# Business Administration and Business Economics

# Strategic Human Resource Metrics: A Perspective of the General Systems Theory

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**Abstract:** Measuring and quantifying strategic human resource outcomes in relation to key performance criteria is essential to developing value-adding metrics. **Objectives** This paper posits (using a general systems lens) that strategic human resource metrics should interpret the relationship between attitudinal human resource outcomes and performance criteria such as profitability, quality or customer service. **Approach** Using the general systems model as underpinning theory, the study assesses the variation in response to a Likert type questionnaire with twenty-four (24) items measuring the major attitudinal dispositions of HRM outcomes (employee commitment, satisfaction, engagement and embeddedness). **Results** A Chi-square test (Chi-square test statistic = 54.898, p=0.173) showed that variation in responses to the attitudinal statements occurred due to chance. This was interpreted to mean that attitudinal human resource outcomes influence performance as a unit of system components. The neutral response was found to be associated with the 'reject' response than the 'acceptance' response. **Value** The study offers suggestion on the determination of strategic HR metrics and recommends the use of systems theory in HRM related studies. **Implications** This study provides another dimension to human resource metrics by arguing that strategic human resource metrics should measure the relationship between attitudinal human resource outcomes and performance using a systems perspective.

**Keywords**: HR metrics; HR strategy; general systems theory; employee attitudes

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## 1. Introduction

Attitudinal human resource management (HRM) outcomes (such as employee engagement, satisfaction, commitment and engagement) have been found to relate to superior performance as distinct constructs (Boyd & Sutherland, 2005; Greenberg, 2011; Dalal, Buysinger, Brummel & Lebreton, 2012; Kaifeng, Lepak, Jia & Baer, 2012; Chinomona, Dhurup & Chinomona, 2013; Imran, Arif, Cheema & Azeem, 2014). This study aimed to explore the argument that the constructs should be interpreted as a unified system that randomly attracts response. The study also uses the systems view to argue that the neutral response to the performance effect of attitudinal HRM outcomes represent a construct that signifies the influence of other performance factors. This analysis is meant to infer that strategic human resource (HR) metrics should measure the relationships linked with HRM outcome systems. The queen problems of what and how to measure HRM related strategic imperatives represent an HR metrics crisis among practitioners and academics. As such the view in this paper is that strategic HRM metrics should have holistic perspectives that measure the relationships between HRM and organisational outcomes. Thus, the study tackles the two problems through the lenses of the general systems theory to argue that for HR metrics to be strategic, they ought to measure the relationship between attitudinal HRM outcomes and employee performance. While empirical evidence exists in support of the influence of attitudinal HRM outcomes on employee performance (Paaawe & Boselie, 2008), the postulation that such relationships could be used to generate HR metrics of strategic importance has been missing. In addition, the general systems theory has been used widely, almost semantically, with no particular emphasis on how it is applied in HRM research, including strategic HRM research to enhance ideological and methodological rigour.

If HR metrics were to be embedded within the theoretical arguments associated with the resource based view (RBV) theory and also within high performance work systems (HPWS), then their strategic role would become more explicit. A valid proposition would hold that for HRM to offer competitive advantage and contribute to business strategy, it ought to provide measurable value adding deliverables. To this end, HR metrics have become of interest to quantify HRM functions and activities within the HRM value chain. While a range of HR metrics have emerged, critics have observed that these metrics are evaluative rather than predictive and therefore lack a strategic appeal. Modern conceptualisation of HR metrics is credited to the seminal work of Fitz-en (1987) and the United States based Saratoga Institute (Carlson & Kavanagh, 2012, p. 150). However, there is evidence that the need for HR metrics in organisations has been felt since HRM emerged as a profession during the industrial revolution (Fitz-en, 1987, p. 3). Notions of HR measurements in the era of the scientific school of management were championed by Frederick Winslow Taylor in the 'work and motion' studies which were conducted in search of the 'one best' method of doing work. In giving a brief history of HR metrics and analytics,

Carlson and Kavanagh (2012) noted that most of the HR metrics that are in use today were developed during the industrial expansion period that followed the end of World War II.

Taylor (1911), who is widely regarded as the father of scientific management, laid the foundations for HR metrics and measurements in his early work. According to the National Humanities Center (2005), Taylor argued that there is a need to '…develop a science for each element of a man's work so as to replace the old rule-of-thumb methods.' Later on, Fitz-en (1987, p. 7) in his first publication on HR measurements and metrics noted that:

*While their peers in other departments are focusing on income, assets, liabilities, sales, costs and profits, personnel people are talking about feelings and unquantified personnel issues which they do not know how to measure objectively.*

At about the same time the renowned management writer, Drucker (1988, p. 92) observed that 'the measurements available for the key areas of a business enterprise are still haphazard. We do not even have adequate concepts, let alone measurements….' More recently, Fitz-en (2010, p. 20) argued that there is a crisis in the HR measurement system whereby most indicators of human capital management are more closely related to processes and practices than to results. Kavukcuoglu (2012), writing for the HR Agenda suggested the use of measures that will produce an action and not measures that create 'messtrics.'

Nienhueser (2011) advances the argument that HRM research has failed to holistically create a true image of HRM because it has focused on performance related variables that are of interest to the employer, thus producing a one-sided view. The essence of a theoretical framework that offers a holistic study of phenomena is, therefore, clearly fundamental to HRM research. Abbott, Goosen and Coetzee's (2013) study on HRM was premised on the proposition that current HRM practice and research does not address certain human development concepts. It is, arguably essential for HRM to have holistic and rigorous theoretical framework that ensures that researchers are not biased or restricted to certain research perspectives. According to Nienhueser (2011, p. 377) HRM research has been biased to 'human resource practices, attributes of the workforce, employee behaviour, organisational behaviour and determinants of human resource practice.' The argument of this paper is that the general systems framework which is also explained in this paper offers a theoretical framework that enhances a more holistic study of the HRM phenomena.

For impact, the questionnaire used in this study was (1) aligned to the four distinct attitudinal constructs (employee commitment, satisfaction, engagement and embeddedness) to find out if the constructs could create identifiable patterns of responses among participants. In addition, the study took a holistic interpretation of the responses from the participants by investigating the effect of the neutral response with an assumption that other factors that influence performance manifest

themselves as trade-offs in response to decisions among participants and this can be understood by analysing the neutral response. This was to advance the view that the neutral response represents a distinct construct in itself; one that creates dynamism within the systems.

## 1.1 Problem Statement

Even though research has established that HRM outcomes relate to superior performance particularly within the RBV theory and HPWS framework, measuring HR contribution has remained a challenge. Quantification and measurement of the human resource function has not met the expectations of practitioners (Fitz-en, 1987; Yeung and Berman, 1997; Fitz-en, 2010; Boudreau & Lawler, 2014). Specific questions exist on what to measure and how to measure it. Boudreau and Lawler (2014, p.233) reiterated a problem stated in Cascio (2000, p.1) that key strategic business imperatives are missing from what HR is currently focusing on. Without a focus on strategic HR metrics, the measurement challenge in HRM cannot be met and the HRM function will not gain the recognition that equals that of other functions (Grobler, Bothma, Brewster, Carey, Holland & Warnich, 2012, p. 200).

## 1.2 Problem Conceptualization

As shown in Figure 1, a system such as the HRM subsystem can be decomposed into its partial components (Severance, 2001, p. 1). This partial decomposition results in subsystems which are characterised by cause-effect relationships. In a mathematical interpretation of systems thinking, Severance (2001, p. 1) posits that (1) all the environmental influences on a system can be interpreted as inputs in a vector of $m$ real variables and of the form $x(t) = [x_1(t), \ldots x_m(t)]$; and (2) all system effects can be summarised by $n$ real variables that vary with time and $z(t) = [z_1(t), \ldots z_n(t)]$ where $z(t)$ is the output and the components $z_1(t)$ are the processes. Therefore for suitable functions f and g, $z(t) = [f_2 x(t), y(t)] \equiv g[x(t)]$. This interpretation necessitates that attitudinal HRM outcomes exist as functional variables that form a subsystem which can be assumed to associate with superior employee performance.
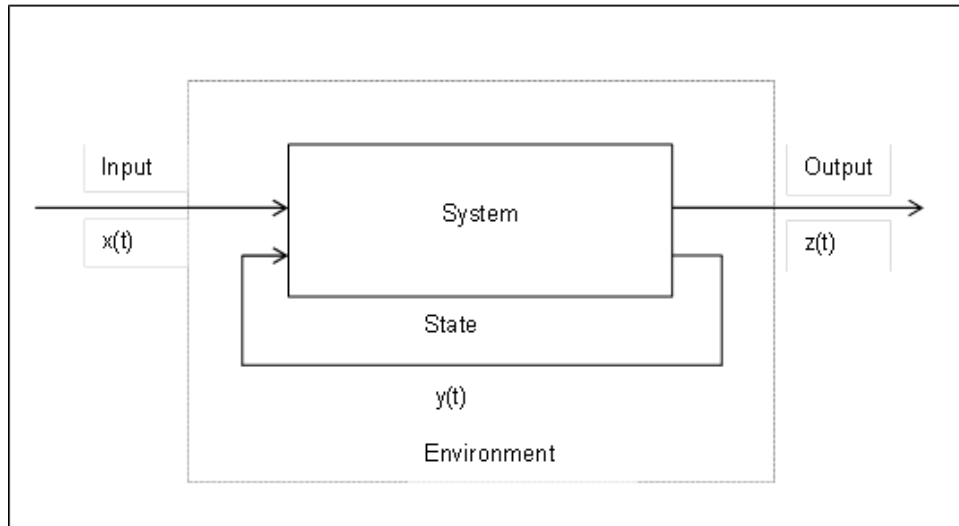
**Figure 1. The general systems concept**

*Source: Severance (2001, p. 1)*

### 1.3  The hypothesis

If attitudinal HRM outcomes influence employee performance as a system, then strategic HR metrics should measure the strength of the inter-relationship between them, their antecedents or determinants and organisational level outcomes.  Hence strategic HR metrics should interpret strategic HRM relationships which are outcome oriented and scrutinise the strength of the interrelationships within HRM outcomes and organisational level outcomes. Quantification of the interaction of HRM outcomes and the organisational outcomes such as profitability, stakeholder satisfaction or quality has greater implications for strategy and puts the role of HRM into a focal position. For instance, HRM metrics that measure employee satisfaction and profitability or employee engagement and service quality become predictors of profitability and other variable resources.

Several studies (for e.g. Christian, Garza & Slaughter, 2011; Gruman & Sacks, 2011; Reijseger, Schaufeli & Peeters, 2012) have provided evidence of association between positive attitudinal HRM outcomes and employee performance. These studies have, however not interpreted the systematic relationship within the attitudinal HRM outcomes. One hypothesis to support this is that attitudinal HRM outcomes such as employee commitment, engagement, satisfaction and embeddedness are system functions whose performance effect is due to their holistic integration. If this claim is true then there should be a relationship between attitudinal HRM outcomes and level of agreement on their performance effect. As in other

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studies, the causal relationship between attitudinal HRM outcomes and performance is assumed. The hypothesis stated below for this study further postulate that different HRM outcome constructs operate as a system and any variation in effect among them is due to chance. In light of the above, we hypothesise as follows:

$H_0$: Variation in agreeableness on the performance effect of attitudinal dispositions of HRM outcomes is due to chance.

$H_1$: Variation in agreeableness on the performance effect of attitudinal dispositions of HRM outcomes is not due to chance.

### 1.4. Objectives of the Study

The main objective of this study was to determine the relationships that HRM outcomes have among themselves and with performance using the general systems view. Its fundamental position is that HR metrics are of strategic relevance if they can quantify and predict value-adding relationships. The specific postulation is that HRM functions result in outcomes viewed as distinct constructs but with a holistic singular impact on performance.

## 2. Theoretical Framework

### 2.1. Background

Wright and McMahan (1992) acknowledge the critique that HRM research lacks a coherent theoretical framework but propose six theoretical models for HRM research, namely behavioural perspectives, cybernetic models, agency/transaction cost theories, resource based view of the firm, power/resource dependence models and institutional theory. Behavioural perspectives are concerned with people behaviours and HRM practices; the resource based view focuses on human capital pool, HRM practices and strategy while cybernetic and agency/transaction cost theory is concerned with relationships between HRM strategy, HRM practices and both human capital pool and behaviours. The most popular HRM theoretical views have been the contingency and the universalistic paradigms (Paauwe, 2009; Truss, Mankin & Kelliher, 2012). This paper took the position that, rather than splitting HRM theory into perspectives and taxonomies, the general systems theory offers a comprehensive and holistic view that is more powerful for researchers than other theoretical models.

## 2.2. General Systems Theory

Mele, Pels and Polese (2010, p.126) claim that the origins of systems theory can be traced back to the philosopher Aristotle, who advocated the principle of 'holism,' which is widely associated with the quote 'the whole is greater than its parts.' The systems approach was first used in the 1920s in the field of Biology to explain the order and functional relationships of living organisms. Hunter (2012, p.24) also observed that:

*The systems approach to management started developing during the 1950s and influenced the development of management techniques such as Total Quality Management (TQM), the learning organisation concept popularised by Peter Senge during the 1990s, Management by Objectives (MBO) and the Balanced Scorecard (a development of the MBO).*

The extract above serves to show how powerful systems thinking has been in the development of the most popular and successful management theories of our time. Hunter (2012, p.24) further asserts that the systems approach has been influential in the development of the functions of HRM such as job analysis, performance appraisal and performance management. Following this significant role that systems thinking has had; both in management science and in HRM, this study is based on the argument that systems thinking is a lens through which HRM phenomena can be understood and interpreted. The literature shows that the seminal work on general systems theory was first presented in the 1930s by a biologist named Ludwig von Bertalanffy at the University of Chicago. A definition of a system by Von Bertalanffy, cited by Mele *et al.* (2010), is that: a system is a complex of interacting elements. Earlier, Laszlo and Krippner (1998) had postulated that a system may be described as a complex of interacting components together with the relationships among them that permit the identification of a boundary-maintaining entity or process. One broad classification of systems is that of 'open' and 'closed' systems (Von Bertalanffy, 2008). In the simplest interpretation, closed systems are merely the opposite of open systems. For purposes of this study, the current focus will be on open systems because business organisations are generally described as open systems in the literature.

Open systems theory refers simply to the concept that organizations are strongly influenced by their environment (Bastedo, 2006). The main elements of a system are the inputs, processes, outputs, feedback and subsystems. Fleetwood and Hesketh (2007, p. 132) refer to Jackson and Schuler (1995) who state that "in general systems theory, skills and abilities are inputs from the external environment, employee behaviour is the cellular mechanism and organisational performance is the output." According to Hunter (2012, p. 24), "it is helpful to view organisations and the people that work in them as systems as this approach provides a framework for managing people and the understanding of the relevant concepts." Therefore, organisations

acquire resources (as inputs) and process them (through business processes) and produce goods and services as outputs.

## 2.3. Conceptual Framework

If attitudinal HRM outcomes operate as a system to influence employee performance, then they should satisfy i.e. $Q = (Y_1, Y_2, Y_3…, Y_n)$, where Q is the set of HRM outcomes and $Y_n$ are the attitudinal components of HRM. Figure 2 below depicts the conceptual diagram, linked to Figure 1 and showing the relevant subsystems for analysis in this exposition.
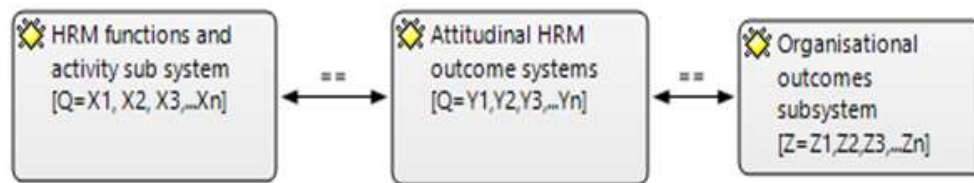


**Figure 2. Conceptual framework**

*Source: Authors' conceptual mapping*

While there are many intangible HRM outcomes, some scholars have singled out the major ones. This study has followed the same approach. The decision to select the few major ones is also justified when considering studies about HPWS from the literature review and also about strategic HRM. Several studies on HPWS and HRM strategies emphasise 'high commitment' HRM strategies that empower employees to perform exceptionally. According to Robbins *et al*. (2009, p.74), most research in organisational behaviour has considered three attributes, namely job satisfaction, job involvement and organisational commitment. Llobet and Fito (2013) also made an almost similar claim by identifying organisational commitment and job satisfaction as major job related HRM outcomes or organisational behaviours.

## 3. Methodology

Informed by the general systems theory, this study aimed to advance the argument that strategic HR metrics should quantify the relationship between outputs and attitudinal HRM system outcomes. The general systems theoretical framework facilitated the identification of the constructs namely HRM outcomes and employee performance. As argued earlier, the HRM system outcomes consist of attitudinal concepts, namely employee commitment, engagement, satisfaction and embeddedness while employee performance output consists of various concepts such as quality, profitability, growth or client satisfaction. The ontological position of the study is that the relationship between the concepts linked to employee performance construct and attitudinal HRM constructs can be formalised and therefore can be analysed deductively. Embedded within this is the positivistic paradigm of systems which is the epistemological basis of this study. The general systems theory proposes that: $z(t) = [f_2 x(t), y(t)] \equiv g[x(t)]$. Where $z(t)$ is the output construct and $g[x(t)]$ is identical to the combination of the input and process construct. This implies that attitudinal HRM outcomes as predictors of performance should correlate significantly with each other if they form a system of concepts. Previous studies have missed this analysis of assessing the inter-correlation of the concepts within the HRM subsystems. As hypothetically stated, strategic HRM metrics should measure the relationship between HRM outcome system components and employees' performance output construct. The methodological implication of the lattice nature of attitudinal HRM outcome systems was to employ a deductive formal analysis of relationships within the system components and the outcomes.

