriate (Hurley, Scandura, Schriesheim, Branninck, Seers, Vandenberg and Williams, 1997).

4.3.1.1 Exploratory Factor Analysis

Exploratory factor analysis (EFA) is a technique for data exploration and to determine the structure of factors to be analyzed. It is used to establish dimensionality and convergent validity of the relationship between items and constructs. Therefore, in order to ascertain whether all the scales used in this study have construct validity, EFA was performed on business strategies construct. Besides determining the validity of measurements, the objective of doing factor analysis in this study was to identify representative variables and to create new variables, if any to be used in the subsequent analysis. The idea was to obtain the most parsimonious set of variables to be included in the analysis.

To justify the application of factor analysis in this study, the measure of sampling adequacy, a statistical test to quantify the degree of inter-correlations among the variables (Hair et al., 1998) was used. The measure of sampling adequacy uses the Bartlett's Test of Sphericity (Bartlett's Test) and Kaiser-Mayer-Olkin (KMO). The Bartlett's Test should be significant ($p < 0.05$) for the factor analysis to be considered appropriate and the measure of sampling adequacy produces the KMO index that ranges from 0 to 1, and indicates that KMO more than 0.60 are considered appropriate for factor analysis (Pallant, 2001). Factor analysis under the extraction method of principal component analysis with the rotation method of varimax with Kaiser Normalization was used to analyze the scales of business strategy. Varimax rotation was favored since it minimized the correlation across factors and maximized within the factors. This helped to yield 'clear' factors (Nunnally, 1978). In fact this method is robust and able to simplify the factor loadings and supports the interpretation. Factor loading indicates the strength of the relationship between the item and the latent construct and thus, is used to ascertain the convergent and discriminant validity of the scales (Hair et al., 2006). Nunnally (1978) posits that items with loadings higher than 0.50 on one factor are retained for further analysis, however, this study

retained items with a coefficient of 0.4 and above as it indicates a reasonable and sufficient loading (Lee and Crompton, 1992; Gorsuch, 1983). Table 2 shows the results factor analysis of the constructs.

(Insert Table 2)

From Table 2, the six factors of business strategy were produced from the results with eigen values greater than one. However, two factors consist only two items were dropped as each factor should have a minimum of three items per factor, preferably four (Hair et al., 2006). The remaining 4 factors contributed 53.48% to total variance explained and factor loadings of the items in the four factors were between 0.445 and 0.828. The four factors were labeled as quality-based, proactive, breadth and reactive.

4.3.1.2 Confirmatory Factor Analysis: Structural Equation Modeling

Confirmatory factor analysis (CFA) is comparable to EFA in some respects, but philosophically it is rather different. CFA involves analyzing the relationship between latent (unmeasured or theoretical construct) and observed (measured or indicators) variables (Tabachnick and Fidel, 1996). In this respect, CFA does not use statistical results to determine the number of factors and loadings as in EFA. This is because, the researcher must specify both the number of factors that exist within a set of variables and which factor each variable load highly on before the results can be computed (Hair et al., 2006). In other words, CFA does not assign variables to factors. Rather, the researcher makes this assignment before any results can be achieved.

In order to test the extent to which a priori pattern of factor loading represents the actual data and how well the specification of the factors matches the actual data, structural equation modeling (SEM) is then applied. SEM models often involve both a measurement theory and a structural theory. SEM using AMOS was also used as the primary construct validation tool. That is, the CFA is used to analyze convergent and discriminant validity, by assessing the measurement model developed for testing the business strategy construct in this study.

CFA is used to examine convergent and discriminant validity. Convergent validity would be assessed through the inspection of the statistical significance of factor loadings (the estimated parameter between latent variables and their indicators). In terms of the value of standardized

loading, the commonly considered threshold value is 0.4 (Ford, MacCallum and Tait, 1986). Moreover to assess convergent validity, the proposed model has to present a holistic fit. There are multiple indices that are used to determine the fit of the model and operationalize different aspects of model fit (Kelloway, 1995; Hair et al., 2006; Bentler, 1990). In general there are two strategies to evaluate overall model fit: 1) selecting fit indices which represent different families of fit indices and 2) specifying a stringent criteria and selecting fit indices that best represent this criteria (Garver and Mentzer, 1999).

According to Hair et al. (2006) and Bentler (1990), the proposed model has to illustrate a satisfactory fit in terms of absolute fit, incremental fit and model parsimony. Absolute fit indices are a direct measure of how well the model specified by the researcher reproduces the observed data. These indices include chi-square statistics (χ^2), normed chi-square or relative chi-square (χ^2/df), goodness-of-fit (GFI), adjusted goodness-of-fit (AGFI) and root mean-square error of approximation (RMSEA). Incremental fit indices differ from absolute fit indices in that they assess how well a specified model fits relative to some alternative baseline model. The most common baseline model is referred to as a null model, one that assumes all observed variables as uncorrelated. Here, the results of relationship from the hypothesized models are compared with the independent models. The score for the incremental fit model ranges from 0 to 1. A score close to 1 suggests a perfect fit whereas 0 refers to there being no difference between hypothesized and independent model. The indices of the incremental fit comprising of the Normed Fit Index (NFI), the Comparative Fit Index (CFI), Tucker Lewis Index (TLI) or Non-Normed Fit Index (NNFI) and Relative Noncentrality Index (RNI).

Finally, parsimony fit indices refer to the application of parameters or the coefficient of hypothesized model. The fewer the estimated parameters used in the model, the more parsimonious the model (Hair et al., 2006; Bentler, 1995). The indices include the Parsimony Goodness-of Fit Index (PGFI), The Parsimony Normed Fit Index (PNFI) and Aikake Information Criterion (AIC).

Garver and Mentzer (1999) state that many fit indices do not meet the above criteria simply because they are adversely affected by sample size. For instance, the chi-square is the most

common method of evaluating overall model fit, but it is frequently criticized due to its high sensitivity to sample size, and the fact that the significance level can be misleading (Hair et al., 2006). Therefore, based on these criteria, they propose the use of the TLI, the CFI and the RMSEA. Moreover, TLI and CFI are preferred when dealing with samples with fewer than 200 respondents because they are likely to produce biased estimates (Bentler, 1989; Kline, 1998). Based on the important criteria suggested in the above discussion, this study used the fit indices namely, 1) the TLI or NNFI; 2) the CFI; and 3) the RMSEA. Nevertheless, this study still report on the chi-square, degree of freedom, its significance level GFI and NFI as these figures are also important in examining the validity. Table 3 exhibits all the selected indices mentioned above to estimate the measurement model of the study.

(Insert Table 3)

i) Convergent and Discriminant Validity

Convergent validity refers to the degree in which different methods which are used to measure the same construct produce similar results (Anderson and Gerbing, 1991). Garver and Mentzer (1999) advocate that convergent validity is tested by determining whether the items in a scale converge or load together on a single construct in the measurement models. In other words, it is based on the correlation between responses obtained by maximally different methods of measuring the same construct. If there is no convergence, either the theory used in the study needs to be analyzed, or the purification of measures needs to be implemented by eliminating the items. In contrast, discriminant validity refers to the extent in which a certain construct is different from other constructs (Chen, Aryee and Lee, 2003). It means that items from one scale should not load or converge too closely with items from a different scale and that different latent variables which correlate too highly may indeed be measuring the same construct rather than different constructs (Garver and Mentzer, 1999). Therefore, relatively low correlations or no correlation between variables indicates the presence of discriminant validity.

CFA as mentioned earlier provides a number of advantages in examining the instruments in terms of their convergent and discriminant validity. Firstly, CFA measures the overall degree of fit in any particular application such as chi-square and goodness-of-fit test. Secondly, with the used of chi-square difference test, together with the size of factor loadings for traits and the

estimates for trait correlations, CFA provides useful information on how well convergent and discriminant validity are achieved. Finally, through squared factor loadings and error variance, explicit results are available for partitioning variance into trait, method, and error component (Bagozzi et al., 1991: 429).

Table 4 shows the results of convergent validity for business strategy of the study.

(Insert Table 4)

The results from these models show that based on modification indices and standardized error, a few items were deleted to get the data to fit the model. Here, breadth4 and reactive5 were dropped to meet the criteria of model fit. Although there are a number of items that were dropped, there are justifications for dropping the items. Firstly, the scales were integrated from various researchers and considered exploratory in nature. Therefore, in this case, dropping items were considered legitimate reasons in order to seek greater parsimony and fitness (Klein, Ettenson and Krishnan, 2005). This is supported by Nyambegera, Daniels and Sprrow (2001) who mentioned that most of the studies particularly exploratory studies need to delete certain items originally included in the scale to improve their fitness, validity and reliability. Another possible justification for dropping the items was that the integrated items had never been used in a Malaysian sample before.

From the results, most χ^2 are not significant with p value mostly greater than 0.05. However, all the criteria for the incremental and comparative yield results above 0.90, indicating a good fit model. NNFI, GFI, TLI and CFI yield results of more than 0.95. The majority of the values of χ^2/df are between 1 and 3, with RMSEA on an average of 0.06. This indicates that χ^2/df and RMSEA are good indicators of absolute fit of the model. Additionally, the factor loading for each indicator was above the reasonable benchmark of 0.40 (Hatcher, 1994). Therefore, the convergent validity exists for the study variables of the measurement models.

To perform discriminant validity is to compare the average variance extracted for any two constructs or more with the squared of the correlations estimate. As such, the average variance extracted has to be bigger than the variance of the correlation (Hair et al., 2006). This is because a latent construct should explain its item measures better than it explains other constructs.

Business strategy comprises the dimension of quality-based, proactive, breadth and reactive strategy. The average variance extracted of quality-based, proactive, breadth and reactive was 0.81, 0.70, 0.70 and 0.56. Each of the construct exhibited a larger average variance than their correlation coefficients except for the correlation coefficient between breadth and reactive. This was larger (0.85) than the average variance extracted of breadth and reactive. This suggests that breadth and reactive are the unidimensional constructs and one latent variable is the appropriate model.

The correlations among four constructs were 0.77 (covariance between quality-based and breadth), 0.70 (covariance between proactive and reactive) and 0.51 (covariance between quality-based and reactive). This indicates that most of the constructs support the distinctiveness of each of the constructs as uniquely present in the dimensions of business strategy.

4.4 Reliability

Reliability of a measurement refers to its consistency and if a scale possesses a high reliability the scale is homogeneous (Hair et al, 2006). The most commonly used measure is Cronbach's Coefficient Alpha which is derived from the assumption that if all the items are drawn from the domain of a single construct, responses to the items composing the measurement model should be highly correlated (Hatcher, 1994). Additionally, to check the reliability, the composite reliability and variance extracted measures for each construct will also be examined. In the context of CFA, it is possible to compute a composite reliability index for each latent variable. Both of these methods were applied to test the reliability of the scales in this study. The following sections discuss them in detail.

4.4.1 Reliability Tests – Cronbach's Coefficient Alpha

The results of the internal consistency reliability test for the variables examining the four factors are produced from the EFA analysis. The reliability test for quality based, proactive and breadth recorded excellent reliability with coefficient alphas of above 0.7 as recommended by Nunnally (1978). However, the coefficient alpha for reactive was below 0.6. Coefficient alpha in the range from 0.5 to 0.6 is still at the minimum acceptable level of reliability for preliminary research

(Nunnally, 1967). Table 5 exhibits the results of Cronbach Coefficient Alpha for business strategy. (Insert Table 5)

4.4.2 Reliability Test –Using Structural Equation Modeling

Traditionally, researchers used coefficient alpha as an index of scale reliability. However, it has three limitations; a) the accuracy of reliability estimation, it tends to underestimate scale reliability and inflated if scale has large number of item; b) traditional reliability theory defines reliability as consistency, whereby consistency is very difficult to test and to operationalize; and c) coefficient alpha assumes that all items have equal reliabilities (Bollen, 1989). Reliability is also an indicator of convergent validity (Hair et al., 1998, 2006) and SEM approaches to estimating scale and item reliability are designed to overcome limitation associated with coefficient alpha.

In SEM, the value associated with each latent variable-to-item equation measures the reliability of that individual item (Garver and Mentzer, 1999). The stronger the correlation of the systematic component, the higher the reliability associated with the indicator to its latent variable. Therefore, in this study, the results of construct reliability, which is often used in conjunction with SEM models, are also presented in order to prove that convergent validity exist for the constructs of study. It is computed from the squared sum of factor loading (λ_i) for each construct and the sum of the error variance terms for a construct (δ_i) whereby the measurement error is one minus the square of the indicator's standardized parameter estimate, as;

$$\text{Construct Reliability} = \frac{\sum_{i=1}^n \lambda_i^2}{\sum_{i=1}^n \lambda_i^2 + \sum_{i=1}^n \delta_i^2}$$

Adapted from Garver and Mentzer, 1999

The rule of thumb for the reliability estimates is that 0.7 or higher. This suggests a good reliability (Hair et al., 2006). However, Hatcher (1994) asserts that the reliability estimates of 0.6 and above are considered reasonable for exploratory study. Table 6 presents the result of the construct reliability for business and HRM strategies.

(Insert Table 6)

The results exhibit that the construct reliability value for all latent variables or factors in this study were above 0.6, as suggested by Hatcher (1994). This is to prove for the existence of reliability. A complementary measure of construct reliability is the variance extract measure (Hair et al., 2006). It measures the total amount of variance in the indicators accounted for by the latent variable, and higher values occur when the indicators are truly representative of the latent construct. The formula is comparable to construct reliability, except that the numerator is equal to the standardised parameter estimates (λ) between the latent variable and its indicators squared, and then summed. The denominator equals the numerator plus the added measurement error for each item. The measurement error is one minus the square of the indicator's standardised parameter estimate

$$\text{Variance Extract} = \frac{\sum_{i=1} \lambda^2}{\left[\sum_{i=1} \lambda^2 + \sum_{i=1} (1 - \lambda^2) \right]}$$

Adapted from Garver and Mentzer, 1999

By using the same logic, a variance extracted which is less than 0.5 indicates that, on average, more error remains in the items than the variance explained by the latent factor structure in the measurement model (Hair et al., 2006). Table 4 shows the results of the variance extract. Some of the variance extract estimates of that constructs were below 0.5. However, this situation did not cause concern since previous studies show that it is quite frequent to find estimates below 0.50 even when the construct reliability is acceptable (Hatcher, 1994).

Thus, it can be concluded that the measures for integrated business strategies produce sufficient reliability.

5. Discussion and conclusion

The primary focus of this paper was to test the dimensionality of integrated business strategy scale that has been predominantly used in the Western culture to the Malaysian context. To a certain extent the study has shown that by getting a 26 items of business strategy which is capable of explaining sufficient variation in the construct being measured. It has also been proven that the instrument is valid (content, construct, convergent, and discriminant) as well as reliable.

Managers from manufacturing organizations can benefit from the use of this scale in numerous ways. Integrated business strategies were developed and operationalized based on the established business strategy typologies (Porter, 1980; Miles and Snow, 1978; Schuler and Jackson, 1987a; Miller, 1988). From the integration, four types of business strategic dimensions were proposed namely: proactive, quality-based, breadth and reactive. Exploratory factor analysis suggested that the four-factor model was used within this sample of manufacturing organizations, providing support for the construct validity of this scale. The range of factor loadings was observed changing from 0.445 to 0.828 and four factors explained 53.48 percent of total variance. In addition, the results of the confirmatory factor analysis indicated that the fit indices for the four factors of integrated business strategies provided a good fit to the data.

Therefore, these validated strategic dimensions can be utilised as an alternative to establish strategic typologies for the manufacturing organisations. Importantly, this result could be used as reference and as a basis for managers for a further in-depth understanding of the concept of business strategies in manufacturing organisations in Malaysia.

There are some factors that can be considered in order to identify weak areas in the manufacturing organizations. Upon discovering the problematic situation (e.g. managers scored very low in the dimension of reactive strategy), it is worthwhile for the organizations to further investigate the causes of the problems and ultimately lead to decision-makings to remedy the situation. Apart from that, evaluations using the scale can be carried out from time-to-time to

keep a close tab on the adoption of different types of business strategy among the manufacturing organizations in Malaysia.

Finally, in the wake of rising global competition, this empirical finding of integrated business strategy scale provides manufacturing organizations with a better understanding on the desirable to have a strategy that promotes competencies inside the organisations. Moreover, the organizations are also aware on the various types of business strategies to adopt particularly in the hyper competitive environment,

In conclusion the integrated business strategy has been presented as a reliable, valid and extremely versatile instrument for the measurement of business strategies espoused by the manufacturing organizations in Malaysia. The instrument can assist with the development of theory and research on strategic management. It may provide a valuable tool for research on business strategy particularly for researchers who are interested in the application of strategy typologies, organization-based perspectives on strategy and strategy-performance relationship. A final insight, the integrated business strategy scale is predicted to perform as a useful role in synthesizing theory, practice, and research on business strategy.

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Annexure 1

**Table 1
Profile of the Respondents**

HR Outsourced Organizations	Number	Percentage
Type of industry		
• Food and beverages	8	7.1
• Textiles	10	8.8
• Wood products	6	5.3
• Chemical products	12	10.6
• Rubber and plastic products	11	9.7
• Metal products	9	8.0
• Machinery and equipment	17	15
• Electronics	16	14.2
• Radio, TV and communication	16	14.2
• Motor vehicles, trailers and semi-trailers	8	7.1
Years in operation		
• 20 years above	41	36.3
• 11-20 years	40	35.4
• 10 years and below	32	28.3
Total employees		
• 150 to 300 employees	30	26.5
• 301 to 1000 employees	46	40.7
• Above 1000 employees	37	32.7
Positions		
• Top Management	9	8
• Senior Management	23	20.4
• Management Level	63	55.8
• Senior Executive	18	15.9
7. Years of working experience		
• Below 5 years	69	61.1
• 5 to 10 years	34	30.1
• Above 10 years	10	8.8

Table 2
Exploratory Factor Analysis of Integrated Business Strategy

Factors/Items	Factor loading
Business Strategy - KMO = 0.910 Barlett's:Sig. = 0.000	
Factor 1: Quality based	
• My company considers product quality as important	0.828
• My company places great emphasis on producing products with the highest quality.	0.821
• My company emphasizes on controlling the quality of products.	0.820
• My company offers premium prices for quality of product.	0.769
• Our primary focus is on the highest quality of products.	0.768
• My company emphasizes on superiority of products.	0.767
• My company offers selective product with high in quality.	0.707
• My company concentrates on product differentiation to maintain competitive power.	0.537
Factor 2: Proactive	
• My company favors a strong emphasis on the innovation of new products.	0.711
• My company always tries to be ahead of competitors in introducing new things.	0.807
• My company typically initiates actions, which competitors then respond.	0.734
• My company is very often the first company to introduce new products.	0.788
• My company favours the development of new products.	0.742
• My company pursues a tough 'undo the competitors' philosophy.	0.656
• My company is willing to take risks in order to be the first with new venture.	0.771
• One way to attain success is by taking the first mover advantage.	0.453
• In the past 5 years, my company has marketed many new lines of products.	0.601
• In the past 5 years, my company made drastic changes in product lines.	0.612
Factor 3: Breadth	
• In general, my company offers a wide assortment of products.	0.752
• My company satisfies the customers' needs through wide variety of products.	0.639
• My company produces diverse products.	0.662
• My company's products are continually changing.	0.572
Factor 4: Reactive	
• My company offers standardized products.	0.583
• My company emphasizes on maintaining the production of standardized products.	0.694
• My company seeks to avoid competitive clashes.	0.532
• My company sets prices of products below those competitors.	0.530
• My company considers reduction in labor cost as important.	0.445

Table 3
Summary of Fit Indices

Indices	Abbrev.	Acceptable Level	Comments
Chi-Square	$(\chi^2)(df, p)$	$p > 0.05$ at $\alpha = 0.05$	$P > 0.05$ reflects acceptable fit; 0.1 reflects a good fit.
Normed Chi-Square	$(\chi^2) / df$	$1.0 < (\chi^2) / df < 3.0$	Values close to 1 indicate good fit but values less than 1 may indicate overfit.
Goodness of fit	GFI	$GFI > 0.90$	Values between 0.90 – 0.95 indicate satisfactory fit and values higher than 0.95 indicate good fit.
Root Mean Square of Approximation	RMSEA	$RMSEA < 0.05$	Values between 0.05 – 0.08 indicates satisfactory fit. Value 0 indicates a perfect fit.
Normed Fit Index	NFI	$NFI > 0.90$	Values between 0.90 – 0.95 indicate satisfactory fit and values higher than 0.95 indicate good fit. Values greater than 1 indicate overfit
Tucker-Lewis Index	TLI	$TLI > 0.90$	Values between 0.90 – 0.95 indicate satisfactory fit and values higher than 0.95 indicate good fit. Values greater than 1 indicate overfit
Comparative Fit Index	CFI	$CFI > 0.90$	Values between 0.90 – 0.95 indicate satisfactory fit and values higher than 0.95 indicate good fit. Values close to 0 indicate poor fit, CFI =1 indicates perfect fit.

Source: Adapted from Schumacker and Lomax, 1996; Kline, 1998

Table 4
Results of Confirmatory Factor Analysis

Variable	Chi-square (χ^2)	P value	χ^2/df	NFI	GFI	TLI	CFI	RMSEA
Business Strategies								
Quality-based	29.047	0.048	1.614	0.964	0.941	0.978	0.986	0.074
Proactive	43.699	0.040	1.507	0.938	0.929	0.965	0.978	0.067
Breadth	1.034	0.253	1.304	0.985	0.992	0.989	0.996	0.052
Reactive	3.298	0.348	1.099	0.935	0.985	0.987	0.993	0.030

Table 5
Reliability of the Business Strategies

Variables	No of items	Cronbach's Coefficient Alpha
Business Strategies		
Quality based	8	0.943
Proactive	9	0.925
Breadth	4	0.806
Reactive	5	0.585

Table 6
Variance Extract and Construct Reliability for Business Strategies

Construct	Variance Extracted	Construct Reliability
Quality-based	0.70	0.95
Proactive	0.51	0.85
Breadth	0.56	0.80
Reactive	0.33	0.65

Explicating 5S: Make you Productive

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Listed in ULRICH'S

U L R I C H ' S
P E R I O D I C A L S D I R E C T O R Y . I N

Abstract

5S is the first step towards Total Quality Management (TQM) and Business Excellence (BE). During the later half of the last century, the Japanese have formalized the technique and name it as 5S Practice. The modern industrial environment is rapidly evolving and thus giving it a dynamic cum complex shape. As markets globalize, competitive rivalry intensifies, and stakeholders become more demanding, it is no longer sufficient to change the way the organization functions. In order to adapt and grow in the changing business world, radical change must occur at all levels in the organization. The implementation of a 5S strategic plan will create a culture of continuous improvement across any organization. To remain competitive in the future, manufacturers must adopt lean techniques like 5S to reduce the wastage that will ultimately enhance productivity. The purpose of this paper is to introduce the basic concepts of this lean technique. The supply chain will act as a common thread throughout the paper.

Keywords: 5S, Lean Technique, Productivity, 5S Audit, Total Quality Management, Business Excellence

1. Introduction

Vast sums of money are spent every year on moving items unnecessarily and looking for items which are lost. These inefficient processes add to overhead which has the knock-on effect of reducing margins. Any organisation can utilise a simple 5S waste elimination project for immediate gains. 5S works as a first step on the way to TQM and the manufacturer can ensure a competitive edge through the use of 5S. Modern business works in a dynamic environment. Thus, change is a must.

Change in organization would, in the long run, lead to change in the organizational culture. A typical example is the learning organization, where people are excited in trying out new ideas and recognize that failure is an important part of success. Let us take a step back to look at the traditional strategic change process which can broadly be summarized by five key steps (Ho, 1999):



A new paradigm is:



In fact, the first step is nothing new. Peters and Waterman (1982) have already found out from over 46 successful firms that most of them choose 'action' as step number one in their pursuit towards excellence. The new idea here is that action leads to behavioral change of the employees. This arises from the learning process, and as Reg Raven (1983) said: "There is no learning without action and no action without learning." If learning has been taken successfully, the organizational behavior will be lifted to a dynamic and challenge-seeking level. This will influence the top management in defining their mission. By then they are confident that the mission, spin off from the better organizational behavior, will take off once it is announced. The chief executive will then be in a position to develop the corporate vision which will take the organization through to world class against competition. Built on firm foundations, the new vision will establish a new culture within the organization. One best known example of this new culture is 'Kaizen', the Japanese word for continuous improvement. Being action oriented, 5-S is a powerful quality tool for everyone to get involved in the improvement process. Therefore, it is a very effective way to implement the new management paradigm.

Dr. Kaoru Ishikawa states "Quality begins and ends with education". Senior management need to continually drive the 5S activity through employee training and development, and visual metrics to capture the improvement journey towards a zero waste environment. The paper targets those people who work as a part of management and thinking to install TQM program. First, some background of 5S is given from different literature available followed by a discussion of 5S with 5 different Ss in detail. Later on, the practice of 5S is discussed with a checklist. Finally, the process of 5S audit is defined critically with an insight for such 5S audit.

2. Objectives

The paper has some basic objectives. Some of the objectives can be stated as:

- a. To introduce 5S housekeeping technique;
- b. To discuss the way of using 5S in practice with a checklist; and
- c. To highlight on 5S audit with the rationale.

3. Background

The 5S framework was originally developed by just-in-time expert and international consultant Hiroyuki Hirano. The 5S framework is an extension of Hirano's earlier works on just-in-time production systems. The 5Ss represent a simple "good housekeeping" approach to improving the work environment consistent with the tenets of lean manufacturing systems. The focus on the concept is how the visual workplace can be utilized to drive inefficiencies out of the manufacturing process. This framework also improves workplace safety, which makes it attractive to businesses. According to Hirano, without the organization and discipline provided by successfully implementing the 5Ss, other lean manufacturing tools and methods are likely to fail. The "5Ss" stand for the Japanese words seiri, seiton, seiso, seiketsu, and shitsuke. Often in the west, alternative terms are used to disguise the Japanese origins of the methodology. These are "Sort, Straighten, Shine, Systemize and Sustain" and "Safety" as a 6th optional S. These were arguably derived to prevent 5S from being perceived as yet another Japanese improvement process in an era when western industry was already being overwhelmed by strategies to combat foreign business. Similarly 5Cs aim at same goal but without the strength of maintaining the 5S name.

1. Clear out and classify

- a. Clearing items no longer required
- b. Tagging items that may be required and storing away from workplace

2. Configure

- a. A specific place for specific items
- b. "A place for everything & everything in its place"

3. Clean and check

- a. Identify cleaning zones, establish cleaning routines

4. Conformity

- a. Consolidate the previous 3C's by standardizing the new process and use of 'Visual Management'

5. Custom and practice

- a. Monitor process adherence
- b. Continually validate process

- c. Make further improvements using the PDCA cycle, otherwise known as the Deming cycle

Alternative Americanization's have also been introduced, such as CANDO (Cleanup, Arranging, Neatness, Discipline, and Ongoing improvement). Even though he refers to the ensemble practice as "5S" in his canonical work, 5 Pillars of the Visual Workplace, Hirano prefers the terms Organization, Orderliness, Cleanliness, Standardized Cleanup, and Discipline because they are better translations than the alliterative approximations. There is a photo of a Japanese sign in 5 Pillars that shows the latin "5S" mixed with [Kanji](#).

Additional practices are frequently added to 5S, under such headings as 5S Plus, 6S, 5S+2S, 7S, etc. The most common additional S is for Safety mentioned above, and Security as the seventh S. Purists insist that the other concepts be left out to maintain simplicity and because Safety, for example, is a side-benefit to disciplined housekeeping.

