

# Models-based Organizational Effectiveness Scale: Development and Validation

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**Running head:** Development of OE Scale

**Abstract:** *This study was on development and validation of models-based organizational effectiveness scale. On the basis of inclusive characteristics, four models of organizational effectiveness were adopted and combined to produce the scale. The models are goal attainment, system resources, internal processes and stakeholder. Fifteen items for each of the models were generated from extensive review of the literature. However, after subject-experts' review, 40 items were subjected to factor analysis. Exploratory factor analysis (varimax) on the 40 items, using 244 participants from public, private, manufacturing and service organizations resulted in 10 factors with eigen value 1 and above. And Scree plot of the items showed 1 factor. The Scree plot result was adopted in the study because the 1 factor accounted for 35.33% of the total variance. The scale showed satisfactory psychometric properties. With a sample of 20 participants, the following coefficients for reliability and validity were observed on the entire scale. Test-retest reliability .73; alternate form reliability, .94; cronbach alpha reliability, .96; split-half reliability (correlation between forms, .78; spearman-Brown coefficient, .88; Guttman split-half coefficient, .86); convergent validity, .89; discriminant validity, -.13 with perception of organizational politics; .32 with organizational stress; and -.23 with turnover intention. The adopted model also showed satisfactory relationship between each other. The specific and inclusive characteristics of the scale make it a very useful tool for both research and practice*

**Keywords:** Organizational effectiveness, psychometric properties and scale development,

## 1. Introduction

Humanity and society exist largely at the dictates of organizations. Almost everything, (such as food, shelter, clothing and luxuries) about human beings is determined directly or indirectly by the organization. Organization could be formal or informal. A formal organization, the concern of this study is a planned co-ordination of the activities of a number of people for the achievement of some common, explicit purpose or goal, through division of labor and function, and through a hierarchy of authority and responsibility (Schein, 1988). And the earliest systematic concerns about the functioning of organizations were in theories (scientific management, administrative management, human relations, open systems and contingency). The theories were necessarily and timely followed by empirical works (Burns & Stalker, 1961; Lawrence & Lorsch, 1967; Woodward, 1965).

Theoretical and empirical concerns about organizations were rooted in the understanding that solution to meeting the increasing needs of humanity and by extension the society is largely in organization. However whether in theory building or research activities, works on organizations implicitly or explicitly have organizational effectiveness (OE) as the propelling force (Bryman, 1989). Influence that was succinctly expressed by Pfeffer and Salancik (1978) when they remarked that "organizations survive to the extent they are effective"

## 2. Organizational Effectiveness (OE)

Literarily, the concept of OE has multitude of definitions. It is like there are almost as many definitions as there are OE scholars. The debate over definition is as old as when

systematic concern for OE started 50 years ago (McCann, 2008). One explanation for the diversity in the definition of OE is in the various perspectives of organization. How organizations should operate and what is expected of them vary among people. Main elements in the perspectives are issues bordering what organizations are, what they should be, what they do, what they should do, whom they serve and whom they should serve. Perspectives of organization that impact widely on the definition of OE are rational goal, open systems, internal processes, information processing units and organization as political arena (Scott, 1992). Each of the perspectives results in different definition of OE (Goodman & Pennings, 1980), and each highlights, even uncovers, organizational phenomena that were missed or ignored by the others (Cameron & Whetten, 1983).

Another explanation is in the large number of stakeholders of any organization. As open system, organizations are network of interactions. A stakeholder audit of an organization will likely include employees, suppliers, customers, shareholders, host community and government regulatory agencies. These are constituencies with various and sometimes conflicting needs and expectations that reflect in how OE is conceptualized. These explanations account largely for the existing models and multitude of OE indicators.

A number of measures exist on OE. Even studies that work within an indicator (e.g. profit) or model (e.g. goal attainment) differ in content and coverage. Almost every study on OE adopts its specific measure (e.g. Brown, 2013; Duke, Kankpang, & Okonkwo, 2012; Fbrahimpour, Salarifar & Asiaeri, 2012). The reason for this is not because there are no existing measures on the concept, but because even the available measures were also developed to meet the need of

specific studies. This situation has its merits (e.g. high confidence in specific application of results) but with three major problems for studies on OE. It renders results from studies on OE non-cumulative (Bryman, 1989). Because the results are products of varied OE measures, adding and building on them lacked scientific justification. The use of too many and different measures in studies on OE do not allow results generalization. Results from measures developed for specific study may not generalize beyond the population on which the study was based. Finally, the adoption of varied measures does not make possible comparison of results from studies on OE.