### 3.1. Data Collection

Open systems are subject to environmental influences, implying that every sector/industry should perform its own analysis of the strength of the relationship between HRM outcomes and performance. Chosen for analysis were hotels and restaurants within the service oriented hospitality sector in Cape Town central city. The choice was based on the likely importance of affects and attitudes in oganisational performance. Cape Town central city lies between Table Mountain and the Atlantic Ocean. With respect to size, it is $1.6km^2$, has 57 of which 8 of them are 8-star hotels (Cape Town Central City Report, 2012). The exact number of restaurants could not be ascertained; however, The Cape Town Central City Report (2012) indicates that the city has more than 1 200 retailers, 200 of them are restaurants, coffee shops and take-away outlets. The sampling frame was taken to be the 3-star and 4-star hotels in the city following the South Africa hotel market sentiment survey (2010), which stated that the 3-star and the 4-star hotels provided the majority of respondents, and that the average person would choose a 3-star or 4-star hotel. Also a Labour Research Service (2012) survey showed that more beds

were in the 3-star and 4-star hotels, implying that most of the clients in the hotel sub sector are accommodated in 3-star and 4-star hotels. Therefore, employees who work in 3-star and 4-star hotels face more clients daily, resulting in a need for high performance, since profits are realised by serving many clients, as compared to higher star hotels where service is likely to be based on higher prices for quality service to a few clients. A total of 24 *3-star* and *4-star* hotels operate within the delineated area (Cape Town International Convention Centre, 2013). The six major fast food restaurants in the city were also considered, based on a list provided in the Euromonitor Consumer Food Service in South Africa (2005). The researchers attempted the N=1 sampling technique, e-mailing letters of request for consent to conduct the study within the organisations. Only ten (42%) of the 24 hotels responded positively to the request. Of the 14 that did not accept the offer, five (21%) did not respond, while nine (38%) cited business pressure and could not accommodate the researchers. On the restaurant side, five (83%) of the six fast food restaurants to which the request letter was sent responded positively. Therefore, 10 hotels and five restaurants participated in the study. Stoker in De Vos et al. (2005, p.196) suggest guidelines for sample size, which show that for populations less than 30, all the units should be selected. This study, however, could not follow the same guideline owing to the convenience sampling technique that had to be adopted for ethical purposes. This may be viewed as a limitation for the study even though the samples were above 30% of the population, noting that samples that are at least 30% are considered large for statistical purposes.

A questionnaire was self-administered to waiters, till operators, office employees and supervisors, while in hotels the participants were front office employees, receptionists and office employees. Permission was first sought and dates and times were allocated for the researchers to administer the questionnaire. Through interaction with the organisations prior to administering the questionnaire, the managers of the organisations indicated that, generally, at most fifteen employees may be available, but less than ten will be able to complete the questionnaire owing to business imperatives. The researchers then expected eight employees per organisation, thereby issuing 120 questionnaires, of which 75 of them were returned. However, only 71 of them were considered useful after they were screened for usability (i.e. removing those that severely omitted responses and those with unclear responses).

### 3.2. Measurement of Variables

The independent variables for the study were the attitudinal HRM outcomes. Employee commitment was measured using the affective commitment component of Meyer and Allen's (1991) three component model of commitment. Meyer, Stanley, Herscovitch and Topolnytsky (2002) found that affective commitment has the strongest correlation with performance. Items for job satisfaction were developed from the short form of the Minnesota Satisfaction Scale. The actual scales were an adaptation of the Minnesota scales based on Macdonald and MacIntyre (1997). Based on this work, nine items were utilised to constitute the satisfaction section of the questionnaire. Items for work engagement were developed from the Ultrecht Work Engagement Scale (UWES). The UWES has three sections for the measurement of work engagement namely vigour, dedication and absorption. Items from the 'dedication' element were included in the questionnaire because they resemble the concepts of this study more closely than the other items. Items for embeddedness were those involving 'fit to the organisation' (Lee, Mitchell, Sablynski, Burton & Holton, 2004). Seven items were included in the questionnaire. The research instrument was developed from generally accepted instruments. Items were also selected based on the opinion of other researchers. SPSS was used to analyse data while frequencies were checked to determine if they cluster around certain responses or they are dispersed. The questionnaire was found to be reliable since it was clear from the frequencies that the responses clustered with high frequencies notable for some responses and low frequencies for certain responses. Few outliers were observable, which demonstrated some form of internal consistency of the questionnaire.

The questionnaire had four sections: Section A for biographical information, Section B (organisational commitment), Section C (employee satisfaction), Section D (employee engagement) and Section E (employee embeddedness). The questionnaire was first pre-tested with 20 employees from one hotel and one restaurant from organisations other than the 15 from which the study was actually taken. Their responses were analysed by a statistician and a panel discussion involving the authors, the statistician and two other senior researchers resulted in the modification of the measurement instrument to remove some items, which did not correlate well with the objectives of the study. After two weeks, the new questionnaire was re-administered twice to the same group of 20 employees, allowing a three week period between the two last administrations. Based on the test-retest procedure, the questionnaire was found to be reliable with four items for organisational commitment, nine for employee satisfaction, four for employee engagement and seven items for employee embeddedness.

## 4. Analysis and Discussion

The respondents were organised into three groups namely those who accepted the propositional statements (strongly agree and agree responses), those who rejected them (strongly disagree and disagree responses) and those who were neutral. Chi-square test of association among the groups was used to test if variation in agreeableness was due to chance or there was an association between the three responses and the attitudinal statements. The hypothesis postulated that variation in agreeableness on the performance effect of attitudinal dispositions of HRM outcomes is due to chance. A holistic interpretation of HR metrics was taken to consider the relationship between input, subsystems, process and output. While several HRM outcome or attitudinal studies have established the relationship between attitudinal HRM outcomes and outputs, they have neglected the neutral response within the system. A holistic interpretation ought to consider all response levels within the system. It can also be argued that the neutral response represents indifference and should be considered an attitude of its own type because it can play a key role in upsetting the relationship between the attitudinal HRM outcomes and employee performance. If the strategic goal of measuring and predicting the strength of the relationship between attitudinal HRM outcomes and employee performance is to be achieved, then indifference should be seen as an attitudinal disposition in itself that can significantly impact on the relationship. The hypothesis formulated amounted to a claim that the tendency to accept or reject the statements on the Likert scale was independent of the statements. In other ones, rejection or acceptance was random. To test this claim, the attitudinal statements were analysed as a whole ignoring the categories. If the null hypothesis is true, then employees' agreeableness responses should be independent of attitudinal dispositions.

### 4.1.     Chance and the Association between Response and Attitudinal Items

The frequencies of the responses were combined into three categories namely *Accept*, *Reject* and *Neutral*. The frequency table below shows the distribution of frequencies. The four attitudes from which they were derived were ignored and they were analysed to establish if employee responses showed any associations or the responses were those that can be expected due to chance. A Chi-square test of independence was then performed to establish if the variance in agreeableness (tendency to accept, reject or to be neutral) was independent of the attitudinal statements.

**Table 1. Count and Frequency Table for responses to attitudinal statements**

| | | | Response | | | |
| --- | --- | --- | --- | --- | --- | --- |
| | | | Accept | Neutral | Reject | Total |
| Attitudinal | 1 | Count | 53 | 11 | 7 | 71 |
| | | % within Attitudinal | 74.6% | 15.5% | 9.9% | 100.0% |
| | 2 | Count | 56 | 11 | 4 | 71 |
| | | % within Attitudinal | 78.9% | 15.5% | 5.6% | 100.0% |
| | 3 | Count | 51 | 15 | 5 | 71 |
| | | % within Attitudinal | 71.8% | 21.1% | 7.0% | 100.0% |
| | 4 | Count | 51 | 15 | 5 | 71 |
| | | % within Attitudinal | 71.8% | 21.1% | 7.0% | 100.0% |
| | 5 | Count | 55 | 10 | 6 | 71 |
| | | % within Attitudinal | 77.5% | 14.1% | 8.5% | 100.0% |
| | 6 | Count | 45 | 15 | 11 | 71 |
| | | % within Attitudinal | 63.4% | 21.1% | 15.5% | 100.0% |
| | 7 | Count | 50 | 13 | 8 | 71 |
| | | % within Attitudinal | 70.4% | 18.3% | 11.3% | 100.0% |
| | 8 | Count | 51 | 10 | 10 | 71 |
| | | % within Attitudinal | 71.8% | 14.1% | 14.1% | 100.0% |
| | 9 | Count | 53 | 14 | 4 | 71 |
| | | % within Attitudinal | 74.6% | 19.7% | 5.6% | 100.0% |
| | 10 | Count | 57 | 7 | 7 | 71 |
| | | % within Attitudinal | 80.3% | 9.9% | 9.9% | 100.0% |
| | 11 | Count | 56 | 8 | 7 | 71 |
| | | % within Attitudinal | 78.9% | 11.3% | 9.9% | 100.0% |
| | 12 | Count | 59 | 10 | 2 | 71 |
| | | % within Attitudinal | 83.1% | 14.1% | 2.8% | 100.0% |
| | 13 | Count | 59 | 10 | 2 | 71 |
| | | % within Attitudinal | 83.1% | 14.1% | 2.8% | 100.0% |
| | 14 | Count | 53 | 9 | 9 | 71 |
| | | % within Attitudinal | 74.6% | 12.7% | 12.7% | 100.0% |
| | 15 | Count | 57 | 9 | 5 | 71 |
| | | % within Attitudinal | 80.3% | 12.7% | 7.0% | 100.0% |
| | 16 | Count | 57 | 11 | 3 | 71 |
| | | % within Attitudinal | 80.3% | 15.5% | 4.2% | 100.0% |
| | 17 | Count | 55 | 11 | 5 | 71 |
| | | % within Attitudinal | 77.5% | 15.5% | 7.0% | 100.0% |
| | 18 | Count | 53 | 9 | 9 | 71 |
| | | % within Attitudinal | 74.6% | 12.7% | 12.7% | 100.0% |
| | 19 | Count | 46 | 13 | 12 | 71 |
| | | % within Attitudinal | 64.8% | 18.3% | 16.9% | 100.0% |
| | 20 | Count | 60 | 8 | 3 | 71 |

| | | % within Attitudinal | 84.5% | 11.3% | 4.2% | 100.0% |
|---|---|---|---|---|---|---|
| | 21 | Count | 52 | 13 | 6 | 71 |
| | | % within Attitudinal | 73.2% | 18.3% | 8.5% | 100.0% |
| | 22 | Count | 53 | 16 | 2 | 71 |
| | | % within Attitudinal | 74.6% | 22.5% | 2.8% | 100.0% |
| | 23 | Count | 51 | 9 | 11 | 71 |
| | | % within Attitudinal | 71.8% | 12.7% | 15.5% | 100.0% |
| | 24 | Count | 58 | 6 | 7 | 71 |
| | | % within Attitudinal | 81.7% | 8.5% | 9.9% | 100.0% |
| Total | | Count | 1291 | 263 | 150 | 1704 |
| | | % within Attitudinal | 75.8% | 15.4% | 8.8% | 100.0% |

The Chi-square test for the independence of response categories from the twenty attitudinal statements was 54.898 (p=0.173). See Table 2 below.

**Table 2. Chi-square tests for acceptance, rejection and neutral responses**

| | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| Pearson Chi-square | 54.898[a] | 46 | .173 |
| Likelihood ratio | 56.121 | 46 | .146 |
| N of valid cases | 1704 | | |

a. 0 cells (0%) have expected count less than 5. The minimum expected count is 6.25.

Therefore, there is enough evidence that the difference between the expected and the observed frequencies is due to chance. Acceptance, rejection and neutrality occurred independently from the statements. This shows that even though the attitudinal statements measured different constructs, this was not evident in the responses. Differences that occurred in the responses with respect to the statements were simply random with no pattern. The implication is that employee commitment, satisfaction, engagement and embeddedness influence employee performance as a system. A strategic HR metric will therefore measure the holistic influence of the attitudinal HRM outcomes on employee performance rather than focusing on attitudinal outcomes.

## 4.2. The Neutral Response

The study held the belief that employee performance can also be attributable to other factors which cannot fall within the attitudinal analysis. As postulated earlier, the neutral category of response can be taken to arise due to psychological trade-off created when an employee makes a decision whether to agree or reject the statements in the question. It is assumed that a decision to select the neutral element could imply the strength of other factors within the system. This was investigated by determining the changes that can occur to the Chi-square statistic when calculated using, firstly, frequencies for acceptance and rejection, secondly, frequencies for rejection and neutrality and thirdly, acceptance and rejection. The Chi-square tests outputs from SPSS are shown below.

**Table 3. Chi-square test for acceptance and reject responses**

|  | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| Pearson Chi-square | 36.653[a] | 23 | .035 |
| Likelihood ratio | 37.410 | 23 | .029 |
| N of valid cases | 1441 |  |  |

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.73.

**Table 4. Chi-square test for reject and the neutral response**

|  | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| Pearson Chi-square | 28.487[a] | 23 | .198 |
| Likelihood ratio | 29.904 | 23 | .152 |
| N of valid cases | 413 |  |  |

a. 4 cells (8.3%) have expected count less than 5. The minimum expected count is 4.00.

**Table 5. Chi-square test for accept and the neutral response**

|  | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| Pearson Chi-square | 19.101[a] | 23 | .695 |
| Likelihood ratio | 19.120 | 23 | .694 |
| N of valid cases | 1554 |  |  |

a. 0 cells (0%) have expected count less than 5. The minimum expected count is 9.99.

In all cases, the responses were independent of the attitudinal statements (Chi-square statistic = 36.653, $p=0.035$ for the acceptance and rejection responses; Chi-square $=28.487$, $p=0.198$ for the reject and neutral responses while Chi-square = 19.101, $p=0.65$ for the 'accept' and 'neutral' responses). When considering both the Chi-

square statistic and the *p* values for these categories of responses as shown in the tables above the effect of neutral response seems to be that of weakening the evidence to support the null hypothesis. It can also be seen that the 'neutral' response had the greatest impact on the 'accept' category of response. This seems to support the propositions made earlier that the neutral response is more inclined to other factors that make the attitudinal factors of the system weak. It appears that the neutral response is suggestive of stronger factors that influence employee performance other than the attitudinal HRM outcomes.

## 5. Conclusion

The study applied the general systems theory to analyse how responses to attitudinal HRM outcomes related to the construct defining the statements. The specific focus was to establish if construct differences set in the questionnaire development stage would manifest in response patterns. The ultimate aim was to elucidate how attitudinal HRM components are perceived to influence performance, as a single construct or as a unit. Construct differences in the questionnaire items were not reflected on the responses. The perceived implication was that responses were independent of the attitudinal statement (Chi-square statistic = 54.898, $p$=0.173) which meant that participant's responses were nearer to those that can be expected due to chance. This suggested that the attitudinal statements were in a system which cut across construct differences and can be regarded to form a unit. It is, therefore, suggested that strategic HR metrics should measure the relationships that the HRM outcomes have among themselves and with organisational outcomes. Another focal point for the study was the meaning of neutral responses to the attitudinal statements. The assumption was that the neutral responses represented another construct and this construct signifies the strength of non-attitudinal HRM outcomes in affecting employee performance. An analysis of the association that the neutral response had with accept and reject responses shows that neutrality was more inclined to rejection and it represented a trade-off between the desire to accept and some other psychological stimuli in favour of other variables. The paper therefore asserts the essence of the general systems theory in (1) problem conceptualisation; (2) research philosophy; (3) design and methodology; and (4) analysis of results with specific reference to the study of HR metrics.

## 6. Recommendation

Considering the debate surrounding HR metrics as well as the findings of this study, the researchers are inclined to recommend that the general systems theory be used as a lens to analyse relationships whose variables could be used to generate HR metrics. Within the framework, the variables informing relationships should be analysed holistically in order to identify all the cause effect patterns within the system. The study has confirmed that attitudinal HRM outcomes form a unit rather than a separate construct when considering their effect on performance. Therefore, their combined effect in relation to employee performance is a critical measurement of the contribution of HRM to organisational success.

## 7. Future Research

Future research can focus on the inclusion of the technological element in the calculation of HR metrics and other measures. The link between the technological context of business and HR metrics is discussed extensively in Dulebohn and Johnson's (2013) paper, which analyses the interplay between HR metrics, decision support systems (DSS), HR information systems (HRIS) and business intelligence (BI). According to Dulebohn and Johnson (2013, p.71), technological advancements have modernised HR work through the use of electronic HRM (e-HRM) and HRIS, which are being used in conjunction with DSS and BI. The use of computers and specialised software or technology has the potential to leverage the collection and analysis of HR data and metrics. In addition this study has set a foundation for further studies on the actual metric generation algorithms that can emerge from strategic relationships. Evidence to support the essence of attitudinal HRM outcomes in influencing performance within a systems interpretation has been found. It is, therefore, recommended that future research should also hinge on the systems framework.

