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# Gender Effect of Simplex and Apcaw Strategy in Fostering Business Creativity Competence of Managers in Selected ICT Companies in Lagos State, Nigeria

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**Abstract**
*This study investigated the gender effect of SIMPLEX and Akinboye Practical Creativity at Work (APCAW) strategy in fostering business creativity competence of managers in Information Communication and Technology industry (ICT) in Lagos. The study adopted the pre-test, post-test, control group, experimental design using a 3x3x2 factorial design matrix. A sample of 126 managers drawn from three (ICT) companies was used for the study. The Schutte, Malouff, Hall, Haggerty, Cooper, Golden (1998) emotional Intelligence Assessment Scale was used to select and categorize subjects on levels of emotional intelligence based on their scores on the scale. Each group consists of 42 subjects (21 male and 21 female managers). The experimental groups were exposed to six weeks of business creativity training while the control group was given training not related to creativity. The business creativity competence of managers were measured using Ibadan Creativity Assessment Scale (ICAS).Three hypotheses were tested and the data were analyzed using Analysis of Co-variance (ANCOVA).*

*Findings from the study revealed that treated participants' were significantly superior to control on business creativity competence ($F(2,107)=27.325; p<0.01$). Findings also showed that there were no significant effects of gender ($F(2,107)=.351; >0.05$); and no significant two-way interaction effect of treatment and gender ($F(2,107)=.256; P>0.05$) on participants' business creativity competence. Based on the result of the study, it was therefore recommended that SIMPLEX and APCAW strategy could be used to foster the business creativity competence of managers irrespective of gender.*

**Keywords**: SIMPLEX, APCAW, Gender, Business Competence

## Introduction

In today's complex economic, social, and technological world, with its interconnecting spheres of knowledge, the strategic role of creativity cannot be over emphasized. In the 21st century global economy, characterized by rapid change, it takes creativity and innovation for organisations to survive. The world needs more creativity than it is currently getting and the generation of new ideas has never been an easy task. It requires creativity techniques and training to foster and nurture the needed skills in managers. Creativity is one of the main skills to use where changes are rapid: where we need to explore progress in any area of human endeavour- from science to technology, arts to music, economics to socials, and commerce to business among others. Most of the problems in the world today cannot be solved by the level of thinking we are when those problems were created. Problem areas in which creativity and innovation are needed are many and diverse in nature – governmental administration, corporate organisation, economics, education, crime prevention, judiciary, health care provision, conflict resolution, environmental protection, and poverty alleviation among others (Akinboye, 2003.

The rapid advancement in the Information and Communication Technology (ICT) industries in the 21st century has revolutionized the world, turning it to a global village. The advent of Personal Computers, Ethernet, Intranet, Internet, and Global System for Mobile Communication (GSM) has opened the world to super information highway hitherto not witnessed before with its attendant opportunities

and challenges. These advances are the product of the creative ingenuity of individuals, workgroups, companies, and nations.

The importance of the study of creativity, innovation and knowledge management in corporate Nigeria environment cannot be over emphasized in the 21st century global economy, characterized by rapid change. In the late 80's through the 90's, a large number of multinational companies, like Nigeria Brewery Plc, Guinness Plc, Lever Brothers, now Unilever, Dunlop, Nestle, PZ, Cadbury ceded the mantle of leadership to budding Nigerian management. Most of these companies, as at today, have replaced their Nigerian captains of industries with their expatriates' counterpart (Adekunle, 2012). What went wrong? Akinboye (2003) captured this succinctly when he noted that the quality of thinking determines the quality of human and organisation future. It then follows that the level of economic growth any nation can attain is directly linked to the creative ability of her workforce.

Creativity means numerous things to different people and can be defined in many ways. This is because creativity is an amazing and complex phenomenon that is multi-dimensional and multi-factorial in nature. Basically, creativity is the bringing of something new into existence. According to De Bono (1999), at the simplest level, creativity means bringing into being something that was not there before. Csikszentmihalyi and Wolfe (2005) viewed creativity as an idea or product that is original, valued, and implemented. Prabhu, Suton and Sauset (2008) offer a similar definition: the generation of novel, original, and unique ideas concerning procedures and processes that can be used at work which are appropriate and significant to the problem or opportunity presented.