4. 5S

The 5-S practice is a technique used to establish and maintain quality environment in an organization. It is the foundation stone for TQM and Business Excellence (BE). Hiroyuki Hirano (1995) outlines the five elements of the 5S system and how they act together as a foundation for productivity improvement in any organization. The five elements of this waste elimination system are derived from five Japanese words (Osada, 1991): Seiri, Seiton, Seiso, Seiketsu and Shitsuke. The English equivalents, their meanings and typical examples are shown in the following table (Table 1):

Steps	Japanese	English	Application	Typical Examples
S1	Seiri	Sort	Housekeeping	Throw away rubbish or return to store
S2	Seiton	Simplify	Workplace organization	30-second retrieval of document
S3	Seiso	Shine	Clean up	Individual cleaning responsibility
S4	Seiketsu	Standardize	Keep clean	Transparency of storage
S5	Shitsuke	Sustain	Discipline	Do 5-S daily

Table 1: 5-S in Summary

4.1 Seiri

Seiri is closely related to the Just-In-Time philosophy of eliminating manufacturing wastes by producing only the right amount and combination of parts at the right place, at the right time. In essence this requires the strict tagging of all items in the organization which are unwanted and unnecessary. These tags are colored red in order to stand out, and detail some basic information about the item to be evaluated. The red-tags effectively ask three questions of any item (Productivity Press, 1996):

- a. Is the item needed?
- b. If it is needed, is it needed in this quantity?
- c. If it is needed, does it need to be located here?

Even the number of necessary items in the workplace must be kept to an absolute minimum. A dedicated 5S audit team in conjunction with the red-tag initiator will determine whether the item should be disposed, relocated or left exactly where it is. Where the audit team cannot decide on the outcome of an item, it is placed into a red-tag holding area for a set period of time. The holding area helps to alleviate the fear of disposing an item which may become useful in the future (Productivity Press, 1996).

The Seiri element is usually written about in terms of operations or clerical activities, but applies to all work areas. W. E. Deming said, "No manufacturer I know of possesses enough knowledge and manpower to work effectively with more than one vendor for any item". Therefore a company's supply base could be organized by conducting a performance review and eliminating the redundant suppliers which will reduce variation and overhead (Bullington, 2005). Opportunities for consolidation may be identified by assigning a location value to the company's suppliers. A large map showing their locations could be utilized to group suppliers locally or in a targeted area along trucking routes so more than one supplier may be visited on a single trip (Bullington, 2005).

4.2 Seiton

Once all unnecessary items have been removed, the remaining items can be arranged efficiently so that they can be accessed or retrieved quickly, as well as returned to their home quickly. Normally the first two elements of the 5S activity are implemented together as they complement

each other. Seiton dictates that there should be a place for everything and everything in its place (Albert, 2004).

After careful consideration is given to each item, a location will be allocated, and labelled for easy identification by anyone in the company. Motion economy is an important principle of Seiton and focuses on the removal of human motion waste. In essence this is the removal of time, energy and effort from a process by the intelligent location of parts and equipment, so that all movement is absolutely necessary to perform a given operation. Seiton has many benefits to the organization:

- a. It eliminates motion waste as items are strategically located;
- b. It eliminates searching waste and waste due to difficulty in returning items as items have a clearly identified location; and
- c. Easy retrieval of items saves time and reduces employee frustration.

4.3 Seiso

Making a good first impression is vitally important to an organization and the way it is perceived from an external viewpoint. Creating an unblemished impression on corporate visitors will filter back to the people who make decisions about where new product lines should be manufactured.

Seiso consists of regularly cleaning the workplace and keeping equipment clean. A daily five minute cleaning exercise will help to implant cleanliness as a routine. It is particularly important for management to be involved in this element as resistance to cleaning can easily build up. A clean, well maintained company can make the critical difference between gaining new business or a reputation for untidiness.

Other Seiso benefits include (Albert, 2004):

- a. Creating a more comfortable and safe working environment;
- b. Greater visibility which reduces searching time;
- c. Not having to disrupt production every time there is a plant tour; and
- d. Simplification of maintenance activities as cleaning can also be used as a form of inspection. Problems such as oil leaks become instantly visible before they have the opportunity to affect performance

Seiso applies to suppliers in terms of audits. It is important to obtain evidence that suppliers are maintaining their facilities. This evidence can come from third party certification (ISO 9000, QS

9000), third party quality awards (EFQM, Malcolm Baldrige), site surveys or self-assessment (Bullington, 2005).

4.4 Seiketsu

It is vital that the initial three elements don't deteriorate over time. Seiketsu defines processes that sustain the improvements to date and drive further improvements. The first three elements (3S) are made habitual by incorporating 3S duties into regular duties (Dolcemascolo, 2003).

Seiketsu places processes and procedures in place so that mistakes are more difficult to make and problems become obvious quicker. This could include a set time each week to practice the first three elements, including a ten minute clean-up as well as a training re-cap. Some of the potential problems resulting from poor Seiketsu implementation from a supplier perspective are (Bullington, 2005):

- a. The number of suppliers increases unchecked;
- b. Suppliers are not visited on a regular basis; and
- c. Surveys are conducted informally

It is important for engineering and manufacturing to understand why consolidation of suppliers is valuable to the company as the motivation for adding suppliers often comes from outside the purchasing function. Seiketsu ensures that the supplier list is only as long as is absolutely necessary.

4.5 Shitsuke

Without continually moving forward with 5S improvements, a company will gradually lose ground. This will become clear from the 5S monthly audit scores. Making a habit out of the first four elements requires systems which are constantly monitored. Shitsuke secures the first four elements together and ensures that productivity increases continuously. This can be achieved through self-assessments and audits with the results reviewed regularly by a focus team.

A few days of concentrated effort from improvement teams can accomplish the first four elements. However, the fifth element is difficult to achieve. Leadership is crucial to the Shitsuke elements success. Poor leadership will result in a slow deterioration of the work carried out so far. Senior management must realize that 5S is a part of the organizational culture rather than a task to be performed yearly. It is the commitment of management which will ensure that 5S is a sustained success. They must communicate the benefits of 5S and encourage people to use their

training to take action. A 5S champion with the ability to mobilize and motivate people is required to ensure 5S becomes and stays part of the organizational culture (Gregory, 2005).

5. The 5-S Practice in Detail

In order to be able to comment whether 5S practice is useful, the proprietary 5S Audit Checklist developed by Ho [1995] is exhibited below. Following the rule of TQM (i.e., KISS – Keep It Short and Simple), the check-points are mostly self-explanatory (Table 2).

5S	What?	Where	How	Who	When
S1: Sort					
1.1	Throw away/return things which are not needed.				
1.2	3-R: Reduce, Re-use and Re-cycle, paperless, etc.				
1.3	“Needed things” stored: low, medium & high usage				
1.4	Personal belongings kept to the minimum				
1.5	Treat defects, leakage, breakage and their causes				
1.6	One-is-best #1: Daily “Things-to-do” List				
1.7	One-is-best #2: one set of tools/stationery/1-page form				
1.8	One-is-best #3: one hour meeting (be concise)				
1.9	One-is-best #4: one stop service for customer				
1.10	One-is-best #5: one location file (e.g. LAN server)				
S2: Simplify					
2.1	Everything has a clearly designated name & place				
2.2	Every place should have a ‘responsible person’ label				
2.3	Security on doors/ cabinets & key				

	management				
2.4	Functional placement for leaflets, tools and material				
2.5	Filing standards and control master list				
2.6	First in, first out arrangement				
2.7	Zoning, placement marks, signage and badges				
2.8	Neat notice boards (include zoning & labels)				
2.9	Easy-to-read notices (include expiry date)				
2.10	30-second retrieval of tools, document & parts				
S3: Shine					
3.1	Individual cleaning responsibility assigned				
3.2	Make cleaning and inspection easy (15cm)				
3.3	Clean the places most people do not notice				
3.4	Cleaning inspections and correct minor problems				
3.5	Regular sparkling cleaning campaigns				
S4: Standardize					
4.1	Transparency (minimize doors, covers & locks)				
4.2	Straight line and right-angle arrangements				
4.3	'Danger' warning, fire extinguisher & exit signs				
4.4	Dangerous goods, mechanical safety measures				
4.5	Work instructions and 'passed' labels				
4.6	Electrical wiring neatness and switch labels				
4.7	Energy Preservation – Aircon temp. mark/switch				
4.8	Physical handling standards and instructions				

4.9	Colour coding - paper, files, containers, etc.				
4.10	5-S responsibility labels on floor plan or at site				
4.11	Prevent noise and vibration at source				
4.12	Safety Policy and Risk Assessment				
4.13	Fool-proofing (Poka-yoke) Practices				
4.14	Park-like environment (garden office/factory)				
4.15	5-S & OHS Museum (photos before/after)				
S5: Sustain					
5.1	Execute individual 5-S responsibilities				
5.2	Wear, if necessary, safety helmet/gloves/shoes/etc.				
5.3	Good communication & phone call (magic-word)				
5.4	Daily 5-minute 5-S Practice				
5.5	One day processing of job/tasks (see 1.6)				
5.6	Safety-box and practice dealing with emergencies				
5.7	Organization Chart and Performance Indicators				
5.8	Design and follow the 5-S Manual				
5.9	Quarterly 5-S Audit and Improvements				
5.10	Seeing-is-believing and Keep It Short & Simple (KISS)				

Table 2: The 5S Checklist

6. 5S Audit

5S audit is very important for installing and maintaining a successful 5S program. The way of having a complete audit on 5S is to some extent different than other type of audit. First of all, we need an audit plan with different activities in line with 5 Ss. For each activity, the auditor will put

some scores that will be accumulated finally to have an overall 5S audit score. It can be compared with the earlier score, if any, to find out the changes in 5S application. A typical 5S audit plan may include the activities as given in Table 3. This is not an exclusive list rather may be used as an example.

- a. Start with the first S – Sort, check each item according to the description and rate it on a scale of 0 through 4, where 0 is the worst and 4 is the best by putting a check mark in the appropriate box.
- b. When you complete an S, add the number of times you checked each column by the column score weight then add up all your subtotal numbers and write that number in the category subtotal box.
- c. Continue this process throughout each S.
- d. Add up each category subtotal to obtain your final score.
- e. Post the score in a visible location in the target area using the 5S Score Sheet.

Steps	No	Check Item	Description	Score					Category	Subtotal
				0	1	2	3	4		
5S	1	Materials or Parts	Does the inventory or in-process inventory include and unneeded materials or parts?							
	2	Machines or equipment	Are there any unused machines or other equipment around?							
	3	Jigs, tools, or dies	Are there any unused jigs, tools, dies or similar items around?							
	4	Visual control	Is it obvious which items have been marked as unnecessary?							
	5	Written standards	Has establishing the 5S's left behind any useless standard?							
	Subtotal									
5S	6	Location Indicators	Are shelves and other storage areas marked with location indicators and addresses?							
	7	Item Indicators	Do the shelves have signboards showing							

		which items go where?							
	8	Quantity Indicators	Are the maximum and minimum allowable quantities indicated?						
	9	Demarcation of walkways and in-process inventory areas	Are white lines or other markers used to clearly indicate walkways and storage areas?						
	10	Jigs and tools	Are jigs and tools arranged more rationally to facilitate picking them up and returning them?						
	Subtotal								
SHINE	11	Floors	Are floors kept shiny clean and free of waste, water and oil?						
	12	Machines	Are the machine wiped clean often and kept free of shavings, chips and oil?						
	13	Cleaning and checking	Is equipment inspection combined with equipment maintenance?						
	14	Cleaning responsibilities	Is there a person responsible for overseeing cleaning operations?						
	15	Habitual cleanliness	Do operators habitually sweep floors, and wipe equipment without being told?						
	Subtotal								
STANDARDIZE	16	Improvement memos	Are improvement memos regularly being generated?						
	17	Improvement ideas	Are improvement ideas being acted on?						
	18	Key procedures	Are standard procedures clear, documented and actively used?						
	19	Improvement plan	Are the future standards being considered with a clear improvement plan for the area?						
	20	The first 3 Ss	Are the first 3 Ss (sort, set locations and shine) being maintained?						

	Subtotal								
SUSTAIN	21	Training	Is everyone adequately trained in standard procedure?						
	22	Tools and parts	Are tools and parts being stored correctly?						
	23	Stock controls	Are stock controls being adhered to?						
	24	Procedures	Are procedures up-to-date and regularly reviewed?						
	25	Activity boards	Are activity boards up-to-date and regularly reviewed?						
	Subtotal								
Grand Total Score									

6.1 Audit Report

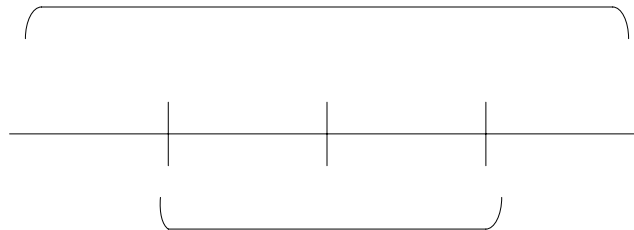
There is no generalized format for 5S audit report. It depends on the nature of the company under consideration. But, a typical 5S audit report should include the following information as given in Figure 2.

5S Score		
Department		
Previous Score		
% Change		
Audit Date		
Auditor		
Notes		

Figure 2: 5S Audit Report.

6.2 Audit Frequency

Since adopting 5S is all about adapting new habits and standards, 5S reviews should be very frequent for the first time and reduce the frequency as the average scores improve. This is different in every company and is a matter of personal choice; however, frequency may follow the following continuum (Figure 3) based on the audit score.



Audit Fr

Figure 3 - Audit Frequency Based on Audit Score (Crabtree, 2006).

7. Conclusion

Senior executives are under constant pressure to increase efficiency and deliver increased shareholder value whilst having to cope with challenges such as global competition, new technology and constantly changing regulation (Heynitz, 2004).

Lean manufacturing techniques which have played such an important role in the Japanese car industry must be successfully adopted by every manufacturer to remain competitive in the future.

As the quality of products from low cost locations improve, manufacturers will have to fully exploit lean opportunities to minimize risk and maximize efficiencies if they are to meet the competitive challenges posed by the steady development of low-cost locations.

5S is one of these lean techniques. It is an ultra-effective, low-cost method of increasing plant efficiency and productivity, fast. Few techniques engage all employees like 5S. Adopting powerful tools like 5S will help the manufacturing industry take control of processes, reduce costs and create competitive advantages in the demanding years ahead.

Bi-weekly
Audits

Monthly
Audits

3.0

3.

Audit

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The Development of Human Capital and the Challenges of Knowledge-Based Production: The Nigerian Situation

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Abstract

This paper reflects on the need for human capital development in Nigeria taking into consideration the challenges of knowledge-based production process in this integrated global economy. It tries to establish that Nigeria has not adequately addressed the core knowledge needs of the production sector by solving problems which relate to human capital management, development and motivation. This is necessitated by the observed pervasive, abject shortage of managerial skills, knowledge and talent required in most nations' organisations. This paper argues that the nation lacks the critical knowledge and management initiative and ability to organise production effectively and efficiently. It concludes that the task of developing a reservoir of skills and knowledge that will tackle the factors constraining the adaptation of knowledge-based production processes in Nigeria is not only imperative but also urgent. Being the single most populous black nation in the world and endowed as it is with enormous natural and human resources, Nigeria is placed in an enviable and critical position in this global economic history if it can harness its abundant resources.

Keywords: Knowledge-Based Economy, Human Capital Development, Motivation, Management Initiative, Nigeria.

1. Introduction and Problem

Nigeria is endowed with abundant natural and human resources. It is expected that with such abundance of natural and human capital resources, Nigeria would have become a prominent figure among the most industrialized nations in the world. Sadly, the situation appears to be the reverse. Nigeria continues to wallow in economic under-development and technological backwardness. Iheriohanma (2004:86) posits that Nigeria's development experience since her Independence has been that of relatively poor economic performance. The nations Gross Domestic Product (GDP) is decreasing and decline in productivity has led to reduced income, organisational closures, lay-off's and increased human misery. At a period when most counties – developed and developing – are embracing the knowledge-based production process as a panacea to ineffectiveness in today's national and global economy, Nigeria it appears, is finding it difficult to truly understand the necessity of knowledge-based production or how to carry out the changes required to bring it about.

Efforts in the past which attempted to reverse this trend were unsuccessful primarily because Nigeria has an economic system which suffers from a plethora of deficiencies. Prominent among these is the relegation of human capital to a secondary role in the production process. Beginning with the four National Development Plans, through Austerity Measure, Structural Adjustment Programme (SAP), the vision 2010 (later shifted to 2020), to the present political leaderships Seven Point Agenda, the various administrations failed to nurture economic growth and development through clearly defined human capital development strategies to evolve competitive market-oriented economy.

The objective of human capital within organisations in a nation is to maximize returns on investment. Human capital is not mere commodities or resources but creative and social beings in a productive enterprise. Harnessing and marshalling the enormous potentials of this resource is crucial to efficient and effective production and economic progress. Abundant resources alone cannot lead to economic renaissance. It is the ability to create a labour force (human capital) that possesses the skills, knowledge, talents, abilities, competences, etc to be competitive in the global economy of the 21st century that can turn the national fortune around.

Human capital, organisations and national economies exist in a world of constant evolutionary activity. Nigeria, the 'giant of Africa' is faced with the intimidating and overwhelming challenge of developing her human capital. This is primarily because the 21st

century economy has made it imperative more than ever that nations' must become increasingly and competitively skilled in their own knowledge-based production and become active creators and contributors to international economy, thinking and decision making.

In the light of the above, the broad objective of this paper is to explore the critical need for the development of human-capital in Nigeria with regard to the challenges of the emergent 21st century knowledge-based production. Specifically, this paper seeks to:

- a. Highlight the importance of human capital development to the production process in Nigeria.
- b. Explore the challenges of knowledge-based production with regard to human capital development in Nigeria
- c. Suggest ways of enhancing critical human capital development that will consolidate on the benefits of knowledge-based production process.

This paper aims at drawing attention to the fact that no nation, despite its development status, can effectively solve its economic challenges of the Third millennium without a continuous development of its stock of human capital. Effective application of existing knowledge and the creation of new knowledge in the production process demands that knowledge and skills inherent in human capital be consistently developed to crystallize into efficient, effective production in this 21st century. The methodology adopted is analytical and it benefits from library research.

2. Theoretical and Conceptual Emphasis

David C McClelland (1961) in his Acquired-needs Theory emphasized three themes each corresponding to an underlying need that he believes is important for understanding individual behaviour in a work situation. The themes are:

- a. The Need for Achievement (nAch). This need drives the individual to do better, solve problems or master complex tasks so as to achieve high quality work life.
- b. The Need for Affiliation (nAff). This need drives the individual to seek friendly and warm relations with co-workers.
- c. The Need for Power (nPow). This need drives the individual to desire control over others and influence their behaviour.

The Acquired Needs Theory emphasizes that individuals with need for achievement aspire to work where they feel challenged and stimulated. Such individuals also desire to influence

particularly and be influenced by others and control their environment. Their desire for affiliation drives them to maintain warm, friendly relations with others. McClelland claims that the amount of achievement motivation an individual has is the function of childhood, personal and occupational experiences and the type of organisation he works for.

The need for achievement is satiated through development and acquisition of talents, skills and knowledge by superiors and subordinates which enable them to develop, grow and climb the authority structure in their work place. Superiors with this drive receive and share ideas with subordinates. They set higher goals and expect that subordinates will become oriented towards goal achievement. Subordinates on the other hand will work harder, particularly if feedback on their past performance in form of growth, achievement, promotion, etc are made available to them. This is more so because of the importance of the goals to them. The Need for Achievement impacts variously to curtail the challenges of knowledge-based production in an information and knowledge-driven economy.

Despite differences in childhood, cultural, personal and occupational/organisational experiences, every nation has its share of high achievers who aspire to achieve a standard of excellence in their work. This need for achievement, as illustrated in figure 1 leads to efforts at increasing capacities through training, education, apprenticeship, job enrichment, manpower-planning and this interact or influence skill, knowledge and competence levels and vice-versa. The impact manifest in increased output, worker resilience reduced wastages in time and resource.

Being driven to achieve more, the worker does not set a roof for his capability to achieve. Therefore, further training and sharpening of his proficiency and problem solving skills become a necessity. This increases his knowledge about the production process because of innovative ideas and knowledge. He becomes more adaptive in the application of existing knowledge and ideas in the production process and environment and the challenges of creation of new knowledge to meet the demands of the future.

The success of knowledge-based production is dependent on identifying the needs and drives of the human capital in a nation. The emerging economy demands that nations ensure that such needs and desires are adequately met through investment in the development of human capital.

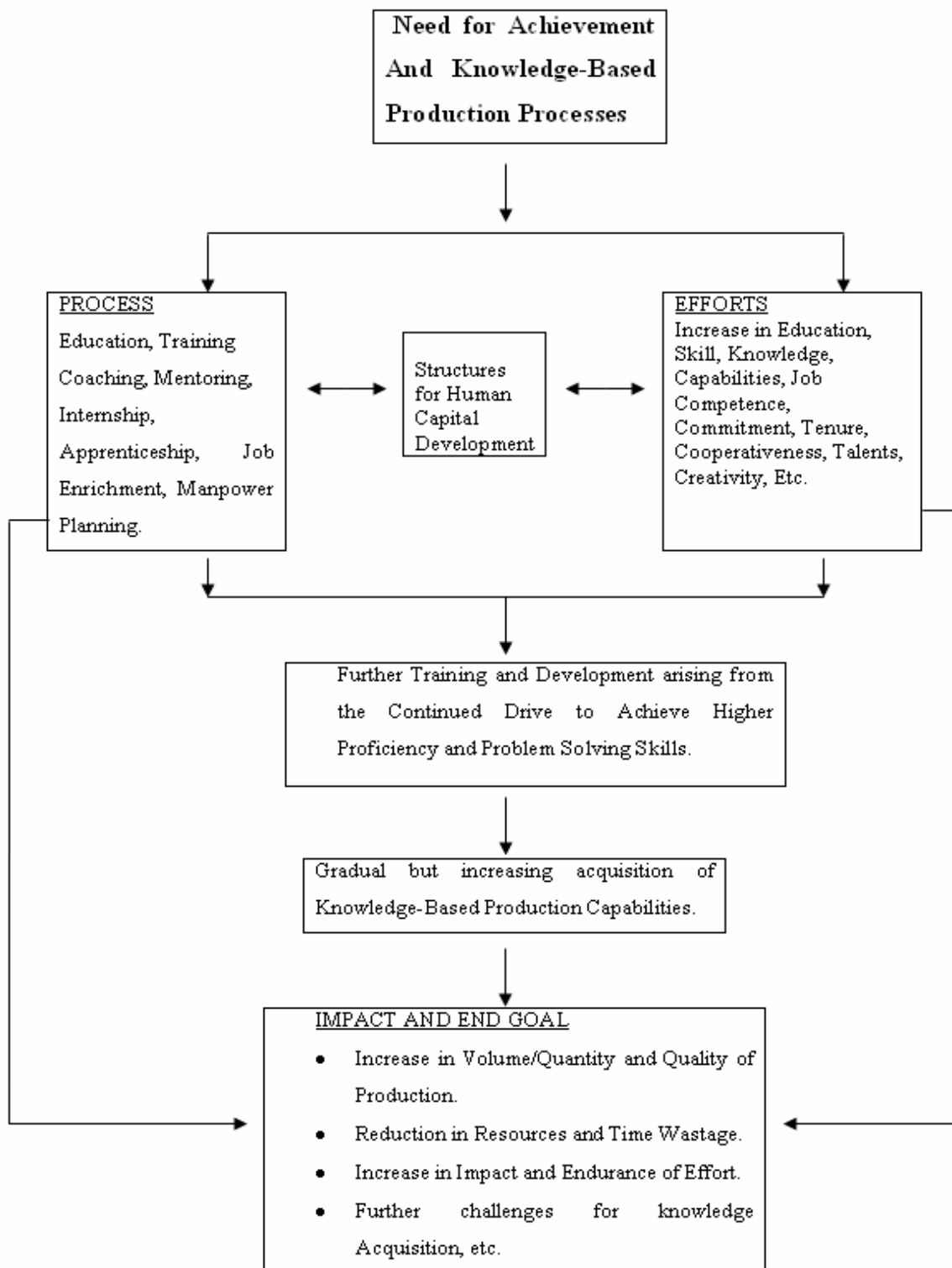


Figure 1. Framework Explaining Relationship between Need for Achievement and Knowledge-Based Production Process

This helps to boost worker's morale and enables him overcome the challenges he must encounter in the production process particularly in a world where globalization has reduced thousands of kilometers to the length of the distance of a GSM handset in the palm of a hand to the ear and mouth.

3. Importance of Development of Human Capital to Production

Bontis (1999), states that human capital represents the human factor in the organisation. It encompasses the knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic wellbeing. Put simply, it represents the skills, knowledge, abilities, etc which make it possible for them to efficiently do their work and create value. According to Akubuiro (1998:37), "human capital constitutes the most important aspect of an organisation to the extent that an organisations performance and resulting productivity are directly proportional to the quantity and quality of its human resources".

The human factor affects production immensely. Iheriohanma (2006:56) categorically states that "any workforce that is not equipped with creativity, versatility and explorative acumen in relation to the aggressive forces of world economic integration is slated to remain a loser from the benefits". The emphasis here is on the relevance of human capital development. It underlines the link between consistent human capital development and new forms of production to sustainable competitiveness, innovation and performance in the volatile productive conditions of the 21st century economy.

Development of human capital is not optional. It is a necessity in the production process. Developing human capital enables individuals acquire skills and knowledge needed to achieve production goals of today and the future. The world is constantly changing and nations find themselves locked in a struggle to gain competitive advantage in manufacture and production. Developing the human capital of a nation gives such nation the advantages of possessing the ability to harness talent. This ability is the key enabler for both the present and the future production needs of the nation. It contributes veritably in helping to build a world-class talent pool that will be among the best and the brightest in the world.

Globalization and its impact on production have caught many unprepared nations unawares. This is more particular for developing nations, Nigeria inclusive. According to ICT-G22 (2005), Nigeria is thus "left in a catch-up mode in a very significant and critical human

existence and development equation". Acquisition of fixed capital equipment without the relevant technologically skilled human capital succeeds only in withering the Nigerian economy and in deepening the underdevelopment and poverty situation.

Iheriohanma (2004:93) observes that "human capital development is a sine-qua-non for industrial economic development anywhere in the world".

By focusing on the development of the different production-directed energies or human capital, a nation builds its requisite capacities for its survival and progress. This further makes it possible for such a nation to focus on developing human capital capabilities in terms of production for alternative future rather than attempting to predict the future. It will facilitate the development of a comprehensive 'national human capital purpose and values' that will capture the essence of production-oriented activities which will ultimately improve the productivity of the nation's human capital.

4. Human Capital Development: The Nigerian Experience

The world of work is changing rapidly. Production is becoming increasingly knowledge-based, requiring more highly skilled management and labour. The search for quality and efficiency as tools of competitiveness is driving new forms of production in the attempt to advance national productivity. The rise of knowledge-based production and the rapidity of technological change require a workforce that possesses a vast portfolio of relevant skills and knowledge. This is because skills required to support this emerging economic order are radically different from what was obtained few decades ago. Underpinning specific skills in the new work environment is a new range of broad skills that include problem solving and synthesizing skills, learning abilities, memory training and competence. Attitudes in terms of change, initiative and motivation are fast becoming very important in the production process. The pace of change and the imperative to update existing skills and develop new skills is gradually accelerating and as such, a stock-pile of developed critical human capital has become the competitive advantage for nations.

The availability and use of knowledge by human capital represents a key challenge that has been identified by both private and public sector organisations engage in production of goods and services in Nigeria. World Bank (2002:8) observes that "comparative advantages among nations derive more and more from natural resources and cheap labour but increasingly from technological inventions and the competitive use of knowledge". The emphasis has been shifted

to learning to learn, learning to transform information into new knowledge and learning to translate new knowledge into new applications.

Iheriohanma (2008:59) asserts that “through the exposure of information and communication technology, the Nigerian worker is now demanding a rising shift in worker aspiration from first earning a living to a greater interest in a more fulfilling and satisfying work experience”. Based on this, the Nigeria worker now demands greater control over his work place and work, greater freedom, greater chance of self-determination and self development and the use of initiative and independence in the production process.