These limitations to application of results represent serious opposite of scientific process. Without the possibility of accumulation, generalization and comparison it is unimaginable the quantity of research efforts that would be required to build a body of knowledge in the area of OE. The implication of the stated weaknesses is that every imaginable need for knowledge of OE would necessitate a separate study. This is not only wasteful in terms of fund and time; it is impracticable given the infinite number of organizations in any given society.

The preceding discussion points to the absence of satisfactory measure on OE. The purpose of this study is to address this gap. Consequently, this study aimed to develop OE scale that has the potential of meeting the needs of researchers with different orientations, and saves the literature the setback of every study on OE with its specific measure. Realizing this requires framework that represents a number of opinions and constituencies. And review of the literature shows that four models of OE (goal attainment, system resources, internal processes and stakeholders) adequately meet this requirements. For instance, the 30 OE indicators listed by Campbell (1977) directly or indirectly reflect the positions of the four OE models. Therefore, this paper adopted four models of OE as sufficient and valid means to achieving a standard scale on OE.

Some concepts such as organizational performance, organizational efficiency and organizational productivity have been widely used interchangeably with OE (Glunk & Wilderon, 2012). The usage of these concepts in the literature clearly showed that their scope is not inherent in them, but in how there are conceptualized and adopted. Some researchers operationalized organizational performance narrower than OE, some others operationalized OE as a component of organizational performance. Anastasia (2008) measure of organizational performance covered effectiveness, efficiency, development, satisfaction, innovation and quality. Like the measurement of OE, the measurement of the other related concepts has grown from being narrowly focused to being very inclusive. All the terms have over time moved beyond shareholder theory to stakeholder theory of organizational management (Hubbard, 2006). This development was clearly expressed by Glunk and Wilderon (2012):

... The degree of similarity between the constructs of organizational effectiveness and performance has varied over time. Being initially defined within the rational - goal approach, both constructs shared common roots. They

developed, however, in different ways. While corporate performance has for a long time been exclusively associated with financial performance, organizational effectiveness has been broadened. Recent developments in strategic performance research, with a broader notion of performance, show a recurrent convergence. The parallel embracing of the multiple-constituency or stakeholder perspective has made both constructs interchangeable (p. 18).

### 3. Models of OE

Goal attainment model is an offshoot of the rational-goal perspective of organization. The model focuses on the organization's output, that is, on the degree of goal achieved by the organization (Etzioni, 1964, Price, 1972; Steer, 1977). This model provided the platform for every other model of OE. Herman and Renz (1998) wittingly expressed this when they stated that the theory of OE may be summarized as the development of alternatives to or modifications of what has been called the goal model of effectiveness. This model is very appropriate when goals are clear, consensual, time bound and measurable (Cameron, 1983).

System resources model represents the open system perspective of organization and the focus is on input. An organization is effective to the extent it can acquire the needed resources such as raw material, labour, capital, managerial and technical expertise (Yuchtman & Seashore, 1967). The assumption of Yuchtman and Seashore (1967) about this model is that an organization's bargaining positioning in its input environment is a "function of all the three phase of organizational behaviour. The phases are the importation of resources, their use (including allocation and processing), and their exportation in some output form that aids further output". The system resources model is most appropriate when clear connection exists between input and performance (Cameron, 1983).

Internal processes model deals more narrowly with internal mechanism of the organizational. It focuses on minimizing strain, integrating individual and smooth and effective operations (Georgopoule & Tannerbaum, 1957). An organization that focuses primarily in maintaining employee's satisfaction and moral, minimizing conflict, and being efficient subscribes to this view. This model satisfies largely the humanistic organizational theorizing. It is very appropriate when organizational performance is strongly influenced by specific process (e.g. cross-functional teamwork) (Kreitner & Kinicki, 2004).