Creativity is strongly provoked and driven by positive emotions. Akinboye (2006) described emotions simply as energetic momentums accompanied by strong feelings and transmitted by peptides and their peptides receptors. Cadence (2002) described emotions as the glue that binds people together. Emotions are so vital to human survival that an intelligence that is driven by emotion is now called emotional intelligence-(EI) (Akinboye, 2006). Bar-On (1997) defined Emotional Intelligence (EI) as an array of non-cognitive capabilities, competencies and skills that

influence one's ability to succeed in coping with environmental demands and pressure. According to Mayer and Salovey (1997), EI is the ability to perceive emotions, to access and generate emotions to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions to promote emotional and intellectual growth.

Gender is one of the personal variables that have been linked to differences in creativity accomplishment. Scores of studies have tried to answer these questions, and the results have been quite mixed (Costa, Terraciano & McCrae (2001) and Averill (1999). Depending on the study, women have sometimes scored higher than men and men have sometimes scored higher than women Misra, 2003 and Tegano & Morano,1989). According to Kaufman and Baer (2005), gender differences in creative achievement exist in many domains, especially if one focuses on the highest level of creative accomplishment.

Mcfadzean (1996) observed that today's business environment is constantly changing and is unpredictable. Consequently, organisations cannot rely on their old methods of doing things. To meet this and other challenges, a new way of thinking must be established. Thus, many organisations are turning towards new tools and techniques that will help them solve problems more effectively, to make decision more rapidly and to explore opportunity more creatively.

This study examined two creativity training programmes - Simplex, which is foreign and APCAW, which is indigenous - in order to determine their relative effectiveness in fostering business creativity competence in corporate organisational setting in Nigeria. The two selected techniques are:

**Simplex:**

Basadur (1979) developed the Simplex system for creative and innovative thinking in collaboration with major international client organisations that assisted in its development and implemented it with great success. These organisations included Procter and Gamble, Pepsi-Cola, Ford, Kimball, among others. The Simplex system is a continuous, dynamic, circular, three phases process of finding good problems, solving them, and implementing good solutions. The Simplex process involves eight- step:

(1) Problem finding,
(2) Fact-finding,
(3) Problem definition,
(4) Idea finding
(5) Selection and Evaluation
(6) Action Planning,
(7) Gaining acceptance
(8) Action.

**APCAW:**

Akinboye (1999) developed Akinboye's Practical Creativity at Work (APCAW). It consists of the following ten steps:

(a) Make creative pause
(b) Note the barriers to creativity and plan to resist, cope with and eliminate them.
(c) Define broad areas to operate.
(d) Focus on appropriate domain of the enterprise.
(e) Set criteria of success.
(f) Use appropriate creativity techniques.
(g) Run creativity sessions.
(h) Harvest new ideas, concepts and new designs.
(i) Evaluate actionable ideas for risks, feasibility, fit, resources, futility and effectiveness and
(j) Develop, produce, commercialize, that is, innovate, and take ideas, concepts, designs, products, and services to the market.

**Objectives of the study**

The main purpose of this work is to determine the effectiveness of Simplex and APCAW training techniques in fostering business creativity competence of managers in the corporate business ambience in Nigeria. The study also investigates the interaction effects of the moderating variable gender – on the relative efficacy of Simplex and APCAW on participants' business creativity competence.

**Hypotheses :**
The following null hypotheses were formulated to guide the study. These were tested at 0.05 level of significance.

**Hypothesis 1:**There is no significant difference in the effect of Simplex, APCAW between the experimental and control groups on business creativity competence.

**Hypothesis 2:** There is no significant difference in the effect of gender on participants' business creativity competence between those in the experimental (Simplex, APCAW) and the control groups.

**Hypothesis 3**: There is no significant interaction effect of treatment and gender on the business creativity competence of participants' between those in the experimental (Simplex, APCAW) and control groups

**Methodology**
This study adopted the pre-test, post-test, control, experimental design using a 3x3×2 factorial matrix. This is because of the fact that this experimental design accomplished in one experiment what otherwise could have required two or more separate studies. Also, the design provides an opportunity to study the interactive effects of the moderating variable-gender. These variables exist at three levels of treatment - Simplex, APCAW and Control group; and Gender at two levels (male and female) and emotional intelligence at three levels (high, medium and low). The target population for the study comprised of all information, communication and technology (ICT) companies in Lagos, Lagos State. Three Information Communication Technology (ICT) companies– Xerox, Sharp and Nashuatec - were purposively selected, because of their workforce size that adequately accommodates the number of the participants needed for the study. A total of one hundred and twenty six (126) participants took part in the study. The selected participants were randomly assigned to the Simplex, APCAW and Control groups using simple balloting with special regards to their gender and emotional intelligence levels. This assignment of subjects was to ensure that no more than seven (7) male and seven (7) female subjects with high,

medium and low emotional intelligence levels fall into a group. This suggested that 42 subjects, made up of 14 high EI, 14 medium EI and 14 low EI were exposed to Simplex, APCAW and Control ( placebo treatment) respectively. The following instruments were used for the study.