Demand for self-determination and self-development among workers in Nigeria remains futile in the absence of a corresponding effort channeled towards attainment of developed human capital. Reacting to this, Ofoegbu (2006:5) opines that though there has been some progress towards staff training and development in Nigeria, the tempo still falls short of the demands of the new knowledge-based production activities of the 21st century. More so, a greater number of bosses in production-based organisation do not seem to appreciate the value and purposes of staff training and development. This vitiates the willingness to make or implement policies directed at harnessing the skills, knowledge and competence from human beings required to achieve production objectives.

Knowledge has been recognized as the driver of productivity and catalyst to economic growth in Nigeria. Yet national economic policies continue to weaken any attempt to emphasize upgrading of human capital either through access to general education and incentives to continuous work related education training and learning (Ukachukwu, 2009). There exists limited focus on the role of information technology (ICT), improved skills, knowledge and competence on economic performance. An example that suffices here is the current Nigeria’s Yar’Adua’s administration Seven-Point Agenda which emphasizes power and energy, food security and agriculture, wealth creation and employment, land reforms, mass transportation, security and lastly education. The position of education in the hierarchy of the items of the agenda suggests to a keen observer the importance arrogated to it by a government claiming to be committed to complete economic turn around. Moreover, the focus on education does not include educating the majority of resource outside the universities walls. Rather, its main focus is on educational institutions where conceptual rather than practical technical experience or knowledge is mostly imparted.

Aimiuwu (2004:26) asserts that in extolling the primacy of the 'human resources', 'human capital', 'human being', or 'my people', we do not walk the talk in our policies and deeds in Nigeria. He argues that though people are said to be the soul of the business, they are treated as the sole of the business to be trampled on. He concludes by asking how much time companies and government allot to discussing people issues. Sadly, the answer to this question is frighteningly 'very little.

Government's effort to reposition the production process in Nigeria is continuously constrained by a range of recurring factors which include institutional weakness, poor capacity for human resources management, planning and development. There exist wide-spread gaps in quality and relevance of training institutions, poor linkage and partnership between government and training providers, inadequate focus on norms, value, attitude and orientations and tribal affiliation of workers (Aimiuwu, 2004; Ukachukwu, 2009).

In a world and century where production processes and working organisations are continuously undergoing significant changes, the Nigeria nation is caught up in the quagmire of a stalemate. In other nations of the world, old production styles characterized by strict division of labour in tightly controlled processes is giving way to more creative team-working with multi-skills and devolved responsibilities. The process continues as the application of new technology spreads. Nigeria unfortunately, wallows in prophetic political and economic visions of the future just as its successive leadership find it difficult to grasp the present because of unpreparedness.

5. The Challenges of Knowledge-Based Production in Nigeria

It is not surprising that it is only the national economies of the world such as China, Japan, USA, etc which are genuinely knowledge-based and technologically proficient that are classified as successful. This success according to ICT-G22 (2005) derives from the fact that such economies have established a new global society where the core production value system is domiciled in the skills to create productively by transforming knowledge and information into innovative products and service. Unfortunately, the Nigeria nation is finding it debilitatingly difficult to keep pace with the rapidly changing world due to its tenacious hold on out-dated human capital value system and education models.

According to Ogbimi (1999), "both the formal and informal education system in Nigeria have continued to produce mediocrities because students do not acquire both theoretical and

practical skills”. The formal system produces people with facts and theoretical knowledge but limited practical skills. The informal or apprenticeship system on the other hand produces people with limited practical skills and no fundamental theoretical knowledge. The same could be said of the generality of the human capital involved in production in Nigeria.

Zach (2003:67) states that “it is increasingly being realized that knowledge is often produced and shared as a by-product of daily interaction with customers, vendors, alliance partners and even competitors”. As such, knowledge-based production focuses on a collection of people and supporting resources that create and apply knowledge through continued interaction in the production process. The boundaries of this interaction are usually blurred, malleable and dynamic. Therefore, organisations seek knowledge where it exists and allies with whoever can help it learn what it needs.

Boulding (1956) observes that “a knowledge-based organisation, regardless of whether its products are tangible or not holds a knowledge-oriented image of itself”. What this means is that the organisation takes into account every aspect of its operation and treats every activity as a potentially knowledge-enhancing act. According to Zach (2002) it involves the use of knowledge and learning as the primary criteria for evaluating how an organisation organizes what it makes, where it locates, who it hires, and the nature of its competition.

The challenges facing the adaptation and utilization of knowledge-based production processes in organisations in Nigeria are multi-faceted. These challenges include deficiencies in the ability to:

- a. Define organisational mission and purpose in terms of knowledge. This makes it difficult to explain the organisation’s industry and the positions within it in terms of knowledge.
- b. Formulate strategies with knowledge in mind. This makes it difficult for the organisation to recognize or impose limits on what it can successfully execute.
- c. Implement knowledge management processes and structure which directly support the organisations strategic knowledge requirements.
- d. Transform organisations into strategic learning environments. This is the most important because it determines the organisations capacity to sustain the knowledge ability of its human capital based on the desire to learn.

A knowledge-based organisation or economy that is advocated for Nigeria understands the economics as well as strategic value of teaching and learning. It treats the cost of development of

human capital as an investment and not an expense. It evaluates investment in training as options for future action rather than sunk cost. Hence, human capital management is taken seriously. Workers are recruited and their skills and knowledge are developed continuously based on the knowledge for which the organisation or economy needs to compete and execute its strategy. It builds and relies on social capital as a key motivator for knowledge creation and application. Most importantly, it rewards creativity, risk taking, experimentation, imagination and even failure when it generates important lessons to be learned.

These deficiencies have not been easy for the Nigerian nation to overcome. There is still encountered the unwillingness or reluctance to employ both imagination and effort which can make an organisation truly knowledge-based. There exists an even greater danger in coasting along and missing out on opportunities of knowledge-based production.

Today, policy makers in Nigeria find themselves trapped in a complex global development spider-web of knowledge of which the nation participates from a peripheral disadvantaged position. Questions have arisen pertaining to ascertaining how individuals can be motivated through incentives, rewards, leadership and importantly, the work they do and the organisational context within which they carry out their work.

Unfortunately, the Nigeria productivity situation continues to fail to realize the advantages residing in the vast intellectual assets hidden below the surface of the production process. This prompted Alugbuo (2004:102) to observe that most workers in Nigeria, especially in the public sector do not produce optimally and this consequently has made Nigeria to be referred to as one of the poorest economies in the world.

6. Recommendations

The inability to formulate and implement wholesome human capital development policies poses a greater obstacle to the achievement of knowledge-based oriented production in Nigeria. This adversely affects the ability of knowledge movement or transfer from one part of an organisation to the other parts. It also constrains any attempt to ensure that existing or emerging knowledge is shared over time and that an organisation benefits from past experience. It reduces the ability of different skills and talents from various parts of an organisation to find each other and collaborate to create new knowledge in the production process. It also reduces opportunity and incentives for experimentation and learning which constitute the driving force of economic development.

To put it succinctly, Nigeria is yet to enact policies that would turn it from a dwindling economy to a striving economy. The truth is, dependence on natural resources alone cannot guarantee the much desired achievement of the lofty ideals of economic progress by the year 2020. It is the human capital that can attain and sustain it. In a globally inter-connected but competitive world, Nigeria needs a workforce which understands how to make use of technology and knowledge as tools for increasing creativity and productivity.

Nigeria needs to address its local production needs. It is also time to realize that the nation is part of a global economy. This makes it more imperative than ever that its teeming human capital be developed. It is time the nation begins to genuinely develop worker's skills towards knowledge-based production. This will enable them become active creators and contributors in international thinking and decision making. This can be attained by creating knowledge based enabling environments, strategic national information structures, revitalization, reorganization and reinforcement of management training and capacity building institutes and knowledge and technology capacity building facilities.

7. Conclusion

The successful and resilient national economies display a number of characteristics in the way they manage human capital in the production process. Human resource development professionals work as partners and not as internal vendors. It is never too soon or too late to begin in the development of critical human capital and the various human resources department in organisations are ideally positioned to lead the way. This is a wake up call for the Nigerian leadership to be critical and knowledgeable to realize the need for human capacity building as catalyst to drive the wheel of economic progress in this millennium of knowledge-based production and market-oriented global economy.

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The Impact of Oil Spillage on Agricultural Production among adult Farmers in the Niger Delta Region Of Nigeria

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Abstract

Environmental degradation of the oil-rich Niger Delta region has been wanton and continuous with dire health, social and economic consequences for its people. Using a sample of 928 registered adult farmers drawn randomly from 3 states in the oil producing agro ecological zones of the Niger Delta region , data were collected using well structured questionnaire, the data collected were analyzed using mean and standard deviation. Results from the study showed that there was a negative impact of oil spill on agricultural production. The negative impact of oil spill on agricultural production was found to be, reduced crop yield, polluted the rivers for fishing, land productivity and thereby reduced farm income and standard of living of the people. In order to arrest the continual degradation of the Niger Delta environment, it was recommended that the enactment and enforcement of stringent environmental laws to protect the law as well as the implementation of policies to reduce the guarantee a better living standard for the people should be urgently carried out.

Keywords: Oil Spillage, Agricultural Production, Adult Farmers, Niger Delta Region Nigeria

1. Introduction

The Niger Delta region of Nigeria is greatly endowed with abundant natural resources and a weather which supports all year round agricultural production. According to federal office of statistics (FOS) (1995), about 50% of the active labour force is engaged in one form of agricultural activity or another with yam, cassava, plantain, maize, cocoyam and vegetables as the predominant food crops in the Niger Delta area.

However, owing to the hydrographic conditions of the area only a fraction of the land size is cultivated with crops. Agricultural practices in this area are mainly at subsistence level

with the use of crude implements such as hoe and cutlasses. Therefore, agricultural production is on a small scale with small farm holdings, mechanization is on a very low scale and the use of modern farming inputs such as fertilizers and pesticides is limited.

Although the level of agricultural production in the Niger Delta area is somewhat low given the abundant resource endowment, Niger Delta is the largest crude oil producing area in Nigeria, the base of the Nigeria oil and gas industry which generates over 90% of the nation's foreign exchange earnings. In spite of the increasing revenue from crude oil exploitation, the communities from where this resource flows in the Niger Delta continue to live in conditions of social deprivation and abject poverty. All stages of oil exploitation impact negatively on the environment and the greatest single intractable environmental problem caused by crude oil exploration in the Niger Delta region is oil spillage. According to the department of petroleum resources (2001), over 6000 spills had been recorded in the 40 years of oil exploitation in Nigeria with an average of 150 spills per annum. In the period of 1990-2000, 647 incidents occurred resulting in the spillage of 2,369,407.04 barrels of crude oil with only 549,060.38 barrels recovered 1,820,410.50 barrels of oil were lost to the ecosystem.

According to Chindah and Braide (2000) oil spill on crops causes great damage to the plant community due to high retention time of oil occasioned by limited flow. The oil hampers proper soil aeration as oil film on the soil surface acts as a physical barrier between air and the soil. In fact oil pollution affects the physicochemical properties of the soil such as temperature, structure, nutrient status and PH. For example, the oiled leaves of pepper and tomatoes may wilt and die off due to blockage of stomata thereby inhibiting photosynthesis, transpiration and respiration (Anoliefo and Vwioko, 1994).

In a study of the socio-economic impact of oil pollution Worgu (2000) stated that crude oil exploitation has had adverse environmental effect on soils, forests and water bodies in host communities in the Niger Delta. Farmers have lost their lands and are consequently forced to migrate to other communities in search of livelihood. According to Stanley (1990) 67.7% of 797 respondents interviewed on the socio-economic impact of oil pollution identified farmland degradation as a major problem.

2. Statement of the Problem

The environmental consequences of oil pollution on the inhabitants of Niger Delta are enormous. Oil spills have degraded most agricultural lands in the area and have turned productive areas into wastelands with decreasing of soil fertility due to the destruction of soil micro – organisms and dwindling agricultural productivity, farmers have been forced to abandon their land to seek for non-existent alternative means of livelihood. Aquatic pollution of traditional fishing grounds, exacerbating hunger and poverty in fishing communities. It is in the light of these problems that this study is aimed at investigating the impact of oil spillage on agricultural production in the Niger Delta Region.

3. Purpose of the Study

The objective of this study is to examine the impact of oil spillage on agricultural production. Specifically, the study aims to:

- i. Determine the influence of oil spill on crop yield
- ii. Examine the impact of oil spill on the fish yield
- iii. Determine the influence of oil spill on farmers income
- iv. Find out the impact of oil spill on the living standard of the farmers

4. Research Questions

The following research questions were formulated.

- i. What is the influence of oil spillage on crop yield?
- ii. What is the impact of oil spillage on the fish yield?
- iii. What is the influence of oil spill on farmer's income?
- iv. What is the impact of oil spill on the living standard of the farmers?

5. Methodology/Procedure

5.1 Design of the Study

The study was carried out using a descriptive survey design. A survey design is one in which a group of people or item(s) is studied by collecting and analyzing data from a few people or item considered to be representation of the entire group (Akuezuilo and Agu 2002).

5.2 Area of the study

The study was carried out in Niger Delta region of Nigeria. The Niger Delta region is made up of nine (9) states namely – Abia, Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo and Rivers. The inhabitants of these areas are mainly crop farmers and fishermen and cases of incessant oil spillages have been reported there.

5.3 Sampling Procedure and Data Collection

The respondents for this study were selected by simple random sampling. Out of nine (9) states which make up the Niger Delta region. Only three (3) states (Delta, Bayelsa and Rivers) representing about 34% that were used in this study. The choice of the 3 states was as a result of the several oil producing communities in the area of study and they are the leading source of on-shore crude oil production in Niger Delta region. On the whole 928 registered Adult farmers out of 12,124 registered farmers from the 3 States were used for this study.

Table 1: Distribution of the Sample According to State

S/N	State	No of Adult Registered Farmers	No of Adult registered Farmers sampled
1	Bayelsa	3,230	260
2	Delta	5,048	360
3	Rivers	3,846	308
	TOTAL	12,124	928

The questionnaire was used for the collection of data for the study. The instrument sought information on the effect of oil spill on crop yield, fish yield farmers income and the living conditions of the farmers. The questionnaire consist of a fiver point likert scale

The researcher personally distributed and collected completed questionnaire through personal contact. The data collected from the respondents were analyzed using mean scores.

6. Findings and Discussions

6.1 Research Question 1

What is the effect of oil spillage on crop yield?

To answer the above research question a list of items was presented to the farmers who were asked to indicate the degree of agreement or disagreement to them as to the effect of oil spill on crop yield.

Their responses were reported in Table 2 below.

Table 2: Distribution of the Effect of Oil Spill on Crop Yield N – 928

S/N	Items	Mean (X)	SD	Remarks
1	The spread of crude oil on the soil surface as a result of oil spillage compact the soil structure thereby reducing the crop yield	4.04	1.09	Agree
2	Oil spillage causes water logging and flooding of the area thereby causing germination failure	4.11	1.04	Agree
3	Desert encroachment as a result of constant oil spillage leads to unavailability of land for agriculture	3.95	1.13	Agree
4	Constant damage of the oil pipe lines causes destruction of fertile land which leads to low agricultural output.	4.38	0.94	Agree
5	Stunted growth of crops and subsequent reduction of yield is caused by thermal pollution as a result of spillage	4.44	0.92	Agree
6	Dumping of chemical waste by oil company workers could lead to	4.04	1.05	Agree

	contamination of agricultural lands thereby reducing the quantity of food crops.			
7	Fauna and vegetation are destroyed through bunkering/vandalisation of oil pipe lines.	4.12	1.03	Agree
8	Pipe line canalization causes destruction of useful microorganisms in the soil	4.29	0.96	Agree
9	Spreading of crude oil on the soil surface could cause oxygen depletion in soil and river water.	4.44	0.92	Agree
10	Spillage of oil contaminates the water and makes it unfit for drinking and affects the farmers performance	4.52	0.96	Agree

Table 2 shows the mean distribution of opinion of the adult farmers on the effect of oil spill on crop yield.

The farmers agreed to all the items in Table 2. That means the farmers agreed that the oil spill has seriously affected their crop yield. The data showed that the farmers agreed that the oil spill has reduced the crop yield. For example the farmers agreed in item 1 ($\bar{x}=4.04$) that the oil spillage has compacted the soil structure thereby reducing the crop yield. The farmers also agreed that the oil spill cause water logging and flooding of the soil thereby resulting in poor germination of crop seeds, constant vandalisation of oil pipe lines causes destruction of fertile land leading to low agricultural output, stunted growth of crops and subsequent reduction of yield is caused by thermal pollution by oil spillage; fauna and vegetation are destroyed through bunkering and vandalisation causes destruction of microorganisms, that the spread of crude oil on the soil surface causes oxygen depletion in soil and river water and that spillage of oil contaminates the water and make it unfit for drinking. These findings are in support with a related study carried out by (Nkata, 2006) in his paper “Environmental degradation and Farm Management Practices of Farmers in Niger Delta”.

The standard deviation (SD) ranges between 0.09 (item 5 and 9) and 1.13 (item 3). This signifies high variability in the opinion of the farmers.

6.2 Research Question 2

What is the impact of oil spillage on the fish yield?

Table 3: What is the impact of oil spillage on the fish field N=928

S/No	Items	Mean (X)	SD	Remarks
11	The crude oil spreading on the soil surface can affect the density and nutrient content of the water	4.06	1.09	Agree
12	Blockage of the soil air spaces in water by the oil spillage lead to the death of fishes and destruction and other nutrients microorganisms	4.11	1.04	Agree
13	Oil spillage leads to water logging and flooding of the land.	3.68	1.07	Agree
14	Dumping of waste and spill leads to contamination of agricultural water	4.00	1.04	Agree
15	Oil spillage leads to unavailability and pollution of water for fish farming	4.21	1.03	Agree
16	The spread of crude oil on the soil surface can reduce the quantity of oxygen in the water	4.16	0.94	Agree
17	Oil spillage can lead to reduction in fish yield.	4.52	0.96	Agree

Table 3 above shows the mean distribution of the responses of the Adult farmers on the impact of oil spoilage on fish yield. The farmers however agreed to all the items in table 3. They agreed that the oil spillage has impact on fish yield as stipulated in item 11, 12, 13, 14, 16 and 17. The data showed that the farmers agreed that the oil spillage had serious impact on fish

yield. For instance, the farmers strongly agreed that the spread of crude oil on soil surface can affect the density and nutrient content of the water, that the blockage of air spaces by the oil spillage can lead to the death of microorganisms and fishes, that oil spillage can lead to loss of water nutrients and that oil spillage leads to unavailability of water for fish farming (items 11,12, 15, and 17) in support of these findings, Nkata (2006) opined that constant pipe line vandalisation causes destruction of forest resources and depletion of oxygen in soil and water .

The standard deviation ranges between 0.94 (item 16), and 1.09 (item 11). This signifies high variability in the opinion of the farmers.

6.3 Research Question 3

What is the effect of oil spill on farmers income?

Table 4: Distribution of the Effect of oil spill on farmers income N = 928

S/N	Items	Mean (X)	SD	Remarks
18	Oil spillage which causes water logging/flooding on farm land has decreased my crop/fish and income.	4.13	1.03	Agree
19	Oil spillage which causes death of fish and germination failure has reduced my crop/fish and total income.	4.02	1.00	Agree
20	The constant vadalization of oil pipeline leading to oil spillage, water pollution and infertile soil has reduced my total yield and income.	4.20	1.02	Agree
21	Death of fish, stunted growth of crops and subsequent reduction of yield as a result of oil spill has decreased my income.	4.08	1.15	Agree
22	The spread of crude oil on the soil and water surface which causes oxygen depletion in the soil and water has reduced my yield and total income.	2.900	1.24	Agree

23	Fauna/vegetation are destroyed through bunkering and vandalization of oil pipelines reduces my crop/fish yield and income.	4.52	0.96	Agree
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Table 4 shows the means distribution of opinions of Adult farmer on the effect of oil spill on farmers income. The farmers agreed that the oil spillage has effect on their income. Hence the farmers agreed to all the items (item 18,19,20,21, 23) in table 4 except item 22 ($X = 2.90$) where the farmers remained undecided in their opinion. For example the farmers agreed that oil spillage which causes water logging/flooding has decreased their income that oil spillage which causes germination failure and death of fish has reduced their yield and total income etc. These findings are in agreement with a similar study carried out by (Ironi, Omotor, Adun,2005) which stated that the level of income realized from crop farming by the farmers as a result of oil spillage is very low.

The standard deviation scores ranged between 0.96 (item 23) and 1.24 (item 22). This shows that farmers have high dispersion of mean responses.

6.4 Research Question 4

What is the impact of oil spill on the living standard of the farmers?

Table 5: Distribution of the impact if impact of oil spillage on the Living standard of the farmers N = 928

S/N	Items	Mean (X)	SD	Remarks
24	The oil spill on my farm land caused poor yield and low income and as a result I was unable to train my children in schools.	4.52	0.94	Agree
25	Oil spillage which caused germination failure in my farm made me not to build a good house.	4.04	1.05	Agree

26	Constant vandalisation of oil pipe line which lead to infertile soil and water pollution and poor yield resulted in my inability to purchase good quality clothes to wear.	4.21	1.03	Agree
27	As a result of oil spillage which leads to water pollution and logging/flooding of the farm land was unable to feed on balanced diet.	3.65	1.17	Agree
28	The spreading of crude oil on the water surface and the farm land which caused nutrient depletion, death of fish and subsequent reduction of yield/income made me not to purchase household equipment like radio, TV, furniture and refrigerator.	4.82	0.55	Agree
29	The stunted growth of crops death of fish and subsequent reduction of yield and income as a result of oil spill has made me not to purchase better car/vehicles.	44.44	0.92	Agree

Table 5 above shows the mean distribution of responses of Adult farmers on the impact of oil spill on the living conditions of the farmers. The farmers agreed to all the items in table 5. They agreed that the oil spillage has an impact on their standard of living. For example, the farmers agreed in items 25 (X = 4.04) that the oil spill which caused germination failure and death of fish in their farm made them not to build good houses. The farmers also agreed that the stunted growth of crops and death of fish as a result of oil spillage made them not to purchase better cars/vehicles as reported in item 29 (X = 4.44) . However, in items 24 and 28, The farmers

strongly agreed that the oil spill on their farm land made them not to train their children in schools, that the spread of crude oil on their farm land made them not to purchase household commodities like Radio, TV, furniture etc. These findings are in support with a similar study carried out (Okoh, 2008), in his paper “Effect of Edo State Agricultural Development Programmes (EDADP) on the improvement of rural farmers”. The standard deviation (SD) scores ranges from 0.55 (item 28) and 1.17 (item 27). This signified high variability in the opinions of the farmers.

7. Conclusion

The destruction of the Niger Delta environment as a result of the oil spillage not only destroys local livelihoods now, but also undermines their future prospect (Ibeanu, 2008). Thus the impact of oil spillage on the degradation of the environment of the Niger Delta region of Nigeria has raised questions of great concern to stakeholders, particularly oil producing communities who have suffered polluted air, water resources, degraded forests and farm lands for over thirty years. Moreover, the wanton and continuous destruction of the ecosystem by oil producing companies is aggravated by lack of political will by the federal government to enact and enforce stringent environmental laws to regulate the environmental consequences of crude oil exploration and exploitation in the Niger Delta.

This paper therefore, considered the effect of crude oil pollution on agricultural production using primary data obtained from 928 registered Adult farmers drawn randomly from 3 states out of 9 states in the oil producing agro-ecological zones of Niger Delta region. Results from the study revealed that oil spill has a negative impact on crop yield, fish yield, farmers income and standard of living of the farmers. Therefore, in order to halt the continual degradation of the Niger Delta environment, the federal government must play a leading role by enacting and enforcing stringent environmental laws that will protect the oil producing areas as well as guarantee the people a better livelihood. The federal government should as a matter of urgency embark on massive infrastructural development of the region, and also address the crushing level or poverty among the people of the Niger Delta region.

8. Recommendations/Suggestions for improvement

The following are the recommendations that should be implemented based on the findings and Implications of the study:

- a. There should be a policy aimed at ensuring that oil companies within their areas of operations make certain minimum provision or nor hi amenities.
- b. Information to farmers by agricultural extension agents on the activities of the oil companies to boost agriculture in their operational areas should be intensified with the peoples local language through the print/electronic media.
- c. There should be a team of environment management personnel consisting of representatives of the youths, the host communities and the oil companies formed to oversee the day-to-day management of the environment.
- d. There should be a mapped out periodic environmental awareness programmes for the host communities to know the hazard in their living environment as well as how they could manage these hazards at lithe or no cost.
- e. The federal government must play a leading role by enacting and enforcing stringent environmental laws that will protect the oil producing areas as well as guarantee the people a better living condition.
- f. Deliberate intervention policies must be implemented speedily to embark on infrastructural development of the Niger Delta region
- g. The federal government should as a matter of urgency address the crushing level of poverty among the people of the Niger Della region.
- h. There should also be provision on a quota employment of qualified indigenes within the top cadre of the oil companies as against casual or slave labour which had hitherto been the practice.

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**Re-Branding : The identity and status
symbol of the Girl-child through literacy and reading**

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Abstract

Re-branding of the identity and status symbol of the Girl-Child is an imperative for redressing gender imbalance and initiating active participation of the girl-child in crucial matters like decision making in family, community and nation building. This will be largely achieved through literacy and reading; because a reading nation is a literate nation. Since reading is an integral part of formal education, the gains of educating a girl-child will reposition her. This paper thus examines the need for re-branding of the status and identity of the girl-child and affirms that it will bring a new standard of behavior open new knowledge as well as give better opportunities to the girl-child in the African society.

Keywords: Re-Branding, Identity, Status symbol , Girl-child , Literacy ,Reading

1. Introduction

The re-branding campaign is a new project in Nigeria and Africa in general which centers on engendering mindset change in our nation. Nigeria is one of the African nations who believe that the place of the girl-child who eventually turns into a woman is restricted. This is fallacious, unacceptable and a great caricature of the women folk.

This has created the rage on the need to recover the identity and status symbol of the African girl-child. There is also need for a revolutionary transformation in order to help the Africans to get to that point. The general cynicism that encapsulates the African mentality on the role of the girl-child is depriving us of the opportunity to fix the status and identity of the girl-child. This is because we are not putting into consideration the saying that you train a woman and the nation benefits while you train a man for his family alone.

The female image problem most times affects her aspirations to greatness. No one expects her to be heard. The maleness and femaleness gender is culturally constructed. Roles are determined by

gender, this accords women lesser positions in the society. Hence, the need for this re-branding is urgent in order to redeem the girl-child image from the harm she encounters as she participates in global competitiveness. This paper expects the girl-child to tell herself that, "She can do it". She should be able to get focused and change her destiny as some women did it and succeeded. The re-branding issue should be a framework for the erection of a new African perspective on the female impression. This will help in the establishment of a network on the new African social systems, ethics, and belief that will restore the dignity of the girl-child

2. Conceptual Framework

This paper seeks to give conceptual clarification on the need for re-branding through literacy and reading. It looks into the girl-child and the various bras for a female in the society. The benefits of girl-child education is also X-rayed and the paper concludes by reaffirming its stand on the need for re-imagining of the identity and status symbol of the girl-child in order to produce an individual who is self-reliant, one with sustained development and the person who achieves good economic and social growth in the society.

3. The Girl-Child and Bias for Females

The girl-child is a female in a family who is under the age of (18) eighteen years. This child at this age is usually dependent on the help of the adult for survival. Attending any literacy program is an exclusive preserve of the boy-child; hence the girl-child education encountered problems from the inception of formal education in Africa. Many families believe that since the girl-child is likely to be married in her early-mid twenties, they believe that it is not rewarding to expose her to any form of literacy program because the husband will reap such investment. This has affected the literacy level of the African girl-child.

Parents also believe that training boys will protect and project their family name and image. This makes the boy-child a preferred child in the family. He is favorably treated and perceived. The girl-child needs literacy attainment in order to contribute to life, adapt to the society, develop and broaden her mindset, have all round development, fill the gaps required of a young adolescent and also cope with domestic work, family life and develop social, economic and political sophistication to function effectively in life.