Stakeholders model is based on the political view of organization (Adas, 2000), and focuses on the groups that have stake in the organization (Atkinson, 1997; Connolly, Colon, & Deutch, 1980). The underlying assumption of stakeholder approach is that organizations depend on various groups for resources and, ultimately for their survival. Therefore, unless organizations can at least minimally satisfy such groups, those groups will withdraw their support, causing organizational decline and possible death. Stakeholder audit of an organization would include supplies, customers, employees, stock holders, the host community, government regulatory agency and others who are influenced by the organization (Appleby, 1984). This model

is appropriate when stakeholders/constituencies have powerful influence on the organization, and the organization has to respond to their demands.

Population ecology model proposes that the environment is the critical factors that determine which organizational succeeds and which fails and thereby selects the most robust competitors through elimination of the weaker ones ((Aldrich, 1979; Hannan & Freeman, 1977). This model postulates that OE assessment should be based on the conditions provided by the environment. Inferred from the propositions, this perspective is insensitive to the contributions of organization's members (particularly managers and decision makers) in the attainment of OE.

Quinn and Rohrbaugh (1983) proposed the competing values mode. The model requires that an organization scrutinizes the balances among four (rational goal, system resources, internal processes and human resources) OE models. This model identifies three sets of competing values. Values related to organizational focus, from internal, micro emphasis on the well-being and development of people in the organizational to an external, macro emphasis on the well-being and development of the organizational itself. Values related to organizational structure, from an emphasis on stability/control to on emphasis on flexibility. Values related to organizational means and ends, from an emphasis on impact process (e.g. planning and goal setting) to an emphasis on final outcome (e.g. efficient product of output). Therefore, an effective organization is one that achieved balance among these set of competing values. This model is most preferred when the organization is unclear about its own criteria, or change in criteria over time is of interest (Cameron, 1983).

The Ineffectiveness/fault-driven model identified an effective organization by the extent it has an absence of faults or traits of ineffectiveness (Cameron, 1983). The basic assumption behind this model is that it is more accurate, more consensual and more beneficial to identify problem and fault (ineffectiveness) than criteria of competence (effectiveness)(Henri, 2010). To this model organization is a set of problems and faults. Ineffectiveness indicators for this model include production defect, customer complaints, production waste and work injuries. The fault-driven model is most appropriate when criteria of effectiveness are unclear, or strategies for improvement are needed (Cameron, 1983)

As indicated above, (and the list is not exhaustive) a number of models exists on OE. However, four of the models were adopted in this study. And some factors are basic to the choice of the four models. They are models of choice in the literature. The majority of OE studies adopted these models separately or in combination. Therefore the prominence of the four models in the literature attests to their value. The four models separately or in combination are highly representative and inclusive. The OE indicators proposed by a few notable scholars almost completely spread among these models (see Table 1 below).

**Table 1: Scholars and Proposed Indicators of OE**

<i>Scholar</i>	<i>Proposed Indicators</i>
Aggyris (1970)	Adaptation to external environment monitoring of internal environment, and achieving objectives.
Caplow (1964)	Stability, achievement, integration and voluntarism
Child (1974,1975)	Profitability and growth
Duncan (1973)	Adaptation, integration, goal attainment.
Drucker, 1959	Survival
Etzioni (1960)	Environmental orientation, optimum allocation of resources, and goal attainment.
Friedlander and Pickle (1968)	Profitability employee satisfaction and contribution to society and maintenance.
Georgopoulo and Tannenbaum,	Productivity, flexibility and strain
Gibson, Ivancevich, & Donnelly, (1973)	Production, efficiency, satisfaction, adaptation, and development
Gross (1965)	Acquiring resources, operating efficiency, producing outputs, behaving rationally, observing codes, investing in the organization and satisfying interests
Katz and Kahn (1966)	Efficiency and political effectiveness
McCann (2004)	Agility and resiliency.
Mott (1972)	Adaptability, flexibility and productivity
Price (1968)	Productivity, morale, conformity, and adaptation
Seashore and Yuchman (1967)	Optimization of resource acquisition, and maximization of bargaining position with respect to environment
Seiler (1967)	Productivity, satisfaction and development
Simpson and Gulley (1962)	Goal attainment in voluntary Organizational and adaptation to internal and External pressure.