**Ibadan Creativity Assessment Scale (ICAS):** For the purpose of collecting data for this study, Akinboye (1976c) Ibadan Creativity Assessment Scale (ICAS) served as the major instrument. The study employed all the four sub-scale (A, B, C, D) of the ICAS. Generally, ICAS was divided into two sections A and B. Section A was designed to elicit personal information, such as, Name, Date, Age, Gender, Occupation, while section B contained the four sub-scales mentioned earlier on. Sub-scale 1 elicited information on Ideative flexibility, that is, the ability of the participants to be flexible to problem-solving in the twenty-one (21) alternative, multiple choice items provided. Sub-scale 2 on Ideative originality aimed at teasing out information about participants' level of persistence and perseverance for new information; it contained twenty-one (21) questions. Sub-scale 3 on Ideative fluency, aimed at testing the ability of participants to generate many ideas in a situation that is free of restrictions; it is made of twenty-five (25) items. Sub-scale 4, was used to gather information on creativity motivation. It probed the participants energizing tendencies to creative behaviour; it is made of twenty (20) items. To establish the psychometric properties of the battery of tests, Akinboye (1976c) used a sample of two hundred participants. Akinboye reported a construct validity co-efficient alpha of: á=0.64 for Ideative Flexibility, á =0.71 for Ideative Originality, á =0.76 for Ideative Fluency á=0.77 for Creativity motivation. The following test-retest reliabilities were recorded for each of the sub-scales: Sub-scale "A" Ideative Flexibility r=0.72, Sub-scale "B" Ideative Originality r=0.77, Sub-scale "C" Ideative Fluency, r=0.79, Sub-scale "D" Creativity Motivation r=0.85

**Schutte et-al Emotional Intelligence Scale:** The Schutte et- al Emotional Intelligence Scale (1998) was developed by Schutte, Malouff, Hall, Haggerty, Cooper, Golden and Dornheim based on the model of

emotional intelligence developed by Salovey and Mayer (1990). A five-point Likert scale was provided, where 1 = 'Strongly disagree' and 5 = 'Strongly agree'. A factor analysis of a pool of 62 items suggested a one-factor solution of 33 items. The one- factor solution resulted in scale items that represented each of the following categories: appraisal and expression of emotion in the self and others, regulation of emotion in the self and others, and utilization of emotions in solving problem. An internal consistency analysis of the 33 items showed a Cronbach's alpha of 0.90. The cross- check of internal consistency showed a Cronbach's alpha of 0.87 for 32 participants with an average age of 30.11, S.D. =8.45 who responded to 33-items measured. The 33-item scale developed through factor analysis showed good internal reliability with two different samples. Two-week test-retest reliability score of 0.78 indicated that the scores were fairly stable over time. The scale has been used with success in Nigeria by Mabekoje and Ogunyemi (2003) and Adeyemi and Mabekoje (2003).

**Procedure/Method:**
The procedure for the collection of data for the study was divided into three main phases.

**Phase one: (Introduction/Pre-treatment session)**
Introductory meetings were held with the participants of the selected organisations to familiarise them with the researcher's mission, objectives and the benefits to be derived from their participation. Suffice it to say that this meeting was used to formally introduce the researcher to the participants' and to solicit for their co-operation and understanding. At the end of the introductory session, the **Schutte et-al** emotional intelligence scale was administered on all the selected participants' for the study. The results obtained formed the basis of the classification of the participants into High, Medium and Low emotional intelligent groups. Participants were, thereafter, randomly assigned to treatment and control groups using simple balloting.

**Phase Two: Administration of the training packages**

This is the session where the training packages on Simplex, APCAW and placebo were taught. Each experimental group was exposed to two sessions, of one hour per session, of lectures, role-plays, and group/ individual exercises per week. In all, each of the experimental groups had 12 contact sessions of either Simplex or APCAW training package spanning a total of six weeks. The control group was also exposed to a placebo-training programme spanning six weeks of 12 contact sessions. This session also features the administration of the pre-test on the experimental groups and the control group at the beginning of the training programme. The scores obtained were recorded as the entry level scores for the participants. The administration of the training packages on Simplex or APCAW commenced immediately after the pre-treatment tests. The participants under the control group were given a placebo treatment. They were met with over 12 contact sessions spanning six weeks of role-play, lectures and individual/ group exercises. A session last for one hour; and two sessions were conducted weekly. The group met weekly, every Thursday from 2.00p.m-4.00p.m. The participants in the control group were given lectures on general topics not related to creativity.