There has existed a great imbalance in handling the boy-child and the girl-child, largely due to old African perception and belief that women's education ends in kitchen. This has to be corrected.

There is an urgent need for a total re-branding of the identify and status of the girl-child. The law of the society should be made to accommodate the female gender in developmental processes. The decision of the 1995 Beijing conference should be upheld. The female gender should be given as much opportunities as their male folks.

Eradication of this bias will help the girl-child escape from some forms of prejudices against her which include:

- a. Low level of educational attainment
- b. Child abuse like domestic servants, hawking, sales girls, baby sitters and even street begging.
- c. Betrothal; which implies that a girl-child is given out early in marriage to whoever catches her parents approval, without a child's consent. This has often created problems when the child grows up to discover that she does not like the man she was betrothed to by her parents. It is a form of forced marriage. It also makes most girls victim of the VVF scourge as a result of early introduction to sexual activities in marriage.
- d. Prostitution, a practice which introduces and exposes the girl-child to sex trade. This launches her into making money with her body. She is made an object for trafficking. She is given out to traffickers (sex agents) and her parents receive stipend in return. They are also at the risk of contacting the dreaded HIV/AIDS disease and other Sexually Transmitted Infections STI's.

These girls encounter all these problems in the course of growing up because of the female bias in our society. This has to be corrected and the ideology that favours boy-child in the African society has to be discouraged; through literacy and reading. Hence this paper evaluates literacy and reading as component of this work.

4. Literacy and Reading; an Evaluation

Literacy and reading are historical phenomenon which have attracted lots of attention from many scholars. Literacy stands out as a means to arouse the human consciousness towards the realization of concrete human goals. While reading and writing develop a higher reasoning process of an individual literacy encourages the upliftment of an individual. "Literacy goes beyond merely performing social functions; it entails the abilities to use numerals wisely, undertake risks, and project adequately for the future". Hillerich (1978).

Postman (1978) posited that literacy; while liberating the individual must also guide him or her in taking rational decisions about himself/herself in a constantly changing environment. He goes further to advocate that literacy should be tied to a nation's aspirations and efforts to liberate the individual.

Literacy is fundamental to functional education which the girl-child needs. Literacy is central to knowledge acquisition, literacy liberates and empowers people. It is the foundation to a wide range of concepts. Njemanze (2008) in order word, there is correlation between success in ones job, every other activity and the person's ability to read and write.

In the view of Howana (1999), literacy frees imagination, inventiveness, creativity. Literacy helps us to deepen our understanding of our origins, our roots, tradition and culture P.5. This will help the girl-child to accommodate the challenges of a changing environment.

Reading on the other hand is highly embedded in wisdom. It is informative: It emphasizes transforming experiences. It changes and creates new insight. Reading opens new knowledge which guarantees better opportunities.

Reading is a language skill most widely utilized in any literate program. In order words where there is little or no reading; there will be little or no literacy. The African reading mind-set has been in this form; "if you want to hide something from an African, put it in a book. He will search for it everywhere except in print". Most people who have heard such remarks have always ignored it but it an affront to Africans. In this regard, the most affected are the youth. Reading

helps people to develop analytical mind, this makes them resist and question some of the unconventional happenings around them and their society. Reading helps people make concrete decisions about their situations. Through reading the girl-child will overcome some of the vices placed against her by her society. She will know her right on time and resist any infringement. It will make her discover a lot of hidden treasures which she is denied.

Reading opens new knowledge which guarantees better opportunities. It promotes culture and civilization. Onukogu (2003) emphasizes that, "if we are to sustain and enhance the current state of our technology and our civilization, then we must learn how to read". According to him reading will empower us to learn from our predecessors. It will also enable us to learn from the experience of the countries that are ahead of us; hence this will position us to move our country forward. This is because a reading nation is a winning, progressing and living nation..... P2-3. Literacy and reading has enhanced this view.

In the words of Acholonu (2001) literacy has brought new opportunities for greater modification of work habits. The roles of the female folk have gone beyond biological societal expectations, to different careers in different establishments. Thus the usefulness of the educated women in our society is now being appreciated. They have proved to be great assets in various establishments and society at large. Acholonu goes further to restate that women folk are power agents of industrial and social change who have proved that they are as brainy/intelligent and as capable as their men folk.

This is because many women despite the discrimination they are exposed to reached the top echelons of their different fields which were traditionally regarded as male dominated careers. Some of them distinguished themselves as lecturers, doctors, engineers, managers, nurses, directors, accountants, chief executives etc. Literacy through reading has helped the women folk achieve notable feat in their chosen career. This is as a result of literacy awareness. Hence a survey of some successful women who excelled in their career despite the restraint imposed on them by rigid gender and cultural limitations of our society

To evaluate the progress of literacy, reading and its effect on womenfolk in our society this paper enumerates some career women who attained enviable height in our society according to Anigbogu Opara and Njemanze (2008) some of these women include:

Prof. (Mrs.) Sambo Abdullahi – Former Minister, Vice-chancellor

Prof. (Mrs.) Oby Ezekwesiri – Former Minister of Education (Aka Madam Due Process)

Prof. (Mrs.) Dorathy Akunyili – Former MD NAFDAC (Aka Fake Drug Destroyer). Presently the Minister of Information and Communications, Nigeria and the Re-branding Project Chairperson.

Chief Mrs. Virgy Etiaba – 1st Female Governor (Anambra State)

Dr. (Mrs.) N. Okonjo Iwuala – Former Minister of Finance Nigeria and presently Managing Director of World Bank.

Prof. (Mrs.) Grace Alele Williams – First Woman Vice Chancellor 1985 (Aka Iron Lady).

Prof. Jadesola Akande – Former Vice Chancellor

Hon. Senator Franca Afegbua – First Senator

Chief (Mrs.) Toyin Olakunri – First Nigerian Female Chartered Accountant

Otumba Bolajoko Kuforoji Olabi First Female Graduate Chartered Accountant and First Female to sit in the Council of the Institute and former Chairman of UBA.

Mrs. Sarah Jubiri – First Nigerian Woman Presidential Candidates

Mrs. Francisca Emmanuel – First Woman Federal Permanent Secretary

Dr. Mrs. Cecilia Ibru – First woman to rise to the position of Chief Executive of a Commercial Bank.

Margaret Ichiem – First Woman to be elected speaker of State House of Assembly.

Chinyere Onyenaucheya – First Nigerian Female Pilot Lady Ellen ekaette – First Female President of the Pharmaceutical Society of Nigeria.

These few women gained transformation through literacy and choose hard work, and determination as their key in career, moreover. There are many more like them. Looking at these women this paper examines the benefits of girl-child education.

5. Benefits of Girl-Child Education

According to Williams (1986) education not only prepares the woman herself to participate in development, it also enables her prepare her offspring for participation. In the view of Okpalanma (1982),... among the indices employed in the measurement of modernization in developing countries of Africa, (education, communication, network, living standard etc). Education has been found to be most important index of modernization and development.

According to Udulgwomen (2004) there are different but related purposes which the education of the girl-child fosters. They include:

5.1 Social Status

This will enhance personal ideology, she can be able to hold her own class in the society express freely and contribute her quota in her environment.

5.2 Economic Development Enhancement

Education helps a girl-child to get a good paid job. Thus she can contribute to economic development of her country.

5.3 Political Awareness

With education a girl-child will know her political rights; she can vote and be voted for.

5.4 National Unity and Reconstruction

Exposure to education helps the girl-child realize the importance of national unity. It will help them participate in associations with its membership across many countries and participate in voluntary organizations that help in nation building.

5.5 Cultural Values

The right cultural values are also inculcated into their live styles.

In another opinion by Kane (1995) some other benefits include;

- a. Higher productivity and greater occupational mobility.
- b. Lower infant mortality rates
- c. Higher family incomes and improved nutrition
- d. Higher rate of return on girl's education

Thus, the education of the girl-child will bring restructuring of the social values, and facilitate economic, religious, political and social development of the child and her nation.

6. Conclusion:

The importance of girl-child literacy attainment is an issue which has gained so much attention in recent times. Literacy and reading are synonymous to education which is the basis for personal and national achievements.

The girl-child needs this education to restructure her social values, economic structure, policy initiation and her entire functional productive process. Her potentials are too numerous to be reserved for only household utilization.

Thus, literacy and reading remains a crucial component of all developmental activities for every individual especially the girl-child. Awareness must be created as a means of achieving optimal performance, repositioning and re-branding her identity and status symbol in the society.

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Monetary Policy Variables and Stock Prices in Pakistan

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Abstract

This study explores the relationship of stock prices and monetary policy variables for Pakistan over sample period from January, 2000 to April, 2008. Monthly observations of stock prices (KSE100), inflation (CPI), interest rate (MTB), money supply (M2) and industrial production (IP) were analyzed using Augmented Dickey Fuller (ADF) test, Co-integration analysis and vector error correction (VEC) model. The ADF test revealed that all variables were integrated of order one i.e. $I(1)$. The results from bivariate co-integration analysis revealed that monetary policy variables were co-integrated with stock prices (KSE100). The bivariate VEC analysis suggested that stock prices (KSE100) lead money supply (M2) and industrial production (IP), however, inflation (CPI) led stock prices. The multivariate co-integration analysis revealed that stock prices (KSE100) and monetary policy variables were co-integrated. The multivariate VEC analysis revealed that stock prices (KSE100) responded to reestablish the equilibrium and hence were Granger-caused by the monetary policy variables.

Keywords: Monetary Policy, Stock Prices, Co-integration

1. Introduction

Stock prices have reported significant growth since 2001 in the Karachi Stock Exchange (KSE) which is the largest and most prominent stock market of Pakistan. The KSE100 index grew from nearly 1300 points at the end of 2001 to over 15000 points in March 2008. The 9/11 terrorists' attack in the U.S. resulted in a substantial increase in money supply in Pakistan. Growth in workers' remittances more than doubled in fiscal year 2002 from \$1 billion to over \$2 billion. The trend continued and these foreign remittances were reported to be over \$5 billion in fiscal year 2007. This growth in workers' remittances is mainly attributed to the checks imposed on the unregulated channels (*hundi* and *hawala*) of international funds transfer. Developmental aid increased in the same period and net foreign assets of the banking system soared as Pakistan set its role as the front line state against war on terror (Siddiqui, Pietersz, Fernandez & Movat,

2007). All these developments led to substantial increase in money supply and hence significantly improved liquidity in the whole economy. It resulted in phenomenal increase in the demand for stocks in equity market and increased investment and consumption in the economy of Pakistan. Subsequently corporate earnings and dividend yields reached levels unseen before during 2002-2005.

On the monetary policy front during the same period, the State Bank of Pakistan (SBP) followed an easy monetary policy that promoted economic expansion by monetary growth and lower interest rates (down from 17.4% in May, 1997 to as low as 1.2% in June, 2003 on 6 month's Treasury bills). The objective of the monetary policy was two fold; promote economic growth and price stability (Akhtar, 2006). However, it was soon realized that inflation was getting into double digits and hence required a change in stance in the monetary policy. The central bank i.e. SBP reacted promptly by increasing discount rates and increasing the cash reserves requirements and the statutory reserve requirements from 15% to 18%. However, banks were least affected by these monetary moves of the SBP because of their huge deposit base and persistent demand for advances. Further the surge in oil prices in international oil markets coupled with world wide food inflation aggravated the situation by increasing inflation. These developments in the fiscal year 2007 effectively resulted in the failure of most of the monetary policy measures taken by SBP to curb inflation. To compound the problem, excessive government borrowing to finance budget deficit made it even more difficult for the SBP to address the alarming level of inflation.

This study aims at investigating the dynamic interaction between monetary policy and stock prices over sample period from January, 2001 to April, 2008. The remaining of this study is organized as follows: section two provides a review of relevant literature, section three discusses the empirical methodology, section four contains empirical findings and their discussions and section five contains the conclusions from the study.

2. Literature Review

The interaction between monetary policy and stock prices has been an area of great interest to both monetary and financial economists. The relationship of stock prices (both real and nominal) with inflation, interest rates and money supply has been extensively investigated to determine the impact of monetary policy on stock prices by researchers in nearly all parts of the world.

Brunner (1961) was the first to argue that money is an asset in the 'monetary portfolio' of an investor. Therefore, investors react to any changes in money supply by rearranging their 'monetary portfolio' to reestablish the equilibrium. This suggests that money supply has predictive power for stock prices. Therefore, money supply leads stock prices. Friedman (1961), Friedman and Schwartz (1963) also supported Brunner's arguments of 'monetary portfolio'. Studies by Sprinkel (1964), Keran (1971), Homa and Jaffe (1971), and Hamburger and Kochin (1972) further reported empirical evidence that future stock prices can be predicted using past money supply data. Cooper (1974), however, found that past data of money supply has no effect on stock prices. In fact he reported findings suggesting that stock prices lead money supply.

Empirical research found both a positive and a negative reaction of stock prices to monetary policy. Berkman (1978) reported that stock prices reacted negatively to monetary policy announcements and that stock prices are caused only by the unexpected changes in monetary policy. Pearce and Roley (1985) also found that monetary shocks had a statistically significant negative effect on stock prices. Recent studies reveal an explicit view that monetary easing leads to higher stock prices (Thorbecke, 1997; Patelis, 1997; Lastrapes, 1998). The findings from these studies propose that monetary expansion positively affect stock prices by increasing the expected future cash flows from the stock and decreasing the discount rate. It explains that monetary expansion and economic activity are positively related. Further monetary expansion and interest rate are negatively correlated implying a negative relationship between stock prices and interest rate too. Hence such studies (e.g. Grossman, 1981; Kearney, 1996) propose that money supply leads stock prices.

Friedman (1988) and Choudhry (1996) found reverse causality from stock prices to money supply confirming the earlier findings of Cooper (1974). Friedman (1988) provided three possible explanations for the observed relationship i.e. wealth effect, substitution effect and risk considerations.

Monetary policy as pointed by Sellin (2001) affects macro economy and consequently inflation via financial markets. It suggests that monetary policy is transmitted via the money supply/interest rate channel through money or bond markets. Changes in the monetary policy change the level of money supply/interest rates. The change in the level of money supply/interest rates influences the level of economic activity and this affects the level of inflation. And since the price of the stock is equal to the present value of expected future cash flows (dividends) from

the stock discounted at the investors' required rate of return, change in monetary policy forces investors to revise their valuation of stocks in the market as both expected cash flows from the stock and discount rate are affected by change in monetary policy.

Thorbecke (1997) studied the relationship of monetary policy and stock returns in the U.S. The findings of his study suggest that reduction in the discount rate is associated with easing of money supply which results in increasing cash flows and/or decreasing the discount rate and hence higher stock prices. It suggests that stock prices and interest rate are inversely related. Patelis (1997) concludes that 'monetary policy variables' have predictive ability for stock prices. Erdem, Arslan and Erdem (2005) proposed that changes in interest rate (monetary policy) cause an investor to change his portfolio of bonds and stocks. When interest rates fall, investor shifts investment from bonds to stocks and vice versa.

Many economists believe that interest rates must be adjusted according to the stock price movements. They are of the view that increases in stock prices could trigger an inflationary pressure on the economy whereas deflated stock prices could depress economic activity. Blanchard (2000) opined that central banks must be in a position to respond effectively whenever there is misalignment of asset prices in the market place. Hence monetary policy adopted by central banks must suit the prevailing economic conditions of the country. Rigobon and Sack (2003) reported that stock prices (returns) had significant effects on short-term interest rates. It suggests that monetary policy reacts significantly to variations in stock prices.

Monetary policy mostly targets inflation by influencing the level of economic activity. A tightening of monetary policy aims at reducing the level of inflation while an ease in the monetary policy aims at expediting economic activity and hence in inflationary. Given this the Fisher hypothesis (Fisher, 1930) implies that stock returns should have a positive relationship with inflation. Stocks represent ownership to real assets and hence should provide a perfect hedge against inflation. However, empirical research (e.g. Fama and Schwert, 1977; Fama, 1981 & Sharpe, 2002) extensively reports a negative relationship between stock prices and inflation. The proxy hypothesis (Fama, 1981) and reverse causality hypothesis (Geske and Roll, 1983) have been the most prominent explanation in literature for the observed relationship.

In the case of Pakistan Agha, Ahmed, Mubarik and Shah (2005) investigated the transmission mechanism of monetary policy in Pakistan. They studied four channels of monetary policy transmission i.e. the direct interest rate channel, bank lending (credit) channel, asset price

channel and exchange rate channel. They found empirical support for the asset price channel i.e. stock market besides the interest rate and bank lending channels. Their variance decomposition revealed that stock price explained more than 32 percent of the variations in industrial production over three years. Previously Husain and Mahmood (2001) investigated the causal relationship between money supply and stock prices in Pakistan over sample period June 1991 to June 1999. They used both M1 and M2 as measures of money supply and six stock price indices i.e. one general stock price index and five different industry stock price indices. They found that stock prices and money supply were co-integrated in the long run; however, they failed to find support for the long run relationship from the Error Correction Model (ECM) between money supply and stock prices. Further they found uni-directional causality running from money supply to stock prices and reported inefficiency of the Karachi Stock Exchange (KSE).

Further Nishat and Shaheen (2004) in their investigation of the relationship between macroeconomic variables and stock prices in Pakistan found that interest rates as well as money supply were significant in explaining stock returns. Further they reported that stock prices were significant in explaining variations in interest rates. However, the same was not true for money supply. Further they reported industrial production (real activity) to be the biggest positive determinant while inflation to be the biggest negative determinant of stock prices in Pakistan.

3. Empirical Methodology

3.1 Variables and Data

In order to investigate the relationship between stock prices and monetary policy variables the following set of variables are analyzed over sample period from January 2000 to April 2008. These variables include:

KSE100	The end of month values of the KSE100 index of the KSE
M2	The end of month values of broad money
CPI	The monthly index value of consumer price index of the SBP
MTB	The 6 month's T-Bill rate quoted monthly
IP	The end of month values of the manufacturing index as a proxy for real activity.

The monthly values of KSE100 index over the sample period were obtained from Taurus Securities Private Limited which is a subsidiary of National Bank of Pakistan and a leading

brokerage house of Pakistan. The monthly values of all the other macroeconomic variables were obtained from the publications of SBP, Federal Bureau of Statistics and the Ministry of Finance. All the data series are transformed into log form for empirical analysis.

The literature review suggests that the above mentioned variables have been extensively used to analyze the relationship between stock prices and monetary policy variables. The aggregate level of stock prices is measured in terms of KSE100 index. The KSE100 index includes the top 100 companies on the basis of market capitalization and accounts for a significant portion (i.e. over 85 percent) of the total market capitalization of all companies listed on the KSE. M2 and MTB are two dynamics of the monetary policy where both are mobilized by the SBP to achieve economic growth as measured by IP i.e. the manufacturing index and controlling inflation (CPI). Ideally gross domestic product (GDP) would have been a better measure of the economic activity; however, the monthly values of GDP are not available. Hence IP (manufacturing index) is used as a measure of economic activity. Agha, Ahmed, Mubarik and Shah (2005) explained that even though manufacturing sector contributes around 20 percent to the GDP and may seem a weak proxy of GDP, however, it accounts for nearly 58 percent of the total private sector credit. They further pointed manufacturing sector to be a leading and lagging indicator of agricultural sector and highly correlated with the services sector.

The sample period of the study i.e. January 2000 to April 2008 exhibit in era in which the economy of Pakistan experience consistency of political setup and consequently economic policies. The economy of the Pakistan experienced consistent growth of more than 6 percent per annum from 2003 to 2007. There were periods of low inflation and high inflation and lately of rising inflation. The exchange rate remained relatively stable. Over the sample period the aggregate stock prices (measured by the KSE100 index) experienced significant growth. Therefore, an investigation of the relevant variables over this sample period would profoundly contribute to the understanding of the dynamic relationship between these variables.

3.2 Empirical Methods

In order to investigate the dynamic behavior of the variables involved acknowledging the shortcomings of the Ordinary Least Squares (OLS) to investigate dynamic relationship simultaneously co-integration analyses, vector error correction (VEC) model and Granger causality test are employed. This has been the standard methodology adopted to investigate such

relationships in recent empirical studies. It not only allows investigating the relationship in the long-run and short-run simultaneously but also enables to identify the direction of influence which may in fact run both ways.

As a first step we apply the unit root test to all the time series in both the log level form and log differenced form to identify the order of integration of each series under investigation to establish whether a time series is stationary or non-stationary. The regression of a non-stationary series on another non-stationary series is not advised as it may result in spurious regression (Gujrati, 2003). Therefore, we use the Augmented Dickey Fuller (ADF) test (Dickey and Fuller, 1979, 1981) in equation (1) and equation (2) to determine the order of integration of all the time series under study.

$$\Delta Y_t = \alpha_1 + \alpha_{2t} + \rho Y_{t-1} + \psi \sum_{i=1}^n \Delta Y_{t-i} + \varepsilon_t \quad (1)$$

$$\Delta Y_t = \alpha_1 + \rho Y_{t-1} + \psi \sum_{i=1}^n \Delta Y_{t-i} + \varepsilon_t \quad (2)$$

In both the equations above we test $\rho=0$ to establish whether a time series is stationary or not by comparing the ADF statistics calculated with the Mackinnon critical values produced by EViews 3.1. Equation (1) includes both a constant (α_1) and a trend (α_{2t}) term.

Time series variables that may individually be integrated of order one i.e. $I(1)$ and diverges as n approaches infinity, however, can diverge together. It implies that time series variables integrated of order one i.e. $I(1)$, may have a linear combination integrated of order zero i.e. $I(0)$. After establishing the order of integration, we then investigate the long run equilibrium relationship of all the time series variables integrated of order one i.e. $I(1)$ in both bivariate and multivariate form. As the Engle-Granger methodology of testing for long run (long run equilibrium) relationship of the variables integrated of the same order, the study uses the Johansen's co-integration test (Johansen, 1995). The specification for the Johansen's co-integration test is as:

$$\Delta Y_t = \phi Y_{t-1} + \sum_{i=1}^{n-1} \psi_i \Delta Y_{t-i} + \beta \chi_t + \varepsilon_t \quad (3)$$

where

$Y_t = (n \times 1)$ random vector of time series variables integrated of the order one i.e. $I(1)$

$\beta \chi_t = (n \times 1)$ vector of constants

$\psi_i = (n \times n)$ matrices of short term parameters

$\phi = (n \times n)$ matrix of long term parameters

$\varepsilon_t =$ sequence of random p -dimensional white noise vectors

The rank (r) of the matrix ϕ contains information about the long run relationship of the variables and may result in a) $r = n$, b) $r = 0$ or c) $0 < r < n$. The first result suggests that all the variables in vector Y_t are integrated of order zero i.e. $I(0)$. In such a situation a vector autoregressive (VAR) model will fit as a tool of analysis to the variables. The second result suggests that there exists no such linear combination of the variables which is integrated of order zero i.e. $I(0)$. Hence it implies that there exists no co-integration (long-run relationship) between the variables and that matrix ϕ contains only zeros. The third result suggests that there are $n \times r$ matrices α and β both having rank r so that $\phi = \alpha \beta'$ and $\beta' Y_t$ is integrated of order zero i.e. $I(0)$. The rank (r) is in fact the number of co-integrating relationships i.e. the co-integrating rank. Further the matrix α contains the speed of adjustment parameters (coefficients) while the columns of the matrix β contain the co-integrating vectors. Therefore, the rank (r) entails information about the co-integration properties of the time series variables. The Johansen's procedure tests for co-integration by estimating the matrix ϕ from an unrestricted VAR and subsequently determining the rank (r) of the matrix ϕ . We employ the trace statistic and the maximal-eigenvalue statistic of the Johansen's procedure to infer on the co-integration properties of the variables under investigation.

Time series variables that are non-stationary and are co-integrated are further investigated to understand the short term and long term dynamics of the relationship via the vector error correction (VEC) model. The VEC model is a restricted VAR that has built-in co-integration restrictions on the long run relationship while simultaneously explains the short term dynamic interaction of the variables. We estimate the bivariate VEC model as:

$$\Delta Y_t = \alpha_0 + \alpha_1 \Delta Y_{t-1} + \alpha_2 \Delta X_{t-1} + \vartheta_t \mu_{t-1} + \varepsilon_t \quad (4)$$

where

$$\mu_{t-1} = (Y_{t-1} - \beta_1 - \beta_2 X_{t-1})$$

α_i = the rate at which the short term effects occur

ϑ = the rate at which the long term effect occurs.

We estimate the multivariate VEC model as:

$$\Delta Y_t = \alpha_0 + \alpha_1 \Delta Y_{t-1} + \alpha_2 \Delta X_{1t-1} + \alpha_3 \Delta X_{2t-1} + \dots + \alpha_n \Delta X_{nt-1} + \vartheta_t \mu_{t-1} + \varepsilon_t \quad (5)$$

The VEC analysis also has implications for causality among the variables i.e. whether stock prices (KSE100) are significantly influenced by the monetary policy variables (IP, CPI, MTB and M2) in short run or long run. Further the VEC analysis has implications for the Efficient Market Hypothesis (EMH).

4. Results and Discussions

In the first place we investigate the unit root properties of the variables by applying the ADF test to all the time series in log levels and in the first differenced of log levels, with and without trend. The results (Table 1) of the ADF test reveal that all the time series are stationary in the first difference form hence are integrated of order i.e. one $I(1)$.

After establishing that all the variables are $I(1)$ we proceed to investigate the co-integration properties of stock prices with the other macroeconomic variables in bivariate form. The Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC) suggested that the appropriate lag length was one. The results of the bivariate co-integration tests (Trace test and Maximal-Eigenvalue test) are reported in Table 2. In case of stock prices (KSE100) and inflation (CPI) the Trace test suggests that these variables are co-integrated, however, the Maximal-Eigenvalue test reports that these variables are not co-integrated. The Trace test and the Maximal-Eigenvalue test suggest that there is at least one co-integrating vector that binds stock prices (KSE100) and Industrial production (IP). The same finding is reported by both the tests

for stock prices (KSE100) and interest rate (M2) as well as stock prices (KSE100) and interest rate (MTB).

Next we estimate the VECM in equation (4) in the bivariate form to explore the short run and long run dynamic relationship of stock prices (KSE100) with the monetary policy variables (IP, CPI, M2 and MTB). Further it also suggests the direction of influence between the variables under study. The results are reported in Table 3 which reports the normalized long term coefficients as well as the error correction coefficients and the lagged coefficients. The normalized long term coefficients for all the variables are statistically significant and suggest that all the variables have significant explanatory power for stock prices (KSE100) in bivariate form in the long run. In case of stock prices (KSE100) and industrial production (IP) both the error correction coefficients and the lagged coefficients are insignificant for stock prices (KSE100). Therefore, stock prices (KSE100) are strongly exogenous. However, the error correction coefficient of industrial production (IP) is statistically significant and suggests that it responds to correct the disequilibrium. Hence it suggests that stock prices (KSE100) Granger-cause i.e. lead industrial production (IP).

For stock prices (KSE100) and inflation (CPI) Table 3 reports a uni-directional causality running from inflation (CPI) to stock prices (KSE100). Stock prices (KSE100), however, do not play any role in the prediction of inflation (CPI). Table 3 reports a uni-directional causality running from stock prices (KSE100) to money supply (M2). Both the error correction coefficient and the lagged coefficient of stock prices (KSE100) are statistically significant. Finally we report a bi-directional causality running between interest rate (MTB) and stock prices (KSE100).

Over all, the findings from the bivariate VECM analysis reveal that both sets of variables i.e. stock prices (KSE100) and monetary policy variables (IP, CPI, M2 and MTB) have significant relation. However, the response is oriented more to the long run relationship than the short run i.e. the lagged coefficients. Further as purported in theory, interest rate (MTB) and inflation (CPI) are negatively related with stock prices. Inflation (CPI) lead stock prices (KSE100), however, interest rate (MTB) and stock prices (KSE100) have bi-directional causality. On the contrary, conforming to theory industrial production (IP) and money supply (M2) have a positive relationship with stock prices and both lag stock prices. These findings suggests that the State Bank of Pakistan (SBP) should take asset prices (stock prices i.e.

