SCHOOL ORGANISATIONAL VARIABLES AND EDUCATION QUALITY PERFORMANCE INDICATORS AT SENIOR SECONDARY LEVEL IN SOUTHWESTERN NIGERIA

BY

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A thesis in the International Centre for Educational Evaluation (ICEE),
Submitted to the Institute of Education
in partial fulfilment of the requirements for the Degree of

DOCTOR OF PHILOSOPHY

of the

UNIVERSITY OF IBADAN

MARCH 2021

CERTIFICATION

I certify that this study was carried out by Akanni, Hafsat Omotola under my supervision at the International Centre for Educational Evaluation, Institute of Education, University of Ibadan.

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DEDICATION

This work is dedicated to none but Allah (S.W.A.), for bringing me thus far, my father (Mr L.E Akanni) and mother (Late Mrs R.M. Akanni (1960-1998) who would have loved to watch me grow.

ACKNOWLEDGEMENTS

All thanks and adoration be to Almighty Allah, most beneficent and most merciful for the success of this programme. Allah is the greatest! But for His love and mercy, this programme would not have started at all. Allah alone made it possible despite the challenges faced. I am thankful to Allah for making this a reality in my lifetime.

I am profoundly grateful to my amiable supervisor, Prof. J.A. Adegbile, for his invaluable guidance, encouragement, constructive criticisms, and painstaking supervision of this project. He is an exemplary academician, great teacher, mentor and his fatherly role is second to none. His impeccable character is worthy of emulation to all. I can never forget how he encouraged me to pick up the Ph.D form when I was concluding my Masters degree. He kept to his word, and was always there to give encouragements and moral support even when I tried to lose courage. His reward is with God Almighty. May he reap it in manifolds.

I am forever indebted to the Director of the Institute of Education, Prof. J.G. Adewale for his mentorship, encouragement, guidance and the prompt attention he always gave to my work. He was so supportive at every stage of the work. His contributions were invaluable. He is indeed a great teacher and father. May God Almighty bless and favour him bountifully among men. Also, the contributions of Prof. B.A. Adegoke and Dr. J.O. Adeleke is highly appreciated. They never got tired of my so many questions.

I say a big thanks to all the Research Fellows who tutored me to be an evaluator in the Institute of Education; Prof. A.O.U. Onuka, Prof. Eugenia A. Okwilagwe, Prof. T.W. Yoloye, Prof. Folajogun V. Falaye and Prof. Adenike E. Emeke, Dr.Serifat F. Akorede, , Prof. Monica N. Odinko, Prof. Modupe M. Osokoya, Dr. Ikhmat O. Junaid, Dr E.O. Babatunde, Dr A. A. Abijo, Dr. F.O. Ibode. They were all instrumental to the success of this work. May Allah increase them all in wisdom, knowledge, and understanding and reward you abundantly.

I am very grateful to my father for believing in my dreams and supporting that dream until fruition. I am eternally grateful to my family and guardians: Alh. Y.D. Suleman and Alhaja Simbiat Suleman. The parental roles they played in my life, is what has made me who I am today. Also, many thanks to my grandmother Hajia Mariat

Mahmood, my prayer warrior, My aunt, Mrs Seidat K. Ologun and my brother, Sheriff Akanni for the support and encouragement given at all times. I thank all my cousins for the love and support I get for my pursuits. May Allah make their individual dreams get accomplished.

Special thanks to my mother-in-law Hajia Balqis Oladele, for the assistance she rendered with my baby and my father in-law (Alhaji Abdullateef Hamzat Oladele) of blessed memory who was always so proud to relate to his associates that his daughter in-law was adding this badge.

I am grateful to Dr. M.D. Rufai and Dr. F.K. Ola-Mudathir. I appreciate the support of my friends Drs Afeez Jinadu, Tunde Oladele, Omorinola Fakayode, Kafilat Oyaremi and other colleagues in the Institute of Education for their unwavering moral supports and assistance. Special thanks to my senior colleagues Dr M.O. Metibemu and Dr. M. B. Bakare for their time. kind assistance, generousity and encouragements. The data and analysis of data would not have been complete without their deliberate efforts to make it as qualitative as possible.

Finally, I owe this degree to my darling husband, dearest friend and greatest critic, Barr. Abdulsemihi Olayinka Oladele. I cannot quantify his efforts, neither can I thank him enough for his love, care, encouragement, moral, spiritual and financial support to see this programme excecuted. He and our lovely daughter- Sakhiya Iremide Abdulsemihi sacrificed a lot. I am grateful to the new additions to my family, Su'ad Taiwo and Sa'ad Kehinde Abdulsemihi. They are the best companions I could ever wish for. May Allah reward all my well-wishers with success of this world and the hereafter!

ABSTRACT

There are evidence of poor indicators (teacher effectiveness, students non-cognitive outcomes, students achievement in English Language and Mathematics) of educational quality performance in most secondary schools in southwestern Nigeria. This problem has been attributed to school organisational variables (organisational leadership, organisational culture, professional development and learner-centredness) among other factors. Previous studies have focused largely on the interrelationship between student and teacher-related factors with little emphasis on how school organisational variables predict education quality performance. This study was, therefore, designed to explore how school organisational variables determine educational quality performance in southwestern Nigeria. It also established the model fit, predictive accuracy and predictive relevance of each variable to English Language Achievement (EACH) and Mathematics Achievement (MACH) models.

Deming's Total Quality Management Theory guided the study, while the survey design of correlational type was adopted. Simple random sampling was used to select three states: Lagos, Oyo and Ondo from the Southwest, while the senatorial district where each state capital is located was purposively selected. In each of the senatorial districts, three local government areas (LGAs) were randomly selected, while six public and three private schools were chosen from each LGA. In each school, a principal, two teachers (English and Mathematics teachers) and an intact class of SS III students were sampled (principals-81, teachers-162 and students-3331). The seven instruments used were: principal leadership practices questionnaire (r= 0.96), school culture survey (r= 0.84), Teachers Professional Development Affinity Inventory (r= 0.92), learner-centredness questionnaire for students in English Language (r= 0.97) students evaluation of teacher effectiveness scale in English language (r= 0.96), and mathematics (r= 0.96). Students non cognitive outcome scales (r= 0.86). Data were analysed by partial least square-structural equation modelling (PLS-SEM) using SmartPLS at 0.05 level of significance.

Organisational leadership (r= 0.10; r= 0.15), organisational culture (r= 0.15; r= 0.16) professional development (r= 0.14; r= 0.30), and learner-centredness (r= -0.22; r= -0.04) had significant relationships with performance in English language and Mathematics respectively. The EACH and MACH structural models indicated model fitness (SMRM = 0.06 and 0.05 respectively), predictive accuracy (R^2 = 0.30; 0.28, respectively) and predictive relevance Q > 0 on organisational leadership (MACH- Q^2 > 0.046) organisational culture (Q^2 > 0.17 and 0.37 respectively), professional development (Q^2 > 0.28 and 0.51 respectively) learner-centredness (EACH- Q^2 > 0.01), teacher effectiveness (Q^2 > 0.47 and 0.43, respectively) students non-cognitive outcome (Q^2 > 0.24 and 0.21 respectively) English language and Mathematics (Q^2 > 0.12 and 0.15 respectively) had predictive relevance to the EACH and MACH models while organisational leadership for EACH (Q^2 < -0.01) and learner-centredness for MACH (Q^2 < 0 - 0.08) had no predictive relevance to the models.

Organisational leadership, organisational culture, professional development and learner-centredness are important in determining educational quality performance. School institutions seeking quality participation in the provision of quality education should improve school organisational variables to ensure quality performance.

Keywords: Organisational variables, Education quality performance, Stone-Geisser's Q^2

Word count: 470

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ABBREVIATIONS

PD:	Professional development
TQM:	Total Quality Management
WAEC:	West African Examinations Council.
WASSCE:	West African Senior School Certificate Examinations.
PLPQ:	Principal Leadership Practices Questionnaire
SCS:	School Culture Survey
TPDAI:	Teachers' Professional Development Activities Inventory
LCPQS:	Learner-centeredness Questionnaire for Students
SETEMS:	Students' Evaluation of Teaching Effectiveness in Mathematics Scale
SETEES:	Students' Evaluation of Teaching Effectiveness in English-Language Scale
SNOS:	Students Non-cognitive Outcome
PLS-SEM:	Partial Least Square Structural Equation Modelling
CB-SEM:	Co-variance Based Structural Equation Modelling
MACH:	Mathematics Achievement
EACH:	English language Achievement

CHAPTER ONE
INTRODUCTION

1.1 Background to the Problem

Education remains a basic factor of growth and development. It is a means of reducing inequality, an avenue for social and political change and a mechanism for making other investments more productive. It also accounts for a larger percentage of what develops a nation and her people in terms of infrastructure, economy, growth rate, poverty rate. Education is a panacea for human socio-economic growth and development.

Although, education could have broad meanings, what is apparent is that education is a tool for the sustenance of individuals and the society. This makes it a self-evident venture which should be prioritized in terms of investment, planning, management and accountability. In other words, educational management processes involve the organisation and deployment of systems that ensure the execution of policies, strategies, and action plans across sets of integrable practices in order to accomplish educational goals (Amanchukwu, Stanley and Ololube, 2015).

The value of education is synonymous with the quality of education accomplished, which is a requisite for achieving the fundamental goal of equity. Possibly, what quality education should entail was rightly encapsulated by Bamisaiye (1983), who described it as what improves the quality of the work enterprise by raising the level of its skillfulness and proficiency, giving a nation admittance to the world body of knowledge, and as a conseqence, the acceptance and acclimatization of the prevalent technology to specific environment is encouraged. The net yield of quality education is a dynamic increament in productivity and efficiency, hence, the standard and quality of livelihood. Quality improvement of educational output has implications for the future of a nation.

The word ‘quality’ comes from the Latin word *qualitas* (property, quality, value, characteristic, feature, ability). In a uncommonly engaged world with growing consumer need, quality has become the key factor of continuity not just for specific industries and

organisations, but also for the entire nation's economy. The case for education is not different because quality education is the goal of every level of education. However, the prescriptions for quality education may vary from one country to another considering their philosophies, economy, resources, value systems and educational goals. The three main concerns relevant to policy makers about the developmental gains to be derived from educational investment are;

1. educational realization as a fundamental human need in itself;
2. equity and productivity in the performance of the educational system, where productivity relates to the cost-effectiveness of the educational system and the utilization of resources utilized in education and equity to the appropiation of possessions and benefits among the populace; and
3. *externalities* of education, i.e. its effect on productiveness, work enterprise functioning, wellbeing and taking part in social transformation (Vos, 1996).

Quality education has been defined using different parameters of estimates. This trend makes it seems that there is no unification of standards and the evaluation criteria for quality education in different education systems is not conclusive about the measures of quality education. Researchers battle that training quality is a multi-dimensional idea that cannot be effectively evaluated by just a single pointer and the desires for various stakeholders (policy makers, parents, school management committee, teachers, students) on education may differ greatly (Bamisaiye, 1983; Stephens, 2003; Subrahmanyam and Shekhar, 2014). Stephens (2003) concludes that quality in education is slippery and prone to be subject to the point of view of the individual endeavouring the definition.

The working definition of quality education in Nigeria recognizes five dimensions of quality: learners, environments, content, processes and outcomes. These are established on 'the privileges of the child, to survival, protection, development and participation' (UNICEF, 2000). In any circumstance, education remains the strong-hold and foundation for meaningful growth and development of individuals in any society. According to Valasic, Vale and Puhar (2015), access to education and quality education are commonly reliant and indissoluble needs and rights. This is principally accomplished by creating imagination, civil and autonomous values. Quality of education may be viewed in terms of;

1. The inputs - which includes infrastructure, human and material resources,
2. The process - which includes the combination of all mechanisms of teaching-learning activities provided to students,
3. The output - which includes the end performance of students that justifies and also serve as index of efforts put into having products of the educational programme and
4. The outcome - which is the final goal for which people are educated. It can be observed by the transformation reflected through productivity and efficiency within the society.

While quality education emphasises the value of education for all, educational quality is rooted in measures of observable factors that delineate the value for education. Hence, educational quality are components in the input, process, and output of schools that give benefits that fulfil both the domestic and independent strategic interest group completely by living up to their express and certain desires (Chiaha and Nane-ejeh, 2014). It is dynamic and includes nonstop upgrades and improvement of the individuals, practices, procedures, and results of the educational system.

Education quality is primarily concerned with learning and applies the three inquiries; who learns, what is learned, and how it is learned while quality in education stresses the value for or how much of what is learned is beneficial to the individual, human capital or society. On the other hand, educational performance is the outcome of education and therefore the extent to which the educational goals are achieved. The performance is usually measured in terms of indicators of either outflows or routines of educational realization (Vos, 1996). The aggregate conducts of such factors are the performance indices of what goes on in the school system at the macro level.

Education quality performance is outcome-based and refers to the conduct of observable and measurable attributes in the educational system on which high expectations are being placed. Education quality performance mirrors the result of good instruction with the emphasis on teaching and learning and the degree of the presentation (whether it is excellent, good, acceptable or unsatisfactory). Hence, performance indicators are data indices of attributes that inform the procedures of vital basic

leadership that outcome in quantifiable upgrades towards the ideal results of education (Rowe and Lievesley, 2002).

Performance indicators can encourage upgrades in the structure and application of instructive strategies, give data about winning issues and allude to a portion of the reasons for the issues. They are also indicative for in-depth analysis and evaluative work. They help the procedure of determination of existing needs and definition of precedence in improving education. To this extent, performance indicators can lead to programmes of educational reform.

There are varieties of indicators that are pointers of education quality performance. They encompass input, process and output variables. Examples are participation rates in education at all levels, indicators of resource provision and funding, access rates, repetition rates, promotion rates, class sizes, achievement outcomes in core curricular, longitudinal achievement progress indicators and provision of teacher training.

The input indicators access the material and immaterial pre-conditions for the core transformation processes in school organisations. Meanwhile, process indicators cover national level indicator systems and multi-level indicator systems, where transformation processes at school level are fundamental. The outcome indicators are central in productivity and effectiveness interpretations of educational quality and also play an indispensable role in assessing the equity, efficiency and responsiveness of schooling (Schereens, lutyen and van Ravens 2011).

Therefore, it is noteworthy to observe that every facet of educational system is an adjunctive system whose interacting parts produce their individual indicators that denote whether their interactions are healthy or otherwise. Meanwhile, building educational quality requires policymakers and administrators to plan and conduct research in partnership with teachers. This synergy will be useful in providing the support that children, teachers, and schools need. A careful analysis of education quality performance indicators of the entire education system may give an insight to happenings within the system and therefore, find resolutions for areas deemed necessary for tangible school improvements.

The methods and processes of teaching and learning are good indicators of education quality. These focus on the teacher, who in turn focus on the assessment of

children's learning and uses the findings to constantly invent opportunities for improving teaching and learning. Thus, the performance of teachers and students are paramount in monitoring educational quality. These indicators demonstrate the results of factors that had been put into education by delivering the outputs of such endeavours. The attribute that describes the quality of a teacher is their effectiveness at the job while students' performances can be reviewed through their learning outcomes. They indicate the output deliverables and consequently the outcomes of quality education.

Teacher effectiveness is used to describe the collection of characteristics, competencies, and behaviours of teachers at all educational levels that enable students to reach desired outcomes" (Hunt, 2009). Awofala (2012) in Calaguas (2013), claimed that teacher effectiveness is synonymous to individual teachers' performance and "teacher effectiveness is encompassed in knowledge, attitudes, and performance" (Hunt, 2009). Typically, effective teachers achieve the goals that are set for them or which they have set for themselves (Anderson, 2004). In addition, they enable their students to attain "specific learning objectives as well as broader goals such as being able to solve problems, think critically, work collaboratively, and become effective citizens" (Hunt, 2009).

According to Gabriel (2011), it is easy to say that teacher effectiveness is the single most important factor in student achievement, but difficult to say what it means to be effective. The work of effective teachers reverberates far outside of school walls and possibly throughout the lifetime of their students. They instill in their students, a love of learning and a belief in themselves that they carry with them throughout their lives. Teachers are the single most important factor in creating an effective and inclusive classroom. Teacher effectiveness has proven to be one teacher quality that consistently improves students' academic gains (Lockhead and Komenan, 1988; Sanders and Rivers, 1996; Schacter and Thum, 2004; Adediwura and Tayo, 2007; Adu and Olatundun, 2007; Hech, 2009; Oyinlola, 2014).

Non-school factors do influence students' academic performance; however, effective teaching has the potential to help equalize the playing ground. Therefore, it is important to identify highly effective teachers and principals on the basis of student growth and other factors through the most effective means. This identification will in

turn inform professional development and also help teachers and principals alike to improve student learning and support ambitious efforts (Gabriel, 2011). Hunt (2009) asserts that the quality of a teacher can make the difference of a full year's growth in learning for a student. Teacher effectiveness is important because the effectiveness of every teacher is the life of every educational institution.

The philosophy of 9-year Universal Basic Education (UBE) curriculum entails that every learner who has gone through nine years of basic education should have acquired appropriate level of literacy, numeracy, manipulative, communicative and life-skills, as well as the ethical, moral and civil values needed for laying a solid foundation for life-long learning as a basis for scientific and reflective thinking'' (NERDC, 2008). Quality education is the access to the core skills most valued by the national education system, that is, literacy, numeracy and life skills. For quality education to thrive, these skills are essential.Value judgement on the educational quality will be placed primarily on such skills by stakeholders. For this reason, at least a pass in English Language and mathematics is required for further studies after the completion of secondary education in Nigeria.

One way to judge educational quality is a focus on what students achieve, what they know and can do. Since stakeholders can specify what is expected of all students to learn, there must be avenue to assess students to determine whether they have learned it. The ultimate indicator of educational quality is students' learning outcome. Students' achievement is intricately linked to school performance. In Nigeria, students' achievement in public examinations like WASSCE, NECO and NABTEB are pointers of educational quality in the country.

While measures of students' achievement are germane, a learning endeavour is not complete without the development of students' non-cognitive capability, particularly in affective and social skills. Chiaha and Nane-Ejeh (2014), express the view that even where students acquire intellectual skills and succeed in examinations, they still remain failures in life as they have not acquired other life-saving skills, such that when they are faced with problems and challenges, they fail to cope and rather resort to unethical and immoral behaviours that have negative impacts on societal development. A qualitative education should be able to guard against such occurrences in the society. Therefore,

students' non-cognitive capabilities form important part of school education that should be evaluated because they constitute some essential life skills.

The Education Bureau (2015), specifies that schools should provide students with opportunities for whole-person development by examining students' performance in the areas of 'attitude and behaviour' and 'participation and achievement' in order to understand students' holistic development. Some non-cognitive skills important to assess students development include, students' self-learning aptitude and ability, attitude, motivation, self-concept, learning competency, psychological well-being, goal directed behaviours, creativity, ethics, values, coping skills, social life, critical thinking, problem solving, decision making, ability to communicate and collaborate, civic awareness, along with personal and social responsibility.

All these are essential skills for success that result in healthy societies and contribute to good citizenship. Students who are able to understand and use these skills along with their educational qualifications will be better placed to take advantage of educational and employment opportunities and contribute their quotas to societal development. Therefore, upon completion of secondary schooling, the school system should be able to provide answers for the level of individual student's skills in these domains.

Students' gross performance constitutes a major outcome of school education; the evaluation of non-cognitive outcomes which impart life skills therefore completes students' learning outcomes circle. Although, there is no consensus on which among the non-cognitive factors are most important to assess at the end of each level of education, students' self-concept, quality of school life, relationship skills, ethics and values, leadership and goal-directed behaviour and life goals are of interest in this study because of their role in students immediate and long-term success and societal functioning.

Self-concept refers to the collection of beliefs in oneself. Mostert in Louise (2011) contends that a positive self-concept is one of the vital elements for success. Since self-concept is both a personal and motivational variable, its overall contribution to the variance of academic achievement should be quite high because individuals seem to be motivated to perform in a manner consistent with their self-concept. Meanwhile, the quality of school life is characterized in terms of individual and contextual connections to

the school environment. It is generally defined in terms of general satisfaction with school, commitment to school work and attitudes towards teachers. Epstein and McPartland (1976) proved the significance of the impact of school life on the forming personal and social identity of pupils. They identified school life experiences as important determinants in their future education, as well as in their overall attitudes towards long-life learning.

To thrive in the immediate environment and the wider society, inter- and intrapersonal relationship skills are essential. They are defined as social associations, connections or affiliations. Relationship skills help to engage, interact and build relationships. It includes the ability, knowledge and understanding to communicate, trust and maintain relationship with others. These skills are critical to success at all stages in life. Peer relationship in the classroom ensures that students have healthy relationship with other students. Likewise, teacher-student relationship increases chances of success and productivity.

In a similar vein, ethics and value are necessary conditions for uprightness, civility, and maintenance of law and order in the society. Ethics are moral principles or values that govern the conduct of individuals or groups and strengthen the social fabric. Ethics transcends religious, cultural, ethical, social and spiritual values. It fosters fundamental and human values by generating a caring and compassionate consciousness which has the potential to salvage human goodness.

To achieve many set goals, taking responsibility and control of ones affairs reverberates energy and keeps the focus. The initiation of and persistence in completing tasks of varying difficulty help students translate their vision into reality. Students' preparation for social functioning would be strengthened when they are able to identify the instrumentality and authenticity of their goals, plan action steps for reaching those goals, engage in peer coaching and mutual support strategies, and evaluate personal progress. Ultimately, having substantial motivation towards future goals is an important aspect of their adaptability. So, the expectations that students have and the extent to which they want to achieve their goals reiterate the personal, affective and social skills they have constructed.

Helping students to gain skills that will help them naturalise within the society, promotes students holistic development. These attributes allow students to cope and be productive and useful members of the society. Therefore, their performance in this domain makes education all-encompassing. A student that has passed through the secondary school up till SSIII is expected to have the fundamental literacy, numeracy and life skills.

Nigeria is said to be below average in literacy, numeracy and life skills (Punch, 2016) whereas, there is the maximum likelihood that life skills were not evaluated. Similarly, the outcry that "students are failing" is viewed in the society as evidence of falling standard of quality in education but technically, it is the level of outcomes that the various stakeholders are not satisfied with. The reason the practitioners dwell on conformity to the speculated goals is because there is still a standard that needs to be met; hence, it is important that stakeholders evaluate whatever is valued. It is upon this premise that the factors affecting teacher effectiveness and students' achievement in English and mathematics and students'non-cognitive skills need to be re-examined to ascertain quality.

From the foregoing, implementing the sound processes that will ultimately lead to the provision of quality in the education system is a goal of national education systems. The constituents of school organisations vary, likewise their organisational dynamics which may account for some differences in the educational performance of schools. Many factors including: school, student and teacher factors affect the indices of educational quality in varying lengths. Therefore, the pursuit of quality improvement is crucial to the actualization of the standard or quality desired. Also, continuous institutional development becomes necessary for quality instructional process, quality examining system and quality outcomes which are all subsets of quality management of the secondary school system. Thus, it is important to look into cardinal and foundational mechanisms that can structure and reform educational organisations such as the school. This is because concerted efforts to provide quality education may be impaired by some of these management and organisational variables.

The management of organisations are coordinators and executors of organisations quality objectives; they play pivotal roles in establishing and achieving quality standards

in school organisations. Among the key variables that could have impact on school systems as an organisation is the kind of leadership present in the school, the subordinates, the environment, the processes and the practices within the system. This, to a great extent can affect the kind of output produced in an institution and the attainment of educational goals. For quality outcome delivery, what is appropriate is to ascertain quality management of all parts of education.

To build an effective quality management system in education, the leadership of educational institutions has been identified to be a key variable with the areas of interest by academics and practioners because leadership has the potential to unleash latent capacities in organisations. School leaders have a wide range of responsibilities. They oversee limited resources within their capacity and coordinate learning. As the lead persons, they manage inputs, processes and outputs of school organisations. Burns, in Abbasialiya, (2010), stated that leadership is arguably one of the most observed, yet least understood phenomena on earth. Managing humans and material resources in education needs competent, professionally trained administrators, and planners equipped with modern techniques of educational management so as to achieve the goals and objectives of education (Oluremi, 2014).

Leadership is second only to quality teaching and classroom instruction among school-related factors that affect student learning in schools (Leithwood et.al. 2006; Wallace Foundation, 2013). In any school, a range of leadership patterns exists among principals, assistant principals, formal and informal teacher leaders, and parents but the principal remains the central source of leadership. The job of the leader is to strategically select and improve the status of all school variables. In the description of Leithwood, Day, Sammons, Harris and Hopkins (2006), stability and improvement is a statutory function of leadership and management, leadership has very significant effects on the quality of the school organisation and on pupils learning because of its ability to provide direction and exert influence

The evidence from the school improvement literature highlights that effective leaders exercise an indirect influence on schools capacity to improve upon the achievement of students. This influence does not necessarily derive from senior managers, but partly lie in strengths of middle level leaders and teachers (Harris, 2004).

Educational research has shown that most school variables, if considered separately, have at most, small effects on learning. A combination of several individual variables results in a critical, cogent and valuable contribution to education. Creating the conditions under which that can occur is the job of the principal.

Leadership effects explain an important proportion of the school-related variance in student analysis (Leithwood and Riehl, 2003). Researchers who have examined school organisational leadership agree that effective principals are responsible for establishing a school wide vision of commitment to high standards and the success of all students (Wallace foundation, 2013).Sun and Leithwood (2015), provides information that school leaders can positively influence teacher commitment, a key variable in delivering quality teaching and learning, by fostering shared governance and a culture of collaboration that helps to develop professional learning communities, implement school based management (SBM), provide collaborative professional development activities, and encourage participatory decision-making.

Similarly, it has been demonstrated that the quality of leadership matters in determining the motivation of teachers and the quality of teaching in the classroom (Fullan, 2001; Sergiovanni, 1999). Perhaps, this is the reason Onabamiro (2014), submitted that school effectiveness is solely a responsibility of the school principals as they give account of whatever success or failure is experienced by the school. The researcher further expressed that if the principals supervise the teachers well, the teachers will monitor the students and manages their classrooms effectively. This leads to quality outputs that are desired of quality education.

Over time, researchers have proposed different styles of leadership as there is no particular style that can be considered universal (Amanchukwu et al, 2015). Despite the many diverse styles, a good or effective leader inspires, motivates, and directs activities to help achieve group or organisational goals. Conversely, an ineffective leader does not contribute to organisational progress and can, in fact, detract from organisational goal accomplishment. According to Muijs (2008), the leadership literature tends to be quite prescriptive in nature, and factors such as transformational rather than transactional leadership, instructional rather than administrative leadership and leadership rather than management have all been posited as key elements of organisational effectiveness. The

effectiveness of each style has to do with the context and situation at hand. Effective leaders are therefore said to combine one or more traits to be really effective.

Studies have highlighted the importance of leadership in school organisations (Amanchukwu et. al, 2015; Sun and Leithwood 2015; Onabamiro, 2014; Wallace foundation, 2013; Leithwood et.al. 2006). The stakeholders of education may not have taken issues concerning quality leadership of quality management of education as important as it may have seemed in research. Past and recent researches continue to canvas leadership practices, behaviour, characteristics, theories and styles that are most suitable and influential to accelerate quality performances in school organisations.

Wan and Jamal (2012) found that the role of the principal is important in determining high-academic performance of students in examinations. Onabamiro (2014) showed that the supervisory role of the principal has indirect effect on mathematics achievement. Meanwhile, it was confirmed that autocratic leadership style had indirect positive effect while democratic and transformational leadership styles have both direct and indirect positive effects on secondary school students' achievement in mathematics (Tek, 2014).