The inclusiveness of the models is also supported by Campbell's (1977) list of 30 indicators of OE that comprises overall effectiveness, productivity, efficiency, profit, quality, accidents, growth, absenteeism, turnover, job satisfaction, motivation, morale, control, conflict/cohesion, flexibility/adaptability, planning and goal setting, goal consensus, internalization of organizational goal, role and norm congruence, managerial interpersonal skills, managerial task skills, information management and communication, readiness, utilization of environment, evaluation of external entities, stability, value of human resources, participation and share influence, training and development emphasis and achievement emphasis. These indicators largely spread within the four models. Therefore, the models make manageable the various propositions of the scholars and the available multitude of OE indicators. The four models have been reported to apply to large, small, profit and non-profit organizations (Kreitner & Kinicki, 2003). This implies that the models have wide application. The models can be combined in various degrees (Kreitner & Kinicki, 2003). This possibility points to the network of relationships that indicates certain commonalities that justify grouping the models under some circumstances. Finally, the four models are actually the source of almost all the existing models. For example, the competing values model is a synthesis of the four traditional models (goal, system resources, internal processes and human relations). The other models either expand or make explicit what is implicit in the four models.

#### 4. Relationships among OE Models

Almost always, OE models are discussed without reference to their network of relationships. This silence prevents adequate knowledge of the models that in turn limit their usefulness and informed some controversies over their application. The four models of OE adopted in this study incorporate every other model of OE and are highly related with each other. In terms of relationships between the four and other models of OE, the goal attainment model emphasis on structure covers partly the concern of the managerial model. In its emphasis on organization-environment relationship, the system resources model expresses the proposition of the population ecology model. In its concern for system maintenance, the internal processes model covers much of the components of the human relations model. And the competing value model is an elaboration and integration of goal attainment, system resources, internal processes and human relations models.

In terms of the relationship among the adopted four models, goal model could be used broadly to reflect, imply and associate with indicators that represent the other models. For instances, the indicators such as profit, adaptability and flexibility of system resource model can be expressed as set of goals for an organization. Meeting the needs and expectations of the stake holders (stakeholder model) could also be set goals of an organization. The integration of organization members, and smooth operations (indicators of internal processes model) could be expressed as an organization's set goals.

The various indicators (quantity, quality, and efficiency) associated with goal attainment model impact tremendously on the indicators of the other three models. The quantity, quality of production and efficiency (indicator within the goal model) largely determined profit, market share and survival (indicators of system resource and internal process models). The indicators of goal models have the potentials of creating enabling conditions for an organization to achieve internal and external adaptation (internal process and system resource models), and meet the needs and expectations of significant proportion of the organization's stakeholder (stake holder model)

The indicator of system resources model such as profitability, and resource acquisition contribute to achieving healthy organization (internal process model) and meeting the needs and expectations of some stakeholder. Finally, emphasis on smooth internal functioning of internal process model could result in profitability (system resources model) and satisfaction for some stakeholders (stake holder model). Conclusion that could be drawn from the above is that the boundaries between the four models are well adjustable. Depending on the prevailing circumstance, the application of a model could be more or less inclusive.

The preceding discussion established that the four models adopted in this study adequately represent OE models. This representative characteristic of the models is achievable both when they are adopted individually or in combination. What is required to achieve this feat is for the propositions of the