KSE100) into consideration while forming the monetary policy of the country to ensure macroeconomic stability.

To establish that whether the co-integrating relationship between stock prices (KSE100) and the monetary policy variables exists in the multivariate form we applied the multivariate version of the Johansen's co-integration procedure. The results for the multivariate analysis are reported in Table 4. The Trace test suggests that there are two co-integrating vectors that bind the two sets of variables i.e. stock prices (KSE100) and monetary policy variables. However, the Maximal-Eigenvalue test suggests that there is one co-integrating relationship that does not allow the two sets of variables i.e. stock prices (KSE100) and monetary policy variables to move independently of each other. Hence, the multivariate co-integrating analysis suggests findings of co-integration similar to that in the bivariate form. Therefore, the multivariate and bivariate analyses suggest that significant interaction exists between stock prices (KSE100) and monetary policy variables (IP, CPI, M2 and MTB).

In the next step, we estimate the VECM in equation (5) assuming one co-integrating relationship between the variables. First, Table 5 reports the normalized long term co-integration coefficients of the VECM. It indicates that industrial production (IP) positively relates to stock prices (KSE100) while inflation (CPI) has a negative relation with stock prices (KSE100). However, the t-values indicate that the estimated coefficient of industrial production (IP) is statistically insignificant in explaining stock prices (KSE100). The statistically significant negative relationship between inflation (CPI) and stock prices (KSE100) is consistent with earlier findings by Nishat and Shaheen (2004) who reported inflation to be the largest negative determinant of stock prices in Pakistan. Further Table 5 reports a statistically significant positive coefficient for money supply (M2) which is consistent with existing theory and earlier empirical research. However, the estimated coefficient of interest rate (MTB), though positive, is statistically insignificant. This finding is consistent with Nishat and Shaheen (2004) who also reported insignificant positive normalized co-integrating coefficient for interest rate.

The error correction and lagged coefficients are reported in Table 6. The sign of the error correction coefficient of stock prices (KSE100) is negative and hence conforms to the VECM theory. It suggests that stock prices (KSE100) react statistically significantly to reestablish the equilibrium relationship between the two sets of variables. Specifically above 13% of the deviations from the long run relationship in the previous period are corrected in the current

period by stock prices (KSE100). Therefore, it suggests that stock prices are Granger-caused by monetary policy variables.

The error correction coefficient of money supply (M2) is also statistically significant and with the right sign i.e. positive. It suggests that money supply (M2) also plays a role in reestablishing the equilibrium relationship. The lagged coefficient of stock prices (KSE100) is also statistically significant in explaining the variations in money supply (M2). However, the other variables in the model do not take part in re-establishing the long run relationship and are, therefore, exogenous. The findings from the multivariate VECM suggest that stock prices (KSE100) and money supply (M2) react to correct the disequilibrium.

5. Conclusion

The literature on the subject i.e. the relationship between stock prices and monetary policy suggest that stock prices should not be a target of monetary policy by the central bank. The reason quoted is that stock prices are never the most desired objective of monetary policy. Rather monetary policy aims at achieving price as well as financial stability and economic growth. However, financial system comprises of capital markets where financial assets are traded hence capital markets are an integral part of the financial system.

Liquidity is considered amongst the most significant variables in determining asset prices in capital markets. In developing and emerging economies like Pakistan, financial institutions remain to be the largest providers of liquidity in capital markets. Capital market lacks both depth (no. of buyers) and breadth (securities traded). More liquidity translates into higher valuation of stock prices very quickly. Increase in stock prices may, therefore, cause wealth effect (Friedman, 1988). It (wealth effect) may cause investors to feel that inflated stock prices (caused by abundant liquidity) have increased their wealth too and they may increase their consumption accordingly resulting in increasing demand and inviting inflation. The increase in stock prices may not be permanent. Stock prices may fall if liquidity falls in the market. This will not only reduce the nominal wealth of the investors, however, will also put them under considerable financial strain and panic. Shares of the financial institutions trade in capital markets (stock market) and hence fluctuate over time. All this may significantly jeopardize the stability of the financial system. Therefore, Increase or decrease in the price level in stock market has great importance for the risk management of such financial institutions. Given this central bank's monetary policy should not be independent of capital markets and asset prices (stock prices).

The findings from the bivariate co-integration and VECM analyses suggest that stock prices (KSE100) have predictive power for money supply (M2) and industrial production (IP). The multivariate VECM analysis also suggests that stock prices (KSE100) Granger-cause money supply (M2). The empirical findings from the bivariate co-integration and VECM analyses indicate that monetary policy does have an effect on stock prices (KSE100) through the levels of inflation (CPI) and interest rate (MTB) prevailing. Further the multivariate VECM analysis suggest that stock prices (KSE100) reacts to changes in the monetary policy variables. The long term normalized co-integrating coefficients of inflation (CPI) and money supply (M2) being statistically significant exhibit the predictive power of these variables for stock prices (KSE100). These findings reject the EMH and suggest that stock returns are predictable in the KSE. Given this we can argue that stock prices (KSE100) are stimulated by changes in monetary policy.

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Annexure 1

Table 1 ADF Test of Unit Root Results

	Log levels		Log Differenced Levels	
	No Trend	Trend	No Trend	Trend
KSE100	0.191	-3.116	-7.568*	-7.647*
IP	-0.457	-0.950	-5.163*	-5.142*
CPI	3.350	0.938	-5.469*	-6.841*
M2	1.325	-3.136	-8.255*	-8.855*
MTB	-1.076	-1.101	-4.741*	-4.761*

* indicates significance at 1%

Table 2 Bivariat Co-integration Tests Results

Variables	Hypothesized CE(s)	Trace Stat	Prob	Max-Eig	Prob
KSE100 & IP	None	33.187	0.005	23.141	0.014
	At most 1	10.045	0.125	10.045	0.125
KSE100 & CPI	None	28.275	0.025	19.387	0.150
	At most 1	12.374	0.053	12.518	0.053
KSE100 & M2	None	40.308	0.000	29.933	0.001
	At most 1	10.375	0.111	10.375	0.111
KSE100 & MTB	None	25.973	0.049	19.794	0.044
	At most 1	6.180	0.438	6.180	0.438

The tests were applied assuming a constant and trend.

Table 3 Bivariate VECM Results & Granger Causality (*t*. values in parentheses)

CE		CE		CE		CE	
KSE100(-1)	1.00	KSE100(-1)	1.00	KSE100(-1)	1.00	KSE100(-1)	1.00
IP(-1)	-10.56	CPI(-1)	5.13	M2(-1)	-12.73	MTB(-1)	3.02
	(-5.32)		(2.09)		(-8.17)		(2.09)
C	40.78	C	-29.85	C	171.39	C	-7.06

EC	D(KSE100)	D(IP)	EC	D(KSE100)	D(CPI)	EC	D(KSE100)	D(M2)	EC	D(KSE100)	D(MTB)
CointEq1	0.00	0.04	CointEq1	-0.11	0.00	CointEq1	-0.03	0.04	CointEq1	-0.15	0.01
	(0.10)	(5.00)		(-4.00)	(-0.20)		-0.68	(5.71)		(-3.68)	(2.66)

Lagged Coefficients			Lagged Coefficients			Lagged Coefficients			Lagged Coefficients		
D(KSE100 -1)	-0.02	0.08	D(KSE100 -1)	-0.05	0.00	D(KSE100 -1)	0.01	-0.05	D(KSE100 -1)	-0.01	0.01
	(-0.19)	(0.84)		(-0.50)	(0.14)		(0.09)	(-3.12)		(-0.12)	(1.12)
D(IP-1)	0.18	0.11	D(CPI-1)	-0.78	0.23	D(M2-1)	0.52	0.05	D(MTB-1)	-0.63	0.30
	(1.73)	(1.09)		(-0.65)	(2.15)		(0.88)	(0.52)		(-0.37)	(3.06)
C	0.02	0.00	C	0.03	0.00	C	0.01	0.01	C	0.02	0.00
	(2.36)	(0.49)		(2.51)	(4.70)		(1.29)	(7.21)		(2.68)	(0.06)

Table 4 Multivariate Cointegration Tests Results

Hypothesized CE(s)	Trace Stat	Prob	Max-Eig	Prob
None	117.418	0.000	47.577	0.003
At most 1	69.841	0.015	28.074	0.144
At most 2	41.767	0.065	19.388	0.280
At most 3	22.378	0.128	18.202	0.074
At most 4	4.176	0.717	4.176	0.717

The tests were applied assuming a constant and trend.

Table 5 Long Term Cointegrating Coefficients

KSE100(-1)	IP(-1)	CPI(-1)	M2(-1)	MTB(-1)	C
1.000	-0.222	3.762	-11.597	-0.221	139.532
	(-0.948)	(2.273)	(-9.237)	(-0.154)	

Table 6 Error Correction & Lagged Coefficients (t. values in parentheses)

Error Correction:	D(KSE100)	D(IP)	D(CPI)	D(M2)	D(MTB)
CointEq1	-0.131 (-2.367)	0.036 (0.560)	-0.003 (-0.660)	0.057 (6.379)	-0.005 (-1.558)
D(KSE100(-1))	0.007 (0.073)	0.061 (0.519)	0.004 (0.473)	-0.050 (-3.051)	0.010 (1.683)
D(IP(-1))	0.094 (1.005)	-0.126 (-1.165)	0.000 (0.042)	0.021 (1.359)	-0.001 (-0.120)
D(CPI(-1))	0.328 (0.253)	-0.170 (-0.114)	0.272 (2.396)	-0.261 (-1.243)	0.116 (1.518)
D(M2(-1))	-0.320 (-0.507)	1.289 (1.766)	0.062 (1.127)	0.132 (1.291)	-0.041 (-1.092)
D(MTB(-1))	-2.496 (-1.518)	0.351 (0.185)	0.132 (0.914)	-0.149 (-0.562)	0.379 (3.923)
C	0.023 (1.623)	-0.009 (-0.527)	0.003 (2.757)	0.013 (5.742)	0.000 (-0.236)

The Basic Aspect of Partnership Accounting

Listed in ULRICH'S

ULRICH'S
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Abstract

This article describes the basic aspect of partnership accounting. The first part of this paper aims to explain the characteristics of a partnership, types of partners and partnership, partnership agreement, and advantages and disadvantages of operating as a partnership. The second part of this paper discusses an accounting procedures for a partnership firms. It highlights the method of accounting for partnership capital and the final accounts to be prepared by a partnership firm. In any partnership firms, there may be changes in partnership. A partnership firm is possible to admit new partners into the firm and it is also possible for any partner to leave the firm due to death or retirement. The third part of this paper explains factors contributing to changes in a partnership and the steps to be taken by a partnership business to record for changes in a partnership. At the end of this paper, the writers discuss the accounting procedures for dissolution of partnership. It is hoped that this paper will serve as a beneficial input to partnership businesses.

Keywords: Basic Aspect , Partnership , Accounting

1. Introduction

A partnership is an association of two or more people who agree to share in the profits and losses of a business venture. The members of a partnership are called partners. In Malaysia, partnership

is defined by the Partnership Act 1961 as “the relationship which subsists between persons carrying on a business in common with a view to profit”.

Generally, the partners will enter into a legal contract in which each agrees to furnish a part of the capital and labor for a business enterprise and share a fixed proportion of profits and losses. The partners are bound by such a contract. The equity contributed by the partners could be in the form of cash and physical assets. This is called partnership capital.

The number of partners allowed by the law is twenty, however certain types of partnership such as solicitors, accountants and members of the stock exchange are allowed to have up to fifty members as partners. The relationship between the partners is characterized by mutual cooperation and responsibility to achieve a specified goal. A partner is liable for the act of all the other partners so long as they are acting in the ordinary course of the business.

In partnerships, the responsibility, authority and decision-making are shared more evenly. There is often a formal agreement between the parties, who work together for a set of common goals, and share the risks and benefits. Being in a partnership generally means that one has to give up some of his decision-making power and adopt wider goals.

Partnerships can be formed to undertake short-term, one-off projects, or they can be the basis of an ongoing relationship between two or more parties who subsequently undertake a range of projects over the long-term. A few characteristics of a partnership are:

- i) Partnerships are formed to make profits.
- ii) A minimum number of member is two and a maximum of twenty partners except for professional partnership where the maximum number of members is fifty partners.
- iii) Each partner is an agent in the partnership and his actions will bind the partnership.
- iv) Each partner is personally responsible for the liabilities of the partnership.
- v) A partnership is dissolved automatically when one of the partners dies.

Generally, there is some form of agreement between the partners setting out their rights, duties and liabilities. This is known as the partnership deed or agreement. The partners should have a legal agreement that sets forth how decisions will be made, profits will be shared, disputes will be resolved, how future partners will be admitted to the partnership, how partners can be taken out, or what steps will be taken to dissolve the partnership when needed.

The partnership agreement may be in verbal, written or under seal. The agreement is important as it could help to solve disputes and conflicts that would result in absence of such an agreement. As the matters regarding the partnership are clearly set out, partners could effectively carry out their duties and responsibilities in the partnership.

Basically, in most partnerships agreement, the following clauses are included:

- i) The firm name
- ii) The names and addresses of the partners
- iii) The principal office of the partnership
- iv) The nature and scope of the partnership business
- v) The duration of the partnership
- vi) The capital contributions of each partner
- vii) The division of profits and losses among the partners
- viii) The salaries, if any, to be paid to the partners
- ix) The arrangement regarding interest on capital, advances and drawings
- x) The duties of the partners regarding the management of the partnership
- xi) Limitations, if any, on the authority of partners to bind the partnership
- xii) Provisions for the admission and withdrawal of partners from the firm, and the terms, conditions, and notices required for withdrawal
- xiii) Provisions for continuing the partnership upon the withdrawal of a partner, death of a partner, or other dissolution of the partnership
- xiv) The method of valuing goodwill upon retirement or death of a partner
- xv) Any other provisions deemed relevant by the partners

In cases where there is no partnership agreement, express or implied, the Partnership Act governs the situation. Express partnership is a partnership that is created by verbal or written words, while implied partnership is a partnership which is implied from the conduct of the parties.

Under the Partnership Act 1961, in the absence of a partnership agreement the following rules apply:

- i) The profit and losses are to be shared equally.
- ii) No interest is allowed on capital.
- iii) No interest is charged on drawings.

- iv) No salaries are allowed.
- v) Interest is allowed on a partner's advance (loan) to the partnership at the rate of 8% per annum.
- vi) Each partner has unlimited liability where each partner is jointly and severally liable for the partnership debts.
- vii) Every partner is entitled to take part in the management of the business.
- viii) Every partner is entitled to access the books and papers of the partnership.
- ix) Each partner is an agent to the partnership and can sign contracts on behalf of the partnership.
- x) A new partner may be admitted to the partnership upon consent of all the existing partners.
- xi) A partnership will dissolve upon the death, insanity or bankruptcy of a partner, or a partner giving notice of his intention to leave the partnership to the other partner/s.

1.1 Types of partners

There are three types of partners. They are sleeping/silent partner, limited liability partner and general partner. A silent partner is one who still shares the profits and losses of the business but who takes no active role in managing the business operations. Normally, the association of the silent partner with the business is not publicly known. The silent partner would be liable fully for the partnership debts.

A limited liability partner is a partner who is not legally liable to the debts of the business beyond the amount of his/her investment in the company. He cannot take active roles in the business operations.

A general partner is a partner who actively manages the business and who bears the responsibilities of its survival and growth. He/she has unlimited liability to the debts of the business.

1.2 Types of partnership

There are three types of partnership. The first type is called general partnership. In the general partnership, the partners will divide the responsibility of the partnership management and liability, as well as the shares of profit or loss according to their internal agreement. A general

partner does not have limited liability for the partnership debt. The assets of the partnership and the personal assets of the partners will be used to settle the outstanding partnership's debts.

The second type is limited partnership. In a limited partnership, one or more of the partners may be limited partners. Limited partners have limited liability to the extent of their investment in the business. However, limited partners may not take an active part in the management of the partnership. In limited partnership, there must be at least one general partner who will be personally liable for the debts of the partnership.

The last type of the partnership is called joint venture partnership. A joint venture or strategic alliance is a type of partnership which refers to the agreement between businesses to pursue some objective jointly. A Joint venture acts like a general partnership, but it is for a limited period of time or a single project. The accumulated partnership assets will be distributed among partners upon dissolution of the entity.

1.3 Benefits of operating as a partnership

Some of the benefits of forming a partnership are:

- i) Partnerships are relatively easy to establish and to organize.
- ii) With more than one owner, the ability to raise funds may be increased.
- iii) The business will benefit from partners who have complementary skills.
- iv) In partnerships, the responsibility, authority and decision-making are shared more evenly than in other forms of participation. Partners can pool their financial, human and information resources and work together to achieve shared goals.
- v) Partnerships can help to solve complex or difficult problems. Through open discussions, the partners can establish common ground and work towards shared vision, objectives and values.
- vi) Partnerships can increase the partners' commitment to getting results as responsibilities for decision-making and managements are shared.
- vii) Partnerships can provide better delivery of services as a partnership may lead to greater operational efficiencies.
- viii) Prospective employees may be attracted to the business if given the incentive to become a partner.

1.7 Disadvantages of operating as a partnership

Some of the disadvantages of a partnership are:

- i) Partners are jointly and individually liable for the actions of the other partners.
- ii) Each partner is subject to unlimited liability. This means that if the company fails, creditors can take action against both the partnership and the partners who are in it.
- iii) Partners have mutual agency. This means that one partner can make decisions without consulting the others.
- iv) The profits must be shared with others.
- v) Since the decisions are shared, disagreements can occur.
- vi) The partnership may have a limited life as it may end upon the withdrawal or death of a partner.

2. Accounting Procedures of a Partnership

Accounting treatment for partnership is the same as for sole proprietorship except for in the owner's equity or capital account. For partnership, there is more than one owner with different amount of capital and profits and losses are apportioned in accordance with the partnership agreement.

Each partner in the partnership usually has to contribute a certain amount of capital to the business on the date of formation of a partnership and on admission in the case of a partner joining an existing partnership. Each partner's capital account is credited for his/her initial investment and the appropriate asset account is debited. The capital can be in the form of cash, other assets for example plant and machinery or a combination of both.

2.1 Methods of accounting for partnership capital

There are two methods to account for partners' capital. The two methods are fixed capital account and fluctuating capital account.

Under fixed capital account method, partners have to prepare two accounts namely partners' capital account and partners' current account

The partners' capital account represents the amounts which the partners agree they will retain in the business. All transactions relating to capital contributions of each partner are to be recorded in these accounts and these accounts remain unchanged from year to year. Any additional capital will be credited to the account and any reduction will be debited. Interest on capital provided by the partnership agreement will be calculated on these balances.

Partners Current Accounts are prepared to record other regular transactions between the partners and the firm on matters other than those sufficiently fundamental to be dealt with through the capital accounts. This account will be debited with the amount of drawings made by each partner, interest on drawings and for the share of losses. It will be credited with the interest on capital, accrued partners' salaries, interest on loan and their respective share of profits. The current accounts represent the balance of the partner's accumulated share of profits less any amounts withdrawn to date.

The Partners Current Account can either have a debit balance or a credit balance. A debit balance means that the partner has withdrawn from the business more than his share of profit. This balance is to be recorded in the Balance Sheet either as a current asset or deducted from the total credit balance in the current accounts of the other partners.

The fluctuating capital account method requires the partnership to prepare only partners capital accounts in the partnership's books. There will be no current accounts, therefore the capital accounts do not only show the amount of capital contributed but also other transactions such as partners' salaries, interest on capital, interest on drawings, drawings made by partners and the share of profits and losses of partners.

2.2 Share of net profit and net loss

Partnership profits and losses are shared as agreed by the partners. They must fix the profit sharing ratio which depends on a number of factors such as the amounts of capital introduced by the partners, the skill and experience of the partners and the time and effort devoted to the partnership by each partner. The profit sharing ratio is usually stated in the articles of

association. In the absence of an agreement, the law provides that all the partners share equally. The partners' current account will be credited with the amount of net profit.

There is a case where a partner may be guaranteed with a minimum amount of profits as stated in the partnership agreement and other partners in the partnership have to bear their share of profits to that partner if the distributable profits are insufficient to pay the partner's minimum share of profits. This is done to make up the guaranteed amount to be received by the guaranteed partner.

2.3 The Final Accounts For A Partnership

At the end of each year, a partnership has to prepare an income statement, an appropriation account and a balance sheet.

The Income Statement is prepared to determine the partnership's gross profit and net profit respectively. The Income Statement will be debited with the amount of partnership's expenses such as salaries, rent and electricity and will be credited with income such as the amount of discount received, rent received and interest received.

An appropriation account is prepared immediately after the preparation of Income Statement. The net profit in the Income Statement is brought down to the credit side of the Appropriation Account. The preparation of this account is to show how the net profit or loss for the year is divided between the partners. All the transactions that are related to the partners are to be recorded in this account before the net profit or net loss is divided between the partners. Interest on capital and partners' salaries are debited to the Appropriation Account and interest on drawings are credited to the account. The balance in the Appropriation Account is then divided between the partners in accordance with the partners' profit and loss sharing ratio.

The Balance Sheet for a sole trader and a partnership is different in the way the capital account is shown. The capital accounts and current accounts are shown in detail in the partnership's Balance Sheet.

3. Changes In Partnership

When a partner leaves due to retirement, ill health or death or a new partner is admitted into a partnership, the existing partnership will be dissolved and a new partnership will be created. A

new profit-sharing agreement must be reached and the assets of the existing business need to be revalued.

3.1 Factors contributing to changes in a partnership

Some factors that contribute to the changes in a partnership are:

3.1.1. Changes to the profit sharing ratio of existing partners

Sometimes the partners decide to change the existing profit and loss sharing ratios. The reasons could be: a partner cannot perform as well as before probably due to ill-health, old age or other reasons, the partner's skills and competency have changed which adversely affect his performance, or a partner has become more efficient than he used to and shown tremendous achievements that deserve recognition.

3.1.2 Retirement or death of an existing partner

A partner may decide to retire from the business and dispose his interest in the partnership. The retirement could also be due to ill health. When a partner retires or dies, his share in the business will be calculated and paid accordingly.

3.1.3 Admission of a new partner

A new partner may be admitted to a partnership to complement the skills and expertise of the existing partners. The business may have grown such that a new partner is needed to contribute toward its future growth. It could also be that an existing partner has left the company and a new partner is needed to replace him. A partner may also retire or have died and a new partner is admitted to fill the vacancy.

3.2 Goodwill

Goodwill appears in accounts of a company only when the company has purchased some intangible and valuable economic source. Intangibles such as patents and copyrights are examples of identifiable intangible assets. On the other hand, intangibles such as favourable government regulations, outstanding credit ratings, superior management and good labour relations are examples of unidentifiable intangible assets. Goodwill refers to the unidentifiable intangible assets held by the company. It embraces many features of a company's activities that

could lead to superior earning power, such as excellent management, an outstanding workforce, effective advertising and market penetration.

When a company buys another firm, the purchase price is allocated among the various components of the acquired business. The allocation is based on the appraised value of the underlying assets. Goodwill is recognised when the purchase price is higher than the value of the specifically identified assets. The premium is paid because the acquirer believes that the acquired firm will generate substantial profits. The excess paid is categorized as goodwill and will be added to the acquiring company's balance sheet as an asset, however, the value of goodwill needs to be reviewed at the end of each financial year. If goodwill loses in value, provision for impairment on it should be made in the accounts.

In a partnership, whenever a new partner is admitted, there is a need for the adjustments of the profit-sharing ratio. The existing partners will be entitled to a smaller proportion of the future profits. Therefore, with the admission of a new partner, the death or retirement of a partner or the change in the existing profit and loss sharing ratios, the ownership of goodwill by the partners changes in some way. The question of goodwill now arises and it involves cash passing from one partner to another, or an adjustment in the books.

3.2.1 Definition of goodwill

In the 1880's, goodwill is defined as the difference between the purchase price and the book value of an acquired company's assets. Today, goodwill may be defined in two different ways:

- i) Goodwill is defined as the difference between the purchase price and the fair market value of an acquired company's assets.
- ii) Goodwill is the difference between the combined company's profits over normal earnings for a similar business. Under this definition, the present value of the projected future excess earnings is determined and recorded as goodwill.

Goodwill can arise in two different ways. It can be internally generated or it can be acquired as part of the acquisition of another company. Only acquired goodwill is allowed to be recorded. Purchased goodwill arising on the acquisition of one business by another is defined as the excess of the purchase price of the acquired business over the fair value of its net tangible and identifiable intangible assets.

The internally developed goodwill refers to the economic value of a business internally developed non purchased goodwill such as name, developed markets, managerial talents, labor force, government relations, ability to finance operation easily, etc. The non purchased goodwill should not be recognized in the balance sheet and the expenditures which may result in internally developed goodwill cannot be capitalized.

3.2.2 Factors contributing to goodwill

The present concept of goodwill encompasses many more intangible economic factors of a business enterprise. Accountants now consider that goodwill results from the evaluation of the earning power of a business by investors. Today, goodwill constitutes a larger part of acquisition prices resulting in a much greater impact on financial statements.

There are a large number of factors which can give rise to goodwill. They include:

- i) The reputation of the business with customers and suppliers.
- ii) The nature and reputation of its product and services.
- iii) The location of the business.
- iv) The possession of trademarks, patents, brand names and special technical knowledge.
- v) The company's efficient and stable workforce.
- vi) Freedom from legislative restrictions.
- vii) The possession of partial or complete monopoly.

3.2.3 Rationale for valuing goodwill

In a partnership, it may be necessary to value goodwill on the introduction of a new partner or on the death or retirement of an old partner. When a new partner is admitted to the partnership, the existing partners will be entitled to a smaller proportion of the future profits. New partners may be admitted because the firm may have grown and need someone with different skills or to replace an existing partner who is leaving the company. The existing partners will be compensated in some way for the goodwill of the business which they have built up. Similarly, an outgoing partner should be entitled for the goodwill of the company that he has helped to build. On the other hand, a new partner who will be entitled to share in the profits and the value of the goodwill will be charged for taking over the share of the goodwill.

Sometimes the existing partners decide to change the existing profit and loss sharing ratios. It could be due to various reasons such as a partner may not be able to work as he used to before due to ill health or old age, the partner's skills and ability may have changed or the partner may contribute to the business more than he used to. In such cases, an adjustment needs to be made and it includes the valuation of the goodwill.

3.3 Revaluation of Assets

When there are changes in partnership, it is necessary for the business to revalue the business assets (fixed and current assets) other than valuing the goodwill. A revaluation asset Account is opened to record any increase or decrease in assets value as compared to its market value. This is because the true value of the assets of the partnership is brought into consideration where there is a change in partnership.

It is necessary to revalue assets as old partners' profit sharing ratio will be affected by the changes in partnership. The admission of a new partner or the retirement of an old partner will directly affect the profit or losses that will be shared by the partners in the business.

Any increase or decrease in these assets revaluation will result in profit or loss on revaluation. The increase or decrease value in assets revaluation will be recorded in Revaluation Assets account. If the total market value is higher than its net book value of the assets, any increases in assets valuation will be debited to Revaluation Assets account. If the total market value is lower than its net book value, any decreases in assets valuation will be credited to Revaluation Assets account.

3.3.1 Admission of a new partner

As the business expands, it is necessary for the partnership to have a new partner in order to help the old partner in managing the business. A new partner with different skills, knowledge and experience will help in improving the business development in the future. Sometimes a new partner is needed in order to replace retired partners or partners who are leaving the business for some reasons.

As a newcomer in the business, it is necessary for a new partner to contribute capital in terms of cash or fixed asset. The new partner also needs to pay premium on goodwill as compensation to

the old partners who are the people that set up the business and built a good name to the partnership.

When the new partner is admitted to the business, he or she will also have some share of the partnership firm's profit in the future. Therefore, the old partners will receive a small ratio of profits as part of the profits will now be given to the new partner.