Gkolia, Belias and Koustelios (2014), mentioned that principal's transformational leadership (school-level) has a significant effect on all factors of teacher's job satisfaction (classroom-level). On the contrary, Gieselmann, 2009; Siegrist et al., 2009; Quin et al 2015) indicated there is no significant correlation existing among transformational leadership practices and student achievement. Gaziel (2007) noted that leadership practices are better captured by measures of instructional leadership rather than transformational leadership, whereas, Marks and Printy (2003) suggested that both are necessary for administration and pedagogy. This study examined the effects of both leadership practices on secondary school students' achievement in mathematics and other education quality performance indicators.

Researchers contended whether it is the factors in the school such as the teachers and other subordinates, students and the school community that shapes a leader's approach to the management and coordination of a school or it is the leader that determines what is obtainable in a school and its environ (Quin, Deris, Bischoff and Johnson 2015; Leithwood and Sun, 2012; Ogbonna and Harris 2000**)**. According to

Janićijević, (2012), the character of different components of management and organisation, such as strategy, structure, leadership style, organisational learning, system of rewards, and motivation, emerges precisely from the way in which employees and management understand organisational reality and behave in it. Meanwhile, Tsai (2011), concludes that the core values of an organisation begin with its leadership, which then evolve to a leadership style. Subordinates are led by these values and the behaviour of leaders, such that the behaviour of both parties becomes increasingly in line. When strong unified behaviour, values and beliefs have been developed, a strong organisational culture emerges.

Organisational cultures are informal aspects of organisations rather than their official elements. They focus on the values, beliefs and norms of individuals in the organisation and how these individual perceptions fuse into shared meanings. Culture is manifested by symbols and rituals rather than through the formal structure of the organisation. Schein (2011), defines organisational culture as shared philosophies, ideologies, beliefs, feelings, assumptions, expectations, attitudes, norms, and values. It is a system of assumptions, values, norms, and attitudes, manifested through symbols which the members of an organisation have developed and adopted through mutual experience and which help them determine the meaning of the world around them and how to behave in it (Janićijević, 2011).

Like any other goal oriented organisation, school organisational culture holds an educational unit together, gives it a distinctive identity, and vigorously resists change from the outside. It results from both conscious and unconscious perspectives, values, interactions, and practices, and it is heavily shaped by a school's particular institutional history. Students, parents, teachers, administrators, and other staff members all contribute to their school's culture, as do other influences such as the community in which the school is located, the policies that govern how it operates, or the principles upon which the school was founded.

Although, there are positive and negative school organisational cultures, school cultures are closely related to the healthy and sustainable development of a school, the development and well-being of the school members, and the objectives of the school and education (Zhu, Devos and Li, 2011). Thus, the culture of an organisation connotes that

all the members of the organisation similarly understand the organisation, and the suitable way in which it functions, and changes. Organisational culture, through its assumptions, values, norms and symbols, determines the way in which the members of an organisation perceive the reality within and around their organisation, as well as the way they behave in that reality (Janićijević, 2012).

Ogbonna and Harris (2000) observed that organisational culture and leadership are intertwined. He illustrates this by looking at the relationship between leadership and culture in the context of the organisational life cycle. The foundation leader creates and shapes the cultural traits of their organisation which reflect their values and beliefs. However, as the organisation develops with time, the created culture of the organisation exerts an influence on the leader and shapes the actions and style of the leader. Through this dynamic continuous process, the leader creates and, is in turn shaped, by the organisational culture. Subsequently, different leaders of the organisation also exert their own values and beliefs on the culture of school organisations while an intact culture is unconsciously formed. Disentangling such relationship is complex.

Nguyen and Mohamed (2011) examined the moderating effect of organisational culture on the relationship between leadership and knowledge management process, in the context of small-to-medium sized enterprises operating in Austria. They found that the effectiveness of leadership behaviour depends upon the type of organisational culture. But, Kargas and Varoutas (2015) examined the degree at which leadership affects culture and vice versa. Their results revealed that in all cases, leadership affects culture more than it is affected, leading to a leader-centric profile where leadership plays a more significant role to cultural formatting, than the opposite.

Ogbonna and Harris (2000) and Oparanma (2010), contend that organisational culture engenders several important activities and initiatives leading to the success of organisations. Similarly, a strong and positive school culture can increase the scope, depth, complexity, and success of what teachers teach and what students learn and achieve. Brockmeier, Starr, Green, Pate and Leech (2013), said that in order to change school culture to improve student learning, principals must be prepared for the responsibilities of their office. Since a stable school leadership is crucial to improving student achievement, efforts must be made to prepare, recruit, and retain quality school

principals. In addition to being prepared to successfully lead schools, principals must be given adequate time to have significant impact on school culture and student achievement (Hall and Hord, 2001).

Changing the school culture to embrace school improvement efforts takes time (McAdams, 1997; Hull, 2012). On the account of studies (Hall and Hord, 2001; Hull, 2012 and Brockmeier et al., 2013) stating that significant change takes three to five years, leadership stability or principal's tenure may be a considerable factor, when examining the density at which leaders create culture or the manner in which culture exerts influence on leaders. Logically, retaining quality principals is of paramount importance.

Literatures (Oshin, 2014; Zhu, et al. 2011; Michell, 2008; Gruenert and Valentine, 1998) have categorized school organisational culture and their influence on persons in the organisation in different ways, with each culture type having its peculiarities. However, to analyse school organisational culture, it is helpful to have an understanding of the three most identified descriptors used in school culture literature. These are, bureaucratic, collegial and toxic cultures (Oshin, 2014; Michell, 2008; Gruenert and Valentine, 1998).

Sackney (1998), Sweetland and Hoy (2000), Le Clear (2005), found that school culture has significant positive relationship with students achievement while Zhu, Devos and Li (2011) discovered school organisational culture to be positively correlated to teachers' commitment and school effectiveness. Also, (Quin et al., 2015; Oshin, 2014; Leithwood and Sun, 2012) observed a relationship between school culture and students achievement. Their results show that school culture is statistically significant, and affects students' achievement contrary to the findings of Michell (2008). Some components of school culture also significantly impacted students' achievement (Quin et al., 2015; Gruenert, 2005), just as leadership practices significantly impact school culture (Quin, et al 2015; Leithwood and Sun, 2012).

In an effort to help students learn and produce quality outcomes, it can be argued that real improvement in quality cannot come from anywhere other than within the school; and 'within' is a complex web of values and beliefs, norms, social and power relationships and emotions (Stephens, 2003). Organisational culture has been identified as a critical element, vital to successfully improving teaching and learning in schools.

This makes understanding school organisational culture an essential pre-requisite for any internal or external qualitative change in schools. This study in addition to other findings, checked the influence of school organisational culture on the performances of other education quality indicators.

Having considered the instrumentality of good leadership, positive organisational cultures, it should be noted that teachers and leaders are competent enough to handle educational affairs ranging from pedagogy to shaping students orientation and attitudes. According to Merilinen and Pietarinen (2002), schools are not "faceless" organisations. On the contrary, the working conditions and the whole culture of every school is shaped by teachers (and students), personal, interpersonal, contextual, and situational factors that change over time. Acquisition and usage of professional knowledge is therefore essential to the growth and development of education.

A number of research findings (Akanni, 2014; Omeonu, 2014; OECD, 2012; Scheerens, 2011; Zuzovsky, 2005; Stephens, 2003; USAID, 1999) have shown that teachers account for a significant influence on students' achievement and also playing the most crucial role in students' learning. This is why teaching, as a service profession, requires those working within the profession to possess appropriate interpersonal skills, considering that it is the most immediate process for supporting learning and for enabling learners to acquire expected competencies. For this reason, what happens within the classroom has been of crucial importance to the quality of education. In addition, it is the level of skilfulness of the school leadership and the teachers that play the most vital roles in shaping the school organisation to be positive and productive enough to achieve quality education performances.

Teacher quality is the single most important school variable influencing students' achievement (Darling-Hammond 2000; OECD 2009). This is due to the fact that teaching itself consists of a complex process that requires a constant and consistent upgrade of knowledge and skills. It is therefore highly important that teachers themselves have required expertise to be professionals and remain as one from time to time. Not minding that teachers have passed through the initial teacher education in colleges and universities, the importance of the teachers' professional development has been justifiably emphasised in educational discourse.

Evidence from local and international perspectives suggests that a focused attention on effective professional development for experienced teachers is essential in efforts to improve student's learning and reform schools. UNESCO (2003) enunciates that learning how to teach, and working to become an excellent teacher is a long term process that requires not only the development of very practical and complex skills under the guidance and supervision of experts, but also the acquisition of specific knowledge and the promotion of certain ethical values and attitudes.

Professional development consists of a lifelong learning and development processes. It is an uptake of formal and informal learning opportunities that deepen and extend teachers' professional competence, including knowledge, beliefs, motivation and self-regulatory skills (Richter D., Kunter, Klusmann, Lüdtke, and Baumert 2012). Gall and Renchler (1985), described professional development more specifically as "efforts to improve teachers' capacity to function as effective professionals by having them learn new knowledge, attitudes and skills". Fullan (1995) defined professional development as "the sum total of formal and informal learning pursued and experienced by the teacher in a compelling learning environment under conditions of complexity and dynamic change." A more comprehensive definition given by Day (1999) describes the whole activity and process as all ativities and experiences expected to add value to educational qualitywhich helps teachers acquire and develop critically the knowledge, skills and emotional intelligence essential to good professional thinking, planning and practice.

Professional development for experienced teachers has been given exclusive attention in the professional development literature. The NCTAF in Richter et al. (2012) stressed the need to embed professional development opportunities in public education. Modern views of professional development characterise it as a long-term process extending from teacher education at university to in-service training at the workplace. UNESCO (2003) outlines professional development of teachers as a long-term process that includes regular opportunities and experiences planned systematically to promote growth and development in education.

Professional development experiences and opportunities that are not embedded in some form of major reform of structures, policies, and organisations have not been successful; as changing teachers without changing contexts, beliefs, and structures cannot

create a significant change(UNESCO, 2003). With regard to the effect of teachers' professional development on students' learning, a number of studies (OECD, 2009; Darling-Hammond, 2000; Cohen and Hill, 1997; Borko and Putnam, 1995) have reported that the more professionally knowledgeable teachers are, the higher the levels of students' achievement through direct or indirect paths. Borko and Putnam (1995), offer evidence that experienced teachers' pedagogical content knowledge and pedagogical contents beliefs can be affected by professional development programmes and that such change are associated with changes in their classroom instruction and student achievement.

Cohen and Hill (1997) similarly found strong relationship that links the improvement of teachers' practices and increasing levels of students' achievement. Teachers who participated in sustained curriculum-based professional development reported changes in practice that, in turn, were associated with significantly higher students achievement scores on state assessment (Darling-Hammond, 2000). OECD (2009) confirms that the amount of professional development undertaken by teachers is significantly related to teachers' reported self-efficacy and improved classroom disciplinary climate. This, in turn, makes the learning environment more productive for learning purposes. Enhanced professional knowledge offers the teachers a better understanding of the ways to inculcate knowledge and coordinate students learning experience in a meaningful way.

The essential role of deliberate, high quality professional learning and development is supporting teachers to be responsive to changing, complex and challenging demands. Professional development of teachers is capable of developing the teacher and in the long run, have meaningful impacts on students' achievement and quality outcomes in education. For this, teachers' professional support deserves to be slated as one of the minimum quality standards for providing quality education outcomes.

Professional development of teachers ensures that only the effective and productive teachers remain within the educational system. UNESCO (2003) asserts that reforms centred around teachers professional development have been extremely successful in transforming national education systems. Obanya (2012), emphasizes that

ensuring the availability of effective teachers in the system requires the application of a teacher management system that ensures:

a. the recruitment of those who can (as opposed to those who cannot) teach into teacher education programmes;
b. quality and rigorous teacher education programmes;
c. a strong emphasis on broad general education as foundation for minds-on/hands-on professional training;
d. systematic induction programmes for newly qualified teachers and
e. systematic, career-long development of teachers.

The need to promote values, ideals and practices of teacher professionalism led to the establishment of the Teachers Registration Council of Nigeria (TRCN) which was established to bring about a rapid transformation in the teaching profession. This is with respect to the quality of teacher education programmes, registration and licensing, mandatory continuing professional development, professional conduct, and overall social status of teachers at all levels of the education system and also provide ethical framework for teaching practitioners. This study examined the impact of professional development of teachers on all the education quality indicators highlighted in this research and its relationship with other operational factors.

Emphasis on management and organisational variables and many other factors that determine the quality of school is not sufficient to ensure quality education except necessary priority is given to students as the centre of learning. Therefore, learner-centeredness is another issue of concern which has become indispensable to educators.

Magno and Sembrano (2009), states that one way to determine whether a school has adopted a learner-centred approach is to look at the assessment of both the teaching and the learning process. Dix (2012), states that what distinguishes a truly learner-centred school is that "the values of a learner-centred focus are validated, supported, articulated, and celebrated by everyone. They are not left to chance." Thus, the essential characteristic of being learner-centered is to consider the needs of the learners above all other aims. Putting this into consideration should in turn enable management to adopt best leadership and professional practices and organisational cultures that assists the course of a learner-centred education.

According to McCombs (1997) being learner-centered entails a positive learning environment that facilitates the success of students. The major features of learner-centered practices are: learners are included in the educational decision making process, diverse perspectives of learners are encouraged, individual differences of the learners are accounted for and respected, and learners are co-creators of the teaching and learning process such that the end result of such procedures translate into enhanced students' academic, personal, social learning and outcomes.

A truly learner-centred school organisation must encompass student-centred pedagogies in the classrooms, continuous learning at all levels of the school, strong learner-centred leadership and systemic support with a focus on the students (Harris et al. 2013). Management of school organisations must, therefore, identify school orientation with learner perspectives in delivering quality education. Where there is an organisational and managerial support for the specific goal of quality in education, and energy is directed towards learner-centered education by major stakeholders, the teaching professionals should realise the goals of quality education.

Improvement efforts in the school system may be undermined if school leadership is not stable. The principal as the central source of influence facilitates effective teaching and learning, fosters effective change efforts, leads the implementation of new standards and shapes strong professional school cultures. Just as a principal's presence can improve students' achievement, a principal's departure can have the opposite effects. Therefore, the principal tenure is an important factor in addressing quality improvements in education.

Principal tenure is defined as the duration of time that a current principal has been serving as the principal of a particular school. According to Hull (2012), it takes a highly effective principal about five years to fully impact a school's performance, particularly in terms of putting in place a staff whose vision is aligned with the principal's and to have fully implemented policies and practices that will improve students' achievements. The five years are for institutionalizing the changes the principal had made to improve students achievement. The findings of Brockmeier, Starr, Green, Pate and Leech (2013) show that as the length of a principal's tenure in a school increased the schools mean scale scores increased. Schools with greater principal stability had higher school mean

scale scores. In addition, principal's educational experience had less of an impact on students' achievement than principal's tenure or stability (Hull, 2012).

Meanwhile, in an attempt to ensure that their children perform better in the SSCE and consequently, gain admission to universities of their choice, some parents and guardians have preference for particular types of secondary schools they want for their children not minding the location and the cost implications of the schools chosen (Adepoju and Oluchukwu, 2011). Badau (2015) stated that private schools produce better outputs than public schools as learners' achievement is lower in public schools. The researcher explained that private schools have contributed to the educational development of Nigeria in terms of internal efficiency of the educational system and quality of services.

School type makes a difference in students' academic performance (Adepoju and Oluchukwu 2011; Ajayi 1999). Yusuf and Adigun (2010) noted that it appears most of the public secondary schools cannot compete favourably with state unity schools in terms of students' academic performance. Yet, their study revealed that school type had no significant influence on students' academic performance.

However, some agencies or state governments make efforts to improve the quality of education for the citizens. The partnership between Lagos State Government and the World Bank has the overall objective of improving the quality of education and enhancing learning outcomes in public secondary schools in the state (Lagos Eko Project, 2013a). The project is an intervention targeted at addressing the deteriorating quality of education in the state as reflected by the West African Senior School Certificate Examinations (WASSCE) results. It focused the learning outcomes on core subjects, English, mathematics and the sciences). Many other states across the country have not had such a robust intervention programme which intended to bridge the gap of educational disparities in their states.

In view of how quality in organisational dynamics can be reflected through organisational leadership, organisational culture and other factors such as the professional development of teachers and a concentration on the optimum goal and practice of learner-centeredness which are characteristic organisational factors central to productivity of school organisations, it becomes pertinent thereafter to examine the consequences of

these variables on the relative performances of indices of quality. Special attention was paid to students' achievement in English Language and mathematics in public examinations and other non-cognitive outcomes that can be used to monitor the quality of schools.

This study explained how each of the variables influence education quality performances by means of the highlighted quality indicators and how differences in location, school type and principal tenure-length may indicate the data indices of this research.

1.2 Statement of the Problem

Access to quality education is a global challenge that has remained an expansive desire of all nations despite often ignoring the best factor inputs for producing quality education. Any intervention on education quality that is not embedded in some form of major reform of structures, policies and organisations may not yield success, as clamouring for quality improvements without changing orientations, operations, contexts and beliefs may not result in significant achievement in the school systems and educational outcomes. Interest in provision of quality education is referenced in the mission and vision statements of school organisations. However, it appears most school organisations lack the discipline to achieve the goals of quality education.

There is evidence that educational quality performance indicators (teacher effectiveness, students' non-cognitive outcomes, students achievement in English language and Mathematics) may be influenced by school organisational variables (organisational leadership and culture, professional development, learner-centredness). Many studies have reviewed some of the variables in different contexts and focused more on teacher and student related variables than on other school variables. There is a dearth of literature on research considering the effects of their causal relationships and there are few studies that used the variance based or exploratory approach to explain the relevance of these variables and how their linkages and causal explanations affect the functioning of the school system especially on the variables of quality index of education highlighted in this research.

This study explained the pattern of relationships among the variables of study, and the extent to which the identified factors (school organisational leadership, culture, professional development and learner-centeredness) determine performance in the highlighted education quality indices variables (teachers' effectiveness, students' non-cognitive outcomes and students' achievement in English and mathematics) especially academic achievement in the core subject areas of English Language and mathematics.

1.3 Research Questions

The questions raised and answered in this study include;

1. What is the magnitude and direction of correlations existing among the variables in:

I. English language achievement model [school location, school type, principal tenure-length, organisational leadership, organisational culture, learner-centeredness (English language) and professional development, teachers' effectiveness (English language), students' non-cognitive outcomes, students' achievement in English language]?

II. Mathematics achievement Model [school location, school type, principal tenure-length, organisational leadership, organisational culture, learner-centeredness (mathematics) and professional development, teachers' effectiveness (mathematics), students' non-cognitive outcomes, students' achievement in mathematics]?

2. Are the measurement and structural models which explain the causal model existing among the variables in the models consistent with the empirical data in determining:

I. students' achievement in English Language?

II. students' achievement in mathematics?

3. What is the most meaningful causal model explaining:

I. students' achievement in English Language?

II. students' achievement in mathematics?

4. What are the percentages of variance accounted for by the latent variables in the parsimonious models for:

I. students' achievement in English Language?

II. students' achievement in mathematics?

5. What are the estimated direct, indirect and total effects of the endogenous variables on:

I. students' achievement in English Language?

II. students' achievement in mathematics?

1.4 Scope of the Study

The study focused on variables such as school location, school type, principal tenure-length, organisational leadership, organisational culture, learner-centeredness and professional development, teachers' effectiveness, students' non-cognitive outcomes, students' achievement in English language and students' achievement in mathematics and how they affect school systems. It was limited to randomly-selected public and private senior secondary schools located in three South-western states in Nigeria in order to observe differences in school organisational dynamics and identify with realities in schools. The study used path analysis to assess, establish and estimate linkages between or among the key variables of the study. Through the use of questionnaires, responses were elicited from randomly select SS III students who participated in 2018 WASSCE and their respective subject teachers. It also employed the students' achievement data in a public based examination (WASSCE) that was retrieved from WAEC.

1.5 Significance of the Study

The study provided evidence that quality management of school organisations is a matter of serious consideration to enhance and sustain quality in education. The variables of the study were also assessed to know which of their variants are most needed in schools. It divulges information to education stakeholders on the importance of each organisational variable to the success or achievement of educational goals as defined by education quality performance indicators.

It equips school leaders, principals and departmental heads with information about the possible effects of inappropriate strategies on school organisational factors and

school's ability to produce quality outputs. Hence they will understand better the need to keep all school system in proper check and accountability.

It availed to teachers knowledge of integrating positive organisational culture and a culture of learner-centredness in improving their own teaching skills and influencing other non-cognitive outcomes that can affect students. Professional development of teachers was examined including the nature of professional development that needs to be encouraged and imbibed within school organisations. The study explains the importance of continued professional development for better effectiveness of teachers. This is useful for school leaders and other stakeholders to assist the course of education by providing enriched professional learning activities for teachers in the most suitable conditions.

This study has provided first-hand information to parents about school and learning effectiveness and the need to choose schools wisely for their wards and also sensitive government and other school owners factors to consider and institutionalize to get the best performances and quality improvements from schools.

It points out the need for quality leaders and school cultures that can drive education towards desired outcomes. the study exposed the ideal practices that should be upheld in school organisations and how they affect quality performance in the school systems.

1.6 Definition of Terms

Conceptual Definition of Terms

Education Quality Performance: These are characteristic features of education system that are pointers to the standard of education achievement in terms of specified indicators in education.

Performance Indicators: These are data indices of information by which the functional quality of institutions or systems may be measured and evaluated to provide evidential bases for determining the extent to which specified goals and targets are being achieved.

Professionalism: This refers to expert knowledge, skills, status, methods, character or standards and values that distinguish a professional teacher as a result of participating in professional development or learning activities.

School Organisational Leadership: This refers to the ability of a principal to initiate school improvement, to create a learning oriented educational climate, and to stimulate and supervise teachers in such a way that the latter may exercise their tasks as effectively as possible. It refers to an integration of transformational and instructional form of leadership

Teachers' Effectiveness: This refers to demonstrated possession and use of teacher skills to consistently achieving students learning goals.

Operational Definition of Terms

Education Quality Performance Indicators: This includes indices of teachers' effectiveness, students' non-cognitive outcomes, students' achievement in English Language and students' achievement in mathematics.

Professional Development: This is a measure of extent of teachers' participation in learning opportunities and experiences that lead to deep understanding and improvement of practice based on the teachers' professional development activities inventory (TPDAI) as shown in appendix III.

Learner-centeredness: This is a measure of the extent to which students' learning is enhanced and success facilitated based on data indices on the areas of learner-centeredness (positive interpersonal characteristics, encourages personal challenge, adopts class learning needs and facilitates the learning process) on the LCPQ for teachers and students as shown in Appendix IV and VIII.

School Organisational Leadership: This is a measure of the extent to which school principals perform their expected roles based on data indices of principals' leadership practices of transformational and instructional leadership characteristics on the Principals' Leadership Practices Questionnaire (PLPQ) in Appendix I.

School Organisational Culture: This is a measure of the degree to which the shared norms and values in a school positively influence school effectiveness based on data indices of; collaborative leadership, teacher collaboration, professional development, collegial support, unity of purpose, and learning partnership as measured on the school culture survey (SCS) in appendix II.

Students' Non-cognitive outcomes: These are the indices students' abilities for adaptive and positive behaviours based on six subscales: self-concept, quality of school life, relationship skills, ethics and values, leadership and goal directed behaviour, life goals as shown on the students non-cognitive outcome scales (SNOS) in Appendix V

Teachers' Effectiveness: This is a measure of teacher skills that is consistently used in achieving students learning goals based on data indices of students' evaluation of teaching effectiveness in mathematics scale (SETEMS) and students' evaluation of teaching effectiveness in English Language scale (SETEES) as shown on appendix VI and VII

Students' Achievement: WASSCE results of the participants (students) of the study.

Principal Tenure-length: This is defined as the duration of time that a current principal has been serving as the principal a particular school

School Type: The ownership of schools which include; public schools and private schools

School Location: States where samples of the study will be selected which include Lagos, Oyo and Ondo states.

CHAPTER TWO
LITERATURE REVIEW

2.1 **Theoretical Framework** – TQM (Total Quality Management)

The bulk of this study is deeply rooted in the methods and philosophy of total quality management. Total Quality Management (TQM) is a management approach that originated in the 1950s and has steadily become more popular since the early 1980s. The concept of total quality management (TQM) was developed by an American, W. Edwards Deming, after World War II, for improving the production quality of goods and services. TQM consists of efforts within an organisation to install and make permanent a climate in which an organization continuously improves its ability to deliver high-quality products and services to customers. TQM describes the culture, attitude and organisation of a company or institution that strives to provide customers with products and services that satisfy their needs. It has been applied to different kinds of organisations to achieve efficiency, effectiveness, productivity and results. Academics have found TQM approach to management a very useful tool for educational institutions as it explains vital aspects of quality management in education. While 'quality' implies the production of a very high standard that is difficult to surpass, quality management involves measuring up and ensuring conformity to a predetermined specification that must be reached. Total implies the synergy between different components and units of an organisation in order to attain the goals and objectives of quality.

According to Vlasic, Vale and Puhar (2009), quality management is "an integral part of management, whose role is to attain quality objectives. It includes creating and implementing quality planning and assurance, as well as quality control and quality improvement. TQM evolved from the concepts of inspection, quality control, and quality assurance before adding up to total quality management. These phases have over time led to detecting, preventing and continuously improving the quality of products and services. Quality management is the act of overseeing all activities and tasks needed to maintain a desired level of excellence.

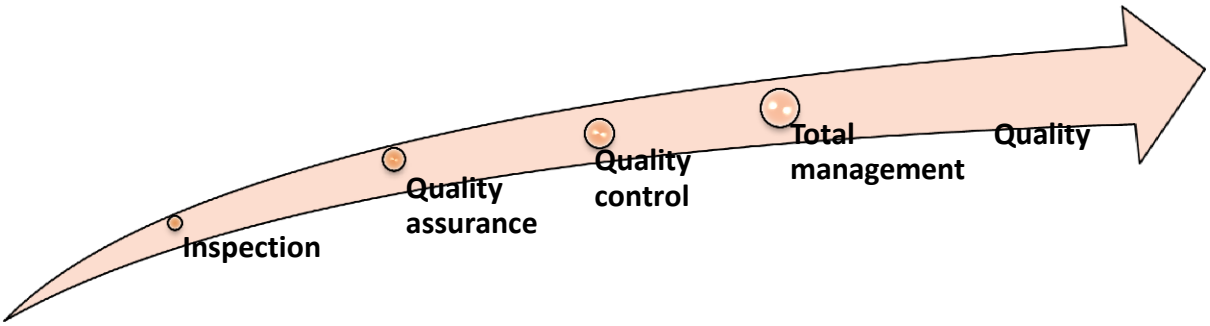

Figure 2.1 the hierarchy of quality concepts

2.2 Total Quality Management in Education

TQM is a management tool that aims at "total", and "quality assurance". Total quality management incorporates, extends, and develops quality assurance. TQM is about creating a quality culture where the aim of every member of staff is to delight their customers, and where the structure of their organisation allows them to do so. In TQM, the customer is sovereign. Total quality management features mainly the customer-supplier interfaces with a number of processes at each interface. Central, also, is an organisational commitment to quality, and the importance of communicating this quality commitment, together with the acknowledgement that the right organisational culture is essential for effective total quality management.