model(s) to be approached broadly with all their implications

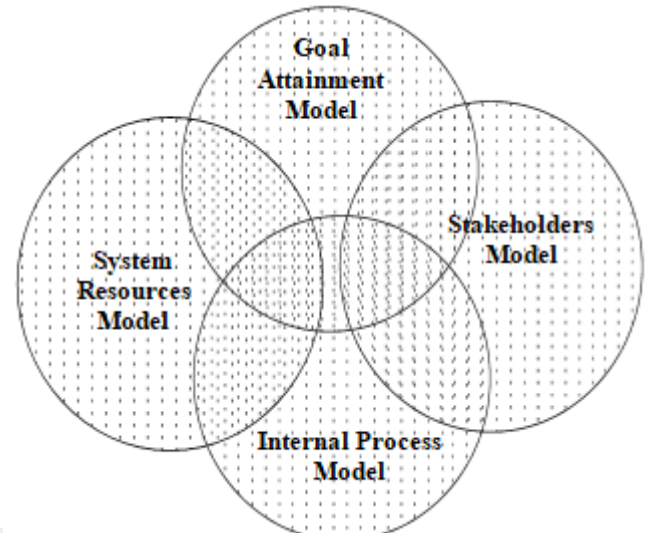


Figure 1: Network of Relationships among the OE Models.

Figure above shows the four models of OE adopted in this study. Each circle represents the entirety of a model. The dots inside each circle symbolize the various indicators of OE the model represents. The circles cutting across each other express an important feature of OE models - models of OE are well related. A fact most researchers of OE have not fully realized and utilized.

#### 5. Method

##### Participants

Two hundred and forty-four participants provided the data for the exploratory factor analysis. The participants comprise 147 male and 97 females with mean age of 41 years. The participants were permanent staff with 2 years and above in the employment of their organizations. It was assumed that a period not less than two years with an organization is long enough for employees to understand the prevailing situations in their organizations. In addition, they were from organizations that have existed for at least two years and with workforce not fifty and above.

Their academic qualifications range from First Leaving Certificates (5), West Africa School Certificate/Senior School Certificate Examination, (25), Ordinary National Diploma (23), Nigeria Certificate in Education (19), Higher National Diploma/First Degree (126), and Post graduate (46). Of the 244 participants, 203 were drawn from public organizations, 41 from private organizations, 221 from service organizations and 23 from manufacturing organizations. The high level of literacy of the participants implies that the items that constituted the research instruments were sufficiently comprehended and "rightly" responded to. The educational qualification of the participants revealed that the sample comprises both junior and senior staff.

##### Procedure

A large number of items derived from associated indicators were generated on the four models of OE (goal attainment, systems resources, internal processes and stakeholders).

Indicators on which items were generated on were: Goal model (quantity and quality of output and efficiency), System resources model(acquisition of factors of production, profitability, adaptability, and growth), Internal processes model (employee morale, commitment, loyalty, trust, job satisfaction, cohesiveness, and free flow of information) and stakeholder model (meeting the needs and expectations of shareholders, employees, management, suppliers, customers, trade unions, and regulating government agencies).

On various discussions with subject experts, 40 items were retained and subjected to exploratory factor analysis. Two hundred and eighty five employees of public, private, manufacturing and service organizations received the study questionnaire. Within a period of three weeks, 272 filled copies of the questionnaires were collected by the researcher. However, due to filling errors, 28 of the retrieved copies were unusable. Therefore, 244 copies were used for the analyses. The data were collected and analysed at organization level.

Exploratory data analysis was conducted on the data. The analysis was done with SPSS Version 16.0. The measurement requirements for conducting and reporting exploratory factor analysis were met in the study. First, the measurement was at interval level. Second, sample size of 244 met the minimum of 50 observations or at least 5 times

as many observations as variables (Habing, 2003). Each models had ten items on it. The items were presented to the participant in Likert (1932) summed format. This scaling approach was adopted because it is of similar reliability with other scaling approach (e.g. scaled statements approach), it is relatively simple in construction and it is easy to perform item analysis on data generated from it (Sax, 1980; Thorndike & Hagan, 1969). Likert type scale has also been reported to be easy for respondents to understand (Malhotra, 2012). However, unlike the scaled statement /Thurstone (1928) approach, the summed /Likert (1932) procedure does not differentiate items according to their degree of implied affect (Upshaw, 1968).

## 6. Results

Factor analysis on the 40 items yielded 10 factors with eigen value 1 and above. On the other hand, the scree plot suggested one factor. Eigen value and scree plot are the two means to determine the number of factors associated with a variable. This study adopted the scree plot for two reasons. First, of the 66.79% variance accounted by the 10 factors with eigen value 1 and above, factor 1 accounted for 35.34%. Figure 2 and Table 2 below present the Scree plot and total variance explained respectively.