For example, Leela and Ratu who are partners sharing their profits and losses equally, agree to admit Rosie as a new partner. The new profit sharing ratio is 2:2:1 for Leela, Ratu and Rosie respectively. If the profit for the year was RM50,000, what will the profit sharing ratio be that Leela and Rosie will receive after the admission of Rosie as a new partner? From the table below, it shows that the amount of profit sharing that Leela and Ratu receive is smaller after the admission of Rosie as a new partner in the business.

Profit Sharing Ratio	Leela	Ratu	Rosie
Old Profit Sharing Ratio	RM25,000	RM25,000	-
New Profit Sharing Ratio	RM20,000	RM20,000	RM5,000

3.3.2 Withdrawal of partners (Retirement or Death of old partners)

Sometimes in a partnership, old partners may retire or leave the business for some reasons. As a compensation to the retired partners for the efforts that they have put into the business, it is necessary to value goodwill or revalue the assets entitled to the retired partners. Thus, the retired partners or out going partners should be entitled to something more than the capital that he or she has contributed to the business.

It is necessary for the business to pay any balances due, in current and capital account, to the retired partners or any balances that the retired partners should pay to the business.

3.4 *Changes in Partnership during the Accounting Period (Pre and Post)*

When a change in a partnership takes place during the accounting period or in the middle of the year, the income and expenditure for the year must be allocated to the period before and after the changes on a time basis. Therefore, the Profit and Loss and Appropriation Accounts must be

prepared for the PRE (before the changes in partnership) and POST (after the changes in partnership) periods.

Sometimes, when the changes take place during the accounting period, the income and expenditure for the year must be apportioned to the period before and after the changes take place. The month to month basis will normally be used to apportion any income or expenditure in the partnership.

A Pre period net profit is derived by appropriating the income and expenditure of the partnership according to the old partnership agreement. A Post period net profit is derived by appropriating the income and expenditure of the partnership according to the new partnership agreement.

4. Dissolution of Partnership

In a business which has more than one owner like in a partnership, the risk of facing a conflict among partners, disagreement upon business matters and personnel problems may result in the dissolution of the partnership. Other than that, economic conditions, legal factors and health may also contribute to such dissolution.

When the partners of the business decide to dissolve the partnership, all the accounts of the business have to be closed and the partners are entitled to their contributions after settling all the debts and the assets of the business. On the date of dissolution, the following steps to be taken by a partnership firms.

- a. Update an appropriation account, partner's capital and current accounts up to the date of distribution.
- b. Transfer all asset account except for bank or cash account. Bank and cash accounts shall be settled the last after considering the amount that should be paid or received to or from partners upon dissolution. Other asset accounts will be transferred to Realization Account.
- c. Pay all the liabilities or debts according to their priority. The external parties such as bankers and creditors should be paid first. If there is any balance in those accounts, it should be transferred to Realization Account.

- d. Settle the entire assets that are either being sold by the partnership firm or taken over by partners. The amounts of debtors collected are also being recorded in the realization account.
- e. To record for any realization expenses in both realization account and cash/bank account.
- f. Calculate the profit or loss on dissolution and transfer this amount to partners' capital account based on their profit sharing ratio. This is done after all the assets (except cash/bank) and liabilities of the business have been settled.
- g. Close off the partners current accounts and the remaining balance on this account to be transferred to their Capital Accounts.
- h. Pay the amount entitled to partners or amount to be received from partners. This could be done by balancing off the partners' capital account. A credit balance shows that the business should pay the partners the amount entitled and a debit balance shows that the partners should pay the amount due to the business.

5. Conclusion

From the business point of view, the partners in a partnership business may be classified into three types of partners. They are sleeping partner, limited liability partner and general partner. The partnership agreement must be made between all the partners in a partnership either in verbal, written or under seal which includes the terms of the partnership. The possible terms included are the capital contributions of each partner, the division of profits and losses among the partners, the arrangement regarding interest on capital, interest on loan and interest on drawings, the salaries, if any, to be paid to the partners. In cases where there is no partnership agreement made by the partners, the rules laid down by Section 26 of the Partnership Act 1961 are assumed to apply to the partnership firms. These rules include the profits and losses are to be shared equally between the partners, no interest is allowed on capital, no interest is charged on drawings, no salaries are allowed, interest is allowed on a partner's loan to the partnership at a rate of 8% per annum, every partner is entitled to access the books and papers of the partnership and any business decision may be decided by a majority of the partners.

There are two method to account for partners capital. Under the first method, that is fixed capital method, a partnership has to prepare two accounts namely partners capital account and partners

current account. All transactions relating to capital contributions of each partner, additional capital and capital and withdrawal of capital made by each partner are to be recorded in partners capital account. The partners current account is prepared to record other transactions such as drawings made by each partner, interest on drawings, interest on loan from partners, interest on capital, partners salaries and the amount of share of profits and losses.

Whereas under the second method, a partnership firm is required to prepare only partners capital account in the partnership's books. There will be no current accounts and all the transactions including the amount of capital contributed by each partner, partners' salaries, interest on capital, interest on drawings, drawings made by partners and the share of profits and losses of partners are to be recorded in the partners capital account.

At the end of each financial year, a partnership has to prepare an income statement, an appropriation account and a balance sheet. The income statement consists of trading and profit and loss account. The trading, and profit and loss accounts are prepared to determine partnership's gross profit and net profit respectively. An appropriation is prepared immediately after the preparation of an income statement to find the amount of profits or losses that to be shared between all the partners a partnership. The balance sheet for a sole proprietorship and a partnership is different in the way the capital account is shown. It is prepared at a particular date to show the financial positions of a partnership.

Changes in partnership happen when there is a retirement or death of an existing partner, admission of a new partner and changes to the profit sharing ratio of existing partners. It can happen at end or during the accounting period. On the date of retirement of an existing partner or admission of a new partner, a partnership has to value goodwill and to revalue the business assets. Goodwill may be referred to as an excess amount of the value of the business as a whole and the total value of the tangible net assets. When there is a retirement of an existing partner, a retired partner is entitled to a share of goodwill and it calculated either based on accounting profit or super profit. In addition a partner who dies or retires is entitled to a share of the tangible assets based on the revalued amount. A revaluation asset account is created to record any

increase or decrease in assets value as compared to its market value and any decrease or increase in these assets revaluation will result in profit or loss on revaluation.

When the new partner is admitted to the partnership, it has to value goodwill and revalue the partnership's fixed assets and current assets. In this case, a new partner who will be entitled to share in the profits and the value of the goodwill will be charged for taking over the share of the goodwill. On the date of admission a new partner has to contribute a certain amount of capital and premium on goodwill.

A partnership is legally dissolved when there is retirement or death of an existing partner or there is admission of a new partner into the business. Whereas for accounting purposes, a partnership is dissolved when the business is closed due to a few reasons such as disagreement upon business matters, personnel problem or when all the partners are no longer interested to carry on the business. On the date of dissolution, the business has to close off all the accounts in the business and to pay the amount of capital contribution to all the partners. Repayment will only be made once all the liabilities are settled and all assets are sold. A dissolution account is prepared to determine profit or loss on realization on the date of dissolution. In general there are eight events that will take place and to be taken into account by a partnership when it is dissolved.

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**Chief Executive Officer Duality and Company Performance:
A Case of Malaysian Companies**

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Abstract

The concept of the agency theory and the stewardship theory had a different point of view on what constitute a good governance practice in the public firms. The agency theory believed that the separation of Chief Executive Officer and board chair roles is necessary to reduce the managers' opportunistic behaviors which could reduce the shareholders' wealth. In contrast the stewardship theory believed that Chief Executive Officer duality promotes flexibilities and reduce conflicts of interest between the boards of directors and management, which in turn lead them to perform effectively and efficiently. The objective of this paper is to examine the relationship between Chief Executive Officer duality and companies' performance of Malaysian public listed companies for the year ended 2002. Particularly, the study wants to examine whether the performance of the company is determined by the leadership structure of duality or independent leadership status. The findings of the study showed that companies with independent leadership showed a better performance in term of the proportion of return on asset to leverage (ROE) and profit after tax and interest to sales (profit margin) as compared to the Chief Executive Officer duality companies, the difference is however, not statistically significant. Therefore, the study explained that the separation of the roles of Chief Executive Officer and chairperson does not necessarily contribute to a better performance and that the duality issue is not a contributing factor in determining the performance of a company. The study will help the main board of directors of the company to gain information regarding corporate

governance. The separation of CEO and board Chairman is important as it provides independence in board decision and therefore, is believed to avoid corporate abuse and other ineffective governance practice. implies that the separation of the roles of Chief Executive Officer and Chairman does not necessarily contribute to a better performance of the companies. For further research it is suggested a companies listed on Kuala Lumpur Stock Exchange Main Board and Second Board.

Keywords: Corporate Governance, Chief Executive Officer Duality, Independent Leadership, Companies' Performance

1. Introduction

Developing a good practice among boards of directors has become an important issue in research, teaching and practice during recent years. In the past, the majority of studies focused on governance practices in large listed firms as boards of directors in these firms acted as supervisory body for the stakes of shareholders and other stakeholders.

Separation of ownership and control in the modern corporation may cause self-interested or opportunistic managers that act in ways which not favorable to shareholders (see, e.g., Jensen and Meckling, 1976; Jensen, 1986, 1993). Corporate governance stressed on the agency problems that are stimulated by the separation of ownership and control. The internal governance mechanisms consist of shareholder meetings, the board of directors, and operating executives. The external governance mechanism consists of the capital market, the public sector, legislation, economic condition and the labor market. Taken together, the corporate governance system of the firm attempts to align incentives of managers with those of shareholders, and hence, motivate managers to maximize shareholder value not their own wealth.

In the Report on Corporate Governance that was released by Malaysian Government in March 1999, Corporate Governance is defined as the process and structure used to direct and manage the business and affairs of the company towards enhancing business prosperity and corporate accountability with the ultimate objective of realizing long-term shareholder value while taking into account interests of other stakeholders". Corporate governance is about the way in which boards oversee the running of a company by its managers, and how board members are in turn accountable to shareholders and the company. This has implications for company behavior

towards employees, shareholders, customers and banks. Good corporate governance plays a vital role in underpinning the integrity and efficiency of financial markets. Poor corporate governance weakens a company's potential and at worst can pave the way for financial difficulties and even fraud. If companies are well governed, they will usually outperform other companies and will be able to attract investors whose support can help to finance further growth.

The practice of good corporate governance demands a sense of conviction and commitment from the people who run the company, namely the board members and senior management. Board of Directors is now expected to ensure that the interests of all parties are protected, and that the company is run in a manner that is fair and equitable to the shareholders and the public as well. Corporate Governance is best carried out in an environment that is open and transparent. Investors are increasingly looking for better information, increased disclosure and more transparent systems. It is important that there be comprehensive, timely and regular reporting of financial and non-financial information so that investors and the public are kept fully informed at all times. One of the good governance practices is the separation of Chief Executive Officer and board Chairman. This is important as it provides independence in board decision and therefore, is believed to avoid corporate abuse and other ineffective governance practice. In Malaysia, the Malaysian Code of Corporate Governance (2000) suggested that companies should have separate persons for both Chief Executive Officer and Chairman of the board positions. With dual leadership can contribute to the lack of transparency and accountability within the company.

This paper was to respond the issues with regard to the performance of companies having Chief Executive Officer duality and companies with independent leadership. The objectives of the paper are to examine the relationship between Chief Executive Officer duality and independent leadership and companies' performance in Malaysian public listed companies for the ended 2002. The paper also investigates whether there are significant difference in the performance of companies having Chief Executive Officer duality and independent leadership.

Agency theory predicts that the separation of owners (principal) and managers (agents) potentially leads to managers of firms taking actions that do not maximize shareholders' wealth (Jensen and Meckling, 1976). The managers are believed to favor decisions or plan that lead to

maximizing their personal welfare at the expense of the shareholders. In other words, the managers will try to fulfill their own interest without having consideration on the shareholders' wealth. Agency problems arise when the agent (Chief Executive Officer) takes actions that conflict with that of the principal (the shareholders represented by Board of Directors). Agency problems are more likely to occur when a key decision maker has little or no financial interest in the outcome of his decisions (Fama and Jensen, 1983).

Fama and Jensen (1983) also believed that the separation of the decision management (Chief Executive Officer) and decision control (BOD) functions within the company reduces agency costs and therefore leads to higher performance. This implies that the effective separation of decision management and decision control requires that the Chairman must not also be the Chief Executive Officer of the company. Having the Chief Executive Officer as Chairman of the board, gives a greater power to Chief Executive Officer in initiating and implementing strategies as well as monitoring such decisions. Chief Executive Officer duality seems to reflect on weak decision control by board of directors, due to opportunistic and inefficient behavior of the Chief Executive Officer. Therefore, in agency theory, companies with Chief Executive Officer duality will not perform in the best interest of shareholders.

In stewardship theory, managers are inherently trustworthy and not prone to misappropriate corporate resources (Donaldson and Davis, 1991). Managers are believed to be good stewards to the principal and will effectively establish strategies that increase the shareholders' wealth. Chief Executive Officer duality promote flexibilities in the firm, thus reduce conflicts between the board of directors and the management. This is important as less conflict will lead the management to perform effectively.

Donaldson and Davis (1991) in their study on agency and stewardship theories that relates to Chief Executive Officer duality concluded that Chief Executive Officer duality leads to higher return to shareholders. Where there is Chief Executive Officer duality, long term compensation for the Chief Executive Officer has no effect on returns to shareholders. Combination of the chairman and Chief Executive Officer gives greater decision power to the Chief Executive Officer, thus enable him to implement strategic decisions and reflect the accountability of the Chief Executive Officer (Pfeffer and Salancik; Hambrick and Finkelstein; in Boyd 1995).

Stewardship theory holds that performance variations arise from whether the structural situation in which the executive is located facilitates effective actions by the executive (Tricker, 1994). In companies with Chief Executive Officer duality, the power and authority are concentrated in one person; similarly the expectations about leadership are clearer and consistent for sides, managers and board members. These factors will therefore enhance the effectiveness and results in a better performance of a company, as compared to companies having independent leadership.

Both agency and stewardship theories reflect the view of leadership structure in any organization. Both theories are being researched and aspect of these as discussed above has been supported by this research effort. Regardless all the application of these theories to the duality issue, it is clear that the recommendations contained in the Malaysian Code on Corporate Governance (2000) seem to favor the views as found in the proponents of agency theory.

Chief Executive Officer duality occurs when the same person holds both the Chief Executive Officer and board Chairman positions in a corporation (Rechner and Dalton, 1991). The combination of Chief Executive Officer and chairman positions reflects leadership and governance issues. Chairman of the board of directors in addition to providing the overall leadership of the company, is also responsible for managing the board, such as selecting new board members, monitoring the performance of executive directors and handling any conflicts among board members. On the other hand, the Chief Executive Officer is responsible for day-to-day management of the company, including the implementation of board decisions. It is the task of the Chief Executive Officer to initiate strategies and implement it under supervision and control by board of directors. This provides check and balance mechanism on the company's operations. There have been a number of studies that have analyzed the relationship between corporate performance and board leadership structure. The empirical evidence relating to duality (Rechner and Dalton, 1991) is mixed with findings that companies with separate leadership performed better than companies that combined the posts.

However, conferring the power of the Chief Executive Officer and Chairman of the board in one person could erode the board's ability to exercise effective control. Therefore, companies with the Chief Executive Officer duality offer greater power to one person, which allow him to make

decisions that do not maximize shareholders wealth (Liang, et al., 1999). Furthermore, Chief Executive Officer duality is linked with the sign of ineffective governance, such as hostile takeovers and also the adoption of 'poison pills' as well as payment of green mail (Boyd, 1995). Chief Executive Officer duality is suggested by researchers has a favorable and unfavorable consequences. Some shareholders are put off by the weak board control over the management. The other shareholders are reassured by the presence of unity of command in the company's leadership, and less conflict among management and board of directors. Being both the Chairman and Chief Executive Officer, the person would be able to steer the company towards achieving its goals at minimum intervention from board members. Chief Executive Officer duality is therefore, a threat to good corporate governance as there will be a lack of independence between the roles of management and governance (Haniffa, 2001). Liang and Li (1999) examined the relationship between board structure and firm's performance in a sample of 228 small private firms in Shanghai, China. The study found that duality of titles and board size does not matter in firm performance. They provided empirical evidence that firms have a higher return on investment when more outsiders are on the boards. They also found that firms, which claim to have a competent management and to be more technologically advanced, are associated with higher firm performance.

According to Faleye (2003), one of the most hotly debated issues in corporate governance is the question of whether the chief executive officer (Chief Executive Officer) should also serve as the chairman of the board of directors. This Chief Executive Officer is a corporation's chief strategist, responsible for initiating and implementing company wide plans and policies. Chief Executive Officer heads the organization's decision management hierarchy whereas the chairman is responsible for the working of the board, ensuring that all essential matters are on meeting agenda, determining that the board adequately ratifies and monitors the strategy initiatives of the Chief Executive Officer, and overseeing the hiring, firing, evaluation, and compensation of the Chief Executive Officer (Fama and Jensen, 1998).

In Malaysia, a study by Haniffa (2001), showed that, there were only seven cases (5%) of role duality out of the total of 139 companies surveyed. Out of the seven, four cases are from larger companies and the rest are from medium sized companies. Role duality is also seemed more popular in the consumer sectors as compared to industrial and trading sectors. Other researcher

that examined the relationship between leadership structure and firm's performance in Malaysia was Ropidah (2001). Her findings showed that there are no significant differences in the performance of the companies regardless the accounting or market-based measurements that used to operationalize firm's performance (ROE, Profit Margin, PE ratio and RET). In other words, the performance of the company is not dependent on the company's leadership structure, whether the Chief Executive Officer or other person chairs the board. The findings of the also dispute the suggestions by agency and stewardship theories as discussed before. There are no significant differences in companies having the Chief Executive Officer sitting as Chairman of the board as measured by ROE, Profit Margin, PE ratio and RET. In other words, the duality issue is not a factor in determining the performance of a company.

Shamsul Nahar (2004) studied the roles of board independence and Chief Executive Officer duality on a firm's performance. The study showed that there is no significant relationship between board independence, leadership structure and firm's performance. The result of this study showed that Malaysian companies' boards were generally dominated by outside directors and the majority of the companies practiced independent leadership structures. In this study, data from the KLSE Main Board companies for the 1994-1996 financial years were used to test the roles of board independence and Chief Executive Officer duality.

The argument on the separation of roles is not crucial since many companies are well run with roles combined and have good strong boards fully capable of keeping the top man in check. Furthermore, when the role is combined, it will be easier for the Chief Executive Officer to shape the company in achieving objectives as there will be less interference and thus, helps to enhance leadership of companies and boards. Among the past studies who support the role of duality are Rechner and Dalton (1991) and Donaldson and Davis (1991). Using data for 627 UK non-financial companies in the pre-Cadbury period (1990/91), the findings of the study conducted by Lasfer (2002) showed that there is no strong relationship between firm value and board structure. The study also showed that high growth firms are more likely to adopt the Cadbury recommendations which are to split the roles of the chairman and Chief Executive Officer and to have three or more nonexecutive directors.

2. Research Methodology

2.1. Sample

A total of 438 companies listed on the KLSE Main Board and Second Board in the year 2002 are included in this study. They represent two groups: companies having Chief Executive Officer duality and companies with independent leadership. Due to different regulatory requirements in the accounting and reporting, companies in the financial and banking sectors are excluded. Data was collected from various sources such as web sites, articles, journals, books and handbook.

2.2. Choice of performance measurement

Company's performance can be measured in many ways. The most common measures are Return On Assets (ROA), Return On Investment (ROI) and Return On Equity (ROE) as well as Profit Margin. These performance measures were used by various researchers on corporate governance performance of companies (Rechner and Dalton,1991; Finkelstein and D'Aveni,1994; Kang and Shivdasamy,1995; Mehran,1995; Baliga et. al ,1996; Mikkelson et.al,1997; Kren and Kerr,1997; Laitinen and Ruuhela,1998; Dehaene and Ooghe,1998; Core et al. 1999; and Liang and Li,1999). In addition, other performance measures such as PE ratio (Price-Earnings ratio), operating cash flow over total assets and operating sales over total sales (Laitinen and Ruuhela,1998; Baliga et. al.,1996) were also used in measuring performance of the firm.

In this study, two accounting performance measurement were used namely Return on Equity and Net Profit Margin.

2.2.1 Return On Equity (ROE)

Return On Equity (ROE) has been commonly used as performance measurement in research (Rechner and Dalton, 1991; Donaldson and Davis, 1991, Daily and Dalton, 1992, Finkelstein and D'Aveni, 1994; Kang and Shivdasamy, 1995; Mehran, 1995; Baliga et. al, 1996; Mikkelson et.al, 1997; Kren and Kerr, 1997; Laitinen and Ruuhela, 1998; Dehaene and Ooghe,1998; Core et al. 1999; and Liang and Li,1999). It is a measure of how stockholders fared during the year. In maximizing the shareholders' wealth, ROE is the true bottom line measure of performance, as it takes into consideration of ROA and leverage of the company.

2.2.2 Profit Margin

Profit margin is another common performance measure used in previous research (Rechner and Dalton,1991; Finkelstein and D'Aveni,1994; Kang and Shivdasamy,1995; Mehran,1995; Baliga et. al ,1996; Mikkelson et.al,1997; Kren and Kerr,1997; Laitinen and Ruuhela,1998; Dehaene and Ooghe,1998; Core et al. 1999; and Liang and Li,1999) in Ropidah ,2001. It is important as it shows the degree of profit generated for every dollar in sales.

2.3 Hypothesis Development

The following two hypothesis are developed. These hypothesis, in the null form, are:

H0 = There is no relationship between leadership structure and firms performance in the year ended 2002.

H0 = There is no significant difference in the performance of companies having CEO duality and companies with independent leadership in the year ended 2002.

3. Results and Discussion

3.1. Descriptive and Univariate Analyses

A cross-sectional review of annual reports of the companies listed on the Main and Second Board of the Bursa Malaysia was carried out over the year of 2002. All of the industry classifications were considered. The analysis focused on the annual reports for the year 2002, as this is the latest publicly data available at the time of data collections. In addition, the data on Chief Executive Officer duality is available for that period. For this study, all financial statements that are available on the KLSE Announcement web site (<http://announcements.klse.com.my>) were selected as sample companies. The annual report for each company was reviewed to extract the related data. Annual reports with incomplete data and/or companies that changed their calendar years (i.e. financial calendar is less or more than twelve months period) were excluded. The final sample selected for this study is 438 annual reports including 219 annual reports for independent leadership companies. Table 1 shows the details of the sampling process.

Table 1. Sample Selection: KLSE Listed Companies (Main, Second Board and Mesdaq) – Financial Year Ending in 2002

Main board Companies	562	
Second board Companies	294	
Mesdaq Companies	12	
Total number of Listed Companies	868	
<i>Less</i>		
Companies that independent leadership	542	
Annual Report not available on KLSE Announcement web site	24	
Total initial sample	302	
Initial Sample	302	
<i>Less</i>		
Chief Executive Officer duality companies with no matching size with independent leadership companies	65	
Chief Executive Officer duality companies but changes the financial year during the review year	<u>18</u>	219
Independent leadership companies for matched sample		219

The data used in the analysis was obtained from various sections of the annual report such as the corporate information, directors’ profile, income statements, balance sheets, and notes to the financial statements.

All financial statements available on KLSE Announcement web site for listed companies were reviewed during the sample period 2002 to identify the companies that Chief Executive Officer duality practices. The Chief Executive Officer duality companies were matched against a sample of independent leadership companies based on total asset size during the year 2002.

Table 2. KLSE Sector Classification

KLSE SECTOR CLASSIFICATION	COMPANIES				Total	
	Chief Executive Officer DUALITY		INDEPENDENT LEADERSHIP			
	N=219	Percent	N=219	Percent		
Main Board	Consumer Products	16	7.4	16	7.4	32
	Industrial Products	36	16.4	36	16.4	72
	Construction	4	1.8	4	1.8	8
	Trading & Services	24	11.0	24	11.0	48
	Finance	8	3.7	8	3.7	16
	IPC	1	0.5	1	0.5	2
	Hotels	1	0.5	1	0.5	2
	PR	23	10.5	23	10.5	46
	Plantations	6	2.7	6	2.7	12
	Trust	3	1.3	3	1.3	6
	PN4	18	8.2	18	8.2	36
Second Board	Consumer Products	20	9.1	20	9.1	40
	Constructions	2	0.9	2	0.9	4

Trading & Services	16	7.3	16	7.3	32
MESDAQ	2	0.9	2	0.9	4
Total	219	100.0	219	100.0	100

Table 2 shows the details of the sample selection among industries in Main Board and Second Board. The table is classified based on the KLSE sector classification. Based on the above criteria, 219 companies were identified, which Chief Executive Officer duality during the year 2002 and 219 companies that independent leadership during the period, were chosen as a matching sample based on size and industry or sector. The industrial products industry is the highest industry (n= 36 Companies) with duality practices followed by Trading and Services Industry (n= 24 Companies) and Property Industry (n= 23 Companies).

Table 3 displays the descriptive statistics of proportion of return on asset to leverage, profit after tax and interest to sales and the frequency of ROE ratio and profit margin ratio for the total sample of 438 companies, i.e 219 companies that having Chief Executive Officer duality and 219 companies that having independent leadership.

Table 3. Proportion of Return on Asset to Leverage and Proportion of Profit after Tax and Interest to Sales (for the Total Sample of 438 Companies, 219 Companies that Chief Executive Officer Duality and 219 Companies that Independent Leadership)

Panel A

Proportion of Return on Asset to Leverage (ROE)

Return on Equity (ROE)	Chief Executive Officer DUALITY		Independent Leadership	
	Number	Percent	Number	Percent
Above 1	3	1.4	3	1.4
0.8 - 0.9	0	0.0	3	1.4
0.6 - 0.7	1	0.5	1	0.5
0.4 - 0.5	0	0.0	2	0.9
0.2 - 0.3	18	8.2	10	4.6
0.0 - 0.1	145	66.2	154	70.3
-0.1 - -0.2	36	16.4	33	15.0
-0.3 - -0.4	6	2.8	4	1.8
-0.5 - -0.6	2	0.9	4	1.8
-0.7 - -0.8	4	1.8	1	0.5
Above -1	4	1.8	4	1.8
Total	219	100.0	219	100.0

Panel-A shows that more than 75% of the companies with Chief Executive Officer Duality and Independent leadership have positive ROE ratio ranging from 0.00 to 1.00 in the year 2002. 1.4% of each type of companies i.e. companies with Chief Executive Officer Duality and Independent Leadership has ROE above one. Majority of ROE for both companies with Chief Executive Officer duality and Independent Leadership fall in the range “Between” 0.0 to 0.1. The ROE performance of the independent companies shows better result than Chief Executive Officer duality companies, anyway the difference is insignificance.

Panel B

Proportion of Profit after Tax and Interest to Sales (PROFIT MARGIN)

PROFIT MARGIN	Chief Executive Officer DUALITY		Independent Leadership	
	Number	Percent	Number	Percent
Above 1	3	1.4	2	0.9
0.8 - 0.9	0	0.0	0	0.0
0.6 - 0.7	3	1.4	0	0.0
0.4 - 0.5	4	1.8	2	0.9
0.2 – 0.3	19	8.7	14	6.5
0.0 – 0.1	123	56.1	141	64.5
-0.1 - -0.2	36	16.4	36	16.4
-0.3 - -0.4	9	4.1	6	2.7
-0.5 - -0.6	5	2.3	3	1.3
-0.7 - -0.8	8	3.7	3	1.3
Above -1	9	4.1	12	5.5
Total	219	100.0	219	100.0

Panel B shows the profit margin of both companies having Chief Executive Officer Duality and Independent Leadership. The results show that more than 70% of companies with Chief Executive Officer duality and Independent companies have positive profit margin in year 2002 (range “Between”0.00 to 1.00). The result also shows that more than 50% of the Chief Executive Officer Duality companies’ profit margin is between 0.0-0.1. Profit margins of Independent leadership companies show 3.4% (72.8%-69.4%) better than Chief Executive Officer duality in term of positive profit margin (range “Between” 0.00 to 1.00). Anyway the difference is considered statistical insignificant.