TQM is a practical but strategic approach to running an organisation that focuses on the needs of its customers and clients. It rejects any outcome other than excellence. It is not a set of slogans, but a deliberate and systematic approach to achieving appropriate levels of quality in a consistent fashion that meets or exceeds the needs and wants of customers. It can be thought of as a philosophy of continual improvement. Using TQM in the education system has proven to be much relevant in actualizing educational goals in many ways.

TQM implies meeting the expectations of all the customers in the educational system. The external customers, such as the tax payers, parents and potential employers, should be satisfied with the standards of the graduates, while the internal customers, such as teachers and students, should be contented with the teaching and learning process in school. It targets the total process and output of the education system. It also requires quality assurance to ensure conformity to specification of standards set out by the customers because the highest possible standard cannot be surpassed. TQM as management tool emphasizes the means for measurement of performance and feedback; it measures and ensures conformity to a predetermined specifications.

Total quality management is both a philosophy and a methodology. It can assist institutions to manage change and set their own agenda for dealing with the plethora of new external pressures. Researchers report that TQM has led to efficiency in organisations and that if properly applied to education, it can bring about a similar transformation. However, TQM does not and will not bring results overnight; neither is it

a panacea for all the problems that beset education. Rather it is an important set of tools that can be employed in the management of educational institutions. Sallis (2005), identified the following four quality imperatives justifying the need for the pursuit of quality improvement in education:

Moral Imperative: It is the duty of educational professionals and administrators to have an overriding concern to provide the very best possible educational opportunities.

Professional Imperative: Professionalism implies a commitment to the needs of students and an obligation to meet their needs by employing the most appropriate pedagogic practices. Educators have a professional duty to improve the quality of education and this, of course, places a considerable burden on teachers and administrators to ensure that both classroom practice and the management of the institution are operating to the highest possible standards.

Competitive Imperative: Educationalists can meet the challenge of competition by working to improve the quality of their service and of their curriculum delivery mechanisms. The importance of TQM to survival is that it is a customer-driven process that is focused on the needs of clients and the mechanisms to respond to such needs. Competition requires strategies that clearly differentiate institutions from their competitors. Quality may sometimes be the only differentiating factor for an institution as it focuses on the needs of customers.

Accountability Imperative: TQM supports the accountability imperative by promoting objective and measurable outcomes of the educational process and provides mechanisms for quality improvement which has become increasingly important as institutions achieve greater control over their own affairs.

Deming's philosophy provides a framework that can integrate many positive developments in education, although his terminologies needs to be translated for school processes to make them more applicable. Deming's 14 principles are based on the assumption that people want to do their best and that it is management's job to enable them to do that by constantly improving the system in which they work. The framework for transforming schools using Deming's 14 principles is as follows:

1. **Create constancy of purpose for improvement of products and services:** in a school setting, the purpose of the system must be clear to and shared by all the

stakeholders – school board members, administrators, teachers, support staff, parents, community, and students. Customer needs must be the focus in establishing educational aims. The aims of the system must be to improve the quality of education for all students. All stakeholders must identify with the aims and know how to contribute to the mission. Processes that do not contribute to the aim of the school should be eliminated so that efforts can be concentrated on viable means and processes.

2. **Adopt the new philosophy:** Implementation of Deming's second principle requires a rethinking of the school's mission and priorities. Existing methods, materials, and environment may be replaced by new teaching and learning strategies in which the success of every student is the goal. Individual differences among students are addressed by insisting on quality in everything. To achieve this quality, an atmosphere of cooperation as opposed to competition must be instilled. That which will ensure every student has the best opportunity to learn. Ultimately, what may be required is a total transformation of the school's organisation and education system.
3. **Cease dependence on inspection to achieve quality:** Inspections will only keep bad products from hitting the market, but there are large costs incurred with each bad piece. The analogy in education is that the failed student is scrap that must be either reworked (repeat or get extra tutoring) or discarded. There is need to develop processes in which there is less testing but more focus on progress in learning. There is evidence that we test far more than is needed to evaluate our students (Lunenburg, 2010). A process can be changed to make inspections unnecessary or at least to reduce the need for inspections. Statistical process control can be an important tool in developing processes that do not require much inspection. It is important to eliminate the need for inspection on a mass basis by building quality into the product in the first place.
4. **End the practice of awarding business on the basis of price alone:** It is a usual practice to go for cheaper goods and services but the lowest bid is rarely the most cost-efficient. For example, schools need to move toward a single supplier for any

one time and develop long-term relationships of loyalty and trust with that supplier. In all processes, there is need to focus on long-term costs and benefits.

5. **Improve constantly and forever every activity in the organisation, to improve quality and productivity:** The focus of improvement efforts in education, under Deming's approach, is on teaching and learning processes. Based on the latest research findings, the best strategies must be attempted, evaluated, and refined as needed. Schools should find ways to make all students successful. This means requiring universal standards of achievement for all students before permitting them to move to the next level. There is also a side benefit of talking directly to the students about their problems; they appreciate it and cooperate. In any case, analyse the process to determine what changes can be made to make it better. Incremental improvements must be made at every point in time.
6. **Institute training on the job:** Training for educators is needed in three areas. First, there must be training in the new teaching and learning processes that are developed. Second, training must be provided in the use of new assessment strategies (Lunenberg, 2010). Third, there must be training in the principles of the new management system. For schools, this means providing continuous professional development activities for all school administrators, teachers, and support staff. Money spent on faculty and staff has long-term payback. In addition, you should teach TQM to everyone; faculty, staff, and especially students. The more everyone knows about the management principles used on a daily basis, the easier it is for everyone to buy into the idea.
7. **Institute leadership:** According to Deming, the improvement of a stable system comes from altering the system itself, and this is primarily the job of management and not those who work within the system. Deming asserts that the primary task of leadership is to narrow the amount of variation within the system, bringing everyone toward the goal of perfection. In schools this means bringing everyone toward the goal of learning for all. It means removing achievement gaps for all population groups – a movement toward excellence and equity. Thus, emphasis is on leadership instead of management. Each person in a supervisory role should

try to be a coach and teacher, not a judge and overseer. As put by Green and Winn (1998), the leader should be a designer, a creator of an environment. Effective leaders will search for barriers to communication and productivity and remove them.

8. **Drive out fear:** A basic assumption of TQM is that people want to do their best. The focus of improvement efforts then must be on the processes and on the outcomes, not on trying to blame individuals for failures. Deming believes that if quality is absent, the fault is in the system. It is management's job to enable people to do their best by constantly improving the schooling system in which they work. Fear creates an unconquerable barrier to improvement of any system. In schools, students and staff are often afraid to point out problems because they fear they may be blamed. School leaders at all levels need to communicate that staff suggestions are valued and rewarded.

9. **Break down barriers among staff areas:** People must work as teams. Collaboration needs to exist among members of the learning organisation so that total quality can be maximized. Encourage cooperation, not competition, encourage the forming of cross-function teams to address problems and process improvements. In schools, total quality means promoting learning for all. It is the essence of initiating and maintaining a professional learning community (Lunenburg, 2010).

10. **Eliminate slogans, exhortations, and targets that demand zero defects and new levels of productivity:** Implicit in most slogans, exhortations, and targets is the supposition that staff could do better if they tried harder. This offends rather than inspires the team. It creates adversarial relationships because the many causes of low quality and low productivity in schools are due to the system and not the staff. The system itself may need to be changed. For example, just telling someone to do good is meaningless without the means to achieve that goal. Management must improve the processes so that the goals can be achieved. Stating that 80% is the minimum acceptable score on an exam will not by itself achieve that goal. Stating that goal and then providing excellent instruction, arranging for study teams, giving extra help where needed, etc., will give the

students a much better chance for success. Contrary to this opinion, Lunenburg (2010), advocates that Deming's assertion may be true for business organisations, but educators tend to use a lot of slogans as a general practice. Typical slogans used by educators are; Keep the main thing, the main thing. This slogan refers to keeping students the focus of all discussions. Another slogan that most teachers adopt is, 'All children can learn'; slogans, such as these serve as targets in school organisations.

11. **Eliminate numerical quotas for the staff and goals for management:** There are many practices in education that constrain our ability to tap intrinsic motivation and falsely assume the benefits of extrinsic rewards. They include rigorous and systematic teacher evaluation systems, merit pay, management by objectives, grades, and quantitative goals and quotas. These, Deming refers to as forces of destruction. Such approaches are counterproductive for several reasons: setting goals leads to marginal performance; merit pay destroys teamwork; and appraisal of individual performance nourishes fear and increases variability in desired performance.

12. **Remove barriers that rob people of pride in their work. Remove the barriers that rob people in leadership of their right to pride in their work:** Most people want to do a good job. Effective communication and the elimination of "de-motivators" such as lack of involvement, poor information, the annual or merit rating, and supervisors who do not care are critical. According to Green and Winn (1998), pride is a strong motivator. In the academic setting, pride certainly flows from personal and group achievements, but there is also a good deal of pride in the institution as well. Often this institutional pride is a result of having survived the programme, but it can also stem from having had a part in the development of that programme. If the students are included in some of the decision-making processes, they will develop a strong pride of ownership that can have a significant impact on their attitudes. A step as simple as talking to students representatives about their concerns can change an antagonistic administrative or versus students' relationship into a cooperative one. Using some of the elements of cooperative learning also empowers the students by sharing some of the

teaching roles with the tutors. Likewise, a secretary who is allowed to choose how the work is to be done and has a voice in some of the administrative decisions that affect secretarial work will be a much more productive and happier worker.

13. **Institute a vigorous program of education and self-improvement:** Everyone in the institution must be included in the education process and be aware of and concerned for their immediate `customer'. The principal and staff must be re-trained in new methods of school based management, including group dynamics, consensus building, and collaborative styles of decision making as one cannot predict just what piece of knowledge will spark the idea that will lead to a significant process improvement. All stakeholders on the school's team must realize that improvements in student achievement will create higher levels of responsibility.

14. **Put everyone in the organisation to work to accomplish the transformation:** The school organisation and staff members must have a clear plan of action to carry out the quality mission. The quality mission must be internalized by all members of the school organisation (school board members, administrators, teachers, support staff, students, parents, community). The transformation is everybody's job (Deming, 2000).

According to Paula (1996), these 14 principles fall into three broad categories:

Philosophy and mission: This category includes principles that stress focusing on customer needs in a never-ending search for quality.

Organisational environment: These principles establish norms and values that dictate the treatment of each individual in the organisation.

Process: This category stresses the need for problem prevention throughout the process rather than the identification of failures at the end of the process.

By adopting TQM, educational administrators are trying to pursue these three objectives. The concepts formulated by TQM founder, W. Edwards Deming, have been suggested as a basis for achieving excellence in schools. It is based on the assumption that people want to do their best and that it is management’s job to enable them to do so by constantly improving the system in which they work. It requires teamwork, training, and extensive collection and analysis of data. It is an opportunity to conceptualize a

systematic change for school organisations. TQM can be a powerful tool in the educational setting even though it was developed with manufacturing processes in mind (Green and Winn, 1998). The following key elements suggested by Green and Winn for successful implementations of TQM are well suited to education:

- gain the support of everyone in the chain of supervision,
- identify your customers,
- focus on refining the process, and
- use Deming's 14 Points as a guide and checklist during the implementation effort.

2.3 The Concept of Quality Performance in Education

Essentially, education is a societal need for which service is provided by various schools and institutions in order to achieve holistic individual and national success. The importance of education to the society makes it a necessity to properly institutionalize educational practice and set goals. Alongside providing educational service, checks and balances become necessary for the standards, accountability and improvement of the education system in order to attain the ultimate quality of service at all the levels of education. In recognition of the importance of quality education to Nigeria's education system, the inspectorate service of the Federal Ministry of Education is directly responsible for quality control and maintenance of standards in institutions below the tertiary level (Ochuba, 2009). Decree No 16 of 20th August, 1985 outlined its objectives as to:

- maintain minimum standards in education practice
- operate common system of education practice
- introduce classroom innovation
- achieve quality education in Nigeria.

Quality according to Babalola (2007) is most often defined as "fitness to purpose in relation to the user and customer needs. It can also be taken to mean that the product conforms to standards, specifications or requirements". whereas the performance or guaranteed output may be the basic measure of quality. This is one of the indices of quality education. Quality of education remains a serious concern among all stakeholders. It is a relative term as what constitutes quality education varies. The desire

for qualitative value and excellence is the primary motive of education accounting for why emphasis is always placed on standard of high quality. Thus, the educational standards set up for the school must be challenging to meet the needs of the students and the society (Olaniyonu, Adekoya and Gbenu, 2008).

The term quality, which encompasses economic, social, cognitive and cultural aspects of education, is perceived as an integral feature of the educational process and its results. By providing high quality educational services, educational institutions play an important role in the development of the national economy. Total quality can only be achieved by establishing an innovative organisation that is flexible and can readily adjust to changes in its environment. (Vlasic et al., 2009).

According to *Education for All: Global Monitoring Report 2005 - the quality imperative* (UNESCO, 2004), two principles characterise most attempts to define quality in education. The first identifies learners' cognitive development as the major explicit objective of all education systems. The second emphasises education's role in promoting values and attitudes of responsible citizenship and in nurturing creative and emotional development. A review of perspectives articulated in research literature reveals that the concept of educational quality is multidimensional and relates to output, (learning achievements and economic/social outcomes); process (the activities of students, the art of teaching and the tasks of administration, supervision, education planning and policy,) and input (the funds, infrastructure, instructional materials, quality of teachers and staff, and professional development opportunities and actions). It is grounded in cultural traditions, social relations, and economic and political life and therefore, unique to each nation and culture. It centres on community participation, dialogue, and involvement in provincial and national development processes. It is also dynamic, because the definition of educational quality changes over time (USAID, 1999).

Achieving high quality education is a top priority for any nation’s education system. The manifestations of poor quality education are inadequate citizens which are not fit for economy’s workforce. Quality education refers to high standard of education for citizenry all geared towards promoting national development (Daluba 2015). According to Stephens 2003, quality is a matter of identifying the:

a) systemic factors or variables that generally seem to make one school more or less effective than another, e.g. relevant resources, levels of reading, writing and numeracy;

b) manner in which these factors or variables are played out in relation to each other in a particular learning environment with a view to improving that environment; and

c) value-added dimension which represents changes in quality between and within schools over a particular period of time

The relevance of the type of education that is given to a child is an important aspect of quality education. The quest for quantitative education without due regard for quality can make education irrelevant to the needs of the society. It has been found that the major cause of differences between the economies of developed and developing countries lies in the quality and quantity of education offered (Gbenu 2012). What is taught and how it is taught should be made relevant to the needs of society (Bamisaiye 1983). Stephens (2003) explains that quality is directly related to what occurs in two educational contexts: firstly in the more focussed environment of the classroom; secondly in the wider context of the school system and social context in which the classroom is embedded. Both environments have a reciprocal relationship with each other. He conceptualized quality education as one which is accessible, flexible, resource efficient and responsive to development of its purpose.

From another perspective, Nagel (2003) sees quality education as a learning situation which vibrates with positive energy and where the learner and the learned are both eagerly absorbed in understanding and communicating through a knowledge construction process. The emphasis of quality education is on the learner. According to Obanya (2012), individuals should acquire the knowledge, skills, competences and values appropriate for functioning in situations created by an ever changing societal environment. Consequently, UNICEF (2000) identified five dimensions of quality education': learners, content, processes, environments and outcomes. The notion of quality education entails:

- learners who are healthy, well-nourished, ready to participate and learn, and are supported in learning by their families and communities;

- environment that is healthy, safe, protective and gender-sensitive, and provides adequate resources and facilities;
- content that is reflected in relevant curricula and materials for the acquisition of basic skills.
- processes through which trained teachers use child-centred teaching approaches in well-managed classrooms and schools, and skilful assessment to facilitate learning and reduce disparities.
- outcomes that encompass knowledge, skills and attitudes, and are linked to national goals for education and positive participation in society.

Improvements in education standards guided by data generation, use and self-assessment are more likely to offer quality education to students (Glasser, 1990) because the indices of quality (especially students' achievement) help in policy formulation, decision making and necessary reforms and improvements. Gordon (1999) remarked that prominent features of schools that produce students' achievement and add value to quality of education in schools include: clear and high standards, multiple changes, strong leadership, collaborative teams, committed teachers.

Pigozzi (2001), explained that 'Quality' requires an understanding of and respect for the different meanings and interpretations people bring as initiatives to improve quality, and work to develop shared meanings underpinned by cultural norms that will promote sustainable improvement. The planning, implementation and administration of quality educational programmes depend on effective administrative machinery and efficient inspection and supervision (Bamisaiye, 1983) even though most problems of quality education in Nigeria have been blamed on funding. To improve education quality, it is important to:

I. strengthen and support school leadership
II. stimulate a supportive school climate and environment for learning
III. attract, support and retain high quality teachers
IV. ensure effective classroom learning strategies
V. prioritise linking schools with parents and communities (OECD 2012).

However, an array of problems incapacitates the delivery of quality education. Omotola (2007) identify these problems as complex and a reflection of the deepening

crises in the Nigerian state. Gbenu (2012), listed the following as some of the challenges especially as it relates to inspection which is a tool for sustaining quality education.

1. using of unqualified and untrained personnel in the inspectorate services which result in poor quality control.
2. shortage of manpower in the inspectorate.
3. lack of adequate statistical compilation in the school system.
4. inadequate funds and resources for inspection.
5. lack of training for would-be school inspectors.
6. non-implementation or inadequate implementation of recommendations in inspection reports which discourages the production of high quality inspection reports.
7. lack of co-operative attitude by some principals.
8. political instability and frequent policy change.
9. overload of administrative duties in addition to inspection tours and travels etc.
10. occupational hazards associated with road or river travels on inspection tours.

Obanya (2014) listed some challenges facing quality education in Nigeria to include; overcrowded classroom, dearth of facilities, poor examination performance, insufficient textbooks and poor classroom comfort levels. Adepoju and Fabiyi (2007), added inadequate number of quality teachers and infrastructural facilities in schools. Other factors include, misplaced priorities of leadership, management, inadequate professionals and inadequate evaluation techniques and mechanisms.

2.4 Quality Performance Indicators in Education

Education reform has become necessary in pursuance of educational quality and effectiveness. Concerns for quality education by stakeholders cannot be overestimated considering the level of investment put into education by nations around the world. This necessitates the collection of educational statistics to point out the levels of attainment of educational goals. Vos (1996) attested that assessment of the impact of educational investment requires a close monitoring of the quantity, quality and coverage of

educational services. Quality of education therefore requires objective account of all factors in the input-process-output. The extent of performance in quality has indices that are evaluated in order to determine quality. This further necessitates the use of performance indicators which are common to educational systems for the purpose of comparing quality. Education performance indicators are the factor indices that provide stakeholders the information used to monitor these progressions.

Rowe and Lievesley (2002) defined performance indicators (PIs) as data indices of information by which the functional quality of institutions or systems may be measured. Performance Indicaor data are 'measures' of various operational and functional aspects of organisations or systems which provide evidential bases for determining the extent to which such goals and objectives have been met. In particular, Performance indicators information allows systems and their constituent organisational elements to:

- formulate strategic policy priorities and their related targets,
- specify achievable objectives,
- implement them, and
- evaluate the extent to which those target objectives have been attained.

According to Rowe and Lievesley (2002), performance indicators of education systems are the pointers of services provided in the inputs, processes and outputs of education system that constitute useful bases for informed planning and decision-making, followed by implementation and reform. Performance indicators assist the process of diagnosis of existing needs and definition of priorities in improving education. These indicators seem most relevant in monitoring and evaluating the performance, cost-effectiveness and equity of educational services. Performance indicators are useful in; facilitating improvements in design, implementation of educational policie, giving information about prevailing problems and hinting at some of the causes of the problems.

2.4.1 Types and sources of performance indicators in education

With the input-process-output approach, the conceptualization of the quality of education remains essentially a pursuit of measurement through quantitative indicators (Stephens, 2003). Depending on the level of analysis (national, school, classroom),

indicators tend to be classified based on whether they reflect the means, the process, or the end in achieving the objectives of a particular set of development policies, programmes or projects. Vos (1996) advocates that good monitoring and evaluation should make use of an appropriate balance between different types of indicators that can establish the link between means and ends. Vlasic et al (2009), grouped the indicators into seven under specific topics:

1. Curriculum
    - structure of the curriculum (programmes, goals, tasks, focus on development of functional tasks, focus on students' activities, integration of programmes within and between areas).
    - courses and programmes
    - key competences that students develop in the given school
2. Achievements (evaluated by external, independent agencies)
    - achievement quality compared with the set goals
3. Learning and teaching
    - teachers' work
    - students' work and experience
    - meeting the needs of the students
    - monitoring and evaluating the work of students and teachers
4. Students' support
    - students' personal, social and spiritual growth
    - progress and achievement monitoring
    - support in all aspects of learning, progress, students' and teachers' personal development
5. School ethos
    - school policy
    - school atmosphere and relations
    - specific goals of individual school
    - orientation towards students', teachers' and parents' satisfaction

6. Resources

- school resources
- teachers, professional associates, the principal; their education, teachers teamwork, co-operation; being open to innovation
- material resources and premises
- efficient human and material resources

7. Management, leadership and quality assurance

- approaches to leadership and management

Quality Assurance and School-based Support Division Education Bureau (2015) defined the framework of performance indicators as comprising domains, areas and performance indicators. Bamisaiye (1983) referred to Perfomance Indicators as indices of the productivity in the educational system. This divides educational activities into inputs, outputs and factor inputs indices. An education system uses inputs in terms of human and non-human factors to produce desired outputs after going through a process. If the inputs into education are conceivably measured and related to outputs by using various procedures, the result of such comparison is regarded as the productivity of the educational system. Thus, productivity is a ratio of inputs to outputs in terms of quality and quantity. Vos (1996) further divided them into four types of indicators: input, access, output and outcome indicators, while Scheerens 2011, identified them as context, input, process and outcome indicators. However, it is popularly classified in terms of input, processes and outcomes (Rowe and L 2002; UNICEF 2002; Stephens 2003, Gbenu 2012) where input is the number of teachers, school buildings, teaching materials supplies and the expenditure (public and private) on education. Since absolute numbers may not be very indicative for policy decisions, input indicators are often specified as some match of supply and demand variables, such as pupil/teacher ratios and average cost per pupil. Other indicators of quality of input are teachers who know how to teach and can actually teach, time for learning and the requisite tools for teaching and learning. They provide the material and immaterial pre-conditions for the core transformation processes in organisations. In the case of education and taking the school as the level where teaching and learning as the primary transformation process take place, the following main categories of input can be discerned:

- financial and material resources
- human resources
- background conditions of the students.

Process encompasses teaching-learning, access, participation, progression, transition from school to work, learning environment and organisation. Process indicators, 'refer to the interactions in the school and classroom between the pupil and the learning environment, such as interaction with the teacher, interaction with other pupils and with learning materials. It also includes the various experiences provided by the curriculum.

Output: Output indicators try to measure to what extent set objectives are achieved. The output indicators for measuring quality of education are qualifications and the levels of competence reflected in the performance of the outputs (students) using the body of knowledge and skills acquired. In addition, the effective performance of the outputs in the competitive job market, and their impact on moral conduct and serviceability in the society are also indicators for measuring the quality of education. The feedback from the job market and society generally is important to the education system for evaluation of both the educational processes and outputs. Better education may serve broader development goals, such as higher labour productivity, better health and enhanced capabilities of individuals to participate in modern society. Such `higher' goals could be referred to as outcomes beyond the immediate influence of educational policies and programmes.

Finally, the outcome indicators specify the long-run effect or impact of the input process and output phases in an entire education process. Outcome indicators are central in productivity and effectiveness interpretations of educational quality but also play an indispensable role in assessing the equity, efficiency and responsiveness of schooling. It may not always be easy to capture "outcomes" through quantitative indicators, but usually proxies can be found. `Socialization' may be captured through proxies such as newspaper circulation, participation in elections, and so on. Labour productivity may be a more straightforward measurable concept, but it may be difficult to identify the degree how much of productivity (Rowe and Lievesly 2002).

Although students' achievements or learning outcomes are often seen as sole or major indicators of education quality because it is easily measurable using standardized

tests, unlike other outcomes that may be more complex and less tangible, the knowledge and use of other indicators in the input-process-output can be used to determine efficiency and effectiveness of education before it gets to the last stage. Therefore, evaluation, diagnosis and reforms can be made on time before the products are shattered.

2.4.2 Qualities of Useful Indicators

According to Rowe and Lievesly (2002), a useful performance indicator (PI) is one that informs the processes of strategic decision-making and taking – resulting in measurable improvements to desired outcomes following implementation. Similarly, the quality of a PI is comprised of many components including:

- validity;
- reliability;
- relevance to policy;
- potential for disaggregation (e.g., by gender, socioeconomic and ethnic groupings, education administrations);
- timeliness (currency and punctuality);
- coherence across different sources;
- clarity and transparency with respect to known limitations;
- accessibility and affordability (cost effectiveness);
- comparability through adherence to internationally agreed standards;
- consistency over time and location; and
- efficiency in the use of resources.

2.5 Concept of Organisational Leadership

Leadership is a phenomenon that seems difficult to define. At the core of most definitions of leadership are two functions: “providing direction” and “exercising influence’’. A variety of theories, steps to, and types of leadership have emerged overtime. According to Leithwood (2012), differences emanate from types of leaders and styles of leadership. Type of leader is determined by the “personality” displayed by the leader in terms of core traits along with other traits and personal qualities being displayed and used to gain the trust of the people and lead them to be commited to undertake the

major tasks facing the organisation. On the other hand, "style" of leadership is defined by the competencies and skills that the leader "applies" to guide, facilitate and support the people of the organisation in their efforts to accomplish the task. Leadership style reflects a leader's decision making behaviour. It is the result of the philosophy, personality and experience of the leader. Leadership style refers to how decisions are made, to provide direction, implement plans, and motivate people.

The core leadership theories that have emerged are trait, behavioural and contingency theories.

Trait Theories: The idea that leadership is based on individual attributes is known as the "trait theory of leadership." Early trait theories see leadership as an innate, instinctive quality that you do or don't have. They are external behaviours that emerge from the things going on within our minds. It is these internal beliefs and processes that are important for effective leadership. Trait theories help to identify traits and qualities (for example, integrity, empathy, assertiveness, good decision-making skills, and likability) that are helpful when leading others. Modern trait theory proposes that individuals emerge as leaders across a variety of situations and tasks; significant individual leadership traits include intelligence, adjustment, extroversion, conscientiousness, openness to experience, and general self-efficacy. However, none of these traits, nor any specific combination of them, guarantees successful leadership.

Behavioural Theories: Behavioural theories of leadership are based on the belief that great leaders are made, not born. This leadership theory focuses on the actions of leaders not on intellectual qualities or internal states. According to the behavioural theory, people can learn to become leaders through training and observation. Behavioural theories focus on how leaders behave. For instance, do leaders dictate what needs to be done and expect cooperation? Or do they involve their teams in decision-making to encourage acceptance and support? In the 1930s, Kurt Lewin developed a framework based on a leader's behaviour. He argued that there are three types of leaders:

- **Autocratic leaders** make decisions without consulting their teams. This style of leadership is considered appropriate when decisions need to be made quickly, when there's no need for input, and when team agreement isn't necessary for a successful outcome.