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# Actualities in the Cadastral Identification and the Measurement of Real Estate Property

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**Abstract:** This paper aims at presenting the current assessment methodology employed in the field of real estate, according to law. Within a correct evaluation of real estate properties, three sides of cadastral survey are taken into consideration, namely, the technical, the economic and the judicial side, in order to accurately reflect the information needed for this process. The case study presented refers to the analysis and evaluation of land in Galati County, based on the specific characteristics of real estate.

**Keywords:** real estate; cadaster survey; surface measurement; rentable spaces

**JEL Classification:** G32; G33; C39; R10

## 1. Introduction

Real estate markets can be studied from more perspectives – geographic, competitive, and from the features of demand and offer. The evaluator considers the value of the real estate property in the context of real estate markets, the delimitation of real estate markets being a basic aspect of evaluation. Real estate evaluation firstly considers assessing the market value, as well as the profitableness of a fixed good as investment value. Consultancy studies in evaluation are carried out in order to determine and explain the markets' features to the clients. An evaluator understands the market of a real estate property as being reflected by the criteria used to analyze, select and explain the comparisons to other real estate properties.

## 2. Cadaster – Data Sources in the Evaluation Activity

The cadastral documentation provides information regarding the surface of the field/area, the built, usable or habitable surface of a building, the coordinates and the

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shares of the points that define the limits of the properties, the orientation of the field surface or of a building reported to the cardinals, the opening of a field, the wearing degree of a building, the condition of the building, the structure type of the building and many other pieces of information. These ones are found in the cadastral files and in the real estate register, documents which first come in hand to the evaluator.

The objective of the cadaster is to determine technical, economic and judicial information regarding the real estate properties, to ensure the publicity of the real estate rights, based on which these rights were founded, transferred, modified or ended, to support the taxation system and to contribute to the security of real estate transactions and the easing of real estate mortgage.

A particular problem that has called into question since there was still in force Law No 32/1968 (the former law concerning the legal regime of offenses) and that is still arousing interest for the specialists and practitioners practice is the issue of limitation in for lifting of unauthorized construction. The thorniest part of the problem relates to the time when this term flows, if it could be invoked by the authorities or by the offender in case of subsequent obtaining of authorization after the discovery of a contravention act.

The cadastral identification of the real estate property is the first stage of the evaluation process, according to the figure below:
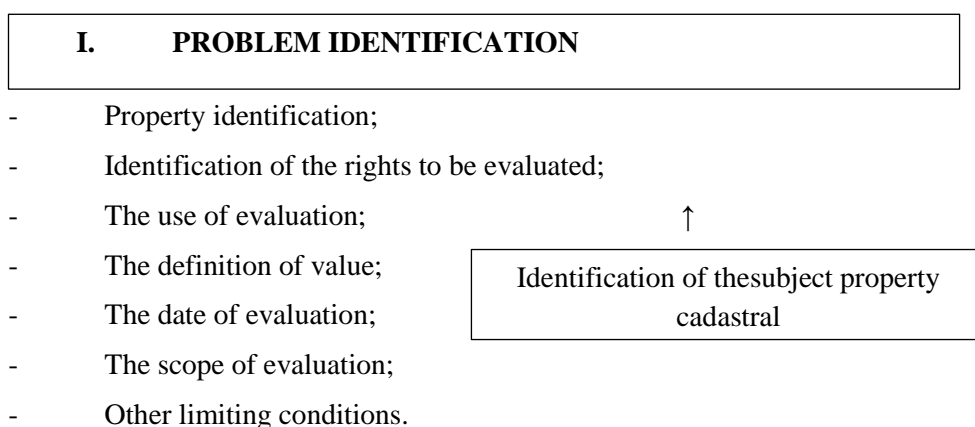
| **I.**    **PROBLEM IDENTIFICATION** |
| --- |

-    Property identification;
-    Identification of the rights to be evaluated;
-    The use of evaluation;       ↑
-    The definition of value;

| Identification of thesubject property cadastral |
| --- |

-    The date of evaluation;
-    The scope of evaluation;
-    Other limiting conditions.

**Figure 1. Cadastral identification within the real estate property**

## 3. Conceptual Delimitations regarding the Cadastral Survey

The regulatory framework of the system that ensures the evidence of real estate goods, whether free or built surfaces, is the *Law of cadaster survey and the real estate publicity no 7/1996, reissued 2 MOF83/2013*, where the cadastral survey and

the real estate register are displayed as a *unitary and mandatory system of technical, economic and judicial evidence, with national significance of all the real estate properties within the country*. According to Law 7/1996, the cadastral survey is classified into the general cadastral survey – periodical evidence and inventory system of the real estate goods – and the specialty cadastral survey - periodical evidence and inventory system from the technical and economic perspective of the real estate goods.

The real estate register displays the buildings' descriptions and information regarding the real estate rights, individual rights, the judicial acts, facts or reports that regard the real estate goods. According to law 18/1991, the agricultural real estate includes *any type of fields, irrespective of use, the title based on which they are owned and the public or private field they belong to*.

**Immovable** – represents the field, with or without buildings, on the surface of an administrative-territorial unit, belonging to one or more owners, identified through a unique cadastral number.

**Allotment** – is the surface with a single use.

**The usage category** of the field is emphasized by a code which represents the features of the field allotment and is established depending on the natural conditions – relief, altitude, soil type.

Cadastral plans are displayed by different scale plans, namely the graphic representation of the immovable in an administrative-territorial unit, which are registered in the real estate register, classified in a cadastral manner.

The sheet plan extract –represents a part of the cadastral plan which includes the representation of the immovable, as well as the neighboring immovable, the dimensions of their sides.

The cadastral sector is represented by a part of an administrative-territorial unit, limited by linear, time stable elements, such as roads, waters, dams, railroads and others.

Through the **technical function of cadaster**, we determine the position of the limits between the neighboring immovable, the surface of the fields and constructions resulted from the measurements.

**The economic function of cadaster** emphasizes the elements that are needed to assess the taxable value of the immovable good.

**The judicial function of cadaster** is given by the identification of the real estate goods' owners and their recording in the land register.

**Usage groups** of the fields, according to art. 2 Law 18/1991, are classified depending on their usage destination:

1. The group of agricultural fields – TDA;

2. The group of forest fields – TDF;

3. The urban area fields – TDI;

4. The permanent under water fields – TDH;

5. The special usage fields – TDS.


## 4. Useful Information for the Evaluation Activity Included in the Specialty Cadaster

The specialty cadaster provides information for the evaluation of fields, which is needed for the assessment of the market value or for their taxation value.

### 4.1. The cadaster of the agricultural land register is represented by the agricultural fields outside the urban area, symbolized by the TDA code.

The regulatory frame work is provided by:

- The Law of the Agricultural real estate 18/1991 reissued in the "MonitorulOficial" no.1/01.05.1998, with subsequent changes and completes.

- Law of vinery and wine no 67/1997 repealed and replaced by Law 244/2002

- GO 34/2000 regarding the ecologic agro-food products

- Law of fruit growing 348/2003, reissued at 14th of November 2012

- GO 34/2013 regarding the organization, management and the exploitation of permanent meadows and for the modification and completion of the agricultural real estate law.

Agricultural fields are ranked depending on the quality in five classes from I to V and on their production capacity in 3 classes from A to C.The cadaster of the vinery real estate is a subsystem of the agricultural real estate and in classified in six classes, as follows:

- Class 1 – fields with no limitations or restrictions;

- Class 2 – fields with low limitations or restrictions;

- Class 3 – fields with medium limitations or restrictions;

- Class 4 – fields with severe limitations or restrictions;

- Class 5 – fields with severe limitations or restrictions that can be adjusted;

- Class 6 – fields with severe limitations or restrictions that cannot be adjusted.

**4.2. The Cadaster of Real Estate Fund is a Subsystem of the General Cadaster Symbolized through the TDI Code.**

The regulatory framework is provided by the MLPAT order and the president's ONCGC no 90/N/911 and 912-CP/2 from 1997, by law 50/1991 updated in 2014, regarding the authorization of construction activities and by the HG 525/1996 reissued in Nov. 2002 and updated in June 2011 for the approval of the general urbanism regulation.

**4.2.1. The Classification of Constructions and their Cadaster Indexes**

Buildings and constructions are classified after their purpose of use as such:

- CL – constructions designed for living;

- CAS – administrative and socio-cultural constructions;

- CIE – industrial and municipal constructions;

- CA – annex constructions.

**4.2.2. Information Needed for the General Real Estate Cadaster**

According to ONGC no. 90/N/911-CP/2 in 1997, the following data is being registered in the general real estate cadaster: the purpose of use, use, number of floors, number of basements, structure, foundation, walls, roof, heating, municipal equipment, condition of the construction, year of construction, propriety type, management method, capacity type, number of families, and number of individuals.

**4.2.3. The Cadaster of the Municipal Estate Register Represents the Inventory of the Underground, Surface and** over ground municipal equipmentfrom the interior of urban area buildings, such as the water supply network, the heating network, the electricity supply network, the communication network and others.

## 5.   Real Estate Publicity and the Real Estate Register

Real estate goods and rights of owners are registered in the public documentation through the real estate register. The real estate publicity system comes to judicially protect the ownership right. The mean through which real estate register is made is the real estate publicity cadaster registry, where all the cadastral activities and judicial documents regarding propriety are registered.According to art. 23 from Law 7/1996 reissued, the real estate register consists of the title, displaying the number and the name of the location where the real estate is located, continuing with:

- **Part I** which consists of a description of the real estate good which includes the order number and the cadaster number, purpose and category use and the plan of the real estate good and its description.

- **Part II** includes data regarding the ownership right and other real rights: name of the owner, propriety title, propriety transfers, management rights, community servitudes, judicial facts regarding propriety, reception and rejection of the dismemberment/merging proposal, alienation interdictions, inalienability clauses of the building (see art 628 of the Civil Code) and any other modifications, adjustments or notes that would be made in the title in part I and II.

- **Part III** – information regardingthe registrations about the property right dismemberments, the real warranty rights and duties, namely: the surface, use, habitation rights, servitudes regarding the purpose of use, the mortgage and real estate benefits, judicial facts, sequester, construction surveillance or its revenues and any other changes, adjustments or other notes that would be made regarding the information in this category.

Notes in the land register are classified in three categories, as follows: - permanent entry – real estate registration, temporary – undefined and actuaries' entries.

## 6.  Scales of Conventional Plans. Conventional Signs

In the case of a cadaster plan, it is important for the conventional signs used for the representation on field elements on plans to be known; thus, information will be understood and easily used when evaluating the building/property.

The cadaster plan provides information on the position of an element/field point, the real size such as length, distances or surface area, by applying different graphic or analytic methods, using the formula of numeric scale.

A cadaster plan is made using a numerical scale expressed by the 1:n ration and allows the passing from the distance between two points of the cadaster plan, its D correspondence in the field, the value of n in the field is 1mm.

The field is displayed with higher details when the representation scale is higher, and the n scale denominator is lower.

The field is displayed with less details when the n denominator is higher, thus the representation scale is lower.

**Conventional** cartographic **signs** are means needed for the conventional scale representation of the field in topographic and cadaster plans. Depending on the size and representation scale, there are three types of conventional signs: outlining conventional signs, scale conventional signs and explanatory conventional signs. To make a low scale plan, a high number of conventional signs are used. In the "Conventional signs atlas for topographic plans at 1:5.000, 1:1000 and 1:500 scales" 1978 edition.

The link between the cadaster plan, the cadaster registries and the real estate register with the graphic and textual data bases of the informational cadaster system is made through the cadaster number. The cadaster number is set through separate succession for the urban and non-urban areas.

Cadaster data are registered in written documents called cadaster registries. These ones are ranked into 5 types, namely: cadaster registry of property goods, cadaster registry of allotments, cadaster registry of owners, the alphabetic index of owners, summary of cadaster parts on owners and destination of use.

## 7. Building Measurement

Evaluation reports of real estate properties, for constructions and lands, includes measurement codes, through which the terms and measurement methods of used areas, surfaces and volumes are defined. This code is designed for specialists in the evaluation of real estate properties and real estate agents, for the correct and unitary use of terminology and the size, surface and volume measurement methods for constructions and lands. The measurement code is split in two parts: constructions measurement and land measurement.

## 8. Construction Measurement

### 8.1.1. Surfaces Measured on the Outline of the Building

To measure the outline of the building, more area types are used.

Built area – Ac – represented by the area of the building's horizontal section at +/- 0,00 (the dimension of the finite floor of the ground floor), measured on the exterior outline of the walls. In the case of underground constructions and basements, the built area is measured at the finite dimension of the floor and is considered as the area of the horizontal section, the area within the exterior outline of the walls, including the thickness of the isolation layer. When we have buildings which are located on slopes, the built area is measured in horizontal surfaces step by step, depending on the land and the specific use of the building.

**Built area per apartment** – Ac-ap – represents the sum of the useful areas in the apartment, lodges and balconies, of the share from the commune areas of the building to which the area of the inside and outside walls of the apartment is added. In the case of solid fuel heating, the surface of the fireplaces and the water heaters are used.

**Floor area – A niv** – includes the area of the horizontal section of the building at the respective floor, limited by its external outline.

**Total area** – **Ad** – includes the sum of all floors' areas.

**Total built area (for dwelling places) –** shows the difference between the total area and the area of the basement.

**Total external area – AET –**shows the area of the building, measured from the exterior, for every floor – similar to the total area.

**Total area – AT –** regards the sum of all the built areas of the building, for every floor – similar to the total built area.

### 8.1.2.   Areas measured on the interior outline of the building

To measure the interior outline of the building, the following area types are used:

**Total interior area – AIT –** regards the building surface limited by the interior outline of the external walls for every floor.

**Net internal area – AIN -** regards the usable area in the building, limited by the internal outline of external walls, for each floor.

**Walls area – Aper –** the sum of all horizontal projections' areas of the walls, panels and external and internal pillars and the chimneys.

**Useful area – Au –** is the unfolded area, less the area of the walls.

### 8.1.3.   Special use areas

The areas with special use are used for the following properties: residential properties, industrial properties and commercial properties.For the residential properties, we use:

**The useful area of the apartment – Auap**– sum of all the useful areas of the spaces in the apartment, minus the areas of the lodges and balconies, the doorways, heating devices' niches, the surfaces of the fireplaces and the water heaters in the bathrooms.

**The habitable area of the apartment – Aloc-ap –** the sum of the areas designed for habitation.

For **industrial properties,**the following areas are used:

**Exploitation area –Aexp –** the sum of all the areas designed for the main technologic process.

**Auxiliary area – Aaux –** the sum of all useful area designed for the supporting technologies of the main technologic process.

**Circulation area – Acirc –** includes the sum of the areas inside the buildings designed for the railroads and pavement for the circulation of vehicles and the area of the hallways, stairways and elevators.

In the case of **commercial properties**, the following areas are used:

**Needed commercial area – An-com –** the areas of the selling, consumption halls, the areas for the goods stocks and the auxiliary area.

**Commercial area – Acom –**includes stocking and auxiliary spaces consisting of non-structural compartments and surfaces with niches and general display arcades and the model of the shop front.

**Storage area – Adep –** represents the net internal area of a shop which is not included in the commercial area and which is designed for goods' storage.

**Auxiliary commercial area – Acom-aux –** includes all the net internal areas which are not included in the commercial and storage are but which can be exploited.

**Total measured area – Atm –**represents the total area of the building included in the dominant area of the height, located in the outside of the basic axis of the building. Parking lots and ramps are excluded and in the case of renting, it is calculated floor by floor.

#### 8.1.4. Rentable spaces description

**Rentable space per floor**- the whole measured area per flood, minus the major vertical empty spaces on the same floor.

**Usable area per floor –** the useful area of that floor.

Common area per floor – the sum of useful areas of the common spaces on that floor.Common building space – the sum of useful areas of the common spaces of the building used by the renter, not included in exclusive spaces.

The R/U index per floor represents the conversion factor applied to the usable space, defines the rentable basic area of the office, commercial areas or the common area in the building.The rentable basic area includes the usable area of the exclusive area and the common area in the building and their corresponding part from the common area per floor. This area is determined by using the R/U index per level, for the areas of residential, or commercial areas and/or for the common area in the building.The total area of the rentable place represents the sum of all the rentable areas for each floor.The rentable surface of the building is the sum of all rentable surfaces per level.

The rentable space is determined by applying the R/U index to the exclusively space and represents the usable area of an exclusively owned space with a share corresponding to the common surface per level.

#### 8.1.5. Dimensions

When evaluating a construction, the following terms are used:

Total façade – Ft – is represented by the total external length, from the external outline of external walls or from the central part of common walls.Net façade – Fn – represents the total external façade of the shop, measured between the internal side

of the external walls or the internal part of the supporting pillars.Shop width – Lt-mg – the internal width between the interior sides of the external walls, in the shop front other reference point.

Shop depth – Ad - mg – is a measurement made from the shop front to the back side of the commercial surface.

Built depth – Ad - c – is a measurement made at the ground floor of the building between the front and back walls.

### 8.1.6.   Volumes

When evaluating a building, the following concepts are used:

Floor volume – V niv – product between the area of the level and its height.

Level height – I niv – is measured for a current level, for the last level at buildings with attics, for the attic, for the last level at the buildings without attic.

Total volume – Vt – sum of the volumes of all levels.

Internal volume – Vint- represents the product of the total area and the internal height.