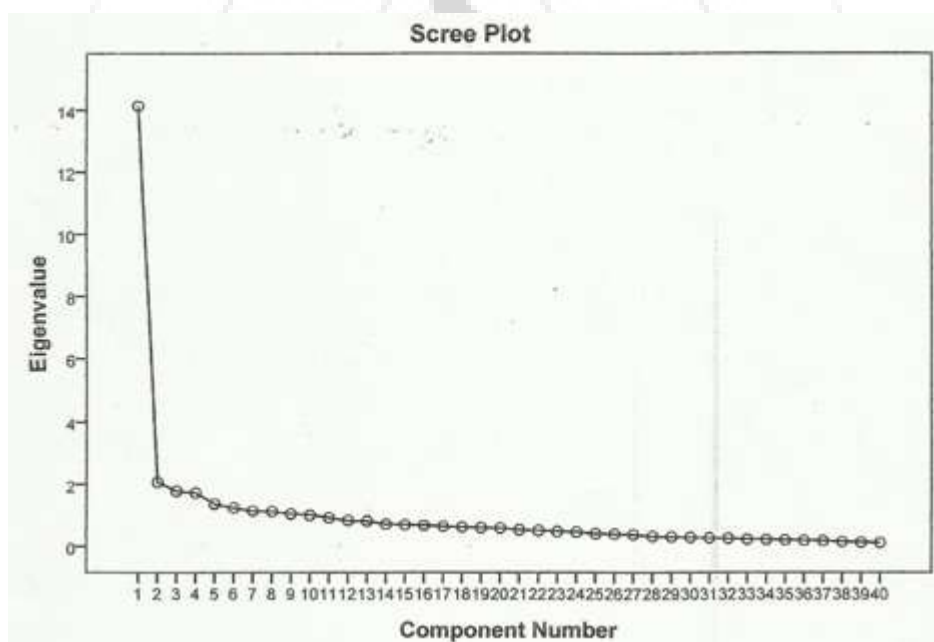


Figure 1: Scree plot

Therefore, one factor analysis was performed. This analysis yielded eigen value of 13.49 and variance of 33.74. Kaiser-Meyer-Olkin Measure of Sampling Adequacy of .89, and significant result from Bartlett's test of sphericity also signify the usefulness of the result of the data. Each of the 40 items had loading of .03 and above. (See appendix). The

items on the table were arranged in the following order. Goal attainment model, 1, 5, 9, 13, 17, 21, 25, 29, 33, 37; system resources model, 2, 6, 10, 14, 18, 22, 26, 30, 34, 38; internal processes model, 3, 7, 11, 15, 19, 23, 27, 31, 35, 38, and stakeholder model, 4, 8, 12, 16, 20, 24, 28, 32, 36, 40.

**Table 2: Total Variance Explained**

Comment	Initial Eigenvalue			Extraction sums of squared loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	14.135	35.339	35.339	14.135	35.339	35.339
2	2.075	5.189	40.527	2.075	5.189	40.527
3	1.790	4.474	45.001	1.790	4.474	45.001
4	1.731	4.328	49.329	1.731 1.377	4.328	49.329
5	1.377	3.442	52.771	1.251 1.151	3.442	52.771
6	1.251	3.127	55.898	1.132 1.058	3.127	55.898 58.776
7	1.151 1.132	2.878	58.776	1.016	2.878	61.605 64.251
8	1.058	2.829	61.605		2.646	66.791
9	1.016	2.646	64.251		2.540	
10	.929 .840	2.540	66.791			
11	.819	2.323	69.113			
12	.718	2.099	71.213			
13	.699 .678	2.048	73.261			
14	.644	1.795	75.056			
15	.619	1.747	76.803			
16	.605	1.695	78.498			
17	.590	1.611	80.109			
18	.531	1.546	81.656			
19	.514	1.513	83.169			
20	.482	1.476 1.328	84.645			
21	.465	1.284	85.973 87.257			
22	.415	1.204	88.461 89.624			
23	.403	1.163	90.661			
24	.383	1.037	91.668			
25	.325	1.007	92.626			
26	.308	.958	93.438			
27	.294	.812	94.207			
28	.277	.769	94.943			
29	.265	.736	95.635			
30	.236	.692	96.297			
31	.228	.663	96.886			
32	.213	.589	97.455			
33	.199	.569	97.989			
34	.190	.533	98.487			
35	.153	.499	98.962			
36	.137	.475	99.345			
37	.125	.383	99.687			
38		.342	100.000			
39		.313				
40						