- **Democratic leaders** allow the team to provide input before making a decision, although the degree of input can vary from one leader to another. This style is important when team agreement matters, but it can be difficult to manage when there are lots of different perspectives and ideas.
- **Laissez faire leadership:** This is a leadership style that abdicates responsibility, delays decisions, offers no feedback, and makes little or no effort to help followers satisfy needs, achieve goals, or grow personally. It is a hands-off approach to leadership (Bass and Avolio, 1990). Laissez-faire leaders don't interfere; they allow people within the team to take many of the decisions. This works well when the team is highly capable, is motivated, and does not need close supervision. However, this behaviour can arise because the leader is lazy or distracted; and this is where this style of leadership can fail.

Contingency Theories: Contingency theories of leadership focus on particular variables related to the environment that might determine which style of leadership is best suited for a particular work situation. According to this theory, no single leadership style is appropriate in all situations. Success depends upon a number of variables, including leadership style, qualities of followers and situational features (Charry, 2012). A contingency factor is thus any condition in any relevant environment to be considered when designing an organisation or one of its elements (Naylor, 1999). Contingency theory states that effective leadership depends on the degree of fit between a leader's qualities and leadership style and that demanded by a specific situation (Lamb, 2013).

However, there are several other theories guiding leadership styles, like management theories, situational, participatory and relational theories. Leadership types include charismatic leadership, bureaucratic leadership, instructional leadership, and learner-centred leadership. Other prominent types of leadership are;

Transactional leadership: It is a leadership style that occurs when leaders intervene to make some correction and generally involves corrective criticism and negative reinforcement. The leader engages in active management and intervenes when followers have not met standards or when problems arise. It exercises power and influence. Transactional leadership approach assumes that people do things for reward and for no other reason. Therefore, it focuses on designing tasks and rewarding structures. While this may not be the most appealing leadership strategy in terms of building relationships

and developing a highly motivating work environment, it often works, and leaders in most organisations use it on a daily basis to get things done.

Transformational leadership: It is a leadership style that inspires and motivates followers to demonstrate commitment to a shared vision. Leaders engage in behaviours that clearly communicate high expectations to followers and encourage collegiality and cohesiveness. Transformational leaders show integrity, and they know how to develop a robust and inspiring vision of the future. They motivate people to achieve this vision, they manage its delivery, and they build ever stronger and more successful teams. Transformational leaders often adapt their style to fit a specific group or situation. Thus it is useful for them to gain a thorough understanding of other styles of leadership.

Instructional leadership: It is a style that facilitates and supports teachers' learning to increase the effectiveness of their schools by encouraging pedagogical innovation and contributing to the growth of the learning organization. Instructional leadership requires high levels of professional knowledge, skill and understanding of pedagogy, student learning and adult interaction. (Hallinger, 2011) lists aspects of instructional leadership as; 1) framing the schools goals, 2) communicating the schools goals, 3) supervising and evaluating instruction, 4) coordinating the curriculum, 5) monitoring students' progress, 6) protecting instructional time, 7) maintaining high visibility, 8) providing incentives for teachers, 9) promoting professional development, and 10) providing incentives for learning.

The realization that there is no one correct type of leadership led to theories that show that the best leadership style depends on the situation. These theories try to predict which style is best in which circumstance. It is however important that effective leaders should master all the styles and should be able to use any one that is appropriate depending on the forces in operation among leaders, followers and the situation (Amanchukwu, Stanley and Ololube; 2015). McBer (1999), in the NCSL research on leadership in schools developed a model of school leadership that has 17 school leadership qualities:

- Analytical thinking,
- Challenge and support,
- Confidence,

- Developing potential,
- Drive for improvement,
- Holding people accountable,
- Impact and influence,
- Information seeking,
- Initiative,
- Integrity,
- Personal convictions,
- Respect for others,
- Strategic thinking,
- Team working,
- Transformational leadership,
- Understanding the environment and
- Understanding others.

2.6 The Concepts of Educational leadership and Quality Management

Research on school effectiveness and improvement corroborated the fact that leadership is as an important element in business performance (Day et al., 2000; Muijs 2008). It has therefore been a contributing factor in education. The concept of leadership carries many different connotations and is often viewed as synonymous with other equally complex concepts such as power, authority, management, administration, and supervision. As argued by Robinson (2011) leadership is frequently judged in terms of other factors such as management (behaviour management, financial and administrative management), relationship with adults within the educational system (parents, staff, departmental officials and so forth) or the willingness to engage in innovation. While effective management is important, it is not sufficient to ensure good educational leadership. Educational leadership must encompass high quality management and a focus on ensuring procedures that ensure high quality teaching and learning.

Adeyemi (2006) viewed leadership as a process through which persons or groups influence the attainment of goals. While leadership centres on direction and influence, the role of management is that of planning, organising and coordinating. According to

Leithwood (2012), managers plan, organise, co-ordinate and control, whereas leaders give direction, offer inspiration, build teamwork, set examples and gain acceptance. Some other literature reinforce the view that leadership and management are separate but related concepts (Schein1992, Harmlin 2002, Leithwood et al. 2006, Leithwood 2012, Ololube 2013). Nonetheless, effective leadership and management are central to the quality agenda. Schein (1992) suggested the need for strong leadership and strong management if the organisation is to be healthy. Strong leadership and weak management may create chaos, while strong management and weak leadership may develop a change-resistant organisation that eventually becomes dysfunctional. Effective leadership frameworks are needed as a starting point towards ensuring quality. Therefore, effective educational leadership and management is essential to school effectiveness and improvement (Day et al. 2000, Muijis 2008. Ololube, Egbezor, Kpolovie, and Amaele, 2012). For example, D'Agostino (2000), Teddlie and Stringfield (1993), reported that the leadership of the prinicipal was the key factor in helping to create a strong shared mission and vision in the school, which in turn was related to teacher effectiveness. This is one value that is sought and cherished by all educational institutions to excel in quality and output.

In the same vein, quality management indicators involve the ways in which educational leaders ensure that academic and non-academic staff are continually trained to operate in innovative and ever-changing educational process that build professional learning communities (Harris and Muijs, 2005; Ololube, Dudafa, Uriah and Agbor, 2013). Hamlin's Generic Model of Managerial and Leadership Effectiveness (2002) proposed a model based upon a meta-analysis of leadership and management behaviours in four UK public-sector organisations. The model distinguishes between positive and negative indications of management and leadership.

- **Positive indicators**:
  - Effective organisation and planning proactive management
  - Participative and supportive leadership/Proactive team leadership
  - Empowerment and delegation
  - Genuine concern for people looking after the interests and development needs of staff

- Open and personal management approach involving inclusive decision making
- Communication and consultation that keeps people informed

• **Negative indicators**:

- Show of lack of consideration or concern for staff ineffective autocratic or dictatorial style of management
- Uncaring, self-serving management/undermining, depriving and intimidating behaviour
- Tolerance of poor performance and low standards/ignoring and avoidance
- Abdicating roles and responsibilities
- Resistance to new ideas and changes negative approach

These are applicable to educational institutions since leadership and management are key to successful organisational goals. Therefore, to sustain educational leadership, leaders must develop sustainability in how they approach, and protect teaching and learning in schools; how they sustain themselves and followers around them to promote and support teaching and learning; how they sustain their vision and avoid burn out; and how they consider the impact of their leadership in school management. Most leaders want to do things that matter, to inspire others to do it with them and to leave a legacy once they are gone (Hargreaves and Goodson, 2006). Since school improvement depends on adequate administrative and management structure, to improve education, there is need for vision, commitment and professional and research evidence upon which to guide educational activities and endeavours (Leithwood, Day, Sammons, Harris and Hopkins, 2006). Leithwood et al. (2004) wrote about 'core leadership practices' which are: setting directions; developing people; redesigning the organisation; and managing the teaching programme. Siraj-Blatchford and Manni (2006) highlighted the following effective educational leadership practices:

- identifying and articulating a collective vision
- ensuring shared understanding, meaning and goals
- effective communication
- encouraging reflection
- commitment to on-going, professional development
- monitoring and assessing practice

- distributed leadership
- building a learning community and team culture
- encouraging and facilitating parent and community partnerships
- leading and managing: striking a balance

Van de Grift and Houtveen (1999) in Finley (2014), described educational leadership as "the ability of a principal to initiate school improvement, to create a learning oriented educational climate, and to stimulate and supervise teachers in such a way that the latter may exercise their tasks as effectively as possible". Educational leadership stands out of many leadership styles that a principal may use to effectively lead a school (Finley, 2014). Principals play a vital and multifaceted role in setting direction that make schools positive and productive workplaces for teachers and vibrant learning environment for children (Davis, Darling- Hammond, LaPointe, and Meyerson, 2005). As the key intermediary between the classrooms, the individual school and the educational system as a whole, effective school leadership is paramount to improving the efficiency and equity of schooling (Pont, Nusche, Moorman, 2008). More importantly, literature has placed emphasis on transformational and instructional leadership.

Transformational leadership is the process whereby a person engages with others and creates a connection that raises the level of motivation and morality in both the leader and follower (Northhouse, 2010). Transformational leadership is characterized by intellectual stimulation, inspirational motivation, individualized consideration and idealized attributes or charisma. Transformational leadership occurs when leaders broaden and elevate the interests of their followers, when they generate awareness and acceptance of the purposes and mission of the group, and when they stir their followers to look beyond their own self-interest for the good of others. This leadership looks for potential motives in followers, seeks to satisfy higher needs of the individual (based on Maslow's Hierarchy of Needs) and engages the person to follow. Transformational leadership involves heroes, intellectuals, and reformers. It involves an exceptional form of influence that moves followers to accomplish more than what is usually expected of them (Northouse, 2010). Leithwood (2003) reports findings that show that transformational leadership affects both teachers' commitment and extra effort. Finally, "transformational leadership directly affects employee motivation and commitment

leading to the kind of extra effort required for significant organizational change" (Yukl, 1989).

Meanwhile, Instructional leadership is a particular form of leadership that emphasizes the improvement of teaching and learning in the schools' technical core (Hoy and Miskel, 2008). Instructional leadership consists of principal's behaviour that sets high expectations and clear goals for students and teachers, monitors and provides feedback regarding the technical core (teaching and learning) of to school, provides and promotes professional growth for all staff members, and help create and maintain a school climate of high academic standard (Alig-Mielcare, 2003). Instructional leaders are described variously as strong and directive, focused on developing culture, goal-oriented, expert in curriculum and instruction, and showing ability to work directly with teachers on the improvement of teaching and learning (Hallinger, 2005).

Blase and Blase (2004) in Dowling (2007), assert that Glickman's definition is one of the most comprehensive. Instructional leadership is supervision that helps the teachers with instruction and "the actions that enable teachers to improve instruction for students" (Dowling, 2007). Hallinger (2005) has further explained that instructional leaders are commonly seen as strong and directive culture builders that are goal-oriented. They are leaders and managers, and people who combine expertise with charisma. The heart of the instructional leadership is the ability of leaders to change schools from cultures of internal accountability to institutions that can meet the demands of external accountability (Halverson, Prichett, and Watson, 2007).

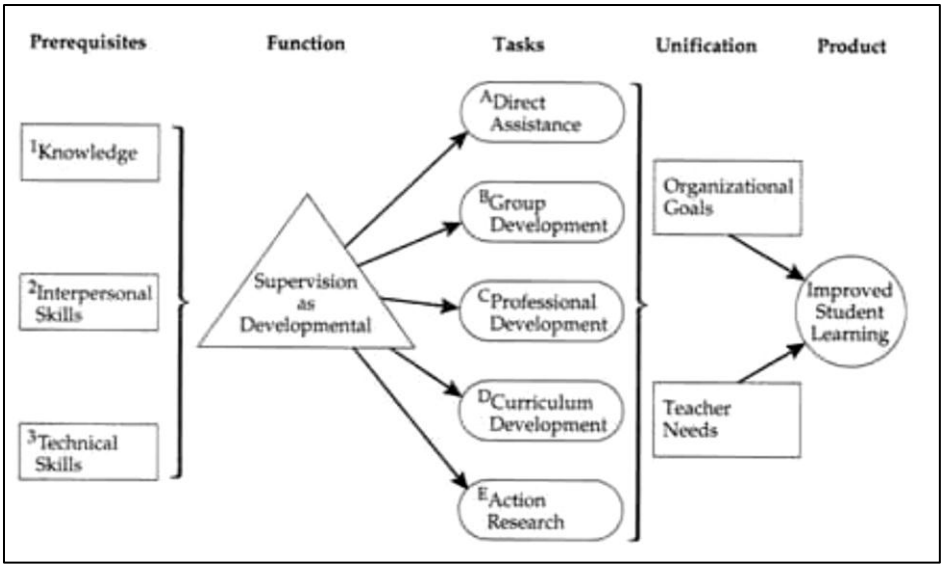

Figure 2.2 Prescriptive method of instructional leadership. (Glickman, Gordon and Gordon, 2001, p. 12).

Consequently, when administrators who are instructional and transformational leaders accept their role and exercise it in collaboration with teachers, they practice an integrated form of leadership. By focusing on instructional leadership, the principal works with instructional matters to enhance the quality of teaching and improve students' performance. By focusing on transformational leadership, the principal applies good leadership practices such as encouraging teachers to reach their fullest potentials to improve organizational performance (Dowling, 2007). Therefore "when transformational and shared instructional leadership coexist in an integrated form of leadership, the influence on school performance, measured by the quality of its pedagogy and the achievement of its students, is substantial" (Marks and Printy, 2003).

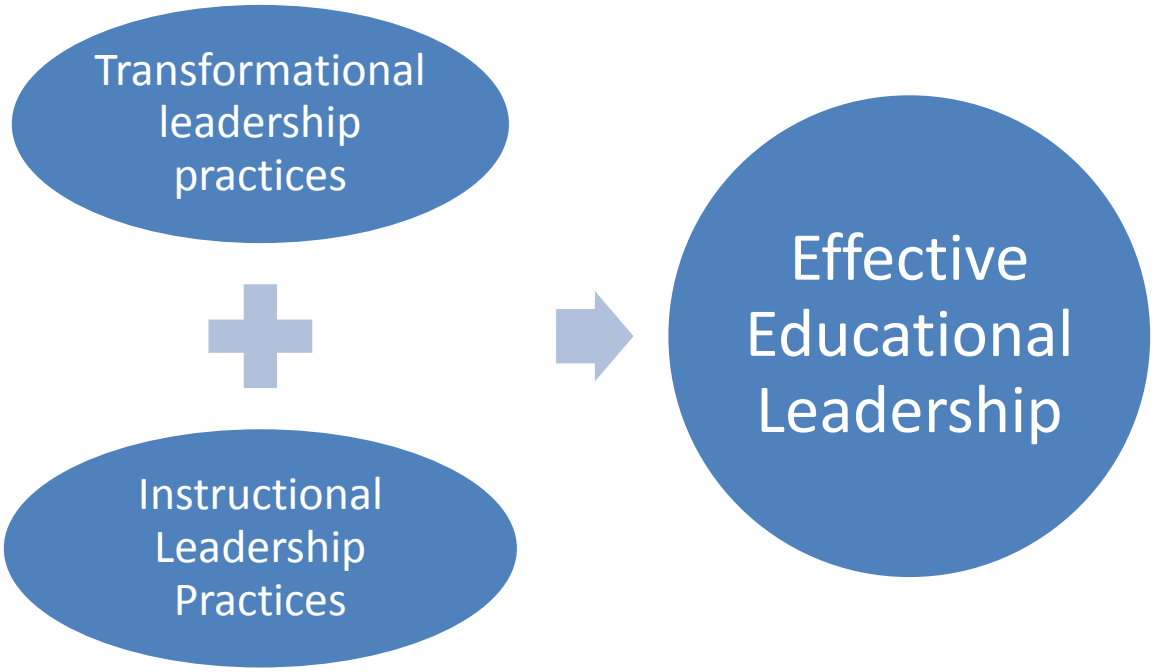

Fig. 2.3 Paradigm for effective educational leadership

Valentine and Prater (2011) found in their study about leadership styles and students' achievement that transformational and instructional leadership both had a positive relationship with students achievement. Instructional leadership was linked to achievement via instructional and curriculum improvement and transformational leadership via the identification of a vision and a leader being able to provide an appropriate model to follow (Valentine and Prater, 2011). According to Gaziel, (2007), leadership practices are better captured by measures of instructional leadership than of transformational leadership. Instructional leadership effect upon students' achievement is indirect, through school principal behaviours which affect teachers and school culture and students' achievement. Marks and Printy (2003), suggest that while transformational leadership approach would cater for administrative purposes, instructional leadership is necessary for pedagogy. Educational leaders must seek to establish the best educational strategies which involves the improvement of educational programmes aimed at creating competent products that are capable of occupying significant positions in society and, in turn, improving educational practices and procedures.

2.6.1 The Role of School Organisational Leadership on Education Quality

The desire for qualitative value and excellence is the primary motive of education at any level and that is why emphasis is always placed on high quality. Leadership has overall effects on organisational effectiveness. Leadership is one tool that enhances, develops and sustains quality in education because of its ability and responsibility over other variables determining quality education and school improvement. Leadership serves as a catalyst for unleashing the potential capacities that already exist in the organisation and it has very significant effects on the quality of school organisation and pupil learning (Wallace, 2013; OECD, 2012).

Usually, the principal is at the centre of affairs. Although in any school, a range of leadership patterns exists among principals, assistant principals, formal and informal teacher leaders, and parents, yet the principal remains the central source of leadership influence. Thus, principals have a sole responsibility to holistically account for whatever transpires under their watch in academic and administrative domains. They perform a role of delivery of education that should not compromise the expected quality in

education. Wallace (2013) describes effective leadership as one that focuses on what is essential, and how to get it done. It is responsible for influencing all other school related variables (learning environment, school culture,), teaching-learning variables (teacher effectiveness, students engagement, teacher quality, commitment) that affect quality of education. Indeed, leadership is second only to classroom instruction among school-related factors that affect students' learning in school (Leithwood and Sun, 2012; OECD 2012; Wallace 2013). If the principal's supervisory roles over all other variables are effective, quality education would be guaranteed. Wallace, in a detailed survey in 2010, school and district administrators, policymakers and others declared principal leadership as one of among the most pressing matters on a list of issues in public school education. Teacher quality stood above everything else, but principal leadership came next. OECD (2012), affirmed that school leadership is the starting point for the transformation of low performing disadvantaged schools. However, school leaders are often not well selected, prepared or supported to exercise their roles in these schools. Wallace 2013 concludes that improving school leadership ranks high on the list of priorities for school reform.

VAL-ED (the Vanderbilt Assessment of Leadership in Education tool to assess principals' performance, developed by researchers at Vanderbilt University) suggests that there are six key steps or "processes" that the effective principal takes when carrying out his or her most important leadership responsibilities: planning, implementing, supporting, advocating, communicating and monitoring (Porter, Murphy, Goldring and Elliot, 2008). The school leader pressing for high academic standards would, for example, map out rigorous targets for improvements in learning (planning), get the team on board to do what's necessary to meet those targets (implementing), encourage students and teachers to meeting the goals (supporting), challenge low expectations and low district funding for students with special needs (advocating), make sure families are aware of the learning goals (communicating), and keep on top of test results (monitoring). Davies and Wilson (2003) noted that leadership style and quality of leadership do affect job and job performance in an organisation. Also, Shamaki (2015) argued that the main task of the principal is to create a conducive atmosphere for the teacher to be able to achieve the desired changes in students learning. Principals can therefore encourage effective performance by their teachers by identifying their needs and trying to satisfy them. All

these lead to school quality improvements and better quality education. The essential aspect of effective school leadership for quality education delivery is an emphasis on requirement for a learner-centred leadership (Harris et al 2013). Wallace (2013) suggests five key responsibilities of leaders of learning who can develop a team to deliver effective instructions:

Shaping a vision of academic success for all students: Researchers who have examined education leadership agree that effective principals are responsible for establishing a school-wide vision of commitment to high standards and the success of all students. An established mission, vision and specified objective or goals makes it easy to focus energy on product delivery. All stakeholders and school machineries are therefore able to work with focus on the target.

Creating a hospitable climate for education in order that safety, a cooperative spirit and other foundations of fruitful interaction prevail: Effective principals ensure that their schools allow both adults and children to put learning at the centre of their daily activities. Such "a healthy school environment," according to Vanderbilt researchers is characterized by basics like safety and orderliness, as well as less tangible qualities such as a "supportive, responsive" attitude toward the children and a sense by teachers that they are part of a community of professionals focused on good instruction (Goldring et al. 2007). Principals play a major role in developing a "professional community" of teachers who guide one another in improving instruction.

Cultivating leadership in others so that teachers and adults assume their roles in realizing the school vision:

There is a growing understanding that leadership is embedded in various organisational contexts within school communities, not centrally vested in a person or an office. It has been demonstrated that, "Leaders who form effective management teams have a more pervasive influence than those who rely on their own personal efforts" (OECD, 2001b, p. 55). Leaders (principal) need to depend on others to accomplish the group's purpose. They also need to encourage the development of leadership across the organisation. A central part of being a great leader is cultivating leadership in others. Authority to lead needs not be located in the person of the leader alone but can be shared with the vice-principals, heads of departments and units (MacBeath 1998; Day et al, 2000). In a

research on leadership, Karen, Kenneth, Kyla and Stephen (2010) found that though the principal plays the central role in school leadership, high-performing schools also benefit from the leadership of many others. They also found that principals improve students' learning by motivating teachers and encouraging their professional development.

Improving instruction to enable teachers to teach at their best and students to learn to their utmost: Effective principals work relentlessly to improve achievement by focusing on the quality of instruction. They help define and promote high expectations; they attack teacher isolation and fragmented effort; and connect directly with teachers and the classroom. They also encourage continual professional learning.

Managing people, data and processes to foster school improvement

Principals have a responsibility to manage and coordinate the activities of everyone in the school. Effective leaders view data not only as means pinpointing problems but of understanding their nature and causes. Effective leaders need to make good use of the resources at hand. In other words, they have to be good managers. All the leadership tasks that lead to effectiveness and quality output are however dependent on one another because it is when all five tasks are well carried out that leadership is at work.

2.7 The Concept of Organisational Culture in School Organisations

Although literature is yet to give a generally acceptable definition of the concept of organisational culture, the relative terms have been used widely with the same understanding and interpretations. Classifications in the business world may only have little differences in semantics with that of other institutions. According to Schein (2011), the culture of an organisation is all the beliefs, feelings, behaviours, and symbols that are characteristic of the organisation. Organisational culture is defined as shared philosophies, ideologies, beliefs, feelings, assumptions, expectations, attitudes, norms, and values. Culture is created by means of terminal and instrumental values, heroes, rites and rituals, and communication networks (Schein, 2004).

The primary methods of sustaining organisational culture is through the socialization process by which individuals learn the values, expected behaviours, and social knowledge necessary to assume their roles in an organisation (Lunenburg, 2011). It is necessary for the management to identify the norms and values of the employees.

Organisational culture is an important construct that affects both individual and organisational processes and outcomes. The complete knowledge and awareness of organisational culture should help to improve the ability to examine the behaviour of an organisation assists in managing and leading it (Brooks, 2006).

Denning (2011), explains that culture is what provides agency members a common ground for interpreting events, understanding issues, and knowing what is expected of them. It represents an interlocking set of goals, values, attitudes, and operating assumptions. Cultural forces can combine to prevent change. Consequently, applying management tools, like strategic planning, without understanding the cultural drivers of agency behaviours will only result in temporary changes as individuals are likely to revert to stagnant patterns of decision-making (Denning, 2011). Culture is the single factor distinguishing top performing organisations from mediocre agencies (Meehan, Rigby and Rogers, 2008). Organisational culture has the ability to influence organisational activities, processes, and outcomes. Organisations develop unique cultures that ultimately impact overall agency effectiveness. According to Shahzad, Luqman, Rashid and Shabbir (2012)**,** strong organisation culture is essential for business because of three important functions:

a. Organisational culture is extremely fixed with the social control and may influence the employee's decisions and behaviour.
b. organisational culture works as social glue to bond employees together and make them feel a strong part of the corporate experience. This is useful to attract new staff and retain the best performers.
c. organisational culture assists employees to understand the organisational objectives, and enhance the efficiency and effectiveness of employees.

Schein (2004) argues that each organisation, at minimum, contains three subcultures: front-line personnel executing tasks; the subset focused on process design, innovation, and improvement; and the executive responsible for organisational survival and long-term effectiveness. This applies to the school organisation where the teachers, academic and administrative heads and the principals all work effectively to meet the required quality of education they ought to deliver.

Haberman (2013), admits that culture is intangible yet essential to school organisations. Haberman (2013), describes a positive school culture as a joint sense of purpose and value demonstrated in continuous improvement through learning, and experience. However, innovation, leadership, teamwork, and goal-orientedness are also important. Mitchell (2008) in Oshin (2014) explicitly identifies three types of school cultures which are located on a continuum.

Bureaucratic culture: The administrator is at the helm of affairs while teachers are followers of the dictating regime. There are laid down rules and regulations that must be strictly followed, as strong emphasis is laid on following the book (following official rule which may seem unnecessary).

Toxic culture: It engenders the feelings of hostility and hopelessness. The focus is on failure of programmes and new ideas. Energy is spent on maintaining the negative values that cause high levels of stress for those unfortunate enough to be part of the culture. Toxic cultures value traditionalism. Teachers fear being different and those who suggest new ideas are often criticized (Sookradge, 2010). It is evident in a negative setting where dissatisfaction is highly palpable.

Collegial culture: This is referred to as positive school culture. It is characterised by**:** collegiality, experimentation, high expectations, trust and confidence, tangible support, reaching out to the knowledge bases (i.e. going to the source of information), developing information networks rather than trying to solve problems in isolation, appreciation and recognition, caring, celebration and humour, involvement in decision making, protection of what is important, traditions (i.e. the rituals, ceremonies and symbols that strengthen the school), honest and open communication (Peterson, 2002). Collegial cultures engender a sense of cohesion and collaboration. Teachers are encouraged to grow. Community is treasured and sharing of resources and ideas is a common thing. Collegial cultures also value involvement of parents, teachers, administrators, and even students in solving problems, which are seen as social not individual challenges.

Teachers simply cannot work in isolation to improve student achievement and meet the demands of high stakes accountability. Students' achievements increases when teachers work together in teams (DuFour, Eaker and DuFour, 2005). Gruenert and Valentine (1998), enlists six elements of positive school culture. They are:

- **Collaborative leadership:** the degree to which the principal develops mutual affiliations with the faculty
- **Teacher collaboration:** the extent to which the teachers work together as a group to improve instructional practices and meet organisational goals
- **Professional development:** the degree to which the educational staff engages in seminars and trainings to stay current with educational issues and improve instructional practices.
- **Collegial support:** the extent to which teachers trust and work together to achieve the objectives of the school
- **Unity of purpose:** the degree to which stakeholders work towards the common mission of the school.
- **Learning partnership:** the extent to which the principal, teachers, and parents work together to improve the performance and achievement of the child (Gumuseli and Eryilmaz, 2011).

Marcoulides, Heck, and Papanastasiou (2005) in their study on how students' perceptions of the school culture affects students achievement found that achievement scores can be explained by students' perceptions of the school culture. Also, Mitchell (2008) used the school culture survey and the criterion referenced Competency test to measure students' achievement. The results revealed that a moderately strong correlation exists between the six elements and students' achievement but the correlation was not statistically significant. Positive school culture may lead to a better learning environment for students thereby enhancing achievement.