Internal height – Iint – the height between the surface of the structural level and the lowest side of the lowest point of the ceiling or structural rooftop.

### 8.2.   Field Measurement According to the Real Estate Evaluation

In STAS 7468/1980, when defining the size features of fields, one uses the surface concept synonymous to the area concept, in the concept of evaluation.The field surfaces are:Precinct surface Sr/Si: total delimited surface of the territory/field.

Built surface Sc: sum of the surfaces that are definitively occupied by buildings, constructions, equipment totally/partially closed or completely open.

Network corresponding surface, Sr: the sum of surfaces covered by external networks with technologic use and underground equipment.

Transport way surface, St: the sum of surfaces of the transport ways, as well as the featured functional arrangements.

Free surface, Sl: the sum of surfaces, other than the mentioned above ones or determined by the mandatory distances between constructions, networks and equipment, set according to the legal in force regulation.

Occupied surface, So: the sum of built surfaces, corresponding to the networks and transport ways.

The occupation percentage of the field (POT) – the occupation degree of the field (G) is a quantitative occupation index of the field and is represented by the ratio between the occupied surface and the precinct.

The usage coefficient of the field (CUT) is a qualitative index for the usage of field and is represented by the ratio between the sum of extended surfaces of all the constructions and the surface of the precinct.

## 9. Conclusions

The real estate evaluation report includes all the expertise, work, efforts, knowledge and experience of a real estate evaluating agent, meets the mean through which the real estate evaluator would communicate the analysis and the results of the real estate evaluation to a client. This is based on a complete investigation, it is logically organized, solid reasoning and an accurate and systematic expression. To meet these requirements, the knowledge of the evaluation terminology is needed. The evaluation process is a complex system including all research, information, reasoning, analysis and conclusions needed to reach the estimated value. The main scope of the evaluation process is the presentation of an impartial opinion on the value, through which the evaluator shows that he has considered all the factors that significantly influence the value. Evaluation is needed wherever a property is traded through the selling-buying process, or rented, and, usually when situations appear, where a decision must be made or it is to act or establish a strategy for which a value estimation is needed, namely the market value.

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# The Influence of Employee Share Ownership Schemes on Firm Performance: the Case of Zimbabwean Firms

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**Abstract:** The purpose of this study was to examine the influence of employee share ownership schemes on firm performance in the case of Zimbabwean companies. The study sought to provide valuable insights on the influence of this initiative on employee productivity and organisational performance in Zimbabwe. A cross sectional design was employed to collect data from Confederation of Zimbabwe Industry listed companies using simple random sampling. The study revealed that financial benefits from EOSs, employee participation, ECOS communication and percentage of shareholding have a significant positive relationship with firm performance. The study has important implications for the implementation and management of ESOs in the context of a development country such as Zimbabwe.

**Keywords:** Employee share ownership schemes; economic empowerment; firm performance; employee commitment; job satisfaction

**Jel Classification:** M10

## 1. Introduction

The period of colonialism relegated black Zimbabweans to economic marginalisation with the resultant being gaping income inequalities (Chaumba, Scoones & Wolmer, 2003; Nherera, 2000). In an attempt to address the skewed ownership of economic resources, a deliberate policy of empowerment was implemented under the auspices of the Indigenisation and Economic Empowerment Act of 2007 (Kurebwa, Ngwerume & Massimo, 2014). In Zimbabwe, the Indigenisation and economic empowerment legislation encourages that Employee Share Ownership Schemes (ESOSs) be set up as part of 51% indigenous shareholding to ensure broad based employee participation (Kurebwa, *et al.,* 2014).

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Since the inception of the economic empowerment policy, ESOSs are growing in popularity as a form of employee financial participation, giving employees the right to own shares and involved in controlling the affairs of the company (Landau, Mitchell, O'Connell & Ramsay, 2007). The ESOSs are administered through an employee fund and are leveraged by bank loans with collateral in the company or by future dividends in the company.

## 2. Research Problem

Employee share ownership schemes (ESOSs) have been subjected to scholarly scrutiny around the globe and recently in Zimbabwe. The debates on ESOSs revolve on their rationale, transparency and efficacy as a strategic tool in enhancing firm performance (Crisis in Zimbabwe Collation, 2015; Matsa & Masibiti, 2014). Multinational companies operating in Zimbabwe perceive the roll-out of ESOSs as a government ploy to seize foreign companies (Confederations of Zimbabwe Industries, 2014). Prior studies yielded contrasting views on the influence of ESOSs on firm performance (Pendleton & Andrew, 2010; Ngambi & Oloume, 2013). The result is also mirrored in Zimbabwe as there is no conclusive data on the influence of ESOSs on firm performance (Confederations of Zimbabwe Industries, 2014). For instance, 250 companies that implementing ESOSs reported mixed financial results. Against this background, the objective of the study was to investigate the influence of employee ESOSs on firm performance in the case of Zimbabwean firms.

## 3. Empirical Objectives

In order to achieve the objective of the study, the following empirical objectives were formulated:

- To examine how the ESOS percentage shareholding influence firm performance;
- To determine how ESOS financial benefits influence firm performance;
- To determine whether employee participation in an organization influences firm performance;
- To examine the influence of ESOS communication on firm performance.

## 4. Literature Review and Hypotheses Development

Employee Share Ownership Schemes are a form of employee financial participation that gives them the right to have a stake in the wealth of a company and a right to apply some degree of control over the affairs of the company (Landau *et al.*, 2007).

Extant literature on ESOSs contends that there is a positive relationship between ESOSs, firm performance and employee performance (Ngambi & Oloume, 2013; Kruse, Blasi & Freeman, 2011, Kaarsemaker, 2006). According to Sengupta, Whitfield and McNabb (2007), ESOSs results in low labour turnover which translates in reduced costs of recruitment. However, a study conducted by Sengupta et al. (2007) showed that embracing ESOSs does not lead to better levels of employee commitment even though the performance of the firm increases as a result of lower labour turnover.

Apart from employee performance, ESOSs positively influence performance metrics such as labour productivity, return on assets, profit margin and shareholder return (Sesil & Maya, 2005). In terms of labour productivity, Kim and Ouimet (2014) opine that, increase in productivity depends on the percentage shareholding of the ESOS and employment size of the organization. The productivity gains are attributed to enhanced employee morale as a result of financial gains (Kim & Ouimet, 2014). This view is also echoed by Kozlowski (2014) who acknowledged the role played by ESOSs in shaping favourable attitudes of employees towards the organization. In particular, ESOSs provides intrinsic motivation to employees to work better and more so, as a unifying factor of employees and management (Trebucq & D'Arcimoles, 2002). In addition, employees benefiting from ESOSs tend to be more willing to share information with management resulting organisational harmony and improved organizational efficiency (Perotin & Robinson, 2002; Kramer, 2008). ESOSs also create a sense of organisational identity among employees, reduces the "them-and- us" attitude that translate into organisational commitment (Pendleton & Robinson, 2011). The implementation of ESOSs is considered to promote the advancement of a long-term association between the firm and its employees as employees hold shares, receive dividends, and the expectation to see the value of their holding increase in value (Freeman, Kruse & Blasi 2004; Gittell, Von Nordenflycht & Kochan, 2004); Kruse, Freeman, Blasi, Buchele, Scharf, Rogers & Mackin, 2004).

Although a number of firms reported a positive impact of ESOSs on firm performance, some reveal a negative correlation. A study on British firms by Pendleton and Andrew (2010) found that, share options have independent effects on productivity. It was noted that in some instances employee involvement in decision making has undesirable impact on productivity. On the other hand, Sengupta et al. (2007) found that ESOSs does not lead to better levels of employee commitment even though the financial performance of the firm increases through lesser labour turnover.

In a longitudinal study conducted in Malaysian firms for a period of more than 12 years, Obiyathulla, Sharifah-Raihan, Mohd-Eskandar and Azhar (2009) noted that a firm's operating performance deteriorates for firms that embraced ESOSs. For instance, performance measures such as return on assets, return on equity and profit

margins all declined and the biggest drop was reported in the immediate year after the implementation of ESOSs. Their study also revealed that the size of the firm also plays a role in the performance of a firm after adoption of ESOSs. In a related study conducted by Ikaheimo, Kjellman, Holmberg and Jussila (2004), Employee Share Ownership granted to top management and those granted to employees were distinguished. Their results show a negative impact of Employee Share Ownership Schemes grated to employees on firm performance, while the results reveal a weakly positive impact of ESOSs granted to managers on firm performance.

In terms of employee attitudes, Selvarajan, Ramamoorthy, Flood and Rowley (2006) noted that, when employees are offered stock options they enjoy the psychological ownership of the organisation.  However, in instances of the decreasing stock earnings, ESOS seem not to have a positive effect on the perceptions of equity and employee attitudes (Pierce, Kostova & Dirks, 2001).  This is because employees feel obligated to contribute to the firm when they perceive that the ESOS is beneficial to their wellbeing (Westwood, Sparrow & Leung, 2001).

In a comparative study, Meng, Zhou and Zhu (2010) noted that firms with ESOSs did not perform any better than firms without ESOSs for all the performance measures. Similarly, a study of 2002 Indian firms listed on Bombay Stock Exchange, over a period of 1 and 3 years, using asset turnover ratio and net assets at book value, Dhiman (2009) concludes that ESOSs does not lead to better productivity performance in the corporate sector of India in the short run. In another study of France firms listed on the Paris Stock Exchange, Triki and Ureche-Rangau (2012) studies the long-term impact of Employee Share Ownership Schemes on the firm's accounting performance and the effect of ESOSs announcements on firm performance. The study reveals that there is no significant impact of ESOSs on firm performance, as indicated by the industry adjusted return on assets and return on equity.

Based on the foregoing discussion, the following hypotheses were formulated:

H1: There is a positive relationship between ESOS percentage shareholding and firm performance.

H2: There is a positive relationship between ESOS financial benefits and firm performance.

H3: There is a positive relationship between employee participation and firm performance.

H4: There is a positive relationship between ESOS communication and firm performance.

## 5. Research Methodology

### 5.1. Target Population and Sampling Method

The study employed a cross-sectional survey design to investigate the influence of ESOSs on firm performance. The quantitative research design was used as it is regarded as an excellent way of determining conclusive results (Sahu, 2013). The population for this study was drawn from CZI listed companies as at 30 April 2015, which had ESOS in place. At the time of the study, a total of 21 companies were having EOSs and constituted the target population for the study.

The sample for this study was 210 employees from the 21 firms with EOSs. Simple random sampling was used to select respondents. For each participating firm, the company register was split into low level staff, middle management and senior management, and the researcher then randomly selected the respondents. This gave each employee at each level an equal chance of being selected to participate in the study. A large number of employees from each firm were considered so as eliminate any bias towards the actual results being obtained in an organization.

### 5.2 Data Collection Procedures

A structured questionnaire, which included closed ended and multiple choice questions, was used. Multiple choice questions were used in the questionnaire as they permit the respondent an option to choose a statement that almost closely describes their response to a statement (Mohan & Elangovan, 2006). The total number of questionnaires distributed to respondents was 210. Approximately 80% of the questionnaires were emailed and about 20% were hand delivered to mainly the shop floor employees who had no access to email, in endeavor to stimulate a better response rate. The questionnaires were accompanied by a cover letter which detailed the purpose of the study as well as the instructions on how to respond to the questions. The overall response rate was 68% (n=143), and 32% (n=67) were not responded to.

### 5.3 Instrumentation

The components of the dependent variable, firm performance, were job satisfaction, ROA, ROE, and employee commitment. According to Mowday, Porter and Steers (2006), job satisfaction is defined as feelings of an employee about their job. Employee performance was connected to salient measures of performance like absenteeism, productivity, and employee turnover (Friedman, 2012). On another hand, job commitment was defined as the psychological attachment by an individual to an organization (Becker, 2005), and it was measured using features like empowerment, job performance, role stress and job security. The responses to the questions were recorded on a 5-level Likert Scale, and in some instances 1 meaning

not satisfied at all and 5 meaning fully satisfied. The scale developed by Pendleton, Wilson and Wright (1998) informed the development of the scale for this study.

### 5.4. Data Analysis

The data analysis for this study consisted of inspecting the questionnaires for completeness and correctness of information captured. Data was then captured into SSPS and an examination of descriptive responses according to frequency distributions and descriptive statistics was performed. Correlation analyses where performed to assess the degree of association between variables under study. Multiple regression analysis was also conducted so as to identify the extent to which the variables under study influence firm performance.

### 5.5. Reliability and Validity Measures

To test for reliability the Cronbach's Alpha ($\alpha$), which is a measure of internal consistency between measurement items, was computed. As shown in Table 4.3, the Cronbach's alpha values ranged from 0.734 to 0.934, thereby surpassing the minimum threshold of 0.6 recommended by Saunders (2009). The spearman's correlations coefficients were computed to assess convergent validity. The study reported significant positive correlations ranging from $r = 0.336$ to $r = 0.492$ (at $p < 0.01$) signifying the attainment of convergent validity. The construct correlation matrix is reported in Table 4.5. Regression analysis was used to assess predictive validity. Causality was shown by all independent variables, that is, financial benefits, employee participation, ESOS communication and percentage of shares with the dependent variable, firm performance, as shown in Table 1, thus demonstrating the attainment of predictive validity.

**Table 1. Statistical Results for Reliability Analysis**

| Variable | Number of items | Cronbach's Alpha Value |
|---|---|---|
| Financial benefits | 6 | 0.744 |
| Employee participation | 6 | 0.749 |
| ESOS communication | 6 | 0.934 |
| Percentage shareholding | 5 | 0.734 |

## 6. Results of the Study

### 6.1. Sample composition

In terms of gender of respondents 40% were females and 60% were males. A majority of respondents (66%) were younger than 35 years, 24% were between 35 and 45 years, and 13% were 45 years and older. The employee category constituted approximately 33% of the total responses whereas the management category constituted approximately 68%. More management was selected more than the general employee as they are assumed to be more open-minded when it comes to researches that are to do with the firm, compared to general employees.

### 6.2. Correlation Analysis

In order to ascertain the degree of association between constructs under investigation, the Pearson correlation was computed. The results are shown in Table 2.

**Table 2. Correlations between constructs**

|  | FIN BEN | EMP PART | ESOS COM | PER SHARES | FIRM PERF |
|---|---|---|---|---|---|
| FIN BEN | 1.000 |  |  |  |  |
| EMP PART | .472** | 1.00 |  |  |  |
| ESOS COM | .230** | .410** | 1.00 |  |  |
| PER SHARES | .653** | .435** | .237** | 1.00 |  |
| FIRM PERF | .467** | .483** | .492** | -.336** | 1.00 |

** Correlation is significant at the 0.01 level (2-tailed). *FIN BEN = Financial benefits, EMP PART = Employee participation, ECOS COM = ECOS communication, PER SHARES = Percentage shareholding, FIRM PERF = Firm performance.*

### 6.3 Regression Analysis

To examine the relationship between the independent and dependent variables, regression analysis was conducted. Regression analysis was deemed to be an appropriate statistical approach due to the existence of significant associations amongst the variables. Prior to conducting regression analysis, key assumptions were verified. The adequacy of the sample size was assessed since regression analysis is susceptible to sample size. Tabachnnik and Fiddel (2007) proposed a sample size of $N > 50 + 8m$ (where m = number of independent variables) as adequate to perform multiple regression analysis. The sample size considered in the study is 161

respondents, which is above the minimum of 82 respondents when four independent variables are involved.

Multi-collinearity was assessed by inspecting the inter-correlation matrix, tolerance value and the variance inflation factor for each independent variable. Multi-collinearity refers to a high degree of inter-correlation between constructs (Shen & Gao, 2008). As shown in Table 4, all reported correlations are below 1 or -1, signifying the absence of perfect multi-collinearity within the data set. To check the presence of outliers, the scatter plot, standardised residual plot and Cook's Distance were utilised. The scatterplot showed scores that were clustered in the middle, tangential to the zero-point with no curvilinearity. The maximum value for Cook's Distance was 0.212 indicating that the existence of outliers did not affect the model results (Tabachnick & Fidell, 2007). The inspection of the standardised residual plot showed that no values were exceeding 3.3 or less than -3.3 as recommended by Tabachnick and Fidell (2007). Table 4 shows the results of regression analysis.

**Table 3. Results of regression analysis**

| Dependent variable:<br>Firm performance | Beta | T | Sig | Collinearity Statistics | |
|---|---|---|---|---|---|
| **Independent variables** | | | | Tolerance | VIF |
| Financial benefits | 1.481 | 6.165 | .000 | .615 | 1.487 |
| Employee performance | .200 | 3.018 | .000 | .627 | 1.520 |
| ESOS communication | .356 | 5.826 | .000 | .568 | 1.769 |
| Percentage shareholding | -1.155 | -4.925 | .000 | .630 | 1.487 |
| R = 0.779   $R^2$ = 0.607   Adjusted $R^2$ = 0.595 | | | | | |

As shown from the Table 4.5, the Model produced $R^2$ of 0.607 implying that about 61 percent of firm performance could be explained by independent variables.