Tests of psychometric properties (reliability and validity) were conducted on the 40 items. Test - retest reliability coefficient of the entire scale was .73. For the subscales, the obtained reliability coefficients were: goal attainment model, .66; system resources model, .45; internal processes model .58 and stakeholder model, .64. Alternate-form reliability was determined by correlating the 40 items with Anantharaman and Chacko's (2008) 40- items OE scale. The obtained reliability coefficient of the entire scale was .94. For the subscales, the obtained reliability coefficients were: goal attainment model, .78; system resources model, .80; internal processes model .62 and stakeholder model, .67. For split-half reliability, the correlation between forms yielded .78 :Spearman-Brown coefficient, .88: Guttman Split-Half Coefficient .86. Cronbach's Alpha of .96 was observed.

Subject experts adjudged the items to have face and content validity. The construct validity (convergent and discriminant) were established. For the convergent validity, the scores on the 40 items were correlated with Anantharaman and Chacko's (2008) 40-items OE scale. Using Pearson Moment correlation, coefficient of .89 was observed. For discriminant validity the scores on the 40

items were correlated with Kacmer & Ferris' (1991) 12-items Perception of Organizational Politics Scale; Rizzo, House and Lirtzman's (1970) 10-items Role Conflict and Role Ambiguity Scale, and Cammann, Fichman, Jenkins & Klesh's (1979) 3- items Employee Turn Over Intention Scale. Pearson Moment Correlation on the three pairs yielded the following coefficients - the 40 items and Perception of Organizational Politics Scale, -.13; the 40 items and the Organizational Stress Scale, .31, and the 40 items and the Turn Over Intention scale, -.23. The high correlation coefficient between the 40 items and Anantharaman and Chacko's (2008) 40- items OE scale, and the low and negative correlation coefficients of the 40 items and the perception of politics, organizational stress and turn over intention scales satisfactorily confirm the construct validity of the new scale.

The use of perception of organizational politics, organizational stress (role ambiguity and role conflict) and turn over intention scales to establish the discriminant validity of the new measure is based on extant literature. A number of studies have reported negative relationship between OE and these other variables. Perception of

organizational politics (POP) negatively relates with both individual performance and OE (Vigoda, 2000; Chang, Rosen, & Levy, 2009), turn over intention and job performance relates negatively (Mossholder, Bedein, Noriss, Giles, & Field, 1988), and organizational stress relates negatively with individual job performance and OE (Kazimi, Rubina, Amjad, Khan, 2008)

In order to identify the nature and strength of relationships between the OE models adopted, Pearson moment correlations were conducted on the data. Table 3 below shows the obtained coefficients. The observed relationships were significant at .01 level.

**Table 3:** Pearson Correlation Coefficients for the OE Models

Model	Goal	System resources	Internal processes	Stakeholders
Goal	1			
System resources	.79	1		
Internal processes	.84	.72	1	
Stakeholders	.78	.74	.77	1

## 7. Model Identification

Adoption of models in the measurement of OE is a common feature in the literature. Researchers, however differ in how the models are adopted. Some researchers adopt a single model, while some combined two or more. Whether used singly or in combination, a serious error that cut across the majority of the study is indiscriminate adoption of the models. In other words, the models are adopted without prior identification of what OE means to the organization being studied or which OE model(s) matches with the organization's perspective of OE. Without this initial identification, possibility of mis-matching organizations and model(s) exists. This is a major source of disillusionment when models are used to measure OE. In fact, when an organization's definition of OE and the adopted effectiveness model in a study are not congruent, results are likely to be unreliable in every sense of the word.