2.8 Relationship Between organisational Leadership and Culture

Daft (2000), said that organisational performance is an organisation's capability to accomplish its goals effectively and efficiently using the needed resources. This is germane to the educational system and school organisation considering the goals for which they are established and the numerous capital and human resources needed for education venture. Meanwhile, practitioners and academics suggest that the performance of an organisation is dependent on the degree to which the values of the culture are comprehensively shared (Denison, 1990). According to Shahzad, Luqman, Rashid and

Shabbir (2012), if employees are committed and have the same norms and values as their organisations, they can increase their performance toward achieving the overall organisation goals.

Leadership has been identified as a factor that dictates the productivity and effectiveness of organisations, including school organisations. Existing literature on the role of organisational culture in the life circle of an organisation justifies the notion that leadership and organisational culture are two of the most crucial organisational elements needed by firms to successfully compete and gain sustainable advantage. Tsai (2011) elaborates that for leaders it is possible to influence work behaviour and attitudes of employees. When there is a good interaction between the leader and subordinates, there will be contributions to team communication and collaboration, and encouragement of subordinates to accomplish the missions assigned by the organisation. This enhances job satisfaction, teacher commitment and effectiveness in their teaching profession. This results in increased performance of teachers and students' higher academic performance; hence, quality in school organisations.

Casida and Pinto-Zipp (2008), Tsai (2011), Leclear (2010), in their different studies to determine the relationship between different leadership styles and organisational cultures, found that leadership behaviour impacts on organisational culture (Casida and Pinto-Zipp 2008). However, Ogbonna and Harris (2000) suggest that literature had been silent on the link between the two concepts and performance, but a large number of studies exists that suggests that: the style of a leader affects performance; certain types of culture are linked to superior performance; and culture and leadership are related. However, the precise nature and form of interaction between the three concepts are not fully understood. He, however, presents empirical evidence which suggests that the relationship between leadership style and performance is mediated by the form of organisational culture that is present. This shows that leadership characteristics and school culture affect students' achievement (Leclear, 2005). Leithwood and Riehl (2003) concludes that school principals are accountable for student achievement as school culture impacts student achievement. Thus, a school culture assessment, as part of the principal evaluation process, would provide an additional measure of potential leader effectiveness and promote continued professional learning by principals to enable them

develop the most effective leadership skills and positive culture that will enhance performance and quality of schooling.

Deal and Peterson (1999) describe the role of leadership as "the creation, encouragement, and refinement of the symbols and symbolic activities that give meaning to the organisation" while Shamaki (2015), asserts that the success of an organisation, whether formal or informal, depends on the way or manner in which a leader operates. This corroborates the literature on leadership which suggests that the ability to understand and work within a culture is a prerequisite for leadership effectiveness (Hennessey, 1998).

Literature on educational leadership or principal leadership in schools have exhaustively explained leadership goal as that which gives direction and exerts influence in school organisations. Organisational culture is defined as a system of assumptions, values, norms, and attitudes, manifested through symbols which the members of an organisation have developed and adopted through mutual experience and which helps them determine the meaning of the world around them and how to behave in it (Janićijević, 2011). Deal and Peterson (1999) noted that the principal, being in the leadership position has a great influence on a school's culture as the position enables him to redirect the school culture towards an ethos of excellence that upholds quality as a major principle of the school's daily life.

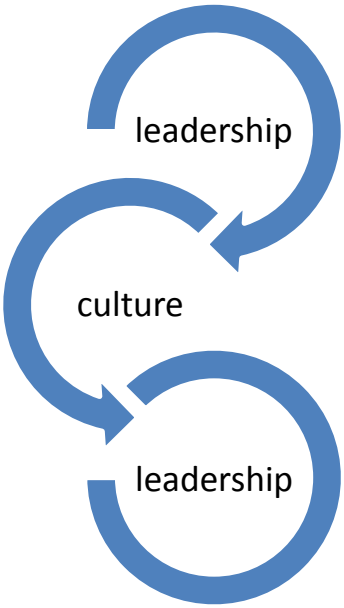

Fig. 2.4 Relationship between school organisational leadership and culture

Leadership and culture are intimately linked. A school's culture can be developed, influenced, and managed (Trice, 1993). Different leadership models are effective in shaping a positive culture that continuously improves a school. Sashkin and Sashkin (1993) suggest that leaders model culture and build values. They suggest that leaders re-weave old traditions and stories into present realities and new visions. Schein (2011), explains the relationship between leadership and culture in the context of the organisational life cycle; the foundation leader creates and shapes the cultural traits of their organisation which reflects their values and beliefs. However, as the organisation develops with time, the created culture of the organisation exerts an influence that shapes the actions and style of the leader. Through this dynamic on-going process, the leader creates, and is in turn shaped by, the organisational culture. This makes principals' tenure a likely mediating factor on the temporal order of relationship between school organisational culture and leadership. Subsequently, different leaders of organisations also exert their own values and beliefs on the culture of school organisations while an intact culture is unconsciously formed. The links between organisational culture and leadership is surprising given the numerous references to the importance of the two concepts in the functioning of organisations. Likewise, Tsai (2011) submits that the core values of an organisation begin with its leadership, which will then evolve to a leadership style. Subordinates will be led by the values and the behaviour of leaders, such that the behaviour of both parties, should become increasingly in line. When strong, unified behaviour, values and beliefs have been developed, a strong organisational culture emerges.

Organisational culture literature alludes to the role of leaders in creating and maintaining particular types of culture (for example, Schein, 1992). It also focuses on change, suggesting that an effective organisation may be defined as one which creates a culture that inspires its members to pursue continuous improvement through change. Thus, shaping the culture within the school towards a culture that is more productive is the focus of principals. Enlightened leadership can change culture by changing the assumptions on which the culture is built. The leader who sets out to do this must have knowledge of the existing culture and be aware of the organisation's key concerns. The goal will be to re-create a positive shared vision and trust. (James, 1996). Leadership

traits continue to be studied so that principals can strive for a more complete understanding of how to mould a positive culture within their schools for an ultimate gain in student performance. School culture has been positively tied to student achievement. It is imperative that school leaders or principals foster a positive school culture and practice effective decision making (Sackney, 1998). Many academics and practitioners argue that the performance of an organisation is dependent on the degree to which the values of the culture are widely shared, that is, are 'strong'. Leclear (2012), reports that principals directly impact students' learning through the school culture they foster. Thus, organisational leadership and culture will immensely assist the education system in providing qualitative educational services for the society's well-being.

2.9 Professionalism in School Organisations and Professional Development (PD) of Teachers

Teaching is a complex art, teachers strive to equip learners with a wide range of skills that they will require to take their place in a world that is in constant evolution. This hastens the need for the development of more competence-centred approaches to teaching, together with greater emphasis on learning outcomes. Teachers, education stakeholders and society sets bold goals for students' learning. Research literature suggests that while many factors contribute to achieving these goals, what teachers know and are able to do is one of the most important factors influencing student learning (Fullan, Hill and Crevola, 2006). Teachers are the ones responsible to work creatively with their students, to translate and shape curricular goals and theoretical notions into effective classroom and school-wide practices, and to provide an environment for effective learning.

European Commission (2010), suggests that since students' outcomes depend greatly on teacher quality, government, local politicians and school managers need to foster teachers' continuous professional development in order to cope effectively with on-going changes and improve the quality of education. Strengthening internal school conditions to promote teachers' professional development is considered an important prerequisite for addressing a continuous stream of changes in their environments (*e.g.* demographic changes, large-scale educational innovations, socio-cultural renewal), the

multidimensional restructuring demands to which they must respond, and the considerable external pressures arising from the tighter "output" controls introduced by accountability policies. Literature identifies with the concept of professionalism of school staff in order to meet up with the trend and demand of school reforms and high standards.

Initial education has prepared teachers to be effective, and take responsibility for their continuing professional development. Teachers reflect on their own practice, develop their skills, knowledge and expertise, and adapt their teaching appropriately to take account of evidence about effective practice and new technology. They understand that all of these are vital if young people are to receive the best and most relevant education (Broad and Evans, 2006). Fortunately, there has been increasing attention to the essential role of deliberate, on-going, high quality teachers' professional learning and development to make them responsive to changing, complex and challenging demands (Darling- Hammond, 2000). There are many definitions of professional development. Most refer to both formal and informal learning experiences and processes that lead to deepened understanding and improvement of practice.

The professional development practices for mid-career or experienced teachers are generally viewed as part of the continuum of learning of teachers throughout their careers while effective professional development strongly links teacher and students' learning and is guided by data (Broad and Evans; 2006). Fullan, Hill and Crevola (2006) alude that professional learning focuses on contextually-based, personalized, data-driven instruction aid is one of the three central components of breakthough thinking that is critical to successful educational reform that improves and sustains learning for students and teachers alike.

According to Caena (2011), the complexities of the teaching profession require a lifelong learning perspective to adapt to fast changes and evolving constraints or needs. Studies on teachers and their professional development have shown that in-service training is considered as a professional duty. European commission (2010), see teaching as a complex craft that cannot be mastered in totality. It needs a continuous commitment to training and improvement throughout one's career to improve students' achievement. Research however suggests that models of professional development change teacher

practice and are possible without significant increases in district spending (Gulamhussein, 2013).

Caena (2011) explained that the conditions affecting teacher learning are in two theoretical perspectives; psychological factors (teacher cognition and motivation) and organisational factors (leadership, teacher collaboration, staff relationships and communication, locus of control, opportunities for teachers' learning). Organisational factors are considered as prerequisites for linking teacher professional development and school development. The structure of professional development should be such that teachers change their teaching practices, leading to students' learning more (Gulamhussein, 2013) because not all the learning of teachers promote professional development in practice and school improvement. Existing literature gives some indications of key professional learning activities that enable teachers to tackle rapid changes such as keeping updated; experimentation; reflective practice; knowledge sharing and innovation (Caena, 2011).

Hawley and Valli (1999) echo Guskey in their review of the research on professional development programme, identifying eight principles of effective professional development. In their view, powerful professional learning designs are:

- driven by attention to goals and student performance
- built upon teacher involvement in identifying learning needs and shaping the learning opportunities and processes
- school-based emphasizing job-embedded learning
- collaborative and problem solving
- continuous and supported over time
- information rich with multiple sources of information for evaluation of the outcomes
- based in theoretical understanding and utilizing evidence and research to develop, support and advance learning
- part of a comprehensive change process connecting individual and collective learning to larger organisational issues and needs.

The depth and type of professional development available to teachers are facilitated by school organisational cultures. A strong, positive, professional culture

which fosters learning by all educators and students encourages professionalism. In a strong professional culture, leaders share and distribute responsibilities to provide quality, effectiveness, and coherence across all components of the instructional system such as curriculum, instructional materials, pedagogy, and student assessment (Gulamhussein, 2013). Teachers' capacity should be enhanced through professional preparations, in-service developments and training programmes. This will ensure that teachers are exposed to current ideas, issues and teaching methods in their fields.

2.9.1 Teacher Registration Council of Nigeria (TRCN) and Professional Development of Teachers in Nigeria

Due to the importance of professional development of teachers, a professional body was establised for teachers to address the daily challenges of teaching, regulate the entry and practice of teachers in the teaching profession and bring about a rapid transformation in the teaching profession to the highest standards possible. This institution provides the standards of practice for the teaching profession in Nigeria.

According to Broad and Evans (2006), the Standards of Practice for the Teaching Profession provides a framework of principles that describe the knowledge, skills, and values inherent in teaching profession, and inspire the need for professional development. These standards articulate the goals and aspirations of the profession and also convey a collective vision of professionalism that guides the daily practices of teachers. The standards of practice for the teaching profession include; commitment to students and students' learning, professional knowledge, professional practice, leadership in learning communities, ongoing professional learning and professional inquiry. The standards of practice for the teaching profession inspires shared vision for the teaching profession, identifies the values, knowledge and skills that are distinctive to the teaching profession, guides the professional judgment and actions of the teaching profession, promotes a common language that fosters an understanding of what it means to be a member of the teaching profession. Concisely, the Teachers Registration Council of Nigeria (TRCN) was established by Act No 31 of 1993 and charged with the following functions:

(i) Determining who are teachers for the purpose of this Act.

(ii) Determining what standards of knowledge and skill are to be attained by persons seeking to become registered as teachers under this Act and raising those standards from time to time as circumstances may permit.

(iii) Securing in accordance with the provisions of this Act the establishment and maintenance of a register of teachers and the publication from time to time of the list of those persons.

(iv) Regulating and controlling the teaching profession in all its aspects and ramifications.

(v) Classifying from time to time members of the teaching profession according to their levels of training and qualification.

(vi) Performing through the council established under this Act the functions conferred on it by this Act.

Following the provisions of the TRCN Act, teachers are categorized into four classes namely:

A – Class: Holders of Ph.D in Education or PhD in other field plus Education (e.g. PGDE, NCE)

B-Class: Holders of Masters degree in Education or Masters in other field plus Education (e.g. PGDE, NCE)

C-Class: Holders of Bachelors degree in Education or Bachelors in other field plus education (e.g. PGDE, NCE)

D-Class: Holders of Nigeria Certificate in Education (**NCE**) or equivalent.

These groups of professionals are guided by the code of conduct as a means for providing rules and regulations of the TRCN regulatory body. The TRCN Act (2005), section 9 (6) empowers the council to make rules which are not inconsistent with the Act as to acts which constitute professional misconduct. The TRCN tenets cuts across the quality of teacher education programmes, registration and licensing, mandatory continuing professional development, professional conduct, and overall social status of teachers at all levels of the education system and also provide ethical framework for teaching practitioners.

2.9.2 Teachers' Effectiveness as Education Quality Performance

Research suggests that schools make a difference in the quality of education. A substantial amount of the difference is attributable to the teachers because the quality of the teacher contributes more to learner's achievement than any other factor, including class size, class composition, or background. Thus, teaching effectiveness can be described as the degree to which students' performance improves after a period of instruction in a manner consistent with the objectives and goals of instruction. Teachers have important influence on student's academic achievement and also play a crucial role in educational attainment because the teacher is ultimately responsible for translating policies into action and principles based on practice during interaction with students (Afe, 2001).

Teaching is a developmental process which includes interactions between teachers and learners. The core of education is teaching and learning. This works best when there are effective teachers working with every student everyday (Hattie 2003). Rockoff (2004), conceptualizes teachers' effectiveness as the managerial skills essential for enhanced classroom control and discipline. Teachers need competence, ability, resourcefulness and ingenuity to efficiently utilize the appropriate language, methodology and available instructional materials to bring out the best from learners in terms of academic achievement. An effective teacher is expected to show interest in the overall development of the school and therefore participate actively in all school activities that would promote harmony, orderliness and an atmosphere conducive for the overall development of students. He/she is also expected to be committed to the teaching profession. Teachers are regarded as effective only when their teaching can lead to students' learning (Oyinlola, 2014).

Effective teachers are often used interchangeably with quality teachers. Zuzovsky (2005) proclaim that quality teachers are often seen simply as good teachers and are considered to be those who exhibit desirable traits and uphold the standards and norms of the profession. Quality teachers are also considered to be those who bring about 'student learning.' These teachers are described as 'expert' (Hattie, 2003), 'effective' (Berliner, 1987, 2005) or 'successful' (Fenstermacher and Richardson in Berliner, 2005). Fenstermacher and Richardson remark that 'good teaching' means that the content taught

accords with disciplinary standards of adequacy and completeness and the methods employed are age appropriate, morally defensible and undertaken with the intention of enhancing the learner's competence with respect to the content. Successful teaching means that the learner actually acquires some reasonable and acceptable level of proficiency from what the teacher is engaged in teaching. Hattie (2003) concludes on five major dimensions of expert teachers as those that can;

- identify essential representations of their subject,
- guide learning through classroom interactions,
- monitor learning and provide feedback,
- attend to affective attributes, and influence student outcomes.

Several studies have linked teachers' effectiveness to many other school and students related variables and academic achievement. The term teacher effectiveness is used broadly, to mean the collection of characteristics, competencies, and behaviours of teachers at all educational levels that enable students to reach desired outcomes (Hunt, 2009). Awofala (2012) claimed that teacher effectiveness is synonymous with individual teachers' performance and is encompassed in knowledge, attitude, and performance" (Hunt, 2009). Teacher effectiveness is important because the effectiveness of every teacher is the life of every educational institution (Rao and Kumar 2004). The influence of teachers' teaching effectiveness on the learning outcome of students as measured by students' academic performance has been the subject of several studies (Lockhead and Komenan 1988; Sanders and Rivers 1996; Schacter and Thum 2004; Adediwura and Tayo 2007; Adu and Olatundun 2007). The above studies suggest that effective teaching is a significant predictor of students' academic achievement. Therefore effective teachers should produce students of higher academic performance.

Hattie (2003) stated that teacher quality matters and is the most important school-related factor influencing student achievement. ShabaniVorki (2006), found that lesson design, teaching execution, teaching evaluation and interpersonal relations are the most important indicators determining teaching quality. While researches consider other dimensions of outcomes (self-efficacy, self-regulation, willingness to be challenged) as critical, the impact of teachers on students' achievement is often considered to be

paramount because the effects on achievement and learning are important (Taut and Barrientos 2015).

Agbatogun (2006), found that low teaching effectiveness of school teachers led to negative students' achievement. In the same vein, Adediwura and Tayo (2007); Adu and Olatundun (2007) reported that teachers' effectiveness influences learning outcome of students as measured by students' academic performance. Hech (2009), examined successive teachers' effects on students' achievement, using a multilevel constellation of teacher-related effects (e.g. classroom effectiveness, collective teaching quality, school academic organisation) that can be changed to increase educational effectiveness. The sample consisted of 9,196 students, cross-classified in 511 and 527 classrooms, and nested in 156 elementary schools. The premise advanced was that teacher effectiveness is an individual resource that varies across classrooms within schools, as well as a collective resource that varies across schools. Results showed that the effectiveness of successive teachers was related to students' achievement in reading and maths. Secondly, collective teacher effectiveness, as an organisational property of schools, was positively associated with achievement levels. Thirdly, the stability of the school's teaching staff and the quality of its academic organisation and teaching processes were positively related to achievement levels. Anderson (2004) summarised the features associated with effective teachers in the table below;

Table 2.1: Summary of characteristics associated with more effective teachers

Cluster	Characteristic	Description
Professionalism	Commitment	Commitment to do everything possible for each student and enable all students to be successful
	Confidence	Belief in one's ability to be effective and to take on challenges
	Trustworthiness	Being consistent and fair; keeping one's word
	Respect	Belief that all persons matter and deserve respect
Thinking/ reasoning	Analytical thinking	Ability to think logically, break things down, and recognise cause and effect
	Conceptual thinking	Ability to see patterns and connections, even when a great deal of detail is present
Expectations	Drive for improvement	Relentless energy for setting and meeting challenging targets, for students and the school
	Information-seeking	Drive to find out more and get to the heart of things; intellectual curiosity
	Initiative	Drive to act now to anticipate and pre-empt events

Leadership	Flexibility	Ability and willingness to adapt to the needs of a situation and change tactics
	Accountability	Drive and ability to set clear expectations and parameters and hold others accountable for performance
	Passion for learning	Drive and ability to support students in their learning and to help them become confident and independent learners

Source: Adapted from McBer (2000) by Anderson (2004), p. 15.

A conceptually sound, well designed, and properly implemented evaluation system for teachers is an essential component of an effective school (Stronge, 2005); without high quality evaluation systems, we cannot know if we have high quality teachers" (Stronge and Tucker, 2003). Research has shown that effective teaching in educational development and student learning are important considerations for evaluation of quality because the success of any education reform effort depends on the availability of high quality teachers in the classrooms (Stronge and Tucker, 2003). Thus, among the school variables that are paramount in education is the quality of teachers in the system; it is the most important factor in driving the quality of education.

Sanders and Rivers (1996) confirm that students who are assigned to several ineffective teachers in a row have significantly lower achievement and gains in achievement than those who are assigned to several highly effective teachers in sequence. A number of contemporary studies have found relationships between the teacher quality and students achievement. This, with other school variables that could influence quality are important indicators of quality education. Thus, teacher effectiveness is an important education quality performance indicator because of its ability to monitor education quality and use in processes of strategic decision making that result in measurable improvements towards the desired outcomes of education. Education Bureau (2015), enumerates six approaches to assessing teachers that demonstrate moderate validity in signalling effectiveness. They are;

1. classroom observations by peers, principals or external evaluators;
2. 'value-added' models (assessing gains in student achievement) ;
3. student ratings;

Three other approaches had limited evidence:

4. principal (or head-teacher) judgement;
5. teachers' self-report;
6. analysis of classroom artefacts and teacher portfolios.

2.10 Students Learning Achievement as Education Quality Performance

The result of secondary school certificate examination is the product of investments standard (of curriculum, personnel, resources and logistics) in secondary education in Nigeria or the output of secondary education is the index of its quality (Ojedokun and Aladejana, 2012). Often times, quality is linked to learning outcomes. Educational results therefore must be a major factor in accessing quality of education. Manno in (Rowe and lievesley, 2002) asserts that judgement on educational quality requires a focus on the schools' input and an emphasis on the students' achievement. Stakeholders who dwell on students' achievement must specify what they expect students to learn and determine whether they have learnt it.

Although, learning achievement is one of the most important measures of the quality of education, it is also intricately linked to school efficiency because the promotion and repetition rates are directly related to the learning achievements of the students, to which in turn, school drop-out can be attributed (Rowe and lievesley, 2002). Nonetheless, student learning outcomes not only comprise of students learning achievement as determined by test scores or public examinations but also, students' performance in the non-cognitive domains which primarily consist of the affective and social skills. This is also measured in a quantitative and objective data for the purpose of reviewing students' needs for their personal development and the effectiveness in terms of attitude, motivation, integrity or health. This makes it crucial to evaluate the social and affective outcomes alongside the students learning achievement. Measures of students' learning outcomes are prime indicators of the quality of education.

2.11 Non-cognitive Learning Outcomes as Education Quality Performances

The non-cognitive factors are basically anything not measured by cognitive tests (achievement or IQ tests). They are not content knowledge or core academic skills, but they influence schools' performance.They are academic behaviours, contextual skills and awareness that can matter even more than cognitive factors for students' academic performance. These may include students' beliefs about themselves, their feelings about school, or their habits of self-control. Educators, psychologists, and even economists recognize the importance of non-cognitive factors in achievement both in school and in

the labour market. They include skills, behaviours, strategies, beliefs and attitudes that address students' identity development as learners, that potray students' behaviours as a response to a larger system of schooling and adult practices rather than students' characteristics (Nagaoka and Farrington, 2014). Examples of dimensions under which the non-cognitive factors can be measured include; peer interactions, interests, conscientiousness, work ethics, professionalism, grit, teamwork, collaboration, motivation, agreeableness, persistence, self-concept, tenacity, self-efficacy, open-mindedness, flexibility leadership, creativity, innovation, confidence, effort, enthusiasm, values, cooperation, communication, goal-setting, self-regulation, work completion, attendance, time management. In view of this, there is no single existing instrument that measures all the non-cognitive factors that research suggests are important for students' performance. They are primarily factors under the affective and social domains of learning.

Table 2.2: non-cognitive domain levels in the affective and social skills

	Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
Social Skills	Communicating	relating to others	relating culturally	Managing	Leading
Affective Skills	Open to experience	engaging in life	cultivating values	managing oneself	developing oneself.

Affect or emotion influences one's awareness of important sensory and situational changes, and motivates action. Skills in the affective domain are strongly related to students, self-management, persistence, attitudes toward assessment, and level of success. The affective domain contains learning skills that are predominantly related to emotional (affective) processes. The learning processes in the affective domain include being open to experience, engaging in life, cultivating values, managing oneself, and developing oneself. Within each of these general process areas are several "clusters" of specific learning skills that can be improved by means of constructive intervention and assessment.

The social domain involves communication-related skills in goal-oriented contexts. The learning processes included in the social domain feature performance that directly focus on the development of social skills (e.g., being courteous) as well as the uses of the social skills themselves to manage situations or problems (e.g., improvising). All of its process areas and specific skills involve interpersonal performance in a large range of social contexts in which learning occurs; interpersonal skills, empathy, cooperation, assertion, responsibility. They are hard to measure and easily blended with other factors

.

2.12 School Organisational Leadership and Education Quality Performance

Louis, Leithwood, Wahlstrom, and Anderson (2010), opines that school leadership, from formal and informal sources, helps to shape school conditions (including; goals, culture, and structures) and classroom conditions (including the content of instruction, the size of classrooms, and the pedagogy used by teachers). It involves not only building collegial teams, a loyal and cohesive staff, and sharing an inspirational vision. Lamb (2013), asserts that for any organisation to be successful in achieving its objectives, the important elements to consider include the achievement of productivity through good leadership and the effective management of people together with their commitment to and involvement with the organisation. Meanwhile, research suggested that school effectiveness and improvement concerns the apparently powerful impact of principals on processes related to school outcomes.

Leithwood et al. (2004) emphasized that effective leadership involves not only determining the goal content (task focus or educational challenges) but doing so in a manner that enables staff to understand and become committed to the goal (relationships) and incorporating both sets of constraints into their problem solving.

Bossert, Dwyer, Rowan and Lee (1982) emphasise that a school principal, through his or her activities, roles, and behaviours in managing school structures does not affect students achievement directly in the ways the teachers do. However, classroom teaching may be impacted by principal's actions, such as setting and clearly communicating high expectations for all students, supervising teachers' instructional performance, evaluating students' progress, and promoting a positive teaching/learning environment. School leaders have an impact on students' achievement primarily through their influence on teachers' motivation and working conditions; their influence on teachers' knowledge and skills produces less impact on students achievement (Louis, Leithwood, Wahlstrom, and Anderson 2010). But rather, it also involves focusing relationships on some very specific pedagogical work. Nonetheless, the quality of leadership matters in determining the motivation of teachers and the quality of teaching in the classroom (Fullan, 2001; Sergiovanni, 1999). According to Robinson, Lloyd and Rowe (2008), for higher achievement, academic goal focus is both a property of leadership (e.g., "the principal makes student achievement the school's top goal") and a quality of school organisation.

Hallinger, Bickman and Davies (1996), explored the extent of the principal' effects on reading achievement in a sample of 87 U.S elementary schools. Their results indicated a direct effect of leadership on the existence of a clear school mission, which in turn influenced students opportunity to learn and teachers' expectations for student achievement. That is to say, principals influence student learning indirectly by developing a school mission that provides an instructional focus for teachers throughout the school, and this creates a school environment that facilitates student learning. Principals contribute to reading achievement through the creation of a positive instructional climate (high teacher expectations, student opportunity to learn, clear mission, and grouping for instruction) (Hallinger, Bickman, and Davis; 1996). Also, Johnson, Livingston, Schwartz and Slate (2000) opined that principals have the ability to

indirectly affect students' achievement by improving the tone or learning environment of a school.

Hallinger and Heck (1998) in a meta-analysis, also examined the empirical literature on principal effects that emerged between 1980 and 1995. In the 40 studies they reviewed, they found different models used to investigate the relationship between school leadership and student achievement. First, the direct effect model, which suggests that leaders practices can have effects on school outcomes and that these can be measured apart from related variables. Second, the mediated effect , which assumes that leaders contribution and effect on school outcomes is mediated by other organisational and cultural factors. Finally, the reciprocal effect model, in which it assumed that relationships between the principals and features of the school and its environment are interactive. In most reviewed studies direct effect models were employed. However, according to Hallinger and Heck (1998), studies in which indirect effect models are used show a greater impact of school leadership on student performance than do studies employing direct effect models. The direct effect of principals on students' achievement is near zero (Witziers, Bosker, and Kruger, 2003; Leithwood, Jantzi, and Steinbach, 1999; Hallinger and Heck, 1996). Thus, holding principals accountable may be defensible if principals create the organisational conditions through which improved teaching and learning occurs. In such situations, principals may be said to have an indirect influence on students' achievement.