## 7. Discussion of Results

The **first hypothesis** (**H1)** predicted a positive relationship between financial benefits from ESOSs and firm performance. This hypothesis was confirmed (β = 1.481, t-value = 6.165, p < 0.000). This result was supported by positive correlation (r = 0.467, p < 0.01). From the result, it can be inferred that as employees receive more financial benefits from the ESOS, they are likely to get motivated to be productive so that the firm makes huge profits and they benefit financially from the profit shares and dividends. The findings of this study are consistent with a number of findings by different scholars. Convincing evidence was found from the results that financial benefits positively impact firm performance. This finding is in line

with the findings of Lin, Yao and Zhao (2014) which investigated the relationship between employee financial benefits and firm performance in China, and concluded that an employee financial benefit system does produce significant relations with overall firm performance. Lin et al. (2014) study also added that the strength of the associations is mediated by behavioral and attitudinal outcomes, which are produced from a psychological consequence of employees.

**The second hypothesis (H2)** predicted a positive relationship between employee participation and firm performance. The effect of Employee Participation ($\beta = .200$, t-value = 3.018, $p < 0.000$). This result was supported by positive correlation (r = 0.483, $p < 0.01$). The outcome reveals that as employees are engaged in making the decisions that affect the firm, they would feel as they are part of the firm and they will productively work so as to produce better results for their firm. This outcome is supported by the results obtained by Kuye and Sulaimon (2011), who examined the relationship between employee participation in decision making and firm performance in the Nigerian manufacturing sector. The obtained results show a statistically significant association between employee participation in decision making and the performance of the firm. It was also concluded that firms with employee participation performed better than firms without employee participation. All the same, Bryson (2007) concluded that an inappropriate configuration of employee participation in a firm can have a negative impact on firm performance, as decision take longer to be made and some decisions will be made not because they are good for the firm but to avoid conflicts with employees.

**The third hypothesis (H3)** predicted a positive relationship between ESOS communication and firm performance. This hypothesis was supported ($\beta = .356$, t-value = 5.826, $p < 0.000$). This result was corroborated by a positive correlation (r = 0.492, $p < 0.01$). This result may be attributed to better understanding of the benefits of ESOS form the ESOS communication, which then drives employees to put more effort in producing results which lead to better firm performance. The finding obtained by the researcher in this study resonates with the findings of the European Commission. This study found out that there is a statistically significant positive relationship between ESOS communication and firm performance. However, low quality communications from management with regards to ESOS can lead to gaps between intended and actual firm performance from the introduction of ESOS (Hartog, Boon, Verburg and Croon, 2013). To drive better firm performance and to avoid misalignments and misunderstandings from employees, management needs to communicate highly informative, clear, and useful information about the ESOS.

**The fourth hypothesis (H4)** predicted a positive relationship between percentage shareholding and firm performance. This hypothesis was confirmed ($\beta = -1.155$, t-value = -4.925, $p < 0.000$). This result was supported by positive correlation (r = -0.336, $p < 0.01$). This result implies that the larger the percentage shareholding, above a certain threshold, the lower the firm performance. The outcome predicts that

as employees get a higher percentage shareholding of the firm, above a certain level, they would not productively produce results (maybe they would start to feel that since they are the major shareholders, they should not work but be managers). The finding is in line with Abbas, Naqvi and Mirza (2013) who found that large shareholders significantly and positively affect firm performance, especially when performance is measured by ROA and ROE, but direction of the association reverses when shareholding by one group goes beyond 50%.

## 8. Managerial and Policy Implications

One of the strongest conclusions that come out of ESOS and firm performance is that there is solid evidence that ESOS has a positive effect on firm performance. As a result of this effect, it is also regarded reasonable to believe that ESOS increase both economic and financial factors of a firm. All economic sectors in a nation play an important role in the growth and development of the economy. From the findings of this study, it is alleged that the effectiveness and proficiency in performing these roles may depend mainly on the introduction of Employee Share Ownership Schemes, which would embrace variables like financial benefits, employee participation and increased ESOS communication to employees. This study has some vital implications for management and policy in the nations' economic sectors. It signifies the need for economic sectors to exhibit high level of commitment to the introduction of ESOSs in order to enhance their performance. In other words, an intensive introduction of ESOS is a possible approach for increasing firm performance in competitive markets engulfed with volatility, uncertainty and complexity.

If the economic sectors of Zimbabwe are to grow and be competitive, its managers should encourage increased employee share ownership schemes in firms, for reasons that ESOS does positively affect firm performance (but keeping in mind that there are other ways of improving firm performance). When employees start to think like owners, this may lead to improved firm performance through increased profitability, job satisfaction and employee commitment to the firm. Therefore, the researcher recommends that management fully embrace the idea of ESOS in firms as its benefits outperform the costs and disadvantages of implementing it.

## 9. Limitations of the Study

The major obstacle encountered in this study was the challenge in persuading invited participants to actually participate in the research. A number of theories may be advanced as to the absence of interest in research participation. The amount of time involved, misperception or suspicion as to the nature of the study, or simply

commitment levels that participants had during the time of the study. All or any of these outlined reasons may have contributed to the lack of participation, which resulted in only 68% response rate. Even though participants were suspicious of the purpose of the study, the researcher took time to explain the purpose of the study and guaranteed confidentiality to the respondents, and this resulted in some respondents agreeing to participate in the study.

## 10. Direction for Future Research

The following proposals for future studies may deserve some remarks. Future study should take into consideration the analysis of firm size and the age of the firm, and their impact on ESOS variables (not only limited to financial benefits, employee participation, ESOS communication and percentage shareholding). These might be appropriate and imperative in making policy decisions for the firm. Second, future research should investigate the impact of firm performance on Employee Share Ownership Schemes, thus to say if the firm is performing better or otherwise, does it involve its employees more in decision making, does it keep on effectively communicating with its employees and does the firm keep on advancing financial benefits to its employees. The future study will be of interest as it will reveal how the firm will react to its performance after implementing an ESOS. Lastly, in the future study, the research design and the tools used to conduct this study might be modified to better develop insights into the impact of ESOS on firm performance. The amendments might include ways to conduct the same or similar research more effectively and might also contain ways to explore additional aspects of Employee Share Ownership Schemes.

## 11. Conclusion

The study showed that ESOS has a positive impact on firm performance. Public policy may therefore legitimately promote the introduction of ESOS in firms to enhance performance. Through ESOS, financial participation may be encouraged to further economic democracy or wealth redistribution. ESOSs should be structured in a way that provide tax advantages to the firm and even subsidize some certain forms of participation like worker co-operatives that set aside a certain percentage of profits to build employee owned firms for future generations. Participation schemes, like the ESOS, should be linked with sufficient information and communication provisions, and they may be effective and safeguard employees' financial interest when joined together with participation in corporate governance at various levels. Particularly, ESOS should as a policy is accompanied with the standard exercise of shareholders' voting rights, individually or through the ESOS trust.

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# Knowledge-Centered Culture and Knowledge-Oriented Leadership as the Key Enablers of Knowledge Creation Process: A Study of Corporate Sector in Pakistan

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**Abstract:** The purpose of this study is to analyze the role of knowledge-centered culture and knowledge-oriented leadership as the key enablers of knowledge creation process for enhanced organizational performance in corporate sector in Pakistan. The notion is that there is an immense need of effective knowledge creation process for organizations if they have to survive in the dynamic markets. Numerous such initiatives have already been undertaken in this research arena. However, the study is unique as it examines the antecedents that steer the execution of knowledge creation process in order to translate better organizational performance. In this regards, the study considers knowledge-centered culture and knowledge-oriented leadership as the key factors that stimulate knowledge creation process and hence, results in an efficient as well as effective knowledge creation process. The study adopted hypothetico-deductive approach and primary data is collected from respondents in corporate sector in Southern Punjab, Pakistan. The study employed SPSS 20.0 and AMOS 20.0 for data analyses and found encouraging results. Finally, the study provides future directions and practical implications for the theoretical framework.

**Keywords:** Knowledge-Centered Culture; Knowledge-Oriented Leadership; Knowledge Creation Process; Knowledge Management; Organizational Performance

**JEL Classification:** D83

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## 1. Introduction

### 1.1 Background

Knowledge creation process has attracted the attention of researchers and practitioners due to increasing competitive eccentricity, globalization, and the paramount significance of knowledge in the knowledge intensive industries especially in the developing countries. By the time, organizations are susceptible to failures without being responsive to harnessing, stipulating, and converting existing knowledge to the new knowledge. Organizations therefore, necessitate their internal systems to be strategically leveraged by a sound knowledge infrastructure that steers the conversion of knowledge *such as* from tacit to explicit, from explicit to tacit *i.e.* from use to reuse; in order to bring creativity and efficiency for sustainable competitive advantage (Nonaka & Toyama, 2003). A massive stream of studies has shown evidences that top managers have increasingly exploited knowledge conversion systems which have maneuvered organizations to manage valuable knowledge embedded within organizational confines (Andreeva & Ikhilchik, 2011; Bratianu & Orzea, 2010; Gavrilova & Andreeva, 2012; Nold III, 2012; Nonaka & Takeuchi, 1995; Rusly, Corner, & Sun, 2011). Organizations have brought into play the use of such sort of activities in broader context for gathering information and knowledge about current and new aspects of businesses (Pandey & Dutta, 2013).

A repercussion to this is the growing acknowledgement of the literature of knowledge creation process since the last decade of 20th century. Not only has the proposition taken a dominant prominence in the existing body of literature but has also been incorporated and embedded within the confines of organizations of all levels. In order to enhance the understanding about knowledge creation process, knowledge management is a prerequisite to comprehend. In this milieu, Davenport and Prusak (1998) defined knowledge management as an unsolidified mix of framed experience, expert insights, contextual information and values that yield a new framework for incorporating and evaluating new information and experiences. The authors further argued that knowledge is what's being the possession of knowers only. Furthermore, knowledge in organizations is not only stored in repositories or documents such as yellow pages but also in organizational norms and practices (Davenport & Prusak, 1998).

Knowledge management is crucial for companies because it points the way to comprehensively and clearly understand management initiatives and procedures. When companies fail to utilize their tangible assets they suffer the economic consequences and this failure is clearly observable to competitors (Osborne, 2004). Organizations in the 21st century entirely count on the quality of knowledge and the knowledge process that companies apply to their key businesses and activities (Nonaka & Toyama, 2003). For example, maximizing the efficiency of supply chain depends on applying knowledge on diverse areas such as raw material resources,

planning, manufacturing and distribution. Likewise, product development requires knowledge of consumer requirements, recent scientific developments, and new technologies, and marketing (Personal Communication).

The focal of knowledge management is on the belief that organizational performance can only be achieved through exploiting the resources *i.e.* the skills of their potential employees (Pandey & Dutta, 2013) through an efficient and effective knowledge creation process (Nonaka & Toyama, 2003). Many research scholars including Nold III (2012); Sandhawalia and Dalcher (2011); Nonaka & Toyama (2003); Nonoka & Takeuchi (1995); Sun (2010); Sun & Anderson (2010) stipulated that knowledge creation process steers organizations about how to enthrall experts' knowledge that resides within the organization and formalize as well as disseminate it for being capable of reuse by other employees in order to achieve shared objectives for enhanced organizational performance. Thus, organizational performance is at the heart of this replica whereas, knowledge creation process is the strategic resource for carrying out this objective.

In lieu of competitive peculiarity, businesses have to envisage their visionary slant beyond the developed constructs of these traditional approaches and move the emphasis to managing valuable knowledge through knowledge process so as to cope up the dynamic business environment that prevails in any knowledge economy. The current study thus proposes a framework that well fits within organizational confines in Pakistani corporate sector. As well as the study intends to empirically investigate the theoretical model being incorporated in this study. From a practical perspective, the theoretical framework proposed in this study is useful for management to realize that apart from a traditional knowledge management system, knowledge infrastructure capability such as knowledge oriented leadership and knowledge centered culture are another crucial aspects to consider in the effort to knowledge creation process for increased organizational performance.

Therefore, in this study the researcher has focused on knowledge-centered culture to be an eminent capability in steering knowledge creation process. In addition, another crucial factor which may be detrimental for organizations if not considered significant is the knowledge oriented leadership. In this regard, Shin (2004) demonstrated that only knowledge-centered culture is not enough for an effective knowledge process; an effective communication throughout the organization also requires knowledge-oriented leadership (Singh, 2008). Thus, the theoretical framework presented in this paper proposes that knowledge infrastructure capability *i.e.* knowledge centered culture and knowledge oriented leadership enables knowledge process that translates superior organizational performance.

**1.2 Gap Identification**

Knowledge process impacts organizations in a number of ways and the principal outcome of knowledge process is organizational performance. For this reason,

organizations are involved to build the sound knowledge infrastructure capability that facilitates the flow of knowledge within the organization. Conversely, a study conducted by Donate and Guadamilla (2011) provided evidence that knowledge process regardless of its utmost importance and significance has not yielded the desired outcomes in many organizations. The authors witnessed few barriers as poor organizational culture, lack of leadership, lower sense of responsibility and accountability of employees and lack of organizational (Donate & Guadamilla, 2011).

However, few studies have rationalized the present research due to various gaps the researchers have found in the existing body of literature. For instance, a study conducted by Tseng (2010) directed and filled the gap for this study because of the limitations of the study as the research had been conducted on Chinese-centric culture and therefore reasons the foundation for conducting study in other cultures for contributing in the empirical investigation of knowledge-centered culture and its influence on knowledge creation process. In the similar stream, Nold III (2012) sanctioned that the research community is facing challenge to generalize the construct because of the "missing link" of the empirical investigation of knowledge-centered culture.

Likewise, for the second independent variable of this study *i.e.* knowledge-oriented leadership; the current study has found a reasonable support from Kumar *et. al.,* (2013) who have conducted research on leadership and knowledge process and advocated that the generic model they had theoretically conceptualized has a greater potential to be furthered and empirically analyzed. Therefore, the current study is based on the fusion of two inter-related as well as independent research frameworks that enables knowledge creation process to enhance organizational performance.

**1.3 Problem Statement**

The significance of knowledge-centered culture and knowledge-oriented leadership are eminent factors that enable knowledge creation process for an increased organizational performance, hence, contributing substantial upshots in corporate sector in Pakistan. Therefore, knowledge centered culture and knowledge oriented leadership are the key enablers of organizational performance that is mediated through knowledge creation process and hence are the areas of concern for researchers and practitioners to conduct research in Pakistani corporate sector. There is a need to examine the extent to which knowledge creation process is cushioned by knowledge-centered culture and knowledge-oriented leadership.

Thus, the current study seeks to examine the impact of knowledge-centered culture and knowledge-oriented leadership in organizational performance through mediating role of knowledge creation process.

**1.4 Research Objectives**

- To examine the extent to which knowledge process is incorporated in corporate sector in Pakistan

- To analyze the impact of knowledge-centered culture and knowledge-oriented leadership as the key enablers of knowledge creation process in enhancing organizational performance

- To examine the extent to which knowledge-centered culture and knowledge-oriented leadership influence organizational performance

- To examine the impact of knowledge creation process in organizational performance

**1.5 Research questions**

- RQ1. What is the influence of knowledge-centered culture on knowledge creation process?

- RQ2. What is the impact of knowledge-oriented leadership on knowledge creation process?

- RQ3. What is the influence of knowledge-centered culture and knowledge-oriented leadership in enhanced organizational performance?

- RQ4. What is the impact of knowledge creation process as a mediator between knowledge-centered culture and knowledge-oriented leadership and increased organizational performance?

## 2 Literature Review

Nonaka and Takeuchi (1995) have pioneered and presented an SECI model *i.e.* "Socialization, Externalization, Combination, and Internalization", demonstrating an organized knowledge creation process for its effectiveness. Knowledge creation can be facilitated by the activities and processes of feedback, interaction, benchmarking, brainstorming, and innovation. Hence, integration, refinement, synthesis, distribution, coordination, combination, and restructuring knowledge processes and activities results in efficient knowledge conversion (Sandhawali & Dalcher, 2011). The intriguing predisposition of knowledge creation process is the cyclic process that converts tacit knowledge into explicit knowledge and explicit knowledge back into tacit knowledge for reuse as new-fangled knowledge. The SECI model is presented in Figure 1.1 and Table 1.1 (Appendix I) Cited in (Takeuchi, 2006).

Basically, the classification of knowledge constitutes two categories: tacit and explicit. Explicit knowledge is knowledge that is stored, codified, and shared in accessible forms such as documents and repositories. Whereas, tacit knowledge is that knowledge which is possessed by individuals and is not codified and stored therefore, can't be reused by other employees in the organization (Nold III, 2012). Therefore, knowledge process translates tacit knowledge into explicit knowledge so that the intellectual insights, perspectives, and exposures of people can be made available for reuse by other employees in the form of new and inventive knowledge. Ultimately, effective knowledge creation process results in increased organizational performance (Gold *et. al.,* 20010; Nold III, 2012; Kumar *et. al.,* 2012; Ringel-Bickelmaier & Ringel, 2010).

In order to lay down the foundation of the theoretical framework, the authors find it necessary to define organizational performance. Organizational performance can be defined from a number of perspectives *i.e.* short term/long term performance, financial performance, non-financial performance, marketing performance, and relationship building performance (Deshpande *et. al.,* 1993). In general organizational performance is measured by organizational competitiveness as compared to industry performance standard (Herciu & Orgean, 2008).

For the present study, the authors incorporated organizational performance as efficiency and effectiveness of the knowledge process. As a great deal of relevance has been witnessed on the bonding between effectiveness and efficiency of knowledge process and the antecedents of knowledge creation process such as knowledge centered culture and knowledge oriented leadership. The basic underlying proposition about organizational performance is a consequence of compliance between organizational strategy, structure, system, environment, and the culture (Van de Ven and Drazin, 1985).