To address this issue, four statements representing each of the adopted models were developed to be used along with the 40 items. In this case, respondents/organization will be evaluated based on choice of model expressed in the definitions. This identification process can come prior to the administration of research instrument or along with the research instrument. However, if the 40 items would be adopted in a study, this identification exercise may not be required. The statements of identification representing goal, systems resources, internal processes and stakeholder models respectively are: (1) Management emphasis centres on quantity, quality and efficiency, ( 2) Mmanagement emphasis centres on profitability, adaptability, and growth,( 3) Mnagement emphasis centres on employee morale, commitment, loyalty, trust, cohesiveness, and free flow of information,( 4) Management emphasis centres on satisfying the stakeholders (e.g. shareholders, suppliers, customers, trade unions, and regulating government agencies) of the organization. Respondent would be requested to indicate how much each statement applies to their organizations.

## 8. Discussion

This paper is on development and validation of scale on OE. The exercise was necessitated by the existing need for a standard and broad spectrum and practical measure on OE. Consequently, 40-item scale was developed on four models of OE. Each of the models was represented by 10 items. The four adopted model implicitly and explicitly incorporate every element of all models on OE. The seemingly large number of items for each model is to enable, where necessary independent adoption of the models.

The observed psychometric properties are satisfactory. Subject experts adjudged the measure to have both face and content validity. Test-retest reliability coefficient of .73, alternate-form reliability coefficient of .94, Cronbach's Alpha of .96 and split-half reliability coefficients between forms .78: Spearman-Brown coefficient, .88: Guttman Split-Half Coefficient .86. Convergent validity coefficient of .89 and discriminant validity coefficient of -.13, .31, and -.23 established the construct validity of the scale. In addition, the observed correlation coefficients between the OE models supported the proposal that the models are highly related and that they can be adopted as a whole and independently.

In conclusion, it is apparent that standard measure of OE is needed. It is of necessity for the admirable features (results accumulation, generalizability and comparison) of science to reflect in the understanding of OE. The role of models in achieving these scientific principles for OE was established. The usefulness and adequacy of the four models of OE in assessing OE was justified in this study. The justification efforts added up to the birth of a standard OE scale. However, with the understanding that a single exercise of reliability and validity does not completely make a scale, it is recommended that more tests of the psychometric properties be conducted on the scale.

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**Appendix**

**Factor Loading of the 40 OE Items**

Items		Factor Loading
1	Desired level of output is always attained	.45
2	Needed manpower is always acquired	.64
3	Employees attitude to work is always encouraging	.64
4	Needs and expectations of the stakeholders are often met	.63
5	Set quantity of products/ services is achieved at all time	.59
6	Needed raw materials are often acquired	.61
7	Job satisfaction among employees	.62
8	Shareholders needs and expectations are always satisfied	.63
9	Set quantity of products/services is frequently attained	.72
10	Needed working capital is regularly acquired	.71
11	High level of employee loyalty	.50
12	Needs and expectations of the customers are often met	.36
13	Desired input – output ratio is attained all the time	.52
14	Needed technical skill is always available	.65
15	Trust exists among Members	.41
16	Needs and expectations of employees are attended to regularly	.63
17	Production /services processes are regularly carried out efficiently	.51
18	Net profit is regularly recorded	.57
19	High employee Commitment	.60
20	Request and demand of the trade unions are always promptly addressed	.60
21	Departmental/sectional output goals are often achieved	.65
22	Desired market share is often attained	.60
23	Low level of dysfunctional conflicts	.50
24	Managers/ administrator needs and expectations are often satisfied	.52
25	Output per unit-input Is always as desired	.53
26	Returns on investments is always adequate	.32
27	High degree of cohesion among members	.42
28	Standards of the regulatory agencies are regularly attained	.58
29	Outputs/services are produced/rendered within the shortest possible time	.47
30	Earnings per share is comparatively satisfactory	.61
31	High level of employees' morale	.60
32	Expectations of the suppliers are usually met	.57
33	Things are always done at the right time	.64
34	Products/services are made in response to demand of the environment	.51
35	Labour- management relationship is always satisfactory	.51
36	Level of corporate social responsibility is always satisfactory	.57
37	Desired productivity level is always achieved	.66
38	Desired degree of expansion is usually attained	.59
39	Free flow of information among members	.65
40	Interests of the various constituencies are often satisfied	.65