Panel C.

Difference in percentage of ROE in Chief Executive Officer Duality Companies and Independent Leadership Companies

Range	ROE		
	Chief Executive Officer DUALITY	INDEPENDENT LEADERSHIP	PERCENTEGE DIFFERENCE
	Per cent	Per cent	Per cent
Above 1	1.4	1.4	0
0.8 - 0.9	0.0	1.4	1.4
0.6 - 0.7	0.5	0.5	0
0.4 - 0.5	0.0	0.9	0.9
0.2 - 0.3	8.2	4.6	3.6
0.0 - 0.1	66.2	70.3	4.1
-0.1 - -0.2	16.4	15.0	1.4
-0.3 - -0.4	2.8	1.8	1
-0.5 - -0.6	0.9	1.8	0.9
-0.7 - -0.8	1.8	0.5	1.3
Above -1	1.8	1.8	0
	100.0	100.0	

Panel C shows that the Return on Equity (ROE) for both companies having Chief Executive Officer Duality companies and Independent companies are slightly difference. The highest differences in Return on Equity (ROE) are fall in the range “Between” 0.00 to 0.10 with a difference of 4.1%.

Panel D.

Difference in percentage of Profit Margin in Chief Executive Officer Duality Companies and Independent Leadership Companies

Range	PROFIT MARGIN		
	Chief Executive Officer DUALITY	INDEPENDENT LEADERSHIP	PERCENTEGE DIFFERENCE
	Per cent	Per cent	Per cent
Above 1	1.4	0.9	0.5
0.8 - 0.9	0.0	0.0	0
0.6 - 0.7	1.4	0.0	1.4
0.4 - 0.5	1.8	0.9	0.9
0.2 - 0.3	8.7	6.5	2.2

0.0 – 0.1	56.1	64.5	8.4
-0.1 - -0.2	16.4	16.4	0
-0.3 - -0.4	4.1	2.7	1.4
-0.5 - -0.6	2.3	1.3	1.0
-0.7 - -0.8	3.7	1.3	2.4
Above -1	4.1	5.5	1.4
	100.0	100.0	

Panel D shows that the Net Profit Margin for both companies having Chief Executive Officer Duality companies and Independent companies are slightly difference. The highest differences in Net Profit Margin are fall in the range “Between” 0.00 to 0.10 with a difference of 8.4%.

Table 4. Descriptive Statistics for untransformed Variables for Total Sample of 438 Companies, 219 Duality Companies, and 219 Non-Duality Companies

Panel A. Descriptive Statistics for untransformed variables

(Total sample-438 companies)

	Minimum (RM'000)	Maximum (RM'000)	Mean (RM'000)	Std. Deviation (RM'000)
Total Assets	5205	61765680	1324757.51	6400132.48
Sales	0	12053100	380686.93	1036800.03
Profit After Tax	-1094405	1394867	10469.96	136838.05
Profit After Tax And Minority	-996506	1339337	6973.24	128043.72
Shareholder Fund	-1965918	8935240	300352.58	752417.73

Panel B. Descriptive Statistics for untransformed variables

(Chief Executive Officer Duality companies –219 companies)

	Minimum (RM'000)	Maximum (RM'000)	Mean (RM'000)	Std. Deviation (RM'000)
Total Assets	5560	58450957	1326777.12	6433783.69
Sales	0	8241507	342271.28	920027.24
Profit After Tax	-1094405	1394867	4699.58	155798.59
Profit After Tax And Minority	-996506	1339337	-123.45	146335.18
Shareholder Fund	-1527284	8935240	297896.11	786932.45

**Panel C. Descriptive Statistics for untransformed variables
(Independent leadership companies –219 companies)**

	Minimum (RM'000)	Maximum (RM'000)	Mean (RM'000)	Std. Deviation (RM'000)
Total Assets	5205	61765680	1322737.90	6381042.89
Sales	1	12053100	419102.58	1142551.70
Profit After Tax	-831595	921718	16240.35	114869.91
Profit After Tax And Minority	-835563	770237	14069.92	106538.36
Shareholder Fund	-1965918	6831996	302809.05	718043.89

Panel D

	Chief Executive Officer Duality Companies	Independent Leadership Companies
	Mean (RM'000)	Mean (RM'000)
Total Assets	1326777.12	1322737.90
Sales	342271.28	419102.58
Profit After Tax	4699.58	16240.35
Profit After Tax And Minority	-123.45	14069.92
Shareholder Fund	297896.11	302809.05

Table 4 shows the descriptive statistics for the untransformed variables for both duality and independent leadership companies. From the above table 4 :Panel D, the average total assets for companies with Chief Executive Officer duality (RM1.327 billion) are slightly higher than companies with independent leadership (RM1.323 billion). Meanwhile, the total sales of companies with independent leadership (RM419 million) shows a higher figure as compared to the total sales of the companies with Chief Executive Officer duality (RM342 million).

Comparing the profit after tax between both types of companies, it is obvious that the independent leadership companies outperformed the Chief Executive Officer duality companies with the average profit after tax of RM16.2 million as compared to Chief Executive Officer duality companies' average profit after tax of RM4.699 million. Further, the profit after tax and minority shareholder for independent leadership companies which is RM14 million is far better than the Chief Executive Officer duality companies which shows a negative figure of RM0.12 million.

The total shareholder fund for independent leadership companies also shows a higher figure of RM302.8 million as compared to the Chief Executive Officer duality companies in which its shareholder fund stood at RM297.9 million.

The performance of the independent leadership companies is better than the Chief Executive Officer duality companies. This is evident in the performance of its profit after tax is higher than the Chief Executive Officer duality companies. The profit after tax and the minority shareholder which is also higher when compared to the Chief Executive Officer duality companies which show a negative figure for the same variable. Moreover, even though the independent leadership companies have a slightly lower figure for the total assets, it managed to generate more total sales as compared to the Chief Executive Officer duality companies. This could imply that they are better in managing their assets in order to generate more sales to the companies. The higher sales and profit figure is further reflected in the higher figure for the shareholder fund of the independent leadership companies as compared to the Chief Executive Officer duality companies.

Table 5. Descriptive Statistics for ROE, PROFIT MARGIN and Chief Executive Officer Duality for Total Sample of 438 Companies, 219 Chief Executive Officer Duality Companies, 219 Independent Leadership Companies and t-test results of H₁ and H₂

	Total Sample (Number=438)	Chief Executive Officer Duality Companies (Number=219)	Independent Leadership Companies (Number=219)	
	Mean (SD)	Mean (SD)	Mean (SD)	t-value
ROE	0.0214 (0.50930)	0.0236 (0.47179)	0.0193 (0.54532)	0.089
PROFIT MARGIN	-70.1465 (1,417.56986)	-4.2601 (42.37020)	-136.0330 (2004.42247)	0.973
	Frequency Distribution: (%)	Frequency Distribution: (%)	Frequency Distribution: (%)	
Chief Executive Officer DUALITY				
YES	219 (50.0%)	219 (100.0%)	0 (0.0%)	
NO	219 (50.0%)	0 (0.0%)	219 (100.0%)	

** Significant at the 0.01 level (2-tailed)

* Significant at the 0.05 level (2-tailed)

Notes:

ROE = return on asset to leverage

PROFIT MARGIN = profit after tax and interest to sales

Chief Executive Officer DUALITY = whether company had the Chief Executive Officer duality or not

SD = standard deviation

Table 5 presents the descriptive statistics for the full sample of 438 companies, consisting of 219 companies that Chief Executive Officer duality and the match sample of 219 companies that independent leadership for the study period 2002. It also shows the mean and standard deviation of the variables that are used to test the hypotheses.

ROE variable is positive but profit margin variable is negative in the total sample, Chief Executive Officer duality companies and independent leadership. The financial performance variables used in the study show that companies performance with Chief Executive Officer duality are not much different with independent leadership during the study period. The incidence of Chief Executive Officer duality does not significantly influence the performance of the company as stated in the results of t-test as measured by ROE and Profit Margin. It also supports the findings that there is no link between Chief Executive Officer duality and corporate performance. There is no impact on the profitability of the firm, whether the Chief Executive Officer is sitting as the Chairman to the board of directors or not.

3.2 Hypothesis Testing

H₁: Return on Equity of companies with Chief Executive Officer Duality shows no significant difference compared to companies with Independent Leadership

Given that Levene's test has a probability greater than 0.05, it can assume that the population variances are relatively equal. Therefore, the t-value, degree of freedom (df) and two-tail significance for the equal variance estimates to determine whether ROE differences exist. The

two-tail significance for ROE indicates that $p > 0.05$ and thus it is not significant. Therefore accept the null hypothesis 1 and reject the alternative hypothesis. The incidence of Chief Executive Officer duality does not significantly influence the performance of the company as stated in the results of t-test as measured by ROE. This result shows that giving the chair and Chief Executive Officer positions to different persons or combining the positions to one person did not influence the companies ROE.

H2: Profit Margin of companies with Chief Executive Officer Duality shows no significant difference compared to companies with Independent Leadership

In relation to PROFIT MARGIN, Levene's test was not significant and thus it interprets the equal variance estimates. Consulting t-value, df and two-tail significance, again no significant differences are apparent ($p > 0.05$) for PROFIT MARGIN. Therefore the study accepts the null hypothesis 2 and rejects the alternative hypothesis 2.

Overall, the results in Table 5 showed that there is no significant difference in company performance between companies with Chief Executive Officer Duality and companies with Independent Leadership either the financial performance measurement used is ROE or PROFIT MARGIN variables. This is consistent with the previous studies done by Ropidah, 2001, Berg and Smith (1978); Rechner and Dalton (1989); Chaganti et al (1995); and Dehaene and Ooghe (1998). It is possible for a company to use other internal or external mechanisms to control the agency problems experienced by the companies.

Table 6. ANOVA test results

	Approximate F	Significance (<i>Sig.</i>)
ROE	0.008	0.929
PROFIT MARGIN	0.946	0.331

Table 6 contains the *F* statistics for further test on the null hypothesis 1 (ROE) and hypothesis 2 (PROFIT MARGIN) using ANOVA single factor confirms the first findings. Since the *Sig.* value of ROE and PROFIT MARGIN is big, and then there is enough evidence to accept the null hypothesis 1 and hypothesis 2. It shows no significant difference between the companies having Chief Executive Officer duality and companies with independent leadership in terms of Return on Equity and Profit Margin. Therefore, the ANOVA Single Factor test result supports all the

two hypotheses. Again the result of the study shows that there is no significant distinction between the performance of separated or combined leadership structure firms.

4. Conclusion

Findings from the two financial performance used i.e Return on Equity (ROE) and profit margin indicate that there are no significant differences in the performance of the companies from both groups. In other words, the performance of the company is not dependent on the company's leadership structure, whether the Chief Executive Officer or other person chairs the board. The findings also dispute the suggestions by agency and stewardship theories as discussed before.

The findings also suggest that the Chief Executive Officer duality is not an issue in the performance of the company. There are no significant differences in companies having the Chief Executive Officer sitting as Chairman of the board as measured by ROE and Profit Margin. In other words, the duality issue is not a factor in determining the performance of a company. Other factors that might contribute to the firms' successful in performance are the leadership skills, quality of management, quality of product or services given, long term investment value, marketing strategy used or other effective internal control mechanism used etc. Leadership structure is one element of Board Structure. Other elements such as the proportion of independent directors sit on the Audit Committee; Remuneration Committee might also contribute to the successful of company performance. This mechanism also might help the board in performing better controlling roles and therefore, reduce the agency problems.

It is suggested by the findings that is an appropriate for the Code of Corporate Governance to allow companies to have the freedom in having either separate persons occupying the positions of the Chief Executive Officer and Chairman of the board or companies to have one person sitting on both positions. The statistical results of the study show that there are no significant differences in the performance of companies as measured by ROE (Return on equity), profit margin, PE (Price Earnings) ratio and RET (Return on common stocks) between companies having Chief Executive Officer duality and companies with independent leadership.

The overall findings of this study show that the independent leadership companies showed a better performance in terms of the proportion of return on asset to leverage (ROE) and profit

after tax and interest to sales (profit margin) as compared to the Chief Executive Officer duality companies. However, the differences in the performance of both types of companies are minimal. The t-test and ANOVA results reaffirmed that the differences in the performance of Chief Executive Officer duality companies and independent leadership companies are not statistically significant. Therefore, from the findings we can conclude that the separation of the roles of Chief Executive Officer and chairperson does not necessarily contribute to a better performance of the companies. It also showed that, in contrast to the argument in the agency theory, the duality issue is not a contributing factor in determining the performance of a company.

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The Public e-Procurement in Malaysia

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Abstract

Public procurement in Malaysia in echoing a global phenomenon has become increasingly afflicted with corruption. If allowed to go unchecked, corruption will threaten the national foundation with a multitude of negative impact like underperformance, over-billing, elimination of fair competition, decreased efficiency and the ensuing dilapidated cost-effectiveness, amongst a plethora of other undesirables. The proliferation of the internet and the World Wide Web technology has enabled the migration of traditional manual paper-based public procurement procedures to electronically-based systems. This paper lauds the affirmative action approach adopted by the Government of Malaysia to address the spectre of corruption via e-procurement. The e-procurement, now referred to as *e-perolehan*, was a flagship project launched in the Multimedia Super Corridor (MSC) in 1996. The arguments tabled in this paper expound the benefits to be garnered through the implementation of e-procurement. However, as the case normally is when matters involve national interests, things are never open and shut. Thus, in

looking at both sides of the argument, this paper also outlined several cautionary arguments on the implementation of e-procurement. This paper supported the Malaysian government's decision to endorse e-procurement as a concerted effort to advocate transparency, accountability, integrity, curtailment of fraud and all that are key components to the principles of good governance.

Keywords: Public, e-Procurement, Corruption, Internet, Malaysian government

1. Introduction

In a survey by the OECD Observer, it was suggested that corruption in public procurement was a growing concern globally (Public procurement, 2007), and Malaysia was not an exception. As such, the Malaysian government needed to take the right action to reduce the high cases of corruption and become more transparent, promote fair competition, increase efficiency, enhance cost-effectiveness and gain public confidence. If ignored, then this would lead to the serious ills of corruption, such as underperformance, contract renegotiation, change orders, over-billing, and the non compliance of the contract secured. A possible panacea to the government in its endeavour to curb corruption in public procurement could be e-procurement.

The Malaysian government had launched the new system of electronic procurement for its public procurement practices in order to increase the efficiency of the system and reduce corruption. Currently both the manual procurement system and the electronic procurement system were simultaneously in operation until the e-system was fully automated throughout the country. The movement from the traditional manual paper-based public procurement procedures to electronically-based public procurement systems gained velocity due to the improvements in internet and World Wide Web technology. As its name suggests, e-procurement referred to the application of internet technology in material procurement (Aik, 2005). The e-procurement system set up involved various procedures such as; the use of web-based technologies and electronic communication networks for transactional purchasing of various forms of information technology (IT) and the automation and streamlining of the procurement processes in business organisations. The major objective of this direction was that it would lead to the improvement of efficiency and transparency, thereby reducing the cost of operations within and between business parties. The e-procurement system also focused on the business to business purchase and sale of supplies and services over the internet.

2. The e-Procurement Processes

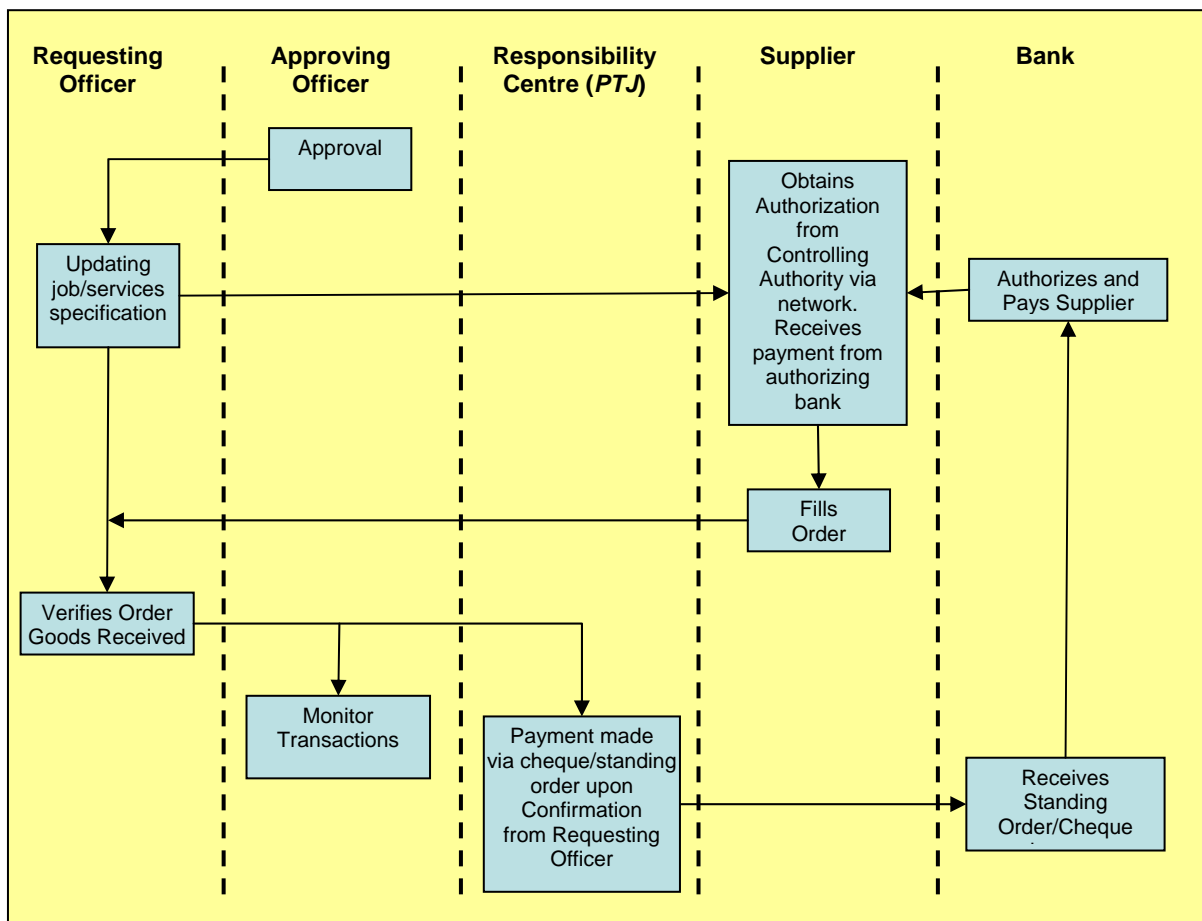
As an introduction to e-procurement in Malaysia, the Ministry of Finance (MOF) had launched 4 types of electronic procurement systems, namely; the Central Contract, the Direct Purchase, the Quotation and the Tender. All these were initiated between the period of 2000 to 2003, while in 2006 the MOF launched the Contract and e-Bidding systems. The e-procurement project was among the several flagships of the e-Government projects that were launched in the Multimedia Super Corridor (MSC) in 1996. The system allowed all government purchases to be managed online, although initially the system used many prototypes which were tested and refined. Upon refinement only, were they extended to other agencies of the federal government and agencies of the state and local government (Abdullah et al, 2006). The Malaysian government had invested a great amount of money, time and effort in promoting and adopting the system which was now locally known as *e-Perolehan* system of procurement.

Prior to the introduction of an e-procurement platform, procurement in Government departments was carried out through a manual procurement process. The complete process required a long chain of internal authorisations and scrutiny, numerous visits by the suppliers to the government departments and the generation of reams of paper-based statements and evaluations (K. Bikshapathi, P. RamaRaju, and Prof. Subhash Bhatnagar, 2006). The manual procurement system was distorted by several deficiencies including tender schedules, cartel information to suppress competition, tampering of tender files and the sabotage of the collection for the tender boxes which were located at different locations. Hence the human error factor and the high rate of fraudulent practices were among the key motivators for the introduction of the e-procurement systems.

The application of digital technology offered opportunities for improvements in the public sectors. This was part of the reason why the government turned to use electronic means to enhance the management of the public procurement processes including the implementation of the e-procurement system. Besides that, the system was able to further enhance transparency and compliance, increased performance and quality, and the most important was that it helped the government to reduce the opportunities for corruptive practices (Aik, 2005). To obtain an overview of the processes involved in the e-procurement system, Table 1 below highlighted the general e-procurement flowchart that showed the parties involved and the various work

procedures. As compared to the conventional manual procurement system, the process workflow looked more simplified as it reduced the number of manpower and the delivery of documents were done electronically. Indirectly, it also reduced errors such as delivery errors of sending to the wrong person or missing documents or late delivery. Via e-procurement, the delivery system was much faster, there were good internal controls incorporated in the system and it could overcome hurdles prevalent in the conventional procurement as seen in the article entitled “Public Procurement : The Prevalent System and its Weakness”.

Table 1: Electronic Public Procurement Flowchart



3. Justifications for e-Procurement

According to the Corruption Perception Index, Malaysia’s rating fell from 33 in the year 2002 to 44 in the year 2006 and was at 43 in the year 2007. With such a status, there was a substantial

lack of transparency¹ and competitive bidding in the procurement process in Malaysia. To overcome this situation, the government launched the electronic procurement system aimed primarily at the optimisation of public spending and the modernisation of the administration through electronic procurement. Other objectives for this reformation in the public procurement procedures included the following; increasing the transparency level in the processes and procedures, creating a more competitive market environment for the suppliers, increasing the accountability and integrity of the public sectors notably the public officials who authorised the approval, so as to gain greater public confidence (Siddiquee, 2006). Government reformation helped moot the change of culture in the government administration to become more aggressive and proactive, so that they would be able to tackle the problems of innovation and take pragmatic measurements to be incorporated into the electronic system. In addition, the public officials could promptly respond to the public demand on procurement matters, they could discharge their duties with probity and a higher level of ethics.

Other reasons for the reformation into e-procurement includes the improved efficiency of the procurement process in terms of lower costs for both the government and the businesses where in the conventional procurement process it was time consuming and involved a lot of paperwork which required a lot of man power to process the documents. There is also a reduction in time of the processing activities where the procedures in the conventional procurement involved the internal staff to make approvals. This normally took a long period of time for processing the documents submitted by the suppliers in the bidding process, (c) increase in transparency to promote public confidence in the procurement system, especially to the bidders (Wayne, 2005). Corruption activities such as collusive actions between the bidders could be avoided. Tight control and close guarded information by the government department created transparency in the conventional procurement process. There is also an improved value for money in government procurement by providing better services and facilities to the community. This could lead to better outcomes for business via a consistent system that streamlined their processes and offered a wider access of opportunities for the SME's². The adoption of e-procurement practices would enable substantial efficiency savings for both the purchaser (government) and the provider

¹ <http://www.business-anti-corruption.com/normal.asp?pageid=209>, "Doing Business In Malaysia: A Country Commercial Guide for U.S. Companies", U.S. & Foreign Commercial Service and U.S. Department of State, 2005

² ADB 2003 – Republic of the Fiji Islands: Report on Survey of readiness for electronic government procurement

(supplier). It is not only streamlined the government procurement activities but also improved the quality of services it provided (Kaliannan, 2008), The e- procurement had become a vehicle for the government to provide all the latest product information to assist the buyers to make a more accurate procurement decision and would make them better informed buyers. Certainly, there will be reduction in corruption practices as there would be a reduction in human contact between government officials and the private bidding firms. The e-procurement system offered a wide availability of relevant information and this helped to increase the number of participating bidders. They would be less likely to face the risk of corruption through collusion and bid rigging. The e-procurement system also prevented corruption by eliminating the gate keepers, it standardised the delivery of services and reduced the abuse of discretion (UNDP 2006). There is a cost saving and efficiency as the government would be able to reduce their associated costs with less paperwork that led to fewer mistakes and more efficient purchasing process. With e-procurement systems, the government was able to provide the latest information on the variety of products and services coupled with the latest pricing, on-line. This aided the suppliers to secure immediate access into the system and make accurate decisions. The government was able to reduce administration and operation costs from improved purchasing control and greater accuracy in the receiving and billing process. The reduction in procurement staff and administration costs led to a decrease in the huge number of staff and a reduction on the time associated with the procurement process. The suppliers were able to have direct application and access to government procurement without human interaction. Therefore, the reduction in staffing was an important way of producing competitive advantage through cost reduction (Robert et al., 2006). With the increased transparency and accountability helped all the interested parties to have the ability to know and understand the actual process by which contracts were awarded and managed. This required the release of minimum information sufficient to allow the average participant to know how the system worked. Transparency was an effective means to identify and correct improper, wasteful and even corrupt practices. There is also a greater accountability since the electronic documents could be retrieved at any given time and all the activities were logged in the system.

According to Wittig (2005), transparency was a central characteristic of a sound and efficient public procurement system. It was characterised by a well-defined regulations and procedures open to public scrutiny, clear and standardized tender documents, bidding and tender documents

containing complete information and equal opportunities in the bidding process. Shortened procurement cycle times as all the operations between the suppliers and the government would be able to receive the services and payments within a shorter period. In the survey in India by K. Bikshapathi, P. RamaRaju, and Prof. Subhash Bhatnagar, (2006) the government departments used to take 90 – 135 days for finalizing high value tenders. However, with e-procurement, the tender cycles were reduced to 42 days in the first year of operation and a further reduction to 35 days in the second year of operation. This improvement was due to automated workflows and the ability to track down and monitor all the file movements.

Price reduction in tendering as it was a costly activity for businesses over the years, often involving slow manual business procedures and even slower systematic processes for handling procurement transaction. At the same time, purchasing officers were forced to handle errors in ordering, costing and invoicing which were often time consuming and costly to trace. A survey in Australia indicated that between 75% and 85% of the respondents cited a reduction in cost of tendering (Hawking et al, 2004) while utilizing the e-procurement systems. The government also saved substantial reductions in media advertising costs as e-procurement tender notices were shorter and contained only the basic information.

4. Challenges Ahead in e-Procurement

Despite the attempt to bring about reform in public procurement by implementing e-procurement, the achievements for a better and cleaner government were limited due to some potential challenges. This reformation produced new risks such as security breaches from both external hackers and unauthorized access by dishonest and corrupt employees learnt ways to beat the new system. So far, the overall success of the public e-procurement portal was limited. The risk of corruption still prevailed. This new procurement system would not be able to curb the corruption because there would always be ways to deviate from rules and procedures. Effective procurement systems required more than regulation. They needed to instil codes of conduct for procurement officials and guides to best practices, all aimed at promoting a culture of high ethics and practical standards.

Below are several challenges faced by the government in implementing e-procurement.

4.1 Security Breach

Security remained the main issue of concern, especially the threat of security breach that could be disastrous in destroying any level of trust among the participants (Aik, 2005). Among the security breaches that may occur include; fraud and financial losses including misappropriation of funds and unavailability of systems either by technical or physical reasons.³ Widely networked e-procurement systems that could be accessed concurrently from many places, could be victim to potential unauthorised access by external hackers or mistreated by dishonest employees, if they were not managed properly. This scenario could be deteriorated further if the public officials lacked the experience to handle important information (Bell, 2001).

4.2 Real time and wide accessibility

The risk of online transactions stems from poor security of the internet. The ambiguity of the internet would potentially allow an opportunity for unauthorised third party to break into the e-procurement systems such as the on-line ordering systems where they could manipulate the figures, alter the tenders or locate and steal sensitive information, for example, the pricing method used and the background details of the supplier company (Philippsohn, 2003). An official from the University of Bologna's e-procurement department declared that "at present a totally secure environment for data protection cannot be fully ensured. Intrusion by hackers or possible opening of offers could not be excluded."⁴

4.3 Segregation of duties and responsibilities

Risk of corruption was imminent if the government failed to incorporate elements of segregation of duties and responsibilities. Corruption may exist if there were inadequate internal control mechanisms and a lack of pure understanding by key management or administration personnel in relation to the systems used (Bell, 2001).