A meta-analysis covering a wide range of variables relating to student outcomes found that leadership had an average effect size of .52, which is higher than the average found for all educational interventions studies (.4); some of which had virtually no impact at all, but, significantly lower than factors such as direct instruction, feedback to students or cognitive strategy training (Hattie, 2005). Gaziel (2007), examined different domains of the principal instructional leadership behaviours on students' achievement. The research sample included 256 teachers from 32 secondary schools in Israel, who filled out the instructional leadership behaviour (ILB) for their school principals. Data about school features, such as, school size, average class size, teacher education and experience were collected. These variables were regressed on school students' achievements in the matriculation exams. The results indicate that 49% of the variance in students'

achievement is explained by students' SES, class size, and only one leadership behaviour i.e framing goals and communicating to staff.

Rautiola (2009), in his study of effects of leadership styles on students academic achievement discovered that school leadership has both direct and indirect implications leading to student achievement. He added that even-though most leadership influences are indirect; these indirect influences lead to increased collective efficacy and improved school culture. Al-Safran, Brown and Wiseman (N.D), also found that principal's leadership style was related to school outcomes in a direct and indirect relationship through the school environment. In their terms and description, they found that the integrative principal leadership style is found to encourage and create a co-operative school environment for better school outcome than schools with authoritative principals.

Adeyemi's (2010) study on principals' leadership styles and teacher-job's performance in senior secondary schools in Nigeria reveals that teacher-job's performance is influenced by principal's leadership style but it is better in schools with principals using autocratic leadership style than in schools with principals using democratic or Laissez-faire leadership style. Meanwhile, Onabamiro (2014), in a study of principals' factors, teachers' job satisfaction and classroom management and students' achievement in senior secondary school mathematics in south-west, Nigeria, discovered that autocratic leadership style had indirect positive effect on mathematics achievement while democratic and transformational leadership styles have both direct and indirect positive effects on students' achievement in mathematics. He concludes that the supervisory roles of the principals have indirect effect on students' academic achievement.

Robinson et al. (2008) identified five conceptual dimensions (establishing goals and expectations, resourcing strategically, planning, coordinating, and evaluating teaching and the curriculum, promoting and participating in teacher learning and development, ensuring an orderly and supportive environment and measurement frameworks) and employed twelve studies in their examination of the impact of particular types of leadership on student outcomes. They concluded that the closer educational leaders get to the core business of teaching and learning, the more likely they are to have a positive impact on students' outcomes. Wallace (2013) confirms that effective

leadership from all sources (principals, influential teachers, staff teams and others) has been associated with better student performance on mathematics and reading tests.

In the foregoing, the importance of leadership cannot be underrated in school organisation. The different sources and forms of leadership employed contribute to the achievement of school organisational goals. Thus, it is deemed necessary to inculcate the virtues of the most significant leadership types by school leaders. Evidence from literature on distributed leadership, transformational leadership and instructional leadership are essential to improve standards of school capacity to perform excellently by improving education quality.

2.13 Organisational Culture and Educational Quality Performances

Organisational culture being an expression of an organisation's collective values, beliefs, and behaviours defines a school's persona. The school organisational cultures consists of assumptions, unwritten rules, and unspoken beliefs that shape how its members think and do their jobs. It affects relationships, expectations, and behaviours among teachers, administrators, students, and parents. A school's culture creates a psycho-social environment that profoundly impacts teachers, administrators, and students and also shapes its organisation. Thus, that organisational culture is linked to performance is founded on the perceived role that culture can play in generating competitive advantage. Organisational culture has a strong impact on organisation and management, which emerges from its nature and content (Leclear, 2005). Understanding a school's culture is therefore an essential pre-requisite for any internal or external qualitative change. Harris (2002) points out that secondary leaders seem to have an effect on teaching because of the organisational ethos they create rather than the specific interpersonal interactions or interventions. School effectiveness research has shown that school culture is related to students' achievement (Sackney, 1998). A study by Sweetland and Hoy (2000) also demonstrated that, after socioeconomic status, school culture had a more powerful effect on students' achievement than any other variable.

Literature on effective schools also found a close correlation between positive school culture and academic quality: Marcoulides, Heck, and Papanastasiou (2005), found that a student's chance for success in learning cognitive skills is heavily influenced

by the culture of the school. Leclear (2005), also found that school culture has a significant effect on students achievement. In her study, however, school culture was found to be significantly related to student achievement in three school culture areas: personal teaching efficacy, performance of students with disabilities, and professional learning communities. Professional learning communities are important to a positive school culture. She concluded that principals need to focus on enhancing three areas of school culture: (a) professional learning communities, (b) teacher efficacy, and (c) the feeling of being a part of the community. Bandura (1993), and Brookover et al. (1978) also found that aspects of school culture clearly make a difference in, and can be a powerful contributor to students' academic achievement. This may be due to the fact that it also contributes grossly to teachers performance and productivity in several ways while their pedagogical activities affects students' performance.

Similarly, Quin, Deris, Bischoff, and Johnson (2015) in a study on relationship between principal leadership practices, culture, and achievement in elementary, middle, and high schools using a total of 216 teachers in 31 schools and instruments such as the leadership practices inventory and school culture survey, generated a significant correlation between (a) leadership practices and school culture and (b) school culture and students' achievement. They also found that leadership practices indirectly impact students' achievement through creating a positive school culture.. Learning partnership was the cultural factor that was a significant predictor of academic achievement. Also, Gruenert (2005) discovered that learning partnership and unity of purpose were the cultural factors that correlated positively with academic achievement. Another researcher found that collaborative leadership and unity of purpose were significant determinants of students' attainment (Demirtas, 2010).

Contrarily, Mitchell (2008) in his study used the school culture survey and the criterion referenced competency test to measure students' achievement. The analysis of the survey results revealed that a moderately strong correlation exists between the six elements and students' achievement, but this correlation was found not to be statistically significant. Meanwhile Oshin (2014) in her study of school culture, structure and practices as correlates of academic self- efficacy and achievement in senior secondary school mathematics in Oyo state, Nigeria found that 23.3% of the variance observed in

high performing school culture in mathematics and 43.2% of the variances observed in low performing school culture in mathematics was accounted for by all the school culture elements (predictors) and the variance are statistically significant in high and low performing schools.

Oshin also observed that unity of purpose (β= -.369, t= -2.404, P< 0.05) is the most influential predictor of mathematics achievement in high performing schools. Table 4.26b shows that professional development (β =.233, t=2.576,P< 0.05),unity of purpose (β=.206,t=2.361, P<0.05), collegial support (β=.281,t=3.224,P<0.05) and learning partnership (β=.351, t=3.897, P<0.05) are the most influential predictors of achievement in mathematics in low performing mathematics schools. The results showed a significant and positive relationship between school culture and students achievement in mathematics and also observed that school culture is one of the most important predictors of achievement in high and low performing schools. It is upon these bases that literature widely recommends that school leaders improve their cultural practices, especially learning partnership, in order to increase academic achievement. The present study seeks to examine the causal linkages of school organisational culture with other variables of this study and more importantly its relationship with other education quality performance indicators.

2.15 Professional Development (PD) of Teachers and Education Quality Performance

Although, in practice much evaluation of professional development focuses only on participants' feelings, attitudes or opinions**,** teacher professional development (PD) is widely seen as an effective way to disseminate and promote new teaching strategies and educational trends(Guskey, 2002). Research evidence suggests that much of professional development may be of poor quality and have minimal impact on classroom practice, nonetheless, other studies found professional development or some aspects of professional development to have meaningful impact on teacher practices and students learning. For example, OECD (2009) confirms that the amount of professional development undertaken by teachers is significantly related to teachers' reported self-

efficacy and significantly related to improved classroom disciplinary climate thereby making learning environment more productive for learning purposes.

Borko and Putnam (1995) reported that experienced teachers' pedagogical content knowledge and pedagogical contents beliefs can be affected by professional development programmes and that such changes are associated with changes in their classroom instruction and student achievement. Cohen and Hill (1997), similarly found strong relationships that link the improvement of teachers' practices and increasing levels of students' achievement. Teachers who participated in sustained curriculum-based professional development reported changes in practice that, in turn, were associated with significantly higher students achievement scores on state assessment (Darling-Hammond, 2000).

According to Zuzovsky 2005, Interesting significant interactions were found between teachers' participation in professional development activities and students' academic aspirations. There is a negative relationship between frequent participation in pedagogically-oriented professional activities and student achievement. A positive relationship between frequent participation in content-oriented professional development activities and students' achievement were more profound for students with low academic aspirations. This pattern was significant in the case of mathematics but less clear in the case of science. Apparently, there are direct and indirect connections between professionalism and professional development of teachers and students whole developments and learning outcomes.

Enhanced professional knowledge offers teachers better understanding of how to inculcate knowledge and coordinate students learning experience in a meaningful way thereby offering a standard professional practice that imparts quality. School leadership and culture also have a role to play in ensuring adequate professionalism in the environment because where professional development opportunities are poorly conceptualized where there is insensitivity towards the concerns of individual participants and a demonstration of little connection to workplace conditions, school leadership culture make little impact upon teachers or their students (Day 1999; Goodall et al., 2005). Meanwhile, accurately evaluating the impact of PD is crucial for schools or education systems to ensure that financial, time and human resources are utilised wisely.

2.16 Learner-centeredness and Education Quality Performances

In literature, the terms learner-centeredness is used to explain instructional processes and education processes that put students' interest at the centre of affairs in order to reap educational goals. Learner-centred practices have gained attention as a way of enhancing the outcomes of teaching and learning among students (Magno and Sembrano 2008). Thus, there is a shift from a directive approach in teaching to giving more recognition to the needs of learners as individuals and as a group. The learner-centred perspective combines a focus on individual learners(their hereditary, experiences, perspectives, backgrounds, talents, interest, capacities, and needs) with focus on learning(the best available knowledge about learning and how it occurs) and about teaching practices that are most effective in promoting the highest levels of motivation, learning and achievement for all learners. This informs and drives education decision making.

Learner-centredness is defined from a research-based perspective including both learning and learners, thereby establishing a foundation for clarifying what is needed to create positive learning contexts in which there is better likelihood of more students experiencing success at the classroom and school levels(McCombs and Whisler, 1997). McCombs (1997) defined learner-centredness for the learner and the learning process as a positive learning environment that is created to facilitate the success of students. According to him, the integrating factors that affect the learner and his learning are metacognitive and cognitive, affective, developmental, personal and social, and individual differences. Thus, the major features of learner-centeredness practices are: (1) the learners are included in the educational decision making process; (2) diverse perspectives of learners are encouraged; (3) individual differences of the learners are accounted for and respected; and (4) learners are co-creators of the teaching and learning process.

Learner-centeredness means the students are at the centre of learning. They assume the responsibility for learning while teachers are responsible for facilitating the learning. In learner-centred teaching, the focus is on the student as a learner, on improving student's learning and success, rather than on the transmission of information (Ebanks, 2010). The essential characteristic of a learner-centred approach is considering

the needs of learners. Having identified the learners' needs enables educators to adjust the classroom situation to facilitate their achievement (McCombs, 1997). One major characteristic of the learner-centred approach is emphasizing diversity among learners where the low performing learners are taken into consideration (Brown, 2003) such that the content and methods used in teaching are made appropriate for each kind of learner. In a learner-centred approach, the teacher understands and values students' differences and needs (McCombs, 1997).Thus, the power in the classroom shifts to the student.

McComb (1997), asserts that one way to determine the status of schools in their shift to a learner-centred approach is by looking at the assessment of both the teaching and the learning process. Such schools promote the use of a balanced combination of learner-centred instruction with aligned curricular and assessment practices. Weimer (2002) described five learner-centred practice areas that need to change to achieve learner-centred teaching. These are the function of content, the role of the instructor, the responsibility for learning, the processes and purposes of assessment, and the balance of power. The functions of the content in learner-centred teaching include building a strong knowledge foundation and developing learning skills and learner self-awareness.

- The roles of the instructor should be focused on student learning. The roles are facilitative rather than didactic.
- The responsibility for learning shifts from the instructor to the students. The instructor creates learning environments that motivate students to accept responsibility for learning.
- The processes and purposes of assessment shift from merely assigning grades to include constructive feedback and to assist with improvement. Learner-centred teaching uses assessment as a part of the learning process.
- The balance of power shifts so that the instructor shares some decisions about the course with the students such that the instructor and the students collaborate on course policies and procedures.

Magno and Sembrano (2009), found that the use of learner-centred practices in teaching has significant direct effects on teaching efficacy and effective teaching characteristics. A teacher who uses a learner-centred approach in teaching obtains efficacy in teaching and becomes effective. Teaching efficacy has a significant direct

effect on effective teaching characteristics that is desired in education. Therefore, it is obvious that learner-centred pedagogy contains instructional elements that can improve student academic achievement. McCombs (1997), affirms that assessing teacher performance through a learner-centred focus is not only meant to improve teacher performance on different aspects, but also to enable teachers to undergo a process of reflection which will assist in identifying personal characteristics and practices that need to change to further motivate each student and enhance their achievements. Based on McCombs study (1997), Magno and Sembrano (2007) grouped the areas of learner-centeredness into four. These are;

(1) *Positive interpersonal characteristics:* This reflects the ability to develop positive interpersonal relationships with students and the instructor's ability to value and respect students as persons.

(2) *Encourages personal challenge:* This shows how students are expected to take charge of their learning.

(3) *Adopts class learning needs: i.e.* the ability to be flexible in order to address students. needs.

(4) *Facilitates the learning process: i.e.* the instructor's ability to encourage students to monitor their own learning process.

Learner-centred pedagogy influences students' achievement with varied instructional arrangements based on the unique needs of each student. This form of pedagogy provides teachers an opportunity to focus on students and meet their learning needs through learner-centred instructions. Such individualized learning arrangements impact student performance in different ways. When a teacher delivers instructions through learner-centred pedagogy, the method increases students' participative activities and cognitive focus. An increase in participation and cognitive focus contributes to students' achievement (White, 2007).

2.17 Structural Equation Modelling in Behavioural Science (Educational Research)

Structural equation modelling(SEM) refers to a collection of related statistical procedures that allows a set of relationships between many variables to be examined.

SEM is a family of statistical models that seeks to explain the relationship among multiple variables (Hair, Black, Babin and Anderson 2010). It is a second-generation technique, that allows the simultaneous modeling of relationships among multiple independent and dependent constructs (Gefen, Straub, and Boudreau, 2000). Therefore, one no longer differentiates between dependent and independent variables but distinguishes between the exogenous and endogenous latent variables; the former being variables which are not explained by the postulated model (i.e.that always act as independent variables) and the latter being variables that are explained by the relationships contained in the model. (Diamantopoulos, 1994).

Structural equation modelling (SEM) can be (and often is) used to test (and consequently to either support or reject) theoretical assumptions with empirical data. It is therefore essential to have a sound understanding of the structure of theories to understand the different components of a structural equation model. It is possible to construct a research model that represents a certain theory, simply by converting theoretical and derived concepts into unobservable (latent) variables, and empirical concepts into indicators, which are linked by a set of hypotheses (representing non-observational hypotheses, theoretical definitions, or correspondence rules). This model can then be represented graphically by a path diagram- an arrow scheme, which shows how the various elements relate to one another (Diamantopoulos, 1994). Based on the path diagram, it is possible to set up equations, which can be used to describe the relationship between the different parameters of a research model. The theoretical equations are also referred to as the structural model. The measurement equations build the measurement model, and both, combined, can be subsumed by the term structural equation model. SEM examines the structure of interrelationships expressed in a series of equations where these equations illustrate the relationship among constructs presented in a theoretical framework.

The growth and popularity of SEM has been generally attributed to the advancement of software development that has increased accessibility of SEM to substantive researchers who have found this method appropriate in addressing a variety of research questions. In general, there are two approaches to estimating the parameters of SEM, namely, the covariance-based approach and the variance-based (or components-

based) approach. Covariance-based SEM, in particular, has received high prominence during the last few decades and, "to many social science researchers, the covariance-based procedure is tautologically synonymous with the term SEM" (Chin, 1998). Tools such as EQS, AMOS, SEPATH, COSAN, the most popular one LISREL are sometimes used as a synonym for covariance-based SEM (CB-SEM). It is a popular data analysis method for confirming or rejecting theories through testing of hypothesis, particularly when the sample size is large, the data is normally distributed, and most importantly, the model is correctly specified. That is, the appropriate variables are chosen and linked together in the process of converting a theory into a structural equation model (Hair et. al.., 2011).

The second approach is necessitated by the weakness of CB-SEM because there are many situations in the applied social and behavioural sciences that are faced with data that do not adhere to a normal multivariate distribution. They need more complex models (many constructs and many variables observed), they are formative models which have little data, and/or are models with less consecrated theoretical support. In these situations, covariance based structural equations modeling (CB-SEM) or models based on maximum likelihood estimation (MLE) are not recommended. Rather, variance based structural equation modeling (VB-SEM) or partial least square models (PLS-SEM) are recommended (Hair et al., 2011).

The partial least squares approach to SEM (or PLS path modeling), originally developed by Wold (1966, 1982, 1985) and Lohmoller (1989) offers an alternative to the more prominent covariance-based (CBSEM, J¨ oreskog 1978). PLS-SEM or partial least squares path modeling is a variance-based structural equation that has become very popular in recent years (Henseler, Hubona & Ray, 2016). It is a second generation multivariate analysis technique (Wold, 1982) that combines the features of the first generation (principal components and linear regression analysis). PLS- SEM is a regression based approach that explores the linear relationships between multiple independent variables and a single or multiple dependent variable. Among variance based SEM methods PLS path modelling is regarded as the fully developed general system and has been called a silver bullet (Hair, Hult, Ringle, Sarstedt, 2014). This technique appropriately functions with structural equation models that have latent variables and

series of a cause-and-effect relationship. PLS path modeling latent variable (LV) scores are estimated as exact linear combinations of their associated manifest variables (MVs) and treated as error free substitutes for the manifest variables. Whereas CBSEM estimates model parameters so that the discrepancy between the estimated and sample covariance matrices is minimized, in PLS path models the explained variance of the endogenous latent variables is maximized by estimating partial model relationships in an iterative sequence of ordinary least squares (OLS) regressions (e.g., Hair, Ringle, and Sarstedt 2011b). PLS-SEM is primarily used to develop theories in exploratory research to maximize predictive ability and provide researchers an opportunity to explore relationships and identify the existing pathways among variables.It focuses on explaining the variance in the dependent variables when examining the model. It is regarded as an appropriate tool for building the statistical model as well as prediction (Ringle, Wende & Will, 2010). PLS - SEM presumably has greater statistical power, converges quickly, handles much larger and complex models.

The basic difference between CB-SEM and VB-SEM is in the way they treat data, in a so-called didactic way. In the first case, there are multiple linear regressions realized simultaneously and, in the second, the correlations between the constructs and their measured or observed variables or items (measuring models) are calculated, and linear regressions between constructs (structural models) are made. That is, CB- SEM considers the constructs as common factors that explain the co-variation between its associated indicators while PLS –SEM on the other hand uses proxies of interest which are weighted as composites of indicator variables for a particular construct. In this manner, one is able to estimate more complex models with a smaller amount of data.

The idea behind PLS-PM is based on soft modelling, an approach for situations in which theory about measurement is not strong and the goal is to estimate predictive relations among latent variables. PLS handle all types of data, from non-metric to metric, with very minimal assumptions about the characteristics of the data (Hair et. al., 2010). Also it handles both reflective and formative constructs and all recursive models are identified. As a SEM technique, PLS is used to mitigate the limitations of regression-based techniques, which all assume that the tested models are simple (composed of one dependent and several independent variables). It is also used and when constructs are

measured by a great number of indicators (Haenlein and Kaplan 2004). The researchers also stressed the difference between PLS and any of the covariance based techniques. The authors stated that covariance-based techniques focus on reproducing the empirical covariance matrix, and in contrast, PLS aims to maximize the variance of the dependent variables explained by the independent ones.

PLS model consists of three parts, a structural part, which reflects the relationships between the latent variables, and a measurement component, which shows how the latent variables and their indicators are related; but it also has a third component, the weight relations, which are used to estimate case values for the latent variables (Chin and Newsted, 1999). Whereas structural and measurement models are components in all kinds of SEMs with latent constructs, the weighting scheme is specific to the PLS approach. PLS has the advantage that it involves no assumptions about the population or scale of measurement (Fornell & Bookstein, 1982) and consequently works without distributional assumptions and with nominal, ordinal, and interval scaled variables. However, one has to bear in mind that PLS, like any statistical technique cannot produce credible results with relatively small data.

PLS is useful for structural equation modelling including formative indicators in applied research projects especially when there are limited participants and that the data distribution is skewed (Wong, 2011a). PLS-SEM has been deployed in many fields, such as behavioural sciences, marketing, organization, management information system, and business strategy as it addresses the absence of symmetric distributions of variables measured by a theory still in its beginning phase or with little “consolidation”, formative models, and/or a limited amount of data. The growing use of Smart-PLS has demonstrated its robustness and the applicability of the model in the areas that are being studied. Other softwares include; LVPLS, VisualPLS, PLS-Graph, XLSTAT-PLSPM, plspm,semPLS, plspm, WarnPLS, ADANCO. PLS-SEM becomes a good alternative to CB-SEM when the following situations are encountered (Wong, 2011b):

- Sample size is small.
- Applications have little available theory.
- Predictive accuracy is paramount.
- Correct model specification cannot be ensured.
- Definition of normal distribution is free.

Table 2.3: Guidelines for Selecting Structral Equation Modelling Approach.

	Criteria to evaluate	CB-SEM	PLS-SEM
1	**Research goal**		
	i. Predicting key target constructs		✓
	ii. Theory testing, theory confirmation or comparison of alternative theories	✓	
	iii. Exploratory of an extension of an existing structural theory		✓
2	**Measurement model specification**		
	i. If formative constructs are part of the structural model		✓
	ii. If error terms require additional specification such as co-variation	✓	
3	**Structural model**		
	i. If a structural model is complex		✓
	ii. If a structural model is non-recursive	✓	
4	**Data characteristics and algorithm**		
	i. Data meet distributional assumptions	✓	
	ii. Data did not meet distributional assumptions		✓
	iii. Small sample size consideration		✓
	iv. Large sample size consideration	✓	✓
	v. Non-normal distribution		✓
	vi. Normal distribution	✓	✓
5	**Model evaluation**		
	i. Use latent variable scores in subsequent analyses		✓
	ii. Requires global goodness of fit criterion	✓	
	iii. Need to test for measurement model invariance	✓	

Adapted from: Henseler et al. (2009) and Hair et al. (2011)

2.18 Appraisal of Literature and Gaps in Existing Literature

Quality education is derived from the educational process that gives room for reforms and improvement upon existing standards. Based on the literature reviewed of this study, it is observed that the advocacy for quality in education is long-termed and education quality performances are means through which the society gauges school products. Research on educational system slates many of the education quality indicators in the input, process and output. It is also discovered that of the many pointers of quality in education, students achievements are often referred to as a sole indicator of quality education. In this research, other indicators such as teacher effectiveness and students' non-cognitive outcomes are being considered alongside students' achievement as indicators of quality performance in education. Meanwhile, the literature reviewed reveals a cogent impact of management and organisational variables in school organisational success. The bulk of the literature on leadership literature emphasised transformational over instructional leadership. Only few known studies identifies educational leadership as the incorporation of instructional leadership and transformational leadership. Most of the studies carried out found leadership to have only indirect effects on most other school variables. This popular belief needs to be further justified by empirical evidence.

Considerable number of literature on organisational culture reveals that it has supplementary function to organisational leadership and influences school performance. This research will further confirm this relationship in causal linkages and in relation to other education quality performance. The impact of length of leadership tenure which can influence the ability of a principal to build a strong positive culture will be examined. Professionalism is important to teachers and school improvements and is therefore encouraged. However, there is a dearth of literature on which aspects of professional development produces better impact on education quality indicators used in this study, or how much it has been enhanced in school organisations upheld by teachers. Learner-centeredness is valuable to administrators and teachers alike but there is no clear dimension on whether school organisations truly make learner-centeredness a pivotal goal or how much of it is practised and how it influences other education quality performances in this part of the world.

Many studies consulted on the variables of this study were not carried out in Nigeria. They used other statistics to verify their inquiry which concentrated on achievement, at the neglect of other indicators that matter. In the cases where path modelling was also employed, the approach was confirmatory rather that exploratory. Hence, the need to fill the gap by providing an empirical basis for drawing inferences and making comparison across the sampled states in south western Nigeria as it relates to the variables in this study.

CHAPTER THREE

METHODOLOGY

This chapter presents the methodology of this study under the following headings: Research design, sampling procedures and samples, instrumentation, data collection and analysis procedure.

3.1. Research Design

This study is descriptive survey that adopted a correlational research type. The independent variables have already occurred and cannot be manipulated in the study. The observations and inferences made on the dependent variables were made based on the data collected (Kerlinger and Lee, 2000).

3.2 Variables for the Study

As a path analytical study approach, variables were classified as exogenous and endogenous variables.

3.2.1 Exogenous variables

1. Location
2. School type
3. Principal tenure-length

3.2.2 Endogenous Variables

4. School organisational leadership
5. School organisational culture
6. Professional development
7. Learner-centeredness
8. Teachers' effectiveness
9. Students' non-cognitive outcome
10. Students' achievement in English Language
11. Students' achievement in mathematics

3.3 Population

The target population for the study comprised of Senior Secondary School Three (SS3) students and their corresponding English language and mathematics teachers in South-West Nigeria. The choice of SS III was premised on the fact that: (i) the education quality performance of the national education system may be examined through the students performance in public examinations (ii) this group of respondents were ready to be examined and certified in public examinations having completed a level of education that elucidates the quality of the education system.

3.4 Sampling Technique and Sample

A multistage sampling procedure was used in the selection of the target samples. The first stage involved simple random sampling of the south-western states (Lagos, Ogun, Ondo, Ekiti, Osun and Oyo states) in Nigeria. Three states (Lagos, Ondo and Oyo states) were randomly selected in the south-western part of Nigeria.

In the second stage, a senatorial district where the state capital resides was purposively chosen in each of the states. This is because education districts in the State capital enjoy some benefits that may not be as consistent in other parts of the state. For example, principals' leadership stability may be varied across a State. Those schools in the state capital get similar treatments.

Three (3) local governments were randomly selected from each of the senatorial districts selected for the study. In each of the local government areas (LGAs), there was a simple random selection of (6) six public schools and three (3) private schools, A total of twenty-seven (27) secondary schools were sampled in each of the states. In all, the randomly selected schools, an intact class of Senior Secondary School (SS III) students that sat for the May/June (2018) WASSCE, together with their corresponding mathematics and English Language teachers were purposively sampled. A total of 3331 students, 162 teachers and 81 principals participated in the study.