In order to strengthen the aforementioned construct, Ringel-Bickelmaier and Ringel (2010) endorsed that successful knowledge creation strategy impacts efficiency gains, effectiveness, and improved results. In addition, they argued that for achieving effectiveness and efficiency as components of organizational performance, organizations are required to lay down procedures and strategy that best describe the role, aim, and scope knowledge creation within organizational confines (Ringel-Bickelmaier & Ringel, 2010).

The critical concern of knowledge process is the conversion of tacit knowledge to explicit and back to tacit knowledge as discussed above. However, the process of knowledge conversion is highly dependent on certain factors that stimulate as well as hinders the applications of knowledge management systems in organizations. As revealed by Gold *et. al.* (2001) that organizational culture is the most substantial impediment in an effective knowledge management. Therefore, the factors including knowledge-centered culture (Sandhawalia & Dalcher, 2011) and knowledge oriented

leadership (Gold *et. al.,* 2001) are the key enablers of an effective knowledge process.

Culture has been considered a basic criterion for integration and collaboration of behaviors and useful insights and actions (Sandhawalia & Dalcher, 2011). Nold III (2012) defined culture as values, beliefs, and meanings that shapes and impacts individual as well as collective behaviors which are based on shared experiences of individuals that create a system. The author further deliberated organizational vision and values as the key determinants of knowledge-centered culture (Tseng, 2010). In addition, self-possessed visions and values explicitly stating knowledge management results in emboldening the management of knowledge within organizational confines (Nold III, 2012).

Similarly, Shin (2004) stated that employees' behaviors and attitudes towards sharing knowledge is steered by organizational culture that takes into account organizational practices and policies for enabling knowledge process and results in superior organizational performance. Extending the idea, Sandhwalia and Dalcher (2011) endorsed that decision-making and group problem solving can be facilitated through knowledge conversion which is enabled through common representations and shared contexts of individuals. Therefore, knowledge-centered culture has a substantial positive influence on knowledge process and organizational performance. Nonetheless, Gold *et. al.,* (2001) argued that organizational culture may also be the most significant hurdle for an effective knowledge process. Similarly, Shin (2004) confirmed that only knowledge-centered culture is not enough for an effective knowledge process; an effective communication throughout the organization also requires knowledge-oriented leadership (Singh, 2008).

In the analogous stream, knowledge-oriented leadership has also been considered an eminent key enabler of knowledge process resulting in increased organizational performance. Studies exhibit that knowledge-oriented leadership remarkably results in an efficient management as well as creation of knowledge in firms (Singh, 2008). For the present study, knowledge-oriented leadership has been viewed in terms of knowledge oriented trainings and organizational rewards. Kumar *et. al.* (2012) postulated that the significance of training and empowering employees has been the fundamental concern of leaders from diverse sectors. Ottersten and Mellander (1999) found positive relationship between productivity growth and training programs' implementations. In another study conducted by Nonaka and Toyama (2003); the authors posited that knowledge-oriented training yields significant results. As such training helps in internalization *i.e.* the impartation of explicit knowledge. The authors reasoned that during training sessions the experts' experiences and insights can be documented and hence, can be utilized as the tacit knowledge of employees working on the jobs (Nonaka & Toyama, 2003). Similarly, Fong (2003) emphasized that during trainings a diverse group of people combine under one roof for some

shared cause and thus this helps in providing a better environment for knowledge conversion in organizations.

Furthermore, Zarraga and Bonache (2003) knowledge creation can be cushioned by certain factors such as leniency, leniency, care, trust, and empathy and this can be done so by the presence of leaders in teams in order to create such knowledge sharing environments. The underline proposition for leadership is that the leaders are attributed as the developers of social interactions (Moitra & Kumar, 2007) and studies propose evidence that social interaction is a prerequisite for the conversion of knowledge (Moitra & Kumar, 2007; O'Dell & Grayson, 1998; Orlikowski, 2002; Zarra & Bonache, 2003).

Basically, leaders who have the ability to provoke knowledge process play central roles in the management and creation of knowledge hence result in results in building competitive powers for organizations (Kumar *et. al.,* 2013). Kumar *et. al.,* (2013) proposed few leadership attributes more closely associated with knowledge process including, as leadership;

- Advocates attract, retain, and reward employees who indulge in knowledge-creation process;
- Renders a common platform for employees to share knowledge; and
- Invests in strategically important training programs.

Kumar *et. al.,* (2013) concluded with the paramount importance of knowledge-oriented leadership for an increased organizational performance through an efficient knowledge creation process. In addition, a study conducted by Srivastaya and Bartol (2006) knowledge-oriented leadership results in transferring powers to subordinates hence, resulting in enhanced intrinsic motivation. The authors witnessed strong correlation between knowledge sharing and knowledge-oriented leadership (Srivastaya & Bartol, 2006).

Therefore, the current study proposes that knowledge-oriented leadership has a substantial positive influence on knowledge process and organizational performance.

**2.2 Hypotheses Statements**

H1. Knowledge-centered culture significantly impacts organizational performance;
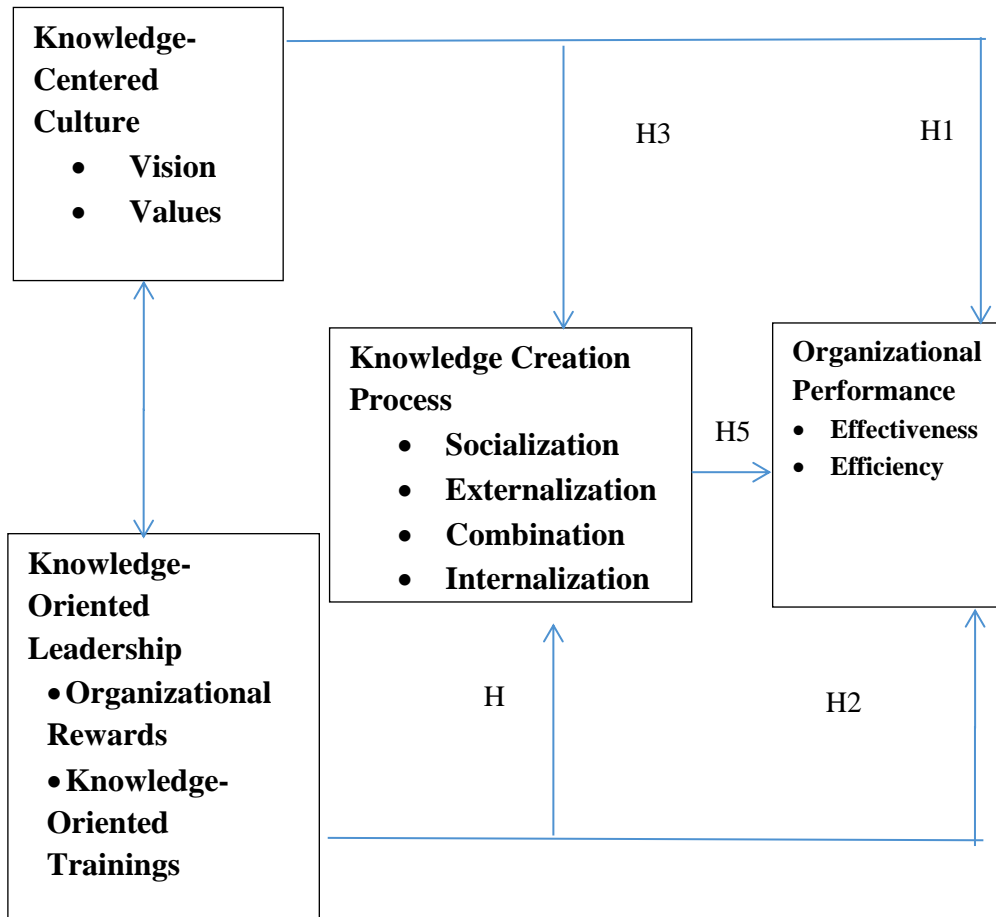
H2. Knowledge-oriented leadership significantly impacts organizational performance;

H3. Knowledge-centered culture significantly influences knowledge process;

H4. Knowledge-oriented leadership significantly influences knowledge process;

H5. Knowledge process is positively correlated with increased organizational performance.

**2.3 Theoretical Framework**

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┌─────────────────┐
│ Knowledge-      │                      H3              H1
│ Centered        │
│ Culture         │
│   • Vision      │          ┌─────────────────────┐   ┌──────────────────┐
│   • Values      │          │ Knowledge Creation  │   │ Organizational   │
└─────────────────┘          │ Process             │   │ Performance      │
                             │   • Socialization   │   │  • Effectiveness │
┌─────────────────┐      H5  │   • Externalization │   │  • Efficiency    │
│ Knowledge-      │          │   • Combination     │   │                  │
│ Oriented        │          │   • Internalization │   └──────────────────┘
│ Leadership      │          └─────────────────────┘
│  • Organizational│                    H            H2
│  Rewards        │
│  • Knowledge-   │
│  Oriented       │
│  Trainings      │
└─────────────────┘
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## 3  Research Methodology

This section includes a detailed discussion of the empirical research methodology including data collection and data analysis procedure. The data collection section is described in five parts as:

(a) Data collection (b) Sample selection and participation (c) Developing the survey questionnaire (d) Measurement scales.

Reliability and validity is employed to justify the data. The chapter also discussed what kind of data is required to examine the variables. Then, data analysis process and statistical techniques are selected to analyze the data.

The methodology section of research study is concerned with the choice of appropriate methodology by which the validity of research can be judged. Thus, it requires a clear and comprehensive rationalization of how the study is done and why particular procedures are preferred. This research has been developed on the basis of literature review and conceptual approach which is previously discussed in the earlier chapter. With the support of literature review, few hypotheses have been developed. In order to select methodological approach, initially a philosophical stance was reviewed to understand the relationship and justification of approach which is adopted. This justification provided foundation to an explanation for the use of methods adopted.

This study is hypothetico-deductive approach. As initially the problem was identified, and rationale of study gave nudge to the extension in the body of literature which resulted in the generation of hypotheses. Hussey and Hussey (1997) argued that research process is normal when literature is reviewed to establish an appropriate theory and construct hypotheses.

The tests applied are regression weights, structural equation model, and correlations analysis.

### 3.1 Research Design

Based on theoretical framework and the developed research model the research design came into formation such as hypothesis testing leading to measurement of association, "dependent", one dependent and multiple independent variables and correlational analysis. In order to follow the study in the systematic way this research design was established which helped in identification of tests to be applied in this study. The choice of research design is very important in the overall research process to carry on the quantitative analysis (Hussey and Hussey, 1997).

### 3.2 Research Population and Sample

The current study is conducted to examine the impact of knowledge-centered culture and knowledge-oriented leadership in organizational performance through the mediating role of knowledge creation process. Therefore, the population of this study is corporate sector (service/IT/Telecom) in Pakistan and personnel working in corporate sector in Pakistan. However, the sample of this study has been drawn out from Bahawalpur and Multan due to convenience of conducting this research study, therefore, the target population contains respondents from Southern Punjab in Pakistan.

### *3.2.1 Size of Sample*

Statistical sample is drawn out of the population which represents the complete population in the statistical analysis (Pratt et. al., 1995). Sample size of this study is appropriate to justify the results and to generalize the data.

### 3.3 Measurement and Instrument

The instrument to measure knowledge-centered culture (KCC) has been adapted from Quinn (1988) and it contains 7 items which is ranked on 5-point Likert scale (1 for strongly disagree and 5 for strongly agree).

The instrument to measure knowledge-oriented leadership contains 5 items for organizational reward (OR) and has been adapted from Davenport and Prusak (1998) and is ranked on 5-point Likert scale (1 for strongly disagree and 5 for strongly agree). The instrument to measure knowledge-oriented leadership for knowledge-oriented training (KOT) contains 3 items and has been adapted from Kamhawi (2012) and is ranked on 5-point Likert scale (1 for strongly disagree and 5 for strongly agree).

In addition, the instrument to measure knowledge creation process (KCP) contains 4 items for socialization (SOC); 3 items for externalization (EXT); 4 items for combination (COM); and 3 items for internalization (INT) and has been adapted from Li *et. al.* (2009) and is ranked on 5-point Likert scale (1 for strongly disagree and 5 for strongly agree).

Finally, the instrument to measure organization performance (OP) with respect to organizational effectiveness has been adapted from Gold et. al. (2001) and contains 13 items and is ranked on 5-point Likert scale (1 for strongly disagree and 5 for strongly agree).

**Table 1. Items for Variables**

| Variables | Items | Sources |
|---|---|---|
| **Knowledge-Centered Culture** | | |
| KCC1 | My organization provides a good place to share things with others like a family | Quinn (1988) |
| KCC2 | My organization respects every employee's participation and team spirit | // |
| KCC3 | Our working environment is open and harmonious (pleasant) as the employees highly support and believe in one another | // |
| KCC4 | Our company is extremely formalized and structured and manages employees' tasks based on certain procedures | // |
| KCC5 | Our company values each employee's creativity and challenges | // |
| KCC6 | Out company possesses a high level of support and trust on employees | // |
| KCC7 | Our company owing to extremely open working environment, dares to take high risks and accepts huge revolutions | // |

| **Knowledge-Oriented Leadership** | | |
|---|---|---|
| OR1 | Employees receive a better work environment for their knowledge contribution | Davenport and Prusak (1998) |
| OR2 | Employees receive a higher salary in return for their knowledge contribution | // |
| OR3 | Employees receive a higher bonus in return for their knowledge contribution | // |
| OR4 | Employees receive increased promotion opportunities in return for their knowledge sharing | // |
| OR5 | Employees receive increased job security in return for their knowledge sharing | // |
| KOT1 | Our organization provides enough training to make sure its managers familiar with knowledge management logic and concepts | Kamhawi (2012) |
| KOT2 | Our organization provides enough training for knowledge based system features and functionalities | // |
| KOT3 | Our organization provides enough hands-on training on knowledge management systems and initiatives | // |
| **Knowledge-Creation Process** | | |
| SOC1 | My firm usually adopts cooperative projects across directorates | Li, Huang, and Tsai (2009) |
| SOC2 | My firm usually uses apprentices (trainees) and mentors to transfer knowledge | // |
| SOC3 | My firm usually adopts brainstorming retreats or camps | // |
| SOC4 | My firm usually adopts employee rotation across areas | // |
| EXT1 | My firm usually adopts a problem-solving system like case-based reasoning | // |
| EXT2 | My firm usually adopts groupware (collaboration software) and other learn collaboration tools | // |
| EXT3 | My firm usually captures and transfers experts' knowledge | // |
| COM1 | My firm usually adopts web-based access to data | // |
| COM2 | My firm usually uses web pages | // |
| COM3 | My firm usually uses databases | // |
| COM4 | My firm usually adopts repositories of information, best practices, and lessons learned | // |
| INT1 | My firm usually adopts on-the-job training | // |
| INT2 | My firm usually adopts learning by doing | // |
| INT3 | My firm usually adopts learning by observation | // |

| **Organizational Performance** (Over the past few years, my organization has improved its ability) | | |
|---|---|---|
| OP1 | Innovate new products/services | Gold *et. al.* (2001) |
| OP2 | Identify new business opportunities | // |
| OP3 | Coordinate the development efforts of different units | // |
| OP4 | Anticipate potential market opportunities for new products/services | // |
| OP5 | Rapidly commercialize new innovations | // |
| OP6 | Adapt quickly to unanticipated changes | // |
| OP7 | Anticipate surprises and crises | // |
| OP8 | Quickly adapt its goals and objectives to industry/market changes | // |
| OP9 | Decrease market response time | // |
| OP10 | React to new information about the industry or market | // |
| OP11 | Be responsive to new market demands | // |
| OP12 | Avoid overlapping development of corporate initiatives | // |
| OP13 | Streamline its internal processes | // |
| OP14 | Reduce redundancy of information and knowledge | // |

## 3.4 Data Collection Procedure

The researcher contacted at random the selected sample of the population for their willingness to participate in this study. After their acceptance, the researchers administered 200 research questionnaires and received 167 completely filled questionnaires to be run for analyses with a response rate of 83.5%. In order to get maximum response, the researchers gave numerous reminders to respondents. Robson (1993) described subject error and bias, which is related to neutral time and date for carrying out data collection. Henceforth, any biasness in data collection is minimized by using this approach.

## 3.5 Data Analysis

The research instrument is adapted for this study. Then, the data is collected from respondents and fed into SPSS 20.0. Dummy coding has been assigned to the items covering each variable. Then, the items have been transformed and then the appropriate tests are employed on the collected data. Cronbach's Alpha was analyzed on all the items of the research instrument. In addition, Pearson's Correlations analysis was used to find the correlation among variables which ensures the authenticity of the research model. Then, AMOS 20.0 has been used to generate the results and Structural equation modeling technique to confirm the model fit of the study.

## 4. Results and Discussion

The current study is undertaken to examine the impact of knowledge-centered culture and knowledge-oriented leadership in organizational performance through mediating role of knowledge creation process in corporate sector in Pakistan.

Cronbahc's Aplha is used to confirm the reliability of the measurement scale. Nunnally (1978) posited that the value of 0.70 or above is good for better and reliable results. All the values of Cronbach's Alpha are far above 0.70 which ensures the reliability of the adapted scale as presented below in Table 2.