**Phase Three: Evaluation of the treatment packages**

The researcher devoted this phase to the evaluation of the treatment packages and the entire training programme. The researcher administered the post-treatment tests after the completion of the treatment packages to determine the effect of the treatment on the participants. The entire batteries of test administered at the beginning of the training programme were re-administered on the experimental and control groups and the scores obtained were recorded as the post treatment score.

**Analysis of Data**

The Analysis of Covariance (ANCOVA) and t-test statistics were adopted to analyse the data gathered from this study. All hypotheses were tested at 0.05 level of confidence using a two-tailed test.

## Results

**Hypothesis 1:** There is no significant difference in the effect of Simplex, APCAW between the experimental and control groups on business creativity competence.

**Table 1: Analysis of Covariance (ANCOVA) of the main and interaction effect of treatment, gender and emotional intelligence on participants' Business Creativity competence.**

| Source | Type III Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 65126.488a | 18 | 3618.138 | 12.318 | .000 |
| Intercept | 17608.856 | 1 | 17608.856 | 59.949 | .000 |
| Pretest Creativity | 23087.305 | 1 | 23087.305 | 78.601 | .000 |
| Group | 160552.266 | 2 | 8026.133 | 27.325 | .000 |
| Gender | 103.126 | 1 | 103.126 | .351 | .555 |
| Emotional Intelligence 2 | 2478.946 | 2 | 1239.473 | 4.220 | .017 |
| Group by Gender | 150.493 | 2 | 75.247 | .256 | .774 |
| Group by EI | 1171.447 | 4 | 292.862 | .997 | .413 |
| Gender by EI | 982.882 | 2 | 491.441 | 1.673 | .193 |
| Group by gender by EI | 1323.485 | 4 | 330.871 | 1.126 | .348 |
| Error | 31428.980 | 107 | 293.729 | | |
| Total | 13692185.000 | 126 | | | |
| Corrected Total | 96555.468 | 125 | | | |

a. R Square = .674 (Adjusted R Squared = .620)

The result in table1 above showed significant main effect of treatment on participants' business creativity competence ($F(2,107) = 27.325$; $P < 0.05$). But there were no significant main effect of gender ($F(2,107)=.351$; $p>0.05$ and treatment and gender ($F(2,107)=.256$; $p> 0.05$ on the business creativity competence of participants.

**Hypothesis 2**: There is no significant difference in the effect of gender on participants' business creativity competence between those in the experimental and the control groups.

**Table 2:** Univariate Analysis of Covariance (ANCOVA) for gender difference on participants' business creativity competence.

| | Sum of Squares | df | Mean Square | F | Sig |
|---|---|---|---|---|---|
| Contrast | 103.126 | 1 | 103.126 | .351 | .555 |
| Error | 31428.980 | 107 | 293.729 | | |

The F tests the effect of gender. This test is based on the linearly independent pair wise comparisons among the estimated marginal means. Table 2 above indicated a univariate F-ratio of .351 which was found to be insignificant at .05 level of significance. The hypothesis which stated that there is no significant difference in the effect of gender on participants' business creativity competence was, therefore, accepted by the finding of this study. The implication of this finding is that gender of participants had no effect on their business creativity competence.

**Hypothesis 3**: There is no significant interaction effect of treatment and gender on the business creativity competence of participants' between those in the experimental and control groups.

**Table 3:** Descriptive statistics of gender difference on the business creativity of participants in different treatment groups.

| Group | Gender | Mean | Std Error | 95% Confidence Interval | |
|---|---|---|---|---|---|
| | | | | Lower Bound | Upper Bound |
| **SIMPLEX** | **Male** | 341.987 | 3.769 | 334.516 | 349.457 |
| | **Female** | 337.057 | 3.763 | 329.597 | 344.518 |
| **APCAW** | **Male** | 333.502 | 3.751 | 326.066 | 340.937 |
| | **Female** | 333.263 | 3.755 | 325.819 | 340.707 |
| **Control** | **Male** | 312.704 | 3.742 | 305.286 | 320.122 |
| | **Female** | 312.392 | 3.808 | 304.844 | 319.941 |

a– Covariates appearing in the model is evaluated at the following values: pretest creativity = 309.5000.