Table 3.4.1: Sampling Frame

State(s)	District(s)	LGAs	Public schools	Private schools	Total no. of schools
Lagos	1(senatorial district)	3 (each)	6 (each)	3 (each)	27
Ondo	1(senatorial district)	3 (each)	6 (each)	3 (each)	27
Oyo	1(senatorial district)	3 (each)	6 (each)	3 (each)	27
					Total no. of schools =81

3.5 Instrumentation

For the purpose of this study, eight instruments were used for data collection. These instruments are:

1. Principals' leadership practices questionnaire (PLPQ)
2. School culture survey (SCS)
3. Teachers' professional development activities inventory (TPDAI)
4. Learner-centeredness questionnaire for students (LCPQS)
5. Students' evaluation of teaching effectiveness in mathematics scale (SETEMS)
6. Students' evaluation of teaching effectiveness in English-Language scale (SETEES)
7. Students non-cognitive outcome scales (SNOS)

3.5.1 Principal Leadership Practices Questionnaire (PLPQ) ……APPENDIX I

Principal leadership practices questionnaire is a self-reporting instrument that was constructed by the researcher. It solicits teachers' perception of principals' leadership in their schools. The instrument is divided into three sections. Section A elicited information on teachers demographic information. Section B was adapted from Jantzi and Leithwood(1996) principal leadership questionnaire-PLQ. It consisted 24 items on transformational leadership. The original instrument was constructed based on six dimensions (with .891, .901, .883, .791, .796, .73 reliability coefficient respectively). In a Likert-style, questionnaire, teachers rated their principals from 1-4 with 'one' meaning strongly disagree and 'four' meaning strongly agree. The respondents were to react to the level of understanding or difference by orbiting a point on the continuum. However, the current instrument was constructed based on exploratory factor analysis. This was done by pilot testing the instrument on a small sample that was not part of the final samples. The result was analysed using factor analysis and Cronbach's Alpha(.927). 15 items were retained; irrelevant items were deleted and others modified.

Section C was adapted from Jana (2003) instructional leadership inventory (ILI); it consisted of items on instructional leadership. The model of instructional leadership has three indicators. The instrument consisted of a 31 item questionnaire; defining and

communicating schools goals (.94), promoting school-wide professional development (.90), and monitoring and providing feedback on the teaching and learning process (.89). A five-point Likert scale was employed for a response system: 0 (Not at all), 1 (Once in a while), 2 (Sometimes), 3 (Fairly often), 4 (Frequently if not always).

In the current instrument (.960), the response formats have been changed and many of the items have been modified to suit Nigerian context. The content validity of the scale were re-investigated. Also, the reliability of the scale was re-determined. This was done by pilot testing the instrument on a small sample that was not part of the final samples. The result was analysed using factor analysis and Cronbach's Alpha, 19 items were retained, irrelevant items were deleted and others modified. Transformational leadership and instructional leadership had one factor each.

3.5.2. School Culture Survey (SCS): ……APPENDIX II

School Culture survey is a self-reporting instrument designed to elicit information from the teachers about the ways things are done in their respective schools .The instrument is adapted from the school culture survey of Gruenert and Valantine (1998). The instrument contained thirty-five item survey to be completed by teachers about their school's culture. The original instrument was constructed based on six factors. The current instrument was factor analysed. Teachers were asked to respond on the extent to which each of the statements were true of their schools.

The contents of the instrument were examined by subject matter experts and re-validated using factor analysis and Cronbach Alpha(.837), which is a measure of the internal consistency and reliability of the instrument. This re-assessment was done using respondents outside the final sample. The factor analysis produced one factor of 20 items which were retained for EACH and MACH. Irrelevant items were discarded and others were modified.

3.5.3 Teachers' Professional Development Affinity Inventory (TPDAI)……... **APPENDIX III**

The teachers' professional development affinity inventory an instrument developed by the researcher. It is a self-reporting instrument of teachers' participation in

activities contributing to professional development. It measures the awareness and the extent of teachers participation in professional learning activities. It contains 45 items in three sections. Section A dealt with demographic information. Section B elicited information about the position on and procedure of (PD) in their schools. The response format include a 5-point rating scale where; (1 – not at all; 2 - hardly; 3 - sometimes; 4 – quite often; 5 – all the time) and also; 1- never; 2-rarely, 3-sometimes, fairly often, 5-always.

The contents of the instrument were examined by subject matter experts. The content validity of the scale were investigated; also, the reliability of the scale was determined. This was done by pilot testing the instrument on a small sample outside the final sample. Factor analysis and Cronbach's Alpha which is a measure of the internal consistency and reliability were used. Professional development for mathematics had a single factor (of 29 items – 0.920) while that of Englsh language had two factors of 26 items (F1 -0.915, F2- 0.859) while other items were discarded.

3.5.4 Learner-Centered Practices Questionnaire for Students (LCPQS)… APPENDIX IV

Learner-centered practices questionnaire for students is an instrument seeking information on learner-centered practices of their teachers from students ratings. It measures the four dimensions of learner-centred practices of teachers as rated by students. The instrument is adapted from McREL Learner-centered battery of McCombs, Lauer and Peralez (1997). It has four subscales which include; 1) positive interpersonal characteristics; 2) encourages personal challenge; 3) adopts class learning needs; and 4) facilitates the learning process. The response format include 1- Almost never, 2-Sometimes, 3- Often, 4- Almost always .

The contents of the instrument were examined by subject matter experts and re-validated using factor analysis and the Cronbach's alpha which is a measure of the internal consistency and reliability of the instrument. 19 items were retained, other items were modified or expunged. The instrument had one factor for English language (0.967) and Mathematics (0.965).

3.5.5.1 Students' Evaluation of Teaching Effectiveness in Mathematics Scale (SETEMS):……APPENDIX V

This instrument was adopted by the researcher from students' evaluation of teaching effectiveness in mathematics (SETEMS) by Omeonu (2014). It is a student rating of teachers' effectiveness tool. The instrument has eight (8) subscales of 40 items. The response format include; 1 = Poor, 2 = Fair, 3 = Good, 4 = Very Good and 5 = Excellent. The instrument was revalidated by using factor analysis. The final scale had two factors (F1-0.959, F2-0.925) and 33 items. Seven items were expunged. Cronbach's alpha was used to determine the reliability coefficient.

3.5.5.2 Students' Evaluation of Teaching Effectiveness In English Language Scale (SETEES): ……APPENDIX VI

This instrument was adapted from the students' evaluation of teaching effectiveness in mathemetics (SETEMS) by Omeonu (2014). It was used for elicit students' response for the effectiveness of English-language teachers. The instrument has eight (8) subscales of 40 items. The response format include; 1 = Poor, 2 = Fair, 3 = Good, 4 = Very Good and 5 = Excellent. The instrument was revalidated by using factor analysis. The final scale had two factors (F1-0.969, F2-0.956) and 37 items. Three items were expunged. Cronbach's alpha was used to determine the reliability coefficient.

3.5.6 Students Non-cognitive Outcome Scales (SNOS): ……APPENDIX VII

Students non-cognitive outcome scales is a self-reporting instrument eliciting information about students affective and social skills. The instrument was developed by the researcher. It contains 68 items under six indicators which include; self-concept, quality of school life, relationship skills, ethics and values, leadership and goal directed behaviour, life goals. It includes different response formats for different subscales e.g NT - Not True of me; ST- Somehow True of me; QT- Quite True of me ; ET - Extremely True of me.

The contents of the instrument were examined by subject matter experts. The content validity of the scale was investigated using factor analysis. This was done by pilot testing the instrument on a small sample outside the final sample. Cronbach's

Alpha, which is a measure of the internal consistency and reliability, was used. 32 items were retained while irrelevant items were discarded. The final items had two factors (F1- 0.860, F2- 0.860).

3.6. Procedure for Administration of Instruments

A letter of introduction was collected from the institute to the management of the participating schools. To administer the instrument, firstly, the researcher soght permission from the respective authorities after which five research assistants were trained. The content of each instrument was explained to them. The training lasted a week. In each school, the research assistants and/or the researcher distributed copies of the questionnaire to the respondents and gave instructions on how to fill them. Also, the researcher collaborated with the principals and examination officers in each school to retrieve examination numbers of some candidates who have not been issued their examination numbers as at the time of contact. After the administration of the instruments, the researcher and the assistants collected the instruments back for analysis. This exercise lasted nine (9) weeks. Students' WASSCE performance was retrieved from the examining body at a later date. The collection of data commenced shortly before the commencement of the examinations. This was to ensure that students were already given their examination numbers. Although, this procedure was later inapplicable as the examining body approved only the mean scores for ethical reasons. This necessitated the change in statistical procedure used in this study, which turned out to be more robust than the initial statistical tool proposed.

3.7 Procedure for Data Preparation

In order to analyse data, the researcher verified if there were missing data or outliers. Missing data refers to the ideal situation of being able to analyse a complete dataset that contained all subjects' responses to all items. In reality, this rarely occurs and one often has to analyse a dataset with missing values. Hence, treating missing data is a widely discussed issue in the application of statistics, including structural equation modelling. Missing data treatment is classified into three types: (a) the deletion of those data, (b) the estimation of those data, and (c) the use of parameter estimation methods

that take missingness into consideration. The current data do not include missing responses, it is not necessary to eliminate, estimate, or impute such responses.

Likewise, outliers are a very huge or little estimation of one variable (a univariate anomaly) or a blend of such estimations of at least two factors (a multivariate anomaly). A univariate anomaly can be identified by drawing a histogram or assessing the z estimations of factors utilizing, the SPSS EXPLORE or DESCRIPTIVES capacities. A multivariate exception has extraordinary scores on at least two factors, or its example of scores is atypical. Albeit no individual score might be viewed as outrageous, the case could be a multivariate exception if this configuration is bizarre in the example. The data was satisfied to be free of missing data and outliers before data were analysed.

Prior to data analysis, the suitability of PLS is contigent upon the fact that PLS accomodates small samples. According to Hair, Hollingsworth, Randolph, and Chong, (2014); Matthews, Hair and Matthews (2018). PLS-SEM can easily be used with formative measurement models, non-metric data (e.g., ordinal & nominal), continuous moderators, higher order models, when latent variable scores are needed for further analysis, and with small sample sizes ($N \leq 100$) as well as large samples. Simulation studies have investigated the statistical advantage of PLS-SEM *vis à vis* small sample size results show that PLS-SEM was consistent in its ability to estimate path coefficients for all the different sample sizes. Monte Carlo simulation study demonstrated that PLS can still produce meaningful results even at small sample size such as 20 (Jannoo, Yap, Auchoybur and Lazim, 2014). Although, the discussion of sample size and normality assumptions is still on-going among researchers, Hair et al (2014) provides a rough guideline, the minimum sample size in a PLS-SEM analysis should be equal to the larger of the following (10 times rule): (1) 10 times the largest number of formative indicators used to measure one construct or (2) 10 times the largest number of structural paths directed at a particular construct in the structural model.

Hence, the peculiarity with the study data which had different number of subjects across the study participants also necessitated the matching of variables and participants. Participants were matched by finding the mean scores of the total number of participants. Therefore, using school as a unit of analysis, the total number of 81 principals, 162

teachers and 3331 students who participated in the study were captured with a mean of 81 cases.

3.8 Data Analysis

Data was analysed using Partial Least Square-Structural Equation Modelling (PLS-SEM) method of path analysis to help in identifying the joint effects of the variables and as well as the total effects (direct and indirect) of independent variables. Path analysis uses path diagrams to guide problem conceptualization or to test complex hypothesis (Kerlinger and Lee, 2000). The following assumptions underlie the application of path analysis:

- The relationship among variables is assumed to be linear, addictive and causal in nature.
- All exogenous variables are measured without error.
- There is a one-way causal flow in the model. That is, reciprocal causation between variables is ruled out
- The variables are measured on an interval scale

The model must accurately reflects actual causal sequence (Adegoke, 2009, Mertler and Vennata, 2005);

To achieve this, Kerlinger and Lee (2000) listed the following conditions.

1. Build the hypothesized causal model.
2. Identify the path of the model through structural equations.
3. Trim the paths of the model based on statistical significance and meaningfulness, and
4. Validate the new model by reproducing the zero order correlation matrix of the variables from a set of normal equations using the path coefficients in the new model.

In addition, statistical analysis in this study is premised on the partial least square-path analysis. Consequentially, this study adopts PLS-SEM as the statistical method to assess the research model based on the following reasons:

1. The focal point of the examination in this investigation doesn't include the estimating of model invariance. The point of convergence of this examination is

on forecast/clarification of variables identified with instructive quality execution. Subsequently, the utilization of dormant variable (LVs) scores is imperative to analyze the hidden connection between the LVs.

2. The PLS-SEM approach gives an insight into the appropriateness of the measurement model. It is exploratory and also establishes the predictive relevance of each latent variable. This is considered as a strength over the CB-SEM.
3. This study uses many LVs and complex displaying of an exploration model. As showed by Henseler et al. (2009), PLS is sensible for gigantic complex models with various inactive variables.
4. The point of convergence of this assessment is to test the associations according to prior hypothetical information. The capacity of PLS-SEM to appraise the connections between's the residuals and survey their effects on the model make this strategy the fitting method.
5. Despite that the study has used a large sample from the population, the students achievement results given by the examining body (WAEC) were mean scores. The researcher therefore considers it more appropriate to use the school as the unit of analysis in this research.

3.8.1 Building the Hypothesized Recursive Path Model

The building of these path models is based on research literature, theories, personal observations, experiences, and logic.

The variables X_1 X_2 and X_3 are the exogenous variables in the model. Their variability is assumed to be explained by other variables outside the causal model under consideration. There is no attempt to explain the variability of the exogenous variables or its relation with one another. Although some known studies have found variability with X_2

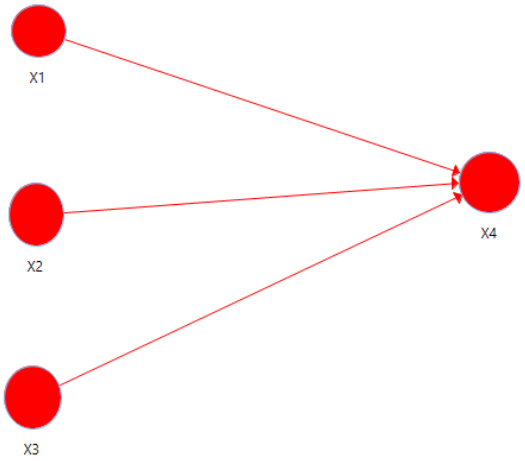

Figure 3.1: Correlation among X_i (i=1, 2, 3 and 4)

Considering the linkages among variables X_1, X_2, X_3, X_4 as shown in Fig. 3.2, based on temporal order, the school locations existed before the school type. By logic, principal's tenure-length(X_3) will also account for variability in the effectiveness of leadership practices in school organisations. It is reasoned that principals that have spent more time serving as the school principal of a particular school will be better acquainted with information about areas that needs intervention and the urgency at which those intervention may be needed. Brockmeier et al. (2013), confirmed that the longer the length of an effective principal, the better their impact are felt on other school variables.

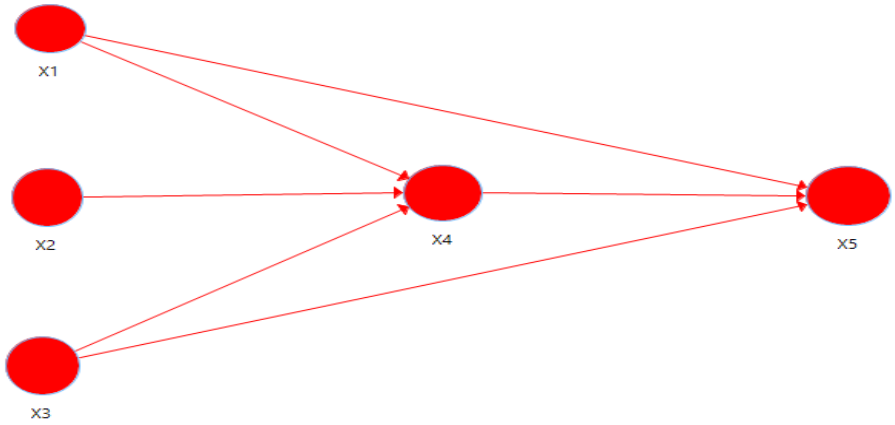

Figure 3.2: Hypothesized Causal Linkages of Variables X_i = (1,2,3,4 and 5)

Key;

X_1 = Location, X_2 = School type, X_3 = Principal tenure-length, X_4 = Organisational leadership, X_5 = Organisation culture

On temporal order, state, school type and principal tenure-length existed before school organisational leadership and culture. From literature, leadership is about direction and influence. Shamaki (2015), asserts that the success of an organisation whether formal or informal depends on the way or manner in which a leader (X_4) operates. Deal and Peterson (1999) wrote that the principal, being in the leadership position, has great influence on a school's culture (X_5). Leadership and organisational culture are operational factors with close interconnections. Kargas and Varoutas (2015), examined the degree at which leadership affects culture and vice versa. They ascertained that leadership affects culture more than it is affected, leading to a leader-centric profile where leadership plays a more significant role than cultural formatting. However, principal's tenure-length (X_3) may be a factor to consider when looking at the connectedness between school organisational leadership and culture. Also, the school type (X_2) may influence the extent of leadership autonomy or influence because there may be limitations to decision making of the principal as observed with some private schools. Similarly, difference in locations (X_1) may denote differences in provisions or education investments. This can affect the way things are done over time.

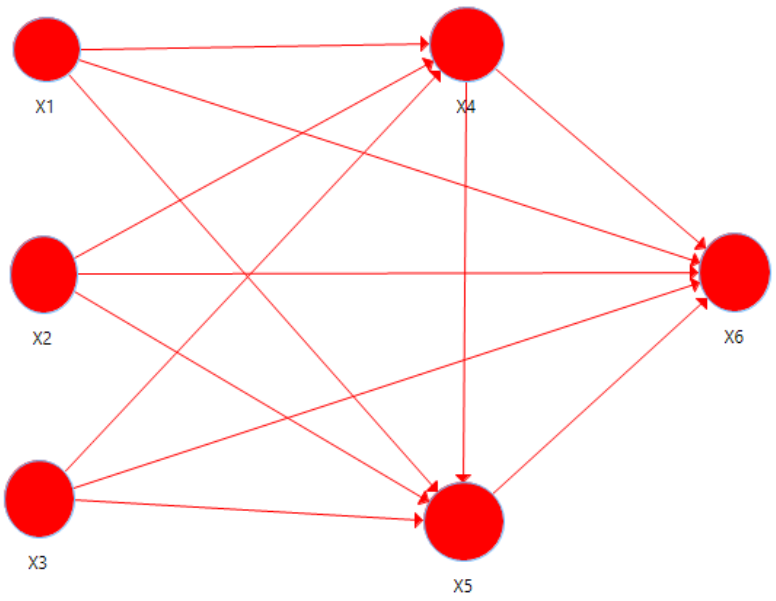

Figure 3.3: Hypothesized Causal Linkages of Variables X_i = (1, 2, 3, 4, 5 and 6)

Key;

X_1 = Location, X_2 = School type, X_3 = Principal tenure-length, X_4 = Organisational leadership, X_5 = Organisation culture, X_6 = Professional development

Considering the hypothesized models in Fig. 3.1, 3.2 and 3.3, the linkages between X_1, X_2, X_3, X_4 and X_5 has been considered. According to Ohlson, Swanson, Adams-Manning, and Byrd (2016), Organisational culture (X5) influences the staff development and professional growth that takes place within a school. Each of the variables(X_1, X_2, X_3, X_4 and X_5) have also been projected to have direct linkage with (X6). Cosner and Peterson (2003) go so far as to claim that promoting teacher professional development (X6) is the most influential educational leadership (X4) behaviour. Looking at professional development as part of the integral leadership practices, the principal tenure length (X3) can also influence the plans for teachers professional development because a principal that has been serving the school over a period of time would be able to allocate resources more effectively to accommodate professional development of teachers in the school budget and also implement such plans effectively. Although, differences in school type (X2) may influence the decisions to make concerning professional development (X6). Nonetheless, some states (X1) give priority to developing effective teachers for their teaming population.

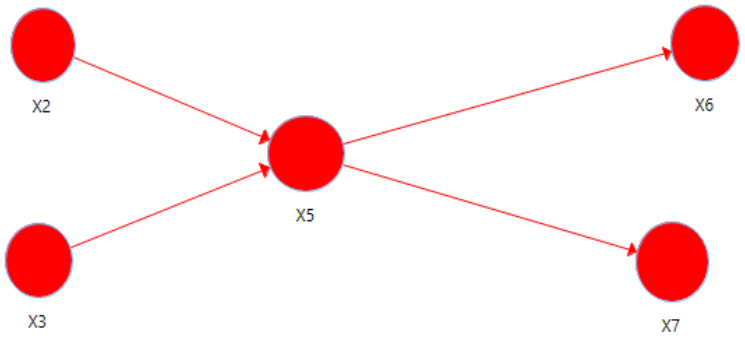

Figure 3.4: Hypothesized Causal Linkages of Variables Xi = (2,3,5,6 and 7)

Key;

X_2 = School type, X_3 = Principal tenure-length, X5 = Organisational Culture, X_6 = Professional development, X_7 = Learner-centeredness

Considering the linkages between X_2, X_3, X_5, X_6 and X_7, literature has confirmed that differences in school type (X_2) affect decisions made about school improvements. Finances may also be a major contributing factor to the differences observed in different school types. Nonetheless, these events influence the school culture i.e the way things are done or school culture (X_5). However, the principal still has the opportunity to influence school processes affecting teachers and students because no matter the differences in school organisations, the principal still owns the responsibility for fostering learning for learners with the best teaching practices that can bring about developmental gains (X_7). This can be done by building quality culture, a culture (X_5) that takes account of teachers needs for continuous learning (X_6) so as to improve their instructional delivery and shift to a learner-centred focus (X_7). The principal, as the change agent, is capable of turning the school around to a better school through this culture (X_5) of continuous improvement. On the contrary, the length of time a principal spends serving as the principal (X_3) is instrumental to the quality of positive change that can be realised. Even for effective principals, significant change takes three to five years (Hall and Hord 2001). Logically, it can be deduced that school organisational culture is a major determinant of school improvement. Thus, a culture of learner-centredness (X_7) can be upheld in a positive school culture (X_5).

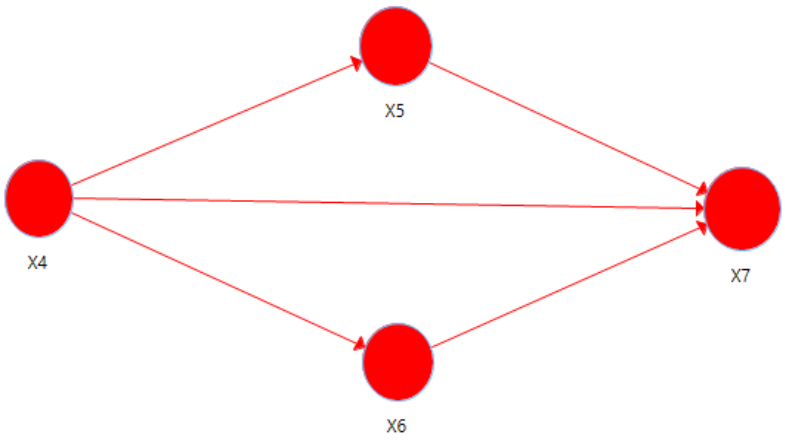

Figure 3.5: Hypothesized Causal Linkages of Variables X_4, X_5, X_6 and X_3,

Key:

X_4 = Organisational leadership, X_5 = Organisation culture, X_6 = Professional development, X_7 = Learner-centeredness

Leclear (2010), in their study determined the relationship between different leadership styles (X_4) and organisational cultures (X_5), and showed a correlation between leadership and organisational culture. It is also found that leadership behaviour impacts on organisational culture (Stephen, 2010). A positive school culture encourages professional learning and collaboration. Also, professional development leads to a career-long commitment and this insinuates the continuous improvement in practice, and an agreement to develop in their practice in ways that are likely to improve teaching-learning. European Commission (2010), states that "Teaching is such a complex craft that one lifetime is not enough to master it, but by rigorously focusing on practice, teachers can continue to improve throughout their career. Consequently, the structure professional development (X_6) ought to be with the end goal that instructors change their showing works on, prompting learners finding out additional (Gulamhussein, 2013). Therefore, a school empowered with professional teachers should be able to adopt the use of learner-centered practices (X_7). The principal as the instructional head gives a focus and affects the extent to which learner-centred practices (X_7) are upheld in the school such that the education quality performances can be accelerated.

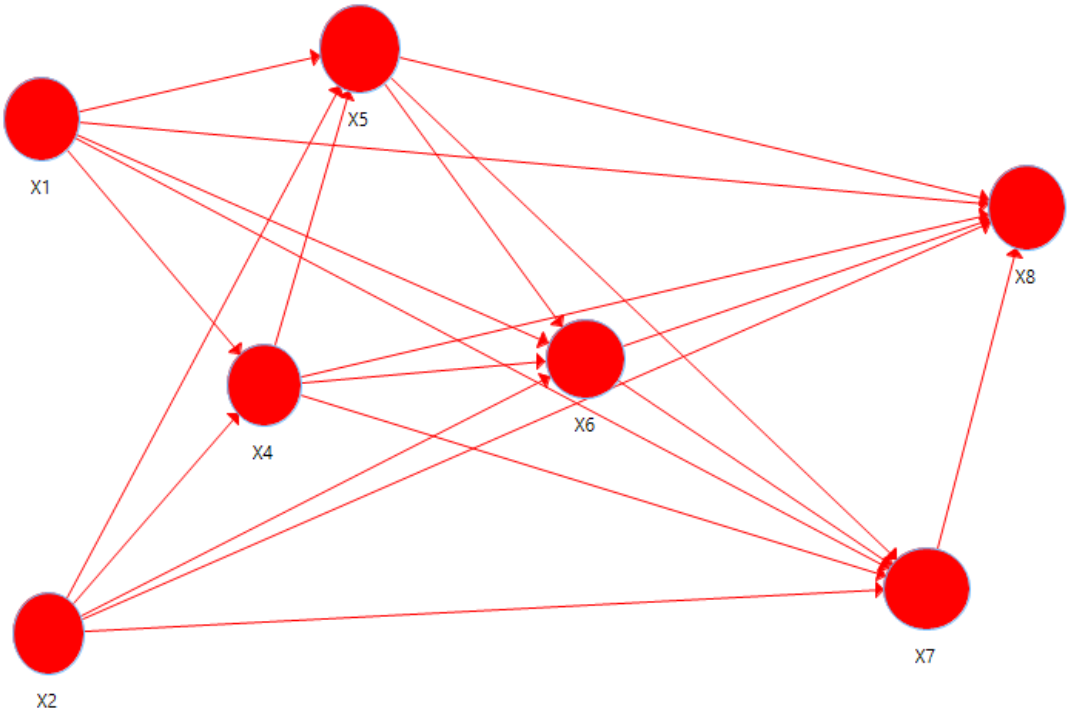

Figure 3.6: The Hypothesized Recursive Model of Seven Variable System where; Criterion is X_8 = Teachers' Effectiveness

Key;

X_1 = Location, X_2 = School type, X_4 = Organisational leadership, X_5 = Organisational culture, X_6 = Professional development, X_7 = Learner-centeredness, X_8 = Teachers' effectiveness

When good programmes and structures that are geared towards quality education are conscientiously implemented by the state ($\mathbf{X_1}$), education quality may improve. Likewise, the structures in different types of schools, as influenced by their ownership type ($\mathbf{X_2}$), may influence teacher performance. For example, Lagos State had invested hugely in support of quality education in the last few years through programmes such as the 'Eko project'. In this scheme, teachers have had more professional development ($\mathbf{X_6}$) opportunities and exposures that can positively affect their instructional delivery. The sustainability of such a programme can cause a shift to a more learner-centred education ($\mathbf{X_7}$) and produce more effective teachers. Teacher effectiveness is a collection of characteristics, skills, competencies, attitudes, behaviours and performances of teachers that enable students to reach their potential. Fig. 3.7 shows the linear relationships among seven variables.