**Table 2. Reliability Analysis**

| Dimension | No. of Items | Cronbach's Alpha |
|-----------|--------------|------------------|
| KCC | 7 | 0.733 |
| KOL | 8 | 0.757 |
| KCP | 14 | 0.842 |
| OP | 14 | 0.892 |

The correlations analysis is produced in Table 3. Table 3 shows positive correlations between knowledge centered culture, organizational performance, and knowledge creation process, knowledge oriented leadership, organizational performance, and knowledge creation process, knowledge creation process and organizational performance. The analysis of data *i.e.* regression weights is presented in Table 4 and SEM is shown in Figure 2. Encouraging results can be seen in Table 4. As for significance results, the value of P should be less than 0.05, and all the values presented in Table 3 are below 0.05 therefore, all the proposed hypotheses are accepted. Such as H1 refers to Knowledge-centered culture significantly impacts organizational performance, which is confirmed by this analysis. H2. Knowledge-oriented leadership significantly impacts organizational performance, which is confirmed by this analysis. H3. Knowledge-centered culture significantly influences knowledge process, which is confirmed by this analysis. H4. Knowledge-oriented leadership significantly influences knowledge process, which is confirmed by this analysis. H5. Knowledge process is positively correlated with increased organizational performance, which is also confirmed by this analysis.

**Table 3. Correlations**

|  |  | KCC | KOL | KCP | OP |
|---|---|---|---|---|---|
| **KCC** | Pearson Correlation | 1 | .687** | .741** | .812** |
|  | Sig. (2-tailed) |  | .000 | .000 | .000 |
|  | N | 167 | 167 | 167 | 167 |
| **KOL** | Pearson Correlation | .687** | 1 | .862** | .902** |
|  | Sig. (2-tailed) | .000 |  | .000 | .000 |
|  | N | 167 | 167 | 167 | 167 |
| **KCP** | Pearson Correlation | .741** | .862** | 1 | .938** |
|  | Sig. (2-tailed) | .000 | .000 |  | .000 |
|  | N | 167 | 167 | 167 | 167 |
| **OP** | Pearson Correlation | .812** | .902** | .938** | 1 |
|  | Sig. (2-tailed) | .000 | .000 | .000 |  |
|  | N | 167 | 167 | 167 | 167 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Table 4. Regression Weights: (Group number 1 - Default model)**

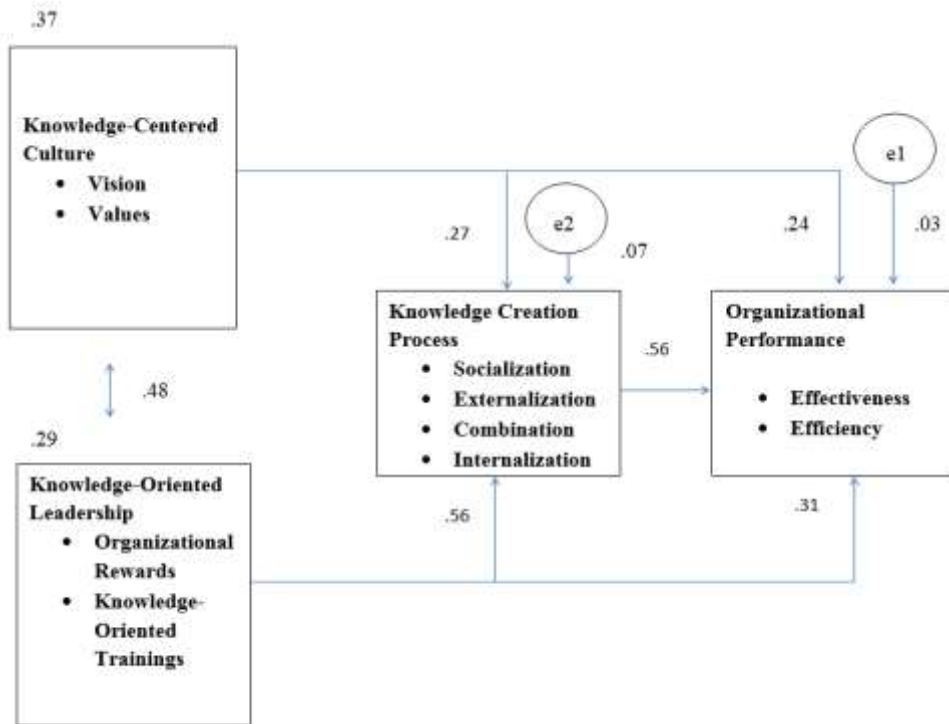|  |  |  | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| KCP | <--- | KOL | .565 | .042 | 13.496 | *** | Accept |
| KCP | <--- | KCC | .269 | .047 | 5.664 | *** | Accept |
| OP | <--- | KCC | .245 | .032 | 7.645 | *** | Accept |
| OP | <--- | KOL | .309 | .037 | 8.268 | *** | Accept |
| OP | <--- | KCP | .558 | .048 | 11.648 | *** | Accept |

**Figure 2. Structural Equation Model**

## 5. Conclusion

The study is conducted to analyze the influence of knowledge centered culture and knowledge oriented leadership as the enabler of knowledge creation process to impact organizational performance. The notion behind knowledge creation process and efficiency and effectiveness with respect to organizational performance lies at the heart of this study as the authors propose knowledge centered culture incorporating vision and values and knowledge oriented leadership incorporating training and rewards as the key components and drivers of organizational performance. The study grounded its foundation by identifying link between knowledge centered culture and knowledge oriented leadership as both constructs are interrelated with each other. For instance, without knowledge centered culture; knowledge oriented leadership cannot stand alone and influence knowledge creation process and vice versa. In addition, considering vision related to effective knowledge management; it is not possible to set directions and foundations of knowledge without knowledge oriented values in organizational confines. Consequently, knowledge oriented values results in empowering the relationship of knowledge

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centered culture and knowledge oriented leadership as knowledge related rewards strategy cannot be implemented without knowledge centered values and ultimately knowledge oriented training also possess significant associations with knowledge oriented leadership and knowledge centered culture.

Subsequently, the study found encouraging results from Pakistani corporate sector and the results with highly positive correlations support and strengthen the theoretical justifications provided in the extensive literature review section. The study also proposes various practical implications as the proposed framework has a huge potential of incorporation in organizations especially in corporate sector in a knowledge economy where the usefulness of knowledge has significant influences in organizational performance also ineffective management of knowledge without a regular update of knowledge infrastructure in organizations may result in an abrupt obsoleteness of knowledge which can never guarantee a source of sustainable competitive advantage for organizations.

Finally, the study sums up by providing future directions as the study provides a framework that has potential to be furthered in manufacturing industries also where technology management and customer knowledge management are the key concerns for organizations.

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# Appendix I

Table 1.1     The SECI Spiral

| Socialization | Sharing and creating tacit knowledge through direct experience |
| --- | --- |
| Externalization | Articulating tacit knowledge through dialogue and reflection |
| Combination | Systematizing and applying explicit knowledge and information |
| Internalization | Learning and acquiring new tacit knowledge in practice |

Figure 1.1.     SECI Process of Knowledge Spiral
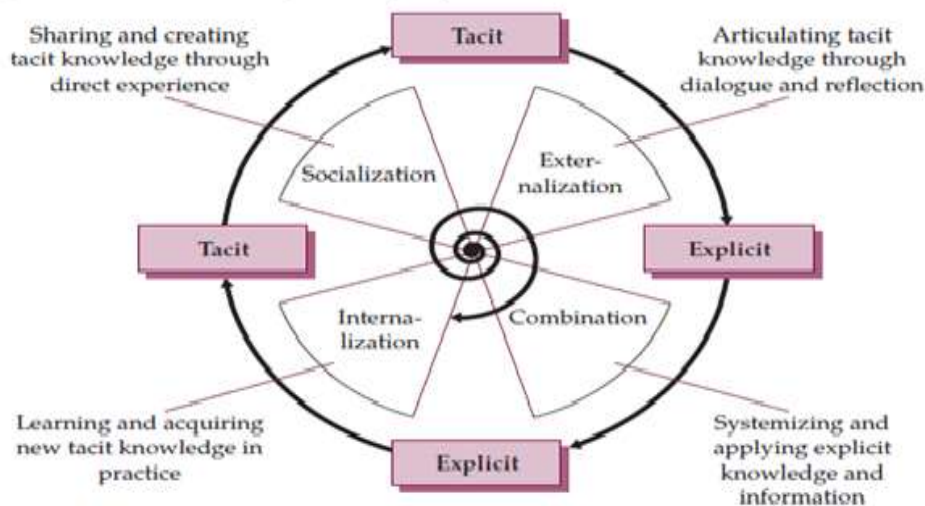
# Fiscal Policy and Term Structure of Interest Rate in Nigeria

## Oseni O. Isiaq[1], Adesoye A. Bolaji[2]

**Abstract:** The study examines the effects of fiscal policy on term structure of interest rate in Nigeria between 1981 and 2014. The paper built on the fact that continuous increase in fiscal deficit in Nigeria has not translated into equal change in term structure of interest rate as proposed by the economic theory. Using secondary annual time series data which are obtained from Central Bank statistical bulletin, 2014, the paper employed appropriate econometric techniques such unit-root test, Johansen Co-integration technique, Error Correction Mechanism and Fully Modified Ordinary Least Squares. The paper shows that fiscal deficit has a positive and significant effect on term structure of interest rate in Nigeria and concludes that consumers are not forward-looking in Nigeria as proposed by Ricardian Equivalence Hypothesis theory. Consumers in Nigeria increase their consumptions has government employed expansionary fiscal policy which may reduce the savings and investment. Consequently, reduces growth. Thus, the implication is that fiscal deficit could responsible for the uncertainties and inconsistencies in the term structure of interest rates in Nigeria.

**Keywords:** Fiscal Deficit; Long-Term Interest Rate; Short-Term Interest Rate; Fully Modified Ordinary Least Squares; Cointegration and ECM

**JEL Classification:** E0; G0

## 1. Introduction

Over the years, studies have overwhelmed the effect of fiscal policy on macroeconomic performance in developed and developing countries particularly in Nigeria. However, there is still on-going debate among scholars and policy makers on the relationship between fiscal policy and term structure of interest rates around the world. This was due to discordant drive between fiscal deficit and term structure of interest rates in developing nations especially in Nigeria. Term structure of interest rate is the relationship between long-term and short-term interest rates. Explicitly, it is the relationship between an interest rate and the maturity on security assuming that economic fundamentals such as inflation, unemployment and political environment remain unchanged (Kimura, 1997). In addition, it measures the relationship among

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the yields on risk-free securities that differ only in their term to maturity. The yield is a rate at which the present value of all future payments of interest and principal is equated to the market price of the security. The yield curve is positively sloped implying that the yields of long-maturity securities are higher than the yields of short-maturity securities (Cox, Ingersoll & Ross, 1985).

Theoretically, the expectation theory argues that the shape of the yield can be explained by investors' expectations about future interest rates. The liquidity preference theory states that short term bonds are more desirable than long term bonds because former are more liquid. The preferred habitat theory elucidates the shape of the term structure by the assumptions that if an investor is risk averse and such investor can draw out of his preferred habitats only with the promise of a higher yield while market segmentation theory assumes that there are two distinct markets for the short and long term bonds. The demand and supply in the long term bond market determines the long term yield while short rate is determined in the short term bond market by the forces of demand and supply. This means that the expected future rates have little to do with the shape of the yield curve. Basically, the factors that affect terms of structure of interest rate include the monetary policy, the fiscal policy, taxation and inflation. The monetary policy is used by the government to control the supply of money in the economy. When supply of money in the economy is low then the interest rates are expected to be high and vice versa while volatility in money supply growth may lead to higher interest rates. Under the fiscal policy, the government hypothetically finance all expenditure for the economy. In cases of budget deficit, the government is forced to borrow from the local markets. This in turn affects the supply of money in the economy which in turn affects the trend of interest rates (Olweny, 2011).

However, theory does not offer a clear-cut relationship between fiscal policy and interest rates. The IS model predicts that a shift in IS curve will result to change in interest rate by either a tax cut or an increase in government spending which boost aggregate demand. Even, the IS-LM model shows that fiscal policy has no effect on interest rate in a small economy that is fully open to capital flows. Tactlessly, a tax cut will not affect interest rate if for a given volume of government expenditure, consumers fully anticipate the future tax burden associated with the shift from tax to debt financing in an open economy. This will oblige the household as a forward-looking consumer saves increase in disposable income due to tax cut in keenness of a higher tax burden in the future. Invariably, an increase in government expenditure will also leave interest rate unchanged.

In the literature, studies from developed and developing countries that have analysed the relationship between fiscal policy and term structure of interest rate reported mixed results and inconclusive. For instance, it has been documented in the literature that there was a positive relationship between fiscal deficit and term structure of interest rate in developing countries (see Vincent & Joseph, 2011; Obi & Nurudeen,

2009; Eduardo *et al*, 2011; Noula 2012; Barnes, 2008; Wang & Rettenmaier, 2008; Evans, 1985).Meanwhile, Plosser, (1982) advocated that fiscal deficit negatively affects interest rate while other studies recognised that fiscal policy does not matter for term structure of interest rate and this implies that there is no correlation between fiscal policy and term structure of interest rate; and the relationship is inconclusive (see Hartman, 2007; Feldstein & Eckstein, 1970).

Indisputably, the relationship between fiscal policy and term structure of interest rate is clued and blurred in Nigeria. This is confirmed by the available data. For instance, the Nigerian deficit in 1981 stood at N3.9021billion while it increased to N8.2543billion in 1986. The percentage increased in budget deficits between 1981 and 1986 was not corresponding with the percentage increased in term structure of interest rate. Likewise, term structure of interest rate was 0.5% in 1981 and it stood at 0% till 1986 but increased to 3.05% in 1987 while fiscal deficit decreased to N5.8897billion. The rising trend of fiscal deficits continued from 1988 till1994. When, the economy witnessed surplus between 1995 and 1996 of N1billion and N32billionrespectively, the term structure of interest rate fell to 0.77% and 0.05% in 1995 and 1996 respectively. In 1998, overall fiscal deficits jumped to N133.3893 billion and further to N301.4016 billion in 2002 while the term structure of interest rate increased to 6.07% in 1997 and fell to 3.43% in 2002.Furthermore, government fiscal deficits declined moderately in 2003 from N202.7247 billion to N172.6013 billion, N161.40630 billion, and N101.3975 billion in 2004, 2005 and 2006 respectively while term structure of interest rate increased slightly from 3.87% in 2003to 4.32% and 3.99% in 2005 and 2006 respectively. In 2007, fiscal deficits increased slightly to N117.2371billion and fell drastically to N47.3796billion in 2008 and ever since then, fiscal deficit has been increasing gradually until 2012 when it reduced by 5% and increased again to N1153.490219billion in 2013 while term structure fell drastically to 0.74% in 2007 and increased to 5.19% in 2009 and since then it has been decreasing until 2013 when it increased to 5.96% (CBN, 2013).Hence, the blur link and variant movement between these variables for most of the periods of study, making it difficult with precision to predict the nature of relationship between fiscal policy and term structure of interest rates in Nigeria. This study therefore intends to fill this vacuum using appropriate econometric techniques.

Following the introductory aspect, the study entails literature review, methodology, empirical results and conclusion.

## 2. Literature Review

Several studies have evolved round the relationship between fiscal policy and term of structure of interest rate among scholars in advanced economies. However, evidence from the nature of the relationship that exists between these variables remains inconclusive. The empirical evidence below entails diverse investigations documented by various scholars navigating developed and developing countries on the relationship between fiscal policy and macroeconomic variables. In USA, Cebula (1986) examined the relationship between federal deficits and the real interest rate for the period of 1975 to 1985 using semi-annually data. The results of the Ordinary least squares technique employed indicated that federal budget deficit had a positive significant effect on real interest rates which indicated that there is a strong existence of crowding-out mechanism. Nearly ten years later, a similar study was equally conducted by Cebula (1997) on the direction of causality between government budget deficits and ex post real long-term interest rates using the same country between 1973:2 and 1996:3 and found that a uni-directional causality running from a rise in the ex-post real long-term interest rate to a rise in government budget deficit. Meanwhile, study conducted by Cebula, McGrath and Toma (2005) concluded that federal primary budget deficit acted to raise the interest rate yield using Cointegration and error correction mechanism techniques. Recently, Dennis and Kim (2014) investigated the impact of federal budget deficits on short term interest rates between 1964 and 1996 using Johansen Co-integration and Error Correction Model techniques and found that a long-run relationship between budget deficit and short-term interest rate.