³ See "National e-procurement Project Supplementary Guidance Notes" Delivering e-procurement, Strategic Procurement Services, January 2004.

⁴ Transparency in Public Procurement: The Italian Perspective, presented at the OECD Expert Group Meeting on Integrity in Public Procurement on 20-21 June 2005 in Paris

4.4 Need for continuous training

Even if ICT technologies could fully automate the different stages in the procurement process, human resources would remain central as they defined the process, they managed the ICT systems and ultimately decided on actual purchases. Thus, the staff would need to become specialised and an expert in those areas (SEC, 2004). Those who were not fully knowledgeable with the new technology would expose themselves to be manipulated by those who understood it well. Unscrupulous ICT specialists would treat computerisation territory as their breeding ground for their corrupt income to expand, leaving behind those without ICT skills⁵. Hence training becomes critical and should be provided for all the officers in order to keep their knowledge updated with the technological advancements.

4.5 Speed up the corruption activities

The new procedure for a speedy, paperless exchange of critical business information posed opportunities for corruption as electronic documents could easily be copied, changed and forwarded to companies offering bribes (Soreide, 2002). This kind of corruption was simplified and speeded up through the internet. For example, if one company decided to send their tender contribution two days in advance to avoid problems with the internet services or server stability, a competing company could be offered the secret documents and price estimates two days before the tender deadline. Additionally, another problem existed when simultaneous submission of bids that contained the business secrets as part of the tender documents. This posed a risk for bribery from competitors who want to obtain the confidential information. Corrupt public officials could misuse their bureaucratic position by using the internet and forwarding the documents to a briber in a competing company (Soreide, 2002).

4.6 Exploiting the automation system

According to Bell (2001), employees could seek opportunities to exploit any slackness in the monitoring of transactions when suppliers enter the system to place an order or make payment on-line. The employees may collude with corrupted customers in committing corruption activities.

⁵ See "E-government to combat corruption in the Asia Pacific Region" by Clay G. Wescott, paper prepared for 11th International Anti-Corruption Conference, Seoul, Republic of Korea, 25 – 28 May 2003.

4.7 Loss of collateral information

E-procurement practices reduced face-to-face communication which minimised information gathered during an interview session. Observing physical characteristics such as facial gestures, verbal and body language, all provided valuable contextual information known as collateral information. Thus, with the loss of traditional societal and business clues, employees may fall victim to electronic imitation of corrupted suppliers or other fraudulent employees.

4.8 Legal and technical environment

The legal environment focused on the development and implementation of the regulatory framework for public e-procurement. For example, erroneous or conflicting interpretation of the new rules could give rise to legal and technical barriers. This would affect cross-border trade and distort competition as well as slow down the use of public e-procurement effectively. Lapses in technical environment especially in the differences in the architecture of systems, diverging technical specifications and standards, and the choice of particular tools could also hinder businesses access to public e-procurement systems, thus limiting competition and leading to discriminations against certain businesses (SEC 2004).

5. Conclusion

The introduction of e-procurement would not totally curb the risk for corruption. Governments have to play a continuous role in detecting and preventing e-procurement fraud which is essential to ensure that agencies should take appropriate steps to establish the identity of suppliers or vendors they deal with and ensure that they carry out normal due diligence checks. Government agencies should implement procedures, controls and adequate security software to prevent and detect fraud related to e-procurement. Additionally, the government need to ensure continuous assessment is made on the performance of the overall e-procurement system to ensure effectiveness of the system. In addition, precise responsibility as well as delegation of authority will be important to promote high ethical values. This could be affected by promoting a stable system of remuneration, career progression and enhancement for public servants. Additionally, the government need to consider constricting the control mechanism via more stringent penalty provisions as an important factor for any successful anti corruption approach (Cicar, 2002).

In its continuous effort to eradicate corruption, detection mechanisms must be promoted, such as red flags and risks mapping. Both of these provide tools to investigators that facilitate easier

audit trail. According to Deloitte UK⁶, risk mapping is a process of identifying and prioritising risks of which process owners or operations managers assess their risks in terms of impact and likelihood⁷. In addition, the introduction of an "accountability index" in 2008 for the public sector is also another alternative for this new e-procurement system that would lead to greater transparency in public procurement. Moreover, the system of "Integrity Pacts" has become acknowledged as useful tools in the fight against corruption. They were initially developed by Transparency International and comprised an agreement between government departments and all potential suppliers to the effect that neither side will pay, offer, demand, accept bribes or collude with competitors to obtain the contract or engage in such abuses while carrying out the contract.⁸

Finally, in its effort to stamp out corruption and endorse the e-procurement system, the government of Malaysia has supported the five year strategy plan of Transparency International Malaysia from 2006 to 2010. This strategy focuses on organisational development, advocacy, education and training, surveys, media relations, publications, and regional networking. Additionally, policy advocacy is also aimed at improving the institutional pillars of the National Integrity systems by reviewing anti-corruption policies and laws and promoting greater transparency and accountability in public contracting and procurement.⁹

⁶ Deloitte United Kingdom, Risk Mapping, <http://www.deloitte.com/dtt/article/0,1002>

⁷ See "Tipology of corruption in Public Procurement", Symposium on How to Assess Measures for Promoting Integrity and Preventing Corruption in the Public Service, September 9 – 10, 2004.

⁸ See "United Nations Convention against Corruption: implementing procurement-related aspects", Conference of the States Parties to the United Nations Convention against Corruption, Second session, Nusa Dua, Indonesia, 28 January-1 February 2008

⁹ See "How to Reduce Corruption in Public Procurement: Experiences from Asia - The Malaysian Chapter", Handbook for Curbing Corruption in Public Procurement Transparency International, 2006

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Long Run Relationship between Malaysian Stock Market and Agriculture Sector

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Abstract

Since independence, agriculture has been Malaysia's primary economic activity and has been the major source of national income (Danilah et.al, 2004). However, in 1987, the manufacturing sector takes over as the premier sector in the economy growth (BNM, 1989). Recently, in the ninth Malaysia plan period, the government has given a new emphasis to agriculture sector. Thus, this paper is to investigate the long-run relationship between Malaysian stock market and agriculture sector performances during 15 years period from 1990 to 2005. The results suggest that Malaysian stock market and agriculture sector have a positive long- run relationship.

Keywords: Cointegration, Causality, Unit root, Market Performance and agriculture

1. Introduction

Agriculture plays an important role in the Malaysian economy. In 2007, the agricultural sector contributed RM38, 501 million or 7.6% of the Gross Domestic Product (See Appendix 1). It provided employment to about 1,386,300 workers or almost 12% of the total labour force of the Malaysian economy as Shown in Appendix 2. Export earnings of the sector expanded significantly due to increase in export volume and better prices of agricultural industrial commodities, for the year 2007, the export volume double from 12.5% to 24.4% (See Appendix 3). Thus, this sector has a truly big impact on Malaysia trade.

During the Eighth Plan Period, the agriculture sector registered favourable growth. This sector achieved a higher rate of growth than targeted and contributed towards economic and export

earnings. For example, agriculture value-added grew at 3.0% per annum over the Eighth Malaysia Plan period, higher than target of 2.0% as shown in Appendix 4. It is because of the better performance of the agricultural industrial commodities sub sectors, particularly oil palm and rubber.

“During the Ninth Plan Period, the agriculture sector will be revitalized to become the third engine of growth. The emphasis will be on New Agriculture which will involve large-scale commercial farming, the wider application of modern technology, production of high quality and value-added products, unlocking the potential in biotechnology, increased convergence with information and communications technology (ICT), and the participation of entrepreneurial farmers and skilled workforce. The functions of agricultural agencies will also be streamlined to enhance service delivery and efficiency”..(9MP, p.81)

In line with the new emphasis to revitalize the agriculture sector as the third engine of growth, the federal government has allocated a total of RM11.4 billion to implement various agricultural programmes, development and projects. This allocation is 84% higher than the RM6.2 billion spent for agriculture development under Eighth Malaysia Plan (See Appendix 5). During the Ninth Plan period, the agricultural sector is expected to grow at a higher average annual rate of 5.0 per cent. With the inclusion of the agro-based industry, the growth rate is expected to be 5.2 per cent (See Appendix 4). The agricultural sector expanded at a moderate pace of 2.2% in year 2007. (BNM, Annual Report, 2007). Thus, this paper investigates the relationship between KLCI market performance and agriculture sector from sectorial plantation composite index whether both of two indexes have long run relationship.

Recently, several studies have examined whether or not two or more indexes of stock price are cointegrated (For example, Cerchi and Havenner, 1988; Takala and Perre, 1991; Bachman et al., 1996; Choudhry, 1997; Crowder and Wohar, 1998; Chan and Lai 1993; Ahlgren and Antell 2002). The evidence of cointegration among several indexes of stock price suggests that these series have tendency to move together in the long run even if experiencing in short term deviations, however, study by Cho and Ogwang (2005), suggests that although each series has unit root, the two series are not cointegrated indicating that there is no significant in long run relationship between them.

2. Literature Review

Studies done on agriculture are very limited, but there are several studies done related to agriculture. Nasir (1989) measures the changes in agricultural production, input utilization and productivity over a period between 1960 and 1986 and identifies the sources of agricultural growth during the period. The results indicate that the growth rates in production were almost doubled that of total inputs, and that total productivity grew at about 3 percent per annum. Labour input was found to be the most productive, followed by capital and land.

Lorch and Anderson (1998) present prospects for food, agriculture, and the environment in the year 2020. The 2020 Vision initiative has identified six priority areas of action in order for global needs (IFPRI, 1995), there are; strengthening the capacity of developing country governments, investing more in poor people, accelerating agricultural productivity, assuring sound management of natural resources, developing competitive markets and expanding and realigning international developing assistance. They suggest that the 2020 Vision can be achieved if government, NGOs and local communities take the necessary actions and work together to establish and enforce systems of rights to used and manage natural resources. A clear policy on agenda that focuses on the problems of developing country farmer must be developed.

Malaysia has a total land area of 33 million hectares of which 19% or 6.2% million hectares are devoted to agriculture. The agricultural land is dominated by two major industrial crops such as oil palm and rubber accounted more than 79% of the total agricultural lands. Norma (2006), one of the main challenges facing agricultural producers in Malaysia today is globalization and free trade, as expounded globally by the World Trade Organization(WTO) agreement and the ASEAN trade Agreement for the South East Asian Region. The world market for trade is now very open and competitive. Taking cognizance of these challenges, Good Agricultural Practice (GAP) standard was introduced and implemented in Malaysian country. GAP is an integrated system to manage the hazards associated with the elements of land, input, process and output of agricultural production to achieve productivity, sustainability, quality and safe produce.

In addition, a study by Azhari (2006), the performance of the agricultural sector greatly depends on its willingness and ability to cope with the changing environment. It must be able to change and adapt to the needs and demands of the surrounding forces with speed and agility. Changing the name of the ministry from agriculture ministry to ministry of agriculture and Agro-base

Industries should change the whole outlook on the agricultural sector and provide impetus to agro-based industries. He suggests, to be an efficient engine of growth, the irrigated agricultural sector needs to transform involving the entire value chains in production and services, efficiencies in operating and productivity gains, innovation and design. There is a need to scratch the whole delivery system such as institutions, resources management, financing, technology, production, marketing and environment.

Wong (2007a, b), explores the reason why agriculture is firmly back on the policy agenda of Malaysia and other countries. After almost two decades of neglect, interest in agriculture is returning in a big and passionate way, as manifested in the Ninth Malaysian Plan. There are three basic drivers of this renewed interest in agriculture; because of Agro-Biotechnology revolution, the rise of supermarkets and also for and reducing poverty and preserving the environment.

3. Methods and Materials

3.1 Data Sampling

This study uses daily data of Kuala Lumpur Composite Index (KLCI) and Plantation Index. The data is obtained from Kuala Lumpur Stock Exchange website (www.klse.com.my) for the 15 years period from June 1990 to June 2005. KLCI is to represent Malaysian Stock Market and Plantation index is to represent the agriculture sector of the country. E-Views program is used to test the long-run relationship between the two indices such as the Unit root test, Johansen Cointegration test and Vector Error Correction Model (VECM).

3.2 Unit Root Test

Unit Root test is an alternative test of stationary for time series. A unit root test, tests whether a time series variable is non-stationary using an autogressive model. Two of the most commonly used techniques for unit root testing are the Augmented Dickey Fuller Test (ADF) and Phillips-Perron test (PP). Both these tests use the existence of a unit root as the null hypothesis. According to Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP), the unit root hypothesis can be rejected if t-test statistics are smaller than the critical value. In this paper, Augmented Dickey Fuller (ADF) is used for detecting a unit root in the series. Existence of unit root in a time series indicates that the time is non-stationary. The results of ADF test is shown in Table 1.

3.3 Johansen Cointegration Test

When the results in ADF are found to be integrated at the same order, an additional test is required to determine whether or not a long run relationship between two variables exists. The Johansen method depends on the calculation of Maximum Eigenvalue and Trace statistics using maximum likelihood estimation procedure to identify the number of cointegration vectors. If H_0 was rejected, we then test for $r \leq 1$ and so on, until the null hypothesis could not be rejected. The trace test provides a test of the null $H_0: r \leq r_0$ against the alternative $H_a: r > r_0$, where r indicates the number of cointegrating vectors. The Maximum Eigenvalue test concerns a test of $H_0: r = r_0$ against $H_a: r = r_0 + 1$. Johansen suggests that Maximum Eigenvalue has greater power than the trace test, but both tests will be reported for consistency.

3.4 VECM and Causality Analysis

Tan et al. (2006), after determining the number of cointegrating vectors, the residuals generated from the Johansen Cointegration Equation can be applied into VECM. The Granger Causality Test must be conducted in the VECM by requirement of the Vector Auto regression (VAR) analysis. When we identified one variable as the dependent variable (y) and another is explanatory variable (x), we have made an implicit assumption that changes in the explanatory variable induce changes also in the dependent variable. This test is used to estimate the model for our study. When the coefficient from the test results is negative sign, therefore we have to change to positive sign when we interpret result.

4. Results and Discussion

Table 1: Results of Unit Root Test (Augmented Dickey-Fuller)

	Level	First Difference
KLCI	0.3203	0.0001*
PLANTATION	0.2885	0.0000*

Notes : Asterisk (*) denotes statistical significance at 1% level. Critical value are taken from MacKinnon(1996). Both Series in levels were estimated with constant only.

Before testing for cointegration by using the Johansen method, we test for the order of integration of both variables. Table 1 above shows the results of the unit root test of the order of

integration of KLCI and PLANTATION. The ADF results show that both variables are stationary at their first-differences or it is I (1). Since the P values for both variables is less than alpha value ($\alpha = 0.01$). Thus, at this stage, we have enough evidence to support the alternative hypothesis.

Having noted that both series are of the same order of integration, we run the cointegration test following the procedure provide by Johansen. The result is shown in table 2.

Table 2: Results of Cointegration Test

Test	Null Hyhotesis	Trace Test	Maximum Eigenvalue Test	95% critical value
Trace Test	Ho : r = 0	17.2*		15.4947
	Ho : r < 1	6.214*		3.8416
Maximum Eigenvalue Test	Ho : r = 0		10.986	14.265
	Ho : r < 1		6.214*	3.8415

Notes : Asterisk (*) denotes statistical significance at 5% level. Critical value are taken from MacKinnon(1996).

From the result in table 2, the null hypothesis of no cointegration cannot be rejected under Maximum Eigenvalue Test because test is less than their 5% critical value, however , the null hypothesis of no cointegration can be rejected under Trace test because test is greater than their 5% critical value. The results clearly indicate that KLCI and Plantation are cointegrated in long run based on Trace result.

On the other hand, Table 3 shows the results of estimating the vectors error correction model. The results show that the KLCI is dependent variable and Plantation is an independent variable. Therefore, the estimated model is:

$$C = 191.2 + 0.309579P + \epsilon$$

Where

C= KLCI

P= Plantation

ϵ = Error Term

Table 3: Results of Long- term Causality from the VECM.

Dependent (Y)	C	Coefficient
KLCI	191.2	0.309579 (7.36559)
Plantation	-617.6	0.323019 (7.74874)

Since the t-statistic is 7.36559 greater than the critical value (1.96), so there is a sufficient evidence to say that plantation can affect the KLCI. From table 3 above, it shows that the Plantation is dependent variable and KLCI is an independent variable. Therefore, the estimated model is:

$$P = -617.6 + 0.323019C + \varepsilon$$

Where,

$$C = \text{KLCI}$$

$$P = \text{Plantation}$$

$$\varepsilon = \text{Error Term}$$

Since the t-statistic is 7.74874 greater than the critical value (1.96), so there is a sufficient evidence to say that the KLCI can affect the Plantation. Therefore, from the two equations above, the coefficient shows that there are positive relationships between each of KLCI and Plantation.

In conclusion, the findings show that Malaysian stock market and agriculture sector are cointegrated in the long-run and both of them have strong positive relationship. Therefore, the strong emphasize on agriculture sector in the Ninth Malaysian Plan (RMK 9) is seemed in line with the long-run performance of Malaysian stock market and agriculture sector's contribution and thus have an impact on national income and Malaysian economy in general.

Annexure

Table 1 : Gross Domestic Product by kind of Economic Activity at Constant 2000 Prices

	2003	2004	2005	2006	2007	2008f
	RM Million					
Agriculture	33,369	34,929	35,822	37,672	38,501	39,817
Mining and quarrying	40,959	42,627	42,076	41,914	43,245	45,840
Manufacturing	119,687	131,127	138,014	147,756	152,367	155150
Construction	15,031	14,903	14,637	14,559	15,223	16,063
Services	201,568	214,528	228,994	245,550	269,276	289,982
Less : Undistributed FISIM 1	17,654	17,705	17,742	18,347	19,720	20,862
Plus : Import Duties	6,453	6,099	6,017	5,287	5,517	5,959
GDP at Purchasers' Prices 2	399,414	426,508	447,818	474,392	504,408	531949
			Annual Change (%)			
Agriculture	6	4.7	2.6	5.2	2.2	3.4
Mining and quarrying	6.1	4.1	-1.3	-0.4	3.2	6
Manufacturing	9.2	9.6	5.3	7.1	3.1	1.8
Construction	1.8	-0.9	-1.8	-0.5	4.6	5.5
Services	4.2	6.4	6.7	7.2	9.7	7.7
Less : Undistributed FISIM 1	3.7	0.3	0.2	3.4	7.5	5.8
Plus : Import Duties	-2.1	-5.5	-1.3	-12.1	4.3	8
GDP at Purchasers' Prices	5.8	6.8	5	5.9	6.3	5.0-6.0

1. Financial intermediation services indirectly measured

2. Numbers may not necessarily add up due to rounding

f: Forecast

Source: Department of Statistics, Malaysia and Bank Negara Malaysia.

Table 2: Labour Market: Selected indicators

	2003	2004	2005	2006	2007e
Active Vacancies Reported by Industry 1	(Number of positions/persons)				
Agriculture, hunting, forestry and fishery	29,048	1,373	40,438	188,104	226,759
Mining and Quarrying	121	41	150	861	1,163
Manufacturing	34,977	17,769	112,542	348,302	275,155
Construction	13,818	3,505	48,524	129,586	117,217
Services	18,954	18,624	63,441	154,902	204,599
Electricity, gas and water supply	499	198	859	2,227	1,477
Wholesale and retail trade, hotel	7,359	5,221	23,921	67,956	66,600
Transport, storage and communication	1,459	1,046	3,892	8,287	12,578
Finance, insurance, real estate	4,079	6,162	13,874	26,642	50,235
Public administration	5,558	1,224	2,497	3,539	11,287
Community, social and personal service		4,773	18,398	46,251	62,422
Others not elsewhere classified		8,663	39,405	12,920	289
Total Vacancies	96,918	49,975	304,500	83,465	825,182
Retrenchment by Category of Occupation					
Administration and management	1,755	2,072	1,712	1,245	1,120
Professional, technician and professional	3,661	2,542	2,689	2,471	2,367
Clerical workers	2,481	1,550	1,295	1,370	1,060
Service, shop and market sales workers	1,818	3,201	1,792	2,501	1,690
Skilled agriculture and fishery workers	337	998	50	307	193
Production workers 2	11,154	9,593	8,571	7,466	7,599
Others not elsewhere classified					6
Total Retrenchments	21,206	19,956	16,109	15,360	14,035
Employment by Industry 3 ('000 persons)					
Agriculture, hunting, forestry and fishery	1,413.2	1,406.9	1,401.3	1,392.4	1,386.3
Mining and Quarrying	42.2	42.6	42.7	42.6	42.9
Manufacturing	2,776.4	2,972.4	3,133.2	3,244.3	3,317.1
Construction	774.6	767.3	759.6	755.2	757.3
Services	5,040.7	5,274.5	3,133.2	5,724.6	5,888.8
Electricity, gas and water supply	85.5	89.9	93.0	95.0	96.5
Wholesale and retail trade, hotel	548.7	594.3	630.6	649.4	661.8
Transport, storage and communication	1,698.1	1,786.4	1,297.0	1,993.6	2,060.4
Finance, insurance, real estate	657.5	695.0	734.4	771.0	802.7

Government Services	1,026.1	1,041.8	1,052.8	1,064.0	1,075.3
Other services	1,024.8	1,067.1	1,118.1	1,154.7	1,192.4
Total Employment	10,047.2	10,463.7	10,892.8	11,159.0	11,392.4
Unemployment rate 3 (% of labour force)	3.6	3.5	3.5	3.3	3.3

1. Refers to active vacancies reported by employers through the Electronic Labour Exchange.

2. Comprise workers in craft and related trade; plant and machine operators and assemblers; and general workers.

3. Refers to estimates by Economic Planning Unit

e Estimates

Sources: Economic Planning Unit, Ministry of Human Resources, and Annual Report, BNM, 2007

Table 3: Exports of Primary Commodities

	2005	2006	2007p	2006	2007p
	Volume and value			Annual change (%)	
Commodity exports (RM million)	89,742	98,950	113,483	10.3	14.7
Agriculture exports (RM million)	37,421	42,106	52,366	12.5	24.4
<i>of Which:</i>					
Palm oil					
('000 tonnes)	13073	14,017	13,505	7.2	-3.7
(RM/Tonne)	1456	1,544	2,368	6.0	53.4
(RM million)	19036	21,643	31,983	13.7	47.8
Palm kernel oil					
('000 tonnes)	577	518	588	-10.1	13.4
(RM/Tonne)	2347	1,969	2,747	-16.1	39.6
(RM million)	1353	1,020	1,615	-24.6	58.3
Rubber					
('000 tonnes)	1128	1,143	1,018	1.3	-10.9

(RM/Tonne)	513	721	720	40.5	0.0
(RM million)	5787	8,235	7,335	42.3	-10.9
Saw logs					
('000 tonnes)	5759	4,772	4,644	-17.1	-2.7
(RM/Tonne)	428	474	455	10.7	-4.0
(RM million)	2465	2,261	2,112	-8.3	-6.6
Sawn timber					
('000 tonnes)	3685	3,318	2,985	-9.9	-10.1
(RM/Tonne)	1099	1,306	1,373	18.8	5.1
(RM million)	4051	4,333	4,096	7.0	5.4
Cocoa beans					
('000 tonnes)	9.3	13.5	17.8	45.8	31.9
(RM/Tonne)	5,421	5,624	6,522	3.7	16.0
(RM million)	50	76	116	51.2	53.0
Mineral exports (RM million)	52,321	56,844	61,117	8.6	7.5
<i>of which:</i>					
Crude oil and condensates					
('000 tonnes)	17,719	16,304	16,390	-8.0	0.5
(USD/Barrel)	55.9	67.8	74.6	21.3	10.0
(RM million)	28,508	30,814	31,880	8.1	3.5
Liquefied natural gas (LNG)					
('000 tonnes)	21,948	21,534	22,668	-1.9	5.3
(RM/Tonne)	947	1,081	1,154	14.2	6.0
(RM million)	20,790	23,285	26,157	12.0	12.3
Tin					
('000 tonnes)	33.6	19.4	15.8	-42.3	-18.7
(RM/Tonne)	27,827	30,093	49,522	8.1	64.6
(RM million)	935	583	780	-37.7	33.8

p Preliminary

Source: Department of Statistics, and Annual Report, BNM, 2007

Table 4 : Value Added of Agriculture and Agro-Based Industry, 2000-2010

Commodity	RM Million			% of Total			Average Annual Growth Rate (%)		
	(In 1987 Prices)						8MP		9MP
	2000	2005	2010	2000	2005	2010	Target	Achieved	Target
Agriculture	18,662	21,585	27,517	100.0	100.0	100.0	2.0	3.0	5.0
Industrial Commodities	11,033	13,278	15,521	59.1	60.6	56.4	0.7	3.8	3.2
Oil Palm	5,860	7,915	10,068	31.4	36.7	39.6	3.4	6.2	4.9
Forestry and Logging	3,055	3,016	2,761	16.4	13.0	10.0	-5.6	-0.3	-1.7
Rubber	1,868	2,264	2,554	10.0	10.5	9.3	1.1	3.9	2.4
Cocoa	250	83	138	1.3	0.4	0.5	0.1	-19.8	10.8
Food Commodities	7,629	8,308	11,996	40.9	39.4	43.6	4.0	1.7	7.6
Fisheries	2,493	2,389	3,875	13.4	12.6	14.1	4.1	-0.9	10.2
Livestock	1,520	2,089	2,483	8.1	8.1	9.0	6.0	6.6	3.5
Padi	590	632	988	3.2	3.4	3.6	2.7	1.4	9.4
Other Agriculture 1	3,026	3,198	4,650	16.2	15.2	16.9	3.2	1.1	7.8
Agro-Based Industry	13,584	16,928	22,221	100.0	100.0	100.0	4.0	4.5	5.6
Vegetable and Animal Oils & Fats	2,526	3,639	5,614	18.6	21.5	25.3	6.3	7.6	9.1
Other Food Processing,									
Beverage & Tobacco	4,010	4,790	6,333	29.5	28.3	28.5	2.0	3.6	5.7
Wood productions including Furniture	2,934	2,972	3,761	21.6	17.6	16.9	0.6	0.3	4.8
Paper & Paper Products,	2,293	2,640	3,275	16.9	15.6	14.7	3.4	2.9	4.4
Printing & Publishing									
Rubber Processing & Products	1,821	2,887	3,238	13.4	17.1	14.6	4.7	9.7	2.3
Total Agriculture and Agro-Based Industry	32,246	38,513	49,738				2.7	3.6	5.2
Gross Domestic Product at Purchaser's Prices	210,558	262,029	351,297					4.5	6.0

Source : Department of Statistics and Economic Planning Unit

Note 1: Includes coconut, vegetable, fruits, tobacco and pepper

Table 5 : Development Expenditure and Allocation for Agriculture, 2001- 2010

Programme	8MP Expenditure RM million	9MP Allocation RM million
Modernization of Agriculture	2,689.6	4,368.6
Integrated Agricultural Development Projects	497.4	605.3
Replanting Scheme	650.2	1150.8
Land Consolidation and Rehabilitation Programmes	482. 1	857.6
Projects under RDAs ¹	1059.9	1754.9
Forestry	199.6	251.5
Fishery	663.8	798.8
Livestock	202.8	519.8
Support Services	1 ,305.8	2,558.0
· R&D	529. 7	614.0
· Marketing	172. 1	392.7
· Training	480.9	551.3
· Credit	123.1	1,000.0
Irrigation for Agriculture	780.0	1 ,458.1
Entrepreneur Development ²	-	511.9
Agro-Based Development	-	361.8
Others ³	366.3	606.5
Total	6,207.9	11 ,435.0

Source: Ministry of Finance and Economic Planning Unit

Notes:

1. Agricultural related projects in regional development authorities (RDAs) areas.
2. Entrepreneur development was assumed under the various programmes during the 8MP.
3. Includes physical infrastructure, buildings, facilities and ICT components as well as poverty

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