Table 1 revealed that there was no significant gender effect on the business creativity competence of participants' in the different treatment

groups (F (2.107) =.256; p>.05). Results from Table 3 above indicated that the mean business creativity score of male participants (341.987) in the Simplex group was not significantly different from that of their female counterpart in the same group (337.057). Similarly, the mean business creativity score of male participants (333.502) in the APCAW group did not differ significantly from that of their female counterpart in the same group (333.263). The mean business creativity score of male participants in the control group (312.704) also was not significantly different from that of their female counterpart (312.393).

**Discussion**

The first hypothesis stated that there is no significant difference in the effect of Simplex, APCAW and Control on participants' business creativity competence. The finding of this study did not support this hypothesis. The Simplex and APCAW participants recorded marked improvement in their business creativity competence after the six weeks training (F(2.107)=27.325;p <.01). This finding was consistent with earlier studies by Adenuga (2004), Akinboye (1976), Akindele-Oscar (2006), Akinboye (1976), Animashaun (2002), Olagunju (1990), Owolabi (1988), Ortese (2005) and Oba-Adenuga (2011) that found that trained participants were superior in creativity competence than untrained participants. This finding also corroborated earlier studies which suggested that creativity is learnable and teachable (Basadur, Graen & Green, 1982; Basadur, Graen & Scandura, 1986; Basadur & Runco,1993; Basadur, Runco & Vega, 2000). More importantly, the finding that managers can be assisted through training to be more creative has helped to correct a number of erroneous believes about creativity. Prominent among these views are: that creativity is a gift bestowed on a chosen few; that creativity is a natural talent and as such is not amenable to learning, teaching, and training. The highlight of the finding of this study is that creativity is an inborn human faculty that can be nourished; cultivated and raised to an extraordinary height in virtually anything we do (Basadur, 2001). One possible explanation for the superior performance of the Simplex and APCAW participants over the control group could be ascribed to the fact that the two techniques have been well researched, validated, and

used over time and hence are simple to practice and assimilate. Secondly, it is also possible that the behaviour modification and verbal self - reinforcement approach promoted among the Simplex and APCAW participants, through role plays, group discussions and presentations helped to boost trained participants' confidence and motivation in tackling difficult problems. Another reason may be traced to the homogeneous composition of participants which increased the group dynamism.

The second hypothesis postulates that there is no significant difference in the effect of gender on participant's business creativity competence. Table 2 showed a univariate F-ratio of .351 which was found to be insignificant at 0.05 level of significance. The hypothesis which stated that there is no significant difference in the effect of gender on participant's business creativity competence was, therefore, accepted by the findings of this study. This implied that gender of participants did not significantly influence creativity competence. Meaning that the two treatments programmes (Simplex and APCAW) used in this study are not sensitive to gender; they worked for both male and female alike. This finding supported earlier works by Chan (2005), Kaufman & Baer (2005), Henderson (2003), Amabile (1982,1983) and Goldsmith & Matherly (1988) that found no gender difference in creativity among participants . The finding also confirmed the assertion by Akinboye (1976), Olagunju (1990), 0wodunni (2002), Ortese (2005) and Akindele (2006) that trained participants were superior and more creative than the untrained in their creativity competence irrespective of gender. However, this finding was contrary to some of the works where mixed findings were reported, Kaufman (in press), Costa, Terraciano & McCrae (2001) and Averill (1999). The finding of this study thus confirmed the effectiveness of Simplex and APCAW creativity techniques in fostering business creativity competence irrespective of the gender of participants.

The third hypothesis stated that there is no significant interaction effect of treatment and gender on the business creativity competence of participants. Table 3 revealed that there was no significant gender effect on the business creativity competence of participants' in different treatment groups ($F(2.107)=.256$ ; $p>0.05$) . This implied that the contribution of gender was not significant to the efficacy of the Simplex

and APCAW programmes in fostering the creativity competence of participants' in the different treatment groups. This is understandable because creativity is an inborn human faculty that can be nourished, cultivated and raised to extraordinary heights in virtually anything we do irrespective of gender difference. Okebukola (1993) submitted that all students irrespective of gender can perform equally in any given task. He commented that when students have opportunities to interact among themselves, the teacher and the materials; knowledge and skills are acquired and learning is real for both sexes.

**Conclusion**

This study confirmed that creativity is a learnable skill and Simplex and APCAW creativity training programmes are effective in fostering the business creativity competence of managers. Most importantly the study reveals the efficacy of the two training programmes on participants' business creativity competence irrespective of gender.

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