Using Canadian economy, Siklos (1988) analysed the relationship between interest rates and deficits using quarterly data from 1937 to 1984. The study used Ordinary least Squares technique and found no relationship between deficits and interest rates. This is in conformity with the Ricardian Equivalence Theorem that believes that forward-looking consumers would only save the increased in income as a result of increase in government deficit since he would be anticipating higher tax burden in the future. Thus, deficit has no clear-cut relationship with interest rate. A similar study was conducted in United Kingdom by Al-Saji (1993). Meanwhile, his study argued that budget deficit significantly contributed to increase in nominal and ex-ante real long-term interest rates. This implied that rising nominal and ex-ante real long-term interest rates as a result of high government budget deficits would crowd-out private investment and deter capital formation and long-term economic growth. Furthermore, Linde (2001) analysed the impacts of fiscal policy on interest rates for a small open economy using Sweden because of the country experience in fluctuations in budget deficit and in the short-term and long-term nominal interest rates between 1982 and 1996. The study employed two-stage least squares and found that larger government budget deficit leads to higher nominal interest rates. A similar study conducted by Hsing (2010) in Sweden using Vector Error Correction

Mechanism (VECM) between 1994 and 2009 found that government deficit would raise the government bond yield and that the ratio of the government deficit to GDP implies that pursing deficit-financed expansionary fiscal policy to stimulate the economy would raise the long-term government bond yield and this partially crowd-out private spending. Favero and Giglio (2006) examined the relationship between the term structure of interest rates and fiscal policy in Italy using Bayesian econometric techniques. The study found that government debt and its evolution significantly influence the yield of government bonds, that such effects are maturity dependent and regime-dependent. The study therefore concluded that investigating the effect of fiscal policy on the term-structure it is of crucial importance to allow for multiple regimes in the estimation. Similarly, Aisen and Hauner (2008) used Vector Auto-regression (VAR) technique to investigate the relationship between budget deficits and interest rates using a panel of 60 advanced and emerging economies except US between 1970 and 2006. They found that budget deficit had significant positive effect on interest rate and this effect was large and robust. The study conducted using a panel of 17 OECD countries by Dell'Erba and Sola (2013) between 1989 and 2012 using Factor Augmented Panel (FAP). The study found that fiscal policy plays a relevant role in affecting long term interest rates.

In the developing countries, the studies abound within the study area are scared and this gives this study more relevant for both policy makers and other researchers. In Pakistan, Burney and Yasmeen (1989) examined the relationship between government budget deficit and nominal interest rates using Ordinary least squares between 1970 and 1989; and found no relationship between budget deficit and nominal interest rate. This is in conformity with Ricardian Equivalent Hypothesis. Also, Mukhtar and Zakaria (2008) examined the relationship between government budget deficit and nominal interest rate using quarterly data from 1960 to 2005. The Cointegration analysis and Granger causality test showed that there was no significant relationship between the nominal interest rate and the budget deficit. This also shows the existence of the Ricardian Neutrality hypothesis. Olweny (2011) examined the link between short-term interest rate volatility and interest rate levels in Kenya from August 1991 to December 2007 using GARCH model. The study found that there exist a link between the level of short-term interest rates and volatility of interest rates in Kenya. Also, the GARCH model is better suited for modelling volatility of short rates in Kenya, as opposed to ARCH models. Further, the study establishes that GARCH models are able to capture the very important volatility clustering phenomena that has been documented in many financial time series, including short-term interest rates. The study recommends future research to examine if other forms of the GARCH process can produce similar results (i.e., EGARCH, PGARCH, GARCH, and FIGARCH).

More so, Pandit (2005) examined the relationship between long-term nominal interest rates and budget deficit variables in Nepal between 1971 and 2003 using

Cointegration and Error-Correction Mechanism (ECM) techniques. He found that there is an insignificant positive relationship between budget deficit and long-term nominal interest rates. In Indian, Chakraborty (2012) analysed the impact of fiscal deficit on interest rate between 2006 and 2011 using quarterly data. The results of asymmetric Vector Auto Regressive (VAR) model showed that neither long-term nor short-term interest rate is determined by fiscal deficit.

In Nigeria, the documented studies that have also examined the relationship between fiscal policy and interest rate are scare as well as found mixed results such as Obi and Nurudeen (2009) investigated the effect of fiscal deficits and government debt on interest rate in Nigeria between 1981 and 2006 using Vector Auto-regression (VAR) approach. They found that fiscal deficits and government debt have significant positive impact on interest rates. Also, Ezeabasili and Mojeku (2011) examined the effect of fiscal deficits on interest rate for the period 1970 to 2006using Cointegration techniques and structural analysis. The study found that there is positive and significant relationship between fiscal deficits and interest rates. Similarly, Joseph and Uma (2013) employed Vector Error Correction Model (VECM) to examine the relationship between budget deficit and interest rate between 1970 and 2010 using quarterly data and found a significant positive long-run relationship between budget deficit and interest rate.

Although, all the documented studies in Nigeria on the relationship between budget deficit and interest rate found significant positive relationship between the variables which is deviated from the results of the documented studies in either other developing countries or developed nations. Though, most of these studies used Ordinary least squares technique while the Nigerian studies used Vector Error Correction Model (VECM). In addition, none of the documented studies in Nigeria explore the relationship between fiscal policy and term structure of interest rate in Nigerian context. This study intends to fill this gap using appropriate econometric technique based on the nature of the Nigerian data between 1981 and 2014.

## 3. Methodology

In order to empirically examines the relationship between fiscal policy and term structure of interest rate in Nigeria, this paper is anchored on the Keynesian theory that states that increase in government spending or budget deficit would lead to change in interest rate through increase in money supply in the circulation as a result of increase in consumers' income (Baro, 1981). Thus, the paper used fiscal deficit (*FD*) to proxy fiscal policy while term structure of interest rate is defined according to Cox et al (1985) that measures term structure of interest rate as the relationship among the yields on risk-free securities that differ only in their term to maturity (*TSINT*). Therefore, since Nigeria is a small open economy with capital flows and IS-LM model documented that in such economy; fiscal policy has no effect on

interest rate. Hence, the relationship between fiscal policy and term structure of interest rate would be subjected to the sign and magnitude of empirical analysis of the estimated model. The model used in this study was adapted from the work of Linde (2001) and modified as follows:

$$TSINT = \alpha_0 + \alpha_1 INFL + \alpha_2 GDPGAP + \alpha_3 FD + \varepsilon_t \qquad 1$$

Since negative values cannot be put in natural log; thus, the fiscal deficit is captured as the difference between total government expenditure (*gexp*) and total revenue from the government (*grev*). Hence, the log-linear form of the above model is specified below:

$$TSINT = \alpha_0 + \alpha_1 INFL + \alpha_2 \log(GDPGAP) + \alpha_3 \log(g \exp - grev) + \varepsilon_1 \qquad 2$$

Where: *TSINT* is the term structure of interest rates; *INFL* is the annual rate of inflation; *GDPGAP* is the percentage deviation of real GDP from potential real GDP; *FD* is (*gexp-grev*) the fiscal deficit and $\varepsilon_t$ is the error term.

## 4. Results and Discussions

### 4.1. Descriptive Statistics

**Table 1. Descriptive statistics of variables applied in the regression analysis**

| Variables | Mean | Median | Std. Dev. | Skewness | Kurtosis |
|-----------|------|--------|-----------|----------|----------|
| LFD | -0.465686 | -0.463354 | 0.381925 | -0.0380588 | 1.858631 |
| TSINT | 2.762206 | 2.945000 | 2.031438 | 0.210102 | 2.187332 |
| LGDPGAP | -1.820903 | -2.401043 | 1.717154 | 0.390588 | 1.598387 |
| INFL | 19.87647 | 12.95000 | 17.31760 | 1.550335 | 4.468888 |

*Source: Authors, 2016*

The table 1 above contains the descriptive statistics for the variables of interest and other related variables used in the study. From the table, it can be seen that the mean of fiscal deficit and GDPGAP are negative, that is, -0.465686 and -1.820903 respectively while that of term structure of interest rate and inflation rate are positive i.e. 2.762206 and 19.87647 respectively. It can also be observed that fiscal deficit has the lowest standard deviation; being followed by GDPGAP, term structure of interest rate and inflation rate. It can be seen from the above result that term structure of interest rate, GDPGAP and inflation rate are positively skewed to the right while fiscal deficit is negatively skewed to the left. The result also indicated that inflation rate have a relatively high peak distribution called leptokurtic distribution while

other variables have a relatively low peak distributions called platykurtic distribution.

### 4.1.1 Correlation Matrix

**Table 2. Correlation Matrix**

|         | INFL      | LFD       | LGDPGAP   | TSINT    |
|---------|-----------|-----------|-----------|----------|
| INFL    | 1.000000  |           |           |          |
| LFD     | 0.169815  | 1.000000  |           |          |
| LGDPGAP | 0.233943  | 0.724387  | 1.000000  |          |
| TSINT   | -0.333833 | -0.376185 | -0.521816 | 1.000000 |

*Source: Authors, 2016*

From table 2 above, since none of the values that below the major diagonal is greater than or close to 0.9, then we conclude that the independent variables are likely not having multicollinearity problem among themselves i.e. there is no perfect correlation among the independent variables.

### 4.2.1 Unit Root Test

Time series is prone to non-stationarity which causes regression results to suffer from spurious regression problem. To avoid this possibility, the data are tested for stationarity using the Augmented Dickey-Fuller (ADF) test.

**Table 3. Unit Root Test Summary Statistics (Augmented Dickey Fuller)**

| Series    | Augmented Dickey-Fuller Test Statistics | |                     |
|-----------|-----------|----------------------------|---------------------|
| Variables | Levels    | 1$^{st}$Difference         | Order of Integration |
| *INFL*    | -2.742868 | -5.469259                  | I(1)                |
| *TSINT*   | -2.770949 | -7.320321                  | I(1)                |
| *LGDPGAP* | -1.429506 | -4.936032                  | I(1)                |
| *LFD*     | -2.572969 | -5.877456                  | I(1)                |
| **C.V 1%** | **-3.48** | **-4.03**                 |                     |
| **5%**    | **-2.88** | **-3.44**                  |                     |
| **10%**   | **-2.58** | **-3.15**                  |                     |

**Note: C.V indicates Critical Values**

*Source: Authors, 2016*

The results of the Augmented Dickey-Fuller test in table 3 above showed that all the time series variables are integrated of order one I(1) meaning that all the variables are stationary at first difference at 5% significance level.

### 4.2.2    Cointegration

**Table 4. Johansen Cointegration Test**

| Trace Test | | | | Maximum Eigen value test | | | |
|---|---|---|---|---|---|---|---|
| H0 | H1 | Statistics | 95% critical values | H0 | H1 | Statistics | 95% critical values |
| r=0 | r≥1 | 51.73282 | 47.85613 | r=0 | r≥1 | 28.09307 | 27.58434 |
| r≤1 | r≥2 | 23.63975 | 29.79707 | r≤1 | r≥2 | 12.13384 | 21.13162 |
| r≤2 | r≥3 | 11.50591 | 15.49471 | r≤2 | r≥3 | 9.426341 | 14.26460 |
| r≤3 | r≥4 | 2.079570 | 3.841466 | r≤3 | r≥4 | 2.079570 | 3.841466 |

*Source: Authors, 2016*

From table 4, the Johansen co-integration test is applied to examine the existence of co-integration among the variables. It was observed that the null hypothesis of no co-integration, for r=0 is rejected by the trace test and the maximum-eigen test because the statistic value is more than the critical value. However, the null hypothesis of no co-integration at r≤1, r≤2, r≤3 could not be rejected by the trace and maximum-eigen test because the statistic values were less than the critical value. Based on the trace statistic, there was one co-integrating equation among the variables. Similarly, the maximum-eigen statistic also showed that there was one co-integrating equation among the variables at 5% significance level. The consistency in the test results confirmed the existence of long-run co-movement among all the variables in the model.

## 4.3. Empirical Analysis of Short Run Relationship between Fiscal Policy and Term Structure of Interest Rate in Nigeria using Error Correction Model Technique

The error correction mechanism measures the speed or degree of adjustment i.e. the rate at which the dependent variable adjust to changes in the independent variables. Short run analysis helps to show the dynamic pattern in the model and to ensure that dynamics of the model have not been constrained by inappropriate lag length

specification. Thus, the lag length on all variables in each model was set at two to ensure sufficient degree of the freedom based on automatic selection of Schwarz Criterion.

**Table 5. Error Correction Model Result**

| Dependent variable: Term Structure of Interest Rates Δ(TSINT) | | | | |
|---|---|---|---|---|
| Variable | Coefficient | Std. Error | t-Statistics | Prob. |
| C | 0.288590 | 0.406919 | 0.709207 | 0.4843 |
| ECM(-1) | -0.657762 | 0.186374 | -3.529251 | 0.0015 |
| Δ(LGDPGAP(-1)) | 0.855497 | 1.896319 | 0.451135 | 0.6555 |
| Δ (LFD(-1)) | -0.600018 | 1.019980 | -0.588264 | 0.5612 |
| Δ (INFL(-1)) | -0.021136 | 0.020776 | -1.017334 | 0.3180 |
| R-squared | 0.375417 | F-statistic | | 4.057211 |
| Adjusted R-squared | 0.282886 | Durbin-Watson stat | | 1.945752 |

*Source: Authors, 2016*

Table 5 above presents the short run relationship between fiscal policy and term structure of interest rate using error correction model technique. The result shows that the coefficient of determination of the model (Adjusted-$R^2$) is low (28.3%). This implies that about 28.3% of the total variations in term structure of interest rate is explained by the ECM, while the remaining 71.7% is explained by other variation outside the model i.e. the error term. The value of F-statistic (4.06) is statistically significant at 5% level of significance showing that model is well specified and statistically significant. Furthermore, the value of D.W statistic (1.95) shows that there is absence of serial autocorrelation in the model.

Furthermore, it is observed from the table that the coefficient of the ECM is both negative and statistically significant 5% level of significance. The coefficient estimate of the ECM (-0.66) implied that the model corrects its short run disequilibrium by 66% speed of adjustment in order to return to the long run equilibrium. With respect to the explanatory variables, it is observed that the coefficients of the short-run fiscal deficit and inflation are negative and statistically insignificant at 5% level of significance indicating that these variables do not influence term structure of interest rate in the short run. Similarly, the coefficient of the first lagged value of GDPGAP is positive and statistically insignificant at 5% level of significance. This implies that the immediate past value of GDPGAP does not influence the term structure of interest rate in the short run.

### 4.4. Empirical Analysis of the Long Run Relationship between Fiscal Policy and Term Structure of Interest Rates using Ordinary Least Square Technique

**Table 6. Fully Modified Ordinary Least Square Result of Model Estimate**

| Dependent variable: Term Structure of Interest Rates ($\Delta$TSINT) | | | | |
|---|---|---|---|---|
| Variable | Coefficient | Std. Error | t-Statistics | Prob. |
| C | 2.276991 | 0.655051 | 3.476053 | 0.0016 |
| $\Delta$INFL | -0.026279 | 0.018168 | -1.446398 | 0.1584 |
| $\Delta$LGDPGAP | -0.558729 | 0.261923 | -2.133185 | 0.0412* |
| $\Delta$LFD | 0.029152 | 0.011814 | 2.467581 | 0.0216* |
| R-squared | 0.319737 | F-statistic | | 4.700195* |
| Adjusted R-squared | 0.251711 | Durbin-Watson stat | | 1.607407 |

*Source: Author, 2016*

**Note: * implies 5% level of significance**

From the regression results in table 6 above, the coefficient of determination (Adjusted-$R^2$) of the model is low (25.2%) which implies that the model has a low goodness of fit. This indicates that the explanatory variables of the model explained 25.2% of the total variations in the term structure of interest rates. The value of the F-statistic (4.70) of the model is statistically significant at 5% level of significance which implies that the model is well specified and significance. Furthermore, the Durbin-Watson statistic value which is 1.61 showed that the model is free from of serial autocorrelation problem.

The regression results above also shows that there is a positive relationship between fiscal deficit and term structure of interest rate since its coefficient is positively signed and statistically significant at 5% level of significance. This implies that a unit increase in fiscal deficit would bring about 0.029152 increases in term structure of interest. Furthermore, the coefficient of GDPGAP shows that there is an inverse relationship between GDPGAP and term structure of interest rate since its coefficient is negatively signed and statistically significant at 5% level of significance. This implies that a unit increase in GDPGAP would lead to about 0.558729 reductions in term structure of interest rate. Similarly, the result also indicates that there is a negative relationship between term structure of interest rates and inflation rate since its estimated coefficient is negatively signed and it is statistically insignificant at 5% level of significance. This implies that a unit increase in inflation rate would bring about 0.026279 decreases in term structure of interest rate.

Consequently, the above result with respect to the variable of interest implies that fiscal deficit influences the term structure of interest rate positively and this result is similar to the results of previous studies in USA by Cebula (1986) and Cebula et al (2005). The reason for the deficit could be as a result of extra-budgetary spending or unnecessary spending which leads to deficit because the expenditure of the government in Nigeria is more of recurrent expenditure and thereby influencing the term structure of interest rate.

## 5. Conclusion

This study investigated the relationship between fiscal policy and term structure of interest rate in Nigeria. It included some other variables which could possibly influence the term structure of interest rate. The study discovered that these variables (fiscal deficit, GDPGAP, and inflation rate) could possibly determine the term structure of interest rate in Nigeria. The findings of the study are in line with the findings of Kitchen (2002) which suggested that fiscal deficit could influence the term structure of interest rate. It is also in conformity with previous studies which suggested that fiscal deficit have positive significant influence on interest rate such as Cebula (2003),Caporale et al, (2004),Ezeabasili and Mojeku (2011), Noula (2012), Cebula and Foley (2013), among others.

The study therefore concluded that fiscal deficit has significant positive effect on term structure of interest rate in Nigeria. As a result, the consumers are not forward-looking as in Ricardian Equivalence Hypothesis theory. Hence, it could also be said that fiscal deficit is responsible for the uncertainties and inconsistencies in the term structure of interest rates in Nigeria. The study recommends that the Nigerian government should embark on policy mix (interaction between monetary and fiscal policies) in order to reduce unnecessary spending that may enhance the budget deficit since increase in deficit leads to increase in term structure of interest rate and this may discourage potential investment and hence reduces aggregate demand.

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