Adeyemi's (2010) study on principals' leadership and teachers-job performance in senior secondary schools in Nigeria reveals that teacher-job's performance is influenced by principal's leadership ($\mathbf{X_4}$). Meanwhile, the school culture creates ($\mathbf{X_5}$) a psycho-social environment that profoundly impacts on teacher attitudes and believes and consequently, their effectiveness on the job. Teachers' professional development ($\mathbf{X_6}$) gives instructors sufficient abilities to improve teaching-learning. Adopting a learner-centred focus ($\mathbf{X_7}$) ultimately leads to teachers being more effective whereas effectiveness of learning for the learners have become a norm. Based on logic and evidence from literature, it can be deduced that variables X_1, X_2, X_4, X_5, X_6, X_7 can have impact on teachers effectiveness (X_8) through their linear and causal relationships.

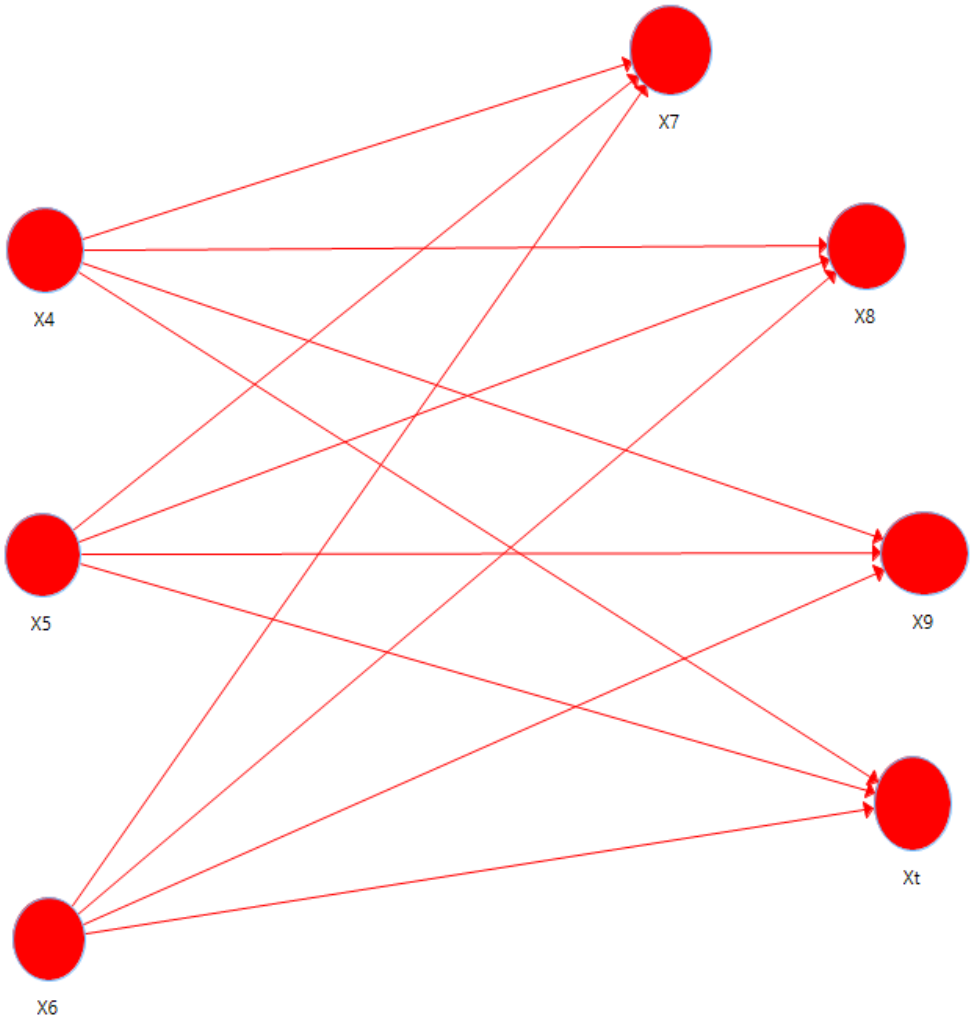

Figure 3.7: Hypothesized Causal Linkages of Variables X_4, X_5, X_6, X_7, X_8, X_9, X_T

Key;

X_4 = Organisational leadership, X_5 = Organisational culture, X_6 = Professional development, X_7 = Learner-centeredness, X_8 = teachers' effectiveness, X_9 = Students' Non-cognitive Outcomes, X_T =Achievement in English language or mathematics**.**

Considering variables X_i (i = 4, 5, 6.) against variables X_7, $X_{8,}$ $X_{9,}$ $X_{T,}$ based on literature and logical reasoning. The maintenance of quality and standards in education depend largely on the extent to which principals effectively carry out their leadership responsibilities. Louis, Leithwood, Wahlstrom and Anderson (2010) found that school leadership, from formal and casual sources, shapes school (counting, for instance, objectives, culture, and structures) and study classroom conditions (counting the substance of guidance, the size of classrooms, and the instructional method utilized by instructors). Cosner and Peterson (2003) go so far as to claim that promoting teacher professional development is the most influential educational leadership behaviour.

Leithwood and Jantzi (2006) observed a significant difference between classroom practices that are "changed" and practices that actually lead to greater pupil learning. The potency of leadership for increasing student learning hinges on the specific classroom practices that leaders stimulate, encourage and promote. Learner-centred practice is what can be institutionalized in schools if principals reinforce it. Principals are therefore in a good position to support teacher effectiveness through observations, conversations and collaborations with teachers in order to foster effective change efforts. Effective school leaders are instructionally focused and observe learning-centered leadership behaviours; they also, exercise an indirect influence on schools' capacity to improve upon the achievement of students.

The relationship between school effectiveness and effective leadership is reinforced in the vital role of school culture. It is the school culture that often influences staff development and professional growth that takes place within a school, (Ohlson, Swanson, Adams-Manning, and Byrd, 2016). School culture has significant positive relationship with students achievement and positively correlated with teachers' commitment and school effectiveness (Le Clear 2005; Zhu, Devos and Li, 2011). School cultures which help teachers to make their work meaningful (e.g., clear and morally inspiring goals) also have a positive influence on teachers' affective dispositions and subsequent performance in class and can lead to their effectiveness and commitment to lead educational improvement through learner-centred practice. It might be logical to say that strong positive school cultures can shape students affective and social outcomes.

Meanwhile, positive commitments to instructors' work are related with structures which give chances to educators to team up with each other, (for example, basic arranging times), work in little groups, plan sufficiently for their classroom teaching, access on-going professional development,, and take part in school-level resolutions. Any experience that amplifies an instructor's know-how, aptitudes and understandings of their work is a professional development. Literature additionally recommends that learners gain when the instructors in a school fashion a "professional learning" sub-network (Newmann and Associates, 1996). Cooperation in such networks advances teaching program consistency throughout the school. It likewise prompts development in instructors' tutoring technique, improves educators' feeling of grasp/mastership and authority over student learning, and assembles educators' feeling of commitment with and duty regarding student learning, thereby making them more effective at the job and contributing to students outcomes. It might, therefore, be logical to reason that effective leadership, likewise, positive school culture and professional learning, growth and development will independently influence the extent of learner-centred focus, affect teachers effectiveness and consequently imply better students outcomes in the areas of their non-cognitive capacity and achievement in English language and mathematics.

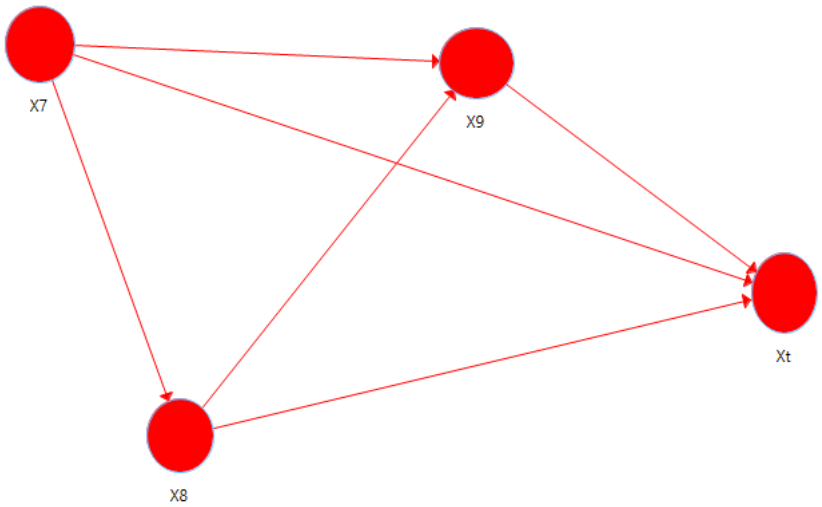

Figure 3.8 Hypothesized Causal Linkages of Variables X_7, X_8, X_9, X_{Tem}

Key:

X_7 = Learner-centeredness, X_8 = teachers' effectiveness, X_9 = Students' Non-cognitive Outcomes, X_{Tem} = Students' achievement in English Language or Mathematics.

The fundamental quality of a learner-centeredness is thinking about the necessities of the students. Having distinguished the learners' needs empowers teachers to change the classroom circumstance to expedite their accomplishment (McCombs, 1997). It is most possible that when teachers adopt this approach, their teaching will be more effective. Magno and Sembrano (2007; 2008; 2009), confirm that the use of learner-centred practice promote effective teaching characteristics. Learner-centred practice contains instructional elements that can improve students wellbeing and academic achievement. Although, it is logical to envisage that learner-centred practice can influence students learning outcome, the findings of Ebanks (2010), suggests that learner-centred practice showed no significant impact on student achievement.

A few investigations that have analyzed the influence of teachers' teaching effectiveness on the learning outcome of students (Adediwura and Tayo 2007; Adu and Olatundun 2007; Lockhead and Komenan 1988; Schacter and Thum 2004; Starr 2002; Omeonu 2014) recommend that effective teaching is a huge indicator of learners' academic achievement. Effective teachers are teachers who achieve the goals that are set for them and that which they have set for themselves (Anderson, 2004). They are capable of influencing students social and affective capacities which are essential developmental skills. These skills can also influence students' performance in English language and mathematics.

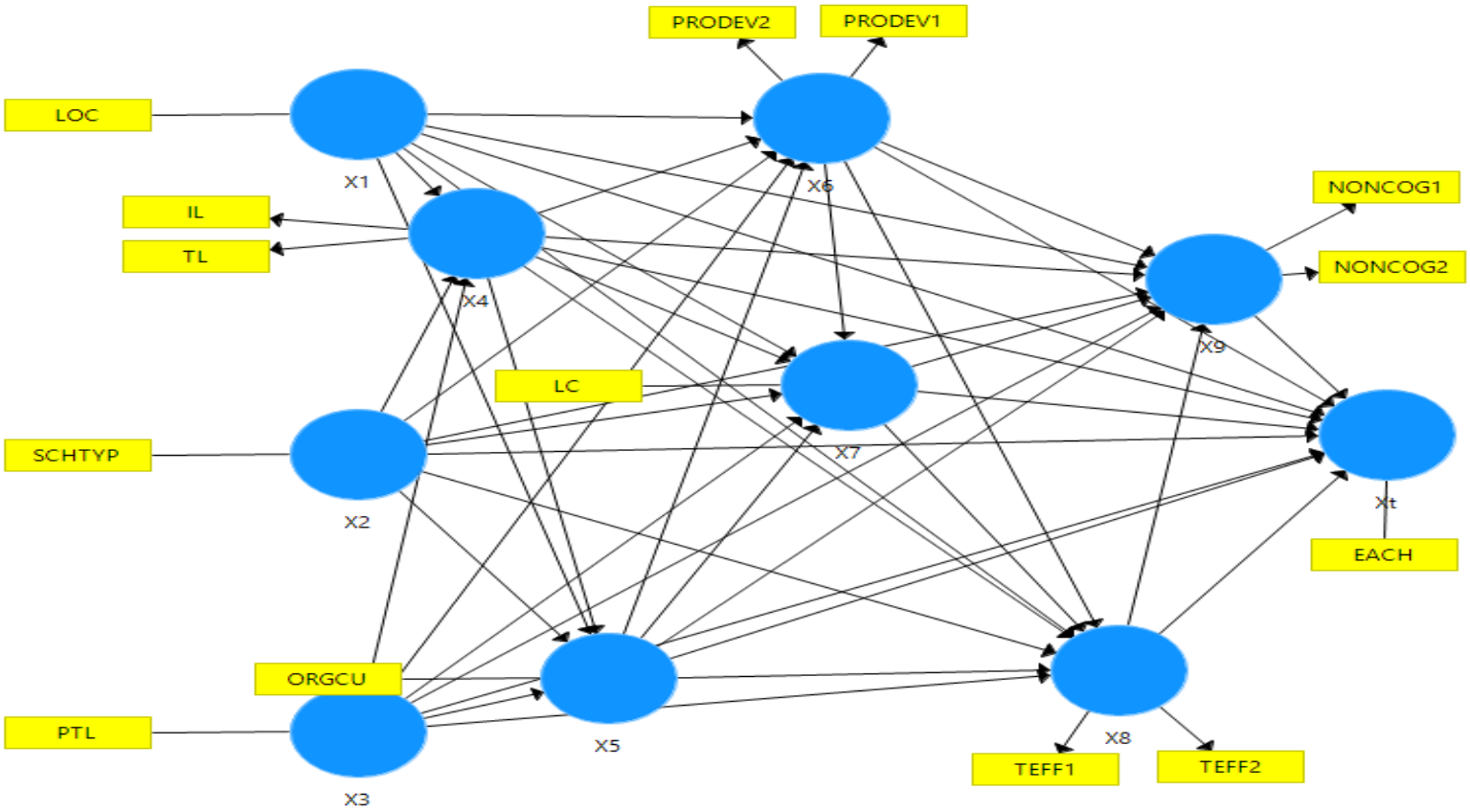

Figure 3.9 The Hypothesized Recursive Model of Ten variable system where; Dependent variable is Y_e = Students' Achievement in English Language

Key;

X_1 = Location, X_2 = School type, X_3 = Principal tenure-length, X_4 = Organisational leadership, X_5 = Organisation culture, X_6 = Professional development, X_7 = Learner-centeredness, X_8 = teachers' effectiveness, X_9 = Students' Non-cognitive Outcomes, X_T = Students' achievement in English Language.

Figure 3.9 reveals the relationship among the ten variables. Location, school type and principal's tenure length are the three exogenous variables while school organisational leadership and culture, learner-centeredness, professional development, teachers' effectiveness, students' non-cognitive outcomes and students' achievement in English Language are the endogenous variables. The exogenous variables affect the endogenous variables and not vice versa. For the hypothesized recursive models (Figures 3.9), students' achievement in English Language (X_T) is the criterion variable which all other variables affect. From the foregoing discussions on the variables (Fig. 3.1- 3.8), and the linear relationships shown among the variables, it is expected that all the endogenous variables will have an impact on the students' achievement in English language.

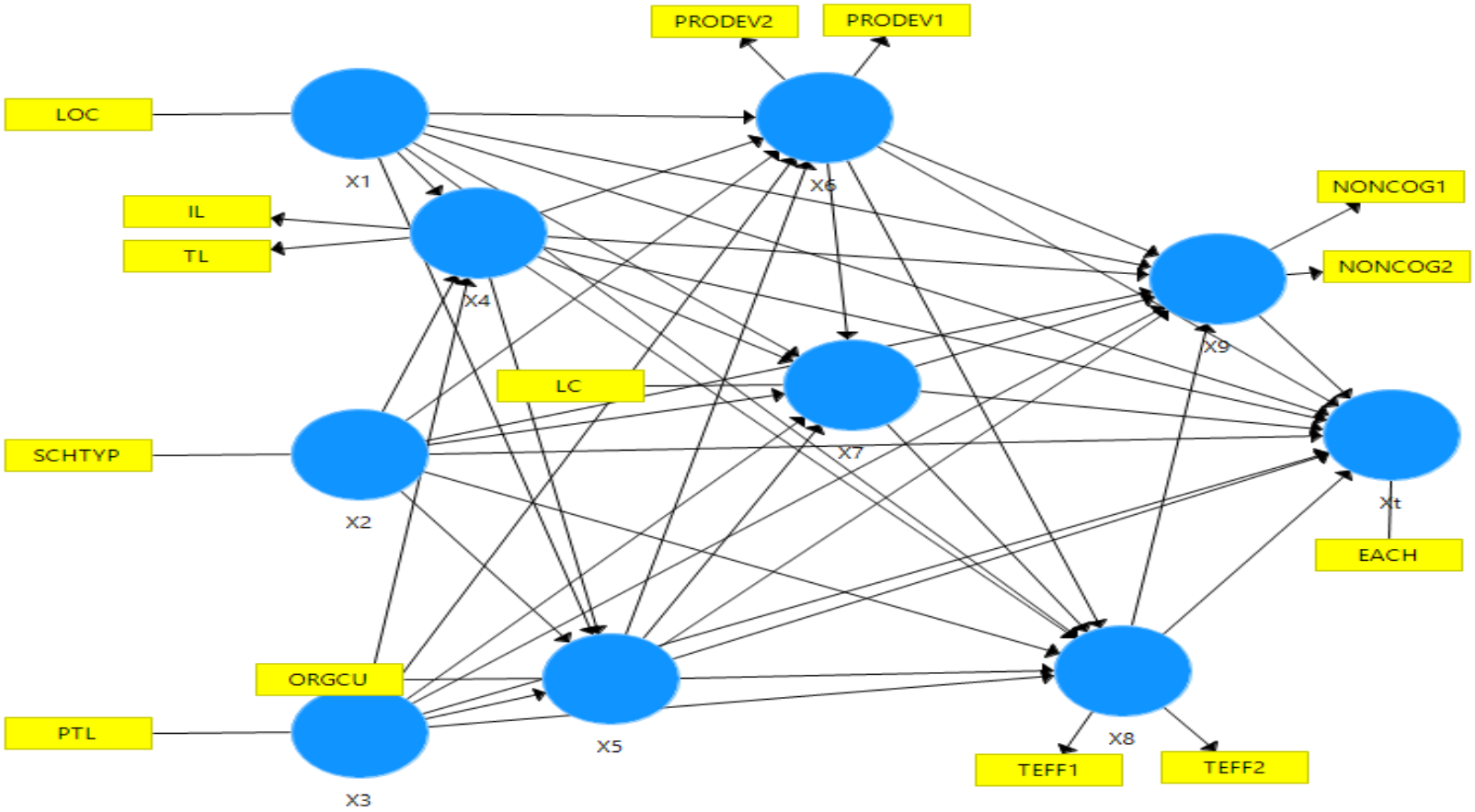

Figure 3.10 The Hypothesized Recursive Model of Ten variable system where; Dependent variable is X_T = Students' Achievement in Mathematics

Key; X_1 = Location, X_2 = School type, X_3 = Principal tenure-length, X_4 = Organisational leadership, X_5 = Organisation culture, X_6 = Professional development, X_7 = Learner-centeredness, X_8 = teachers' effectiveness, X_9 = Students' Non-cognitive Outcomes, X_T = Students' achievement in mathematics.

Figure 3.10 reveals the relationship among the ten variables. Location, school type and principal's tenure length are the three exogenous variables, while school organisational leadership and culture, learner-centeredness, professional development, teachers' effectiveness, students' non-cognitive outcomes and students' achievement in mathematics are the endogenous variables. The exogenous variables affect the endogenous variables and not vice versa. For the hypothesized recursive models (Figures 3.10), students' achievement in mathematics (X_T), is the criterion variable which all other variables affect. From the foregoing discussions on the variables (Fig. 3.1- 3.8), and the linear relationships shown among the variables, it is expected that all the endogenous variables will have an impact on the students' achievement in mathematics.

3.9 Evaluation criteria of the Path models

There are several criteria for assessing partial model structures. In general, a systematic application of the different criteria is carried out in two steps;

1. The assessment of the measurement/outer model and
2. The assessment of the structural/inner model

3.9.1 Assessment of the measurement model

The fundamental step of PLS – SEM investigation includes building up a measurement model and conducting an assessment of the measurement model constructs. The measurement model investigation was built to evaluate the relationship and correlations between constructs. Before investigating the structural model, reliability and validity of the model ought to be assessed and established. Assessment of measurement model is done by evaluation of both reflective measurement models and formative measurement. Appraisal of reflective measurement models incorporates evaluations of;

- Composite reliability to assess internal consistency,
- Outer loadings of indicators for individual indicator's reliability
- Average variance extracted (AVE) to assess convergent validity.
- HTMT, Fornell Larcker criterion and cross loadings to evaluate discriminant validity.

Reliability is a quality rule of a construct; it requires a high level of correlation among the indicators of a specific construct (Kline, 2011). According to Hair et al., (2010) reliability extends to which variable or set of variables is consistent in what it is intended to measure. There are two common measures of construct's reliability: Cronbach alpha and composite reliability. Coefficient alpha is utilized as a more conservative measure of items and it estimates the multiple item scale's reliability. The internal reliability of a construct is said to be achieved when the Cronbach's Alpha value is 0.7 or higher (Pallant, 2001)

Convergent validity

It is the extent to which a measure correlates positively with an alternative measure of the same construct. In examining the convergent validity of a measure in PLS, the average variance extracted (AVE) and item loadings are assessed (Hair et al., 2013). AVE is the average variance shared between a construct and its measures. It is defined as the grand mean value of the squared loadings of the indicators associated with a particular construct (the sum of the squared loadings divided by the numbers of indicators) (Hair et al., 2013) The average variance shared between a construct and its measures should be greater than that shared with the other constructs in the same model (Couchman and Fulop, 2006).In PLS, the calculation of AVE is inbuilt into the analysis software. AVE value equals or is higher than 0.50 indicates that on the average, the construct explained more than half of the variance of its indicators. Conversely, an AVE of lesser value than 0.50 indicates that more error remains in the items than the average variance explained by the constructs. As such, the rule of thumb is that an AVE value greater or equal to 0.50 is acceptable (Hair et al., 2013; Barclays et al., 1995).

Discriminant validity

This analyses relationships between latent variables. It is concerned about the uniqueness of a construct, whether the phenomenon captured by a construct is unique and not represented by the other constructs in the model (Hair et al., 2013). Discriminant validity can be evaluated by assessing the cross loadings among constructs, by using Fornel-Larcker criterion and Heterotrait- Monotrait Ratio of correlation (HTMT). HTMT was introduced by Henseler,Ringle and Sarstedt (2015) in their research based on Monte Carlo Simulation. They demonstrate this approach's superior performance by means of a

Monte Carlo simulation study, in which they compare the new approach to the Fornell-Larcker criterion and the assessment of (partial) cross-loadings. According to Henseler et al., (2016) in order to achieve discriminant validity the HTMT score should be between confidence interval value -1 and 1. SmartPLS specifically recommends using the HTMT criterion to assess discriminant validity**.** Based on the SmartPLS manual, if the HTMT value is below 0.90, discriminant validity is established between two reflective constructs.

3.9.2 Assessment of the structural model

The structural model and its dormant variables represent the stable, theoretically and conceptually established contextual link between observed data on the input and output sides. Based on the structural model, the objective of the investigation is to anticipate the yield layer information by methods for the information layer information. In other words, the structural model is used to illustrate one or more dependence relationships linking the hypothesized model's construct.

In order to assess the structural model, Hair et al., (2011) proposed a five step structural model assessment procedure. This study evaluated the model, using the five criteria and the SRMR model fit quality criteria..

- **Step 1:** Assess structural model for collinearity
- **Step 2:** Assess the path co-efficient
- **Step 3:** Assess the level of R^2
- **Step 4:** Assess the effect size f^2
- **Step 5:** Assess the Q^2
- **Step 6:** Standardized Root Mean Square Residual (SRMR)

Colinearity issues of structural model: Colinearity issue of the constructs was assessed by validating VIF values which should be less than 5. The VIFs found > 5 depicts a multicollinearity.

Path coefficient values (in between +1 to -1) are used for analysing the strength of the hypothesized relationships. The path coefficients values close to +1 represent strong positive relationship whereas a value near 0 represents frail relationship. Bootstrapping

procedure reports essentialness of path coefficient values. It gives empirical t statistics' (obtained by dividing path coefficient value by standard error) and 'P values' (the probability of erroneously rejecting the null hypothesis). Empirical t-value is compared with critical value to check if it is greater than the critical value which is desired. The critical t values are 2.57, 1.96, and 1.65 for a significance level of 1%, 5%, and 10%, respectively (two-tailed tests).

Coefficient of Determination (R^2 Value)

The coefficient of determination (R^2 value) depicts the structural model's predictive accuracy and is calculated as the squared correlation between a specific endogenous construct's actual and predicted values (Hair et al., 2014). The R^2 gives us the combined effects of independent variables on the dependent variable i.e. it represents the amount of variance in the endogenous constructs explained by all of the exogenous constructs linked to it (Hair et al., 2014). The R^2 value ranges (0 to 1) and value near to 1 indicates high predictive accuracy.

Effect size f^2

The assessment of the effect size f^2 seeks to evaluate whether exogenous constructs have a substantive impact on endogenous constructs. It is important to determine the relevance and the extent to which the examined path changes the explaining power of the endogenous construct (Cohen, 1988). As the path coefficient cannot provide any information about the effect size of the exogenous latent variables on the endogenous construct. In determining the effect size, Cohen F^2 value was used and calculated with the formula givenbelow by Cohen (1988): $\mathbf{F}^2 = R^2$ included – R^2excluded 1- R^2included Upon the determination of the effect size (f^2)

Predictive Relevance Q^2

While the R square values denotes predictive accuracy, the predictive relevance Q^2 indicates the model's which is called 'Stone-Geisser's Q^2 value' (Geisser,89 1974; Stone, 1974). The Q^2 values larger than zero for a certain reflective endogenous latent variable indicate the path model's for the construct (Hair et al., 2014).

Standardized Root Mean Square Residual (SRMR)

The SRMR is defined as the difference between the observed correlation and the model implied correlation matrix. Thus, it allows assessing the average magnitude of the discrepancies between observed and expected correlations as an absolute measure of (model) fit criterion. A value less than 0.10 or of 0.08 (in a more conservative version; Hu and Bentler, 1999) are considered a good fit. Henseler et al. (2009) introduce the SRMR as a goodness of fit measure for PLS-SEM that can be used to avoid model misspecification. Henseler, Ringles and Sinkovics (2014) introduced the SRMR as a goodness of fit measure for PLS-SEM. The SRMR is the difference between the observed correlation and the predicted correlation. It allows assessing the average magnitude of the discrepancies between observed and expected correlations as an absolute measure of (model) fit criterion. A value less than 0.10 and of 0.08 (in conservative sense) are considered a good fit (Hair et al., 2014).

3.10 Methodological Challenges

The major challenge faced by the researcher were:

1. Negative Stereotype Attitude: It took the researcher an additional time of sensitizing students and teachers about questionnaires and how their attitudes towards filling of questionnaires can inform wrong policy formulations and affect other learners. The researcher counselled and encouraged them in order for them to respond truthfully to the items on the questionnaires. The researcher tackled this challenge by establishing rapport with the respondents, school principals and examination officers.
2. Confidentiality: It was difficult to get students WASSCE examination numbers in many schools as students were sceptical about providing such information. Some school principals instructed students not to provide the information, and in a case where students had provided it, the information were erased by the principal
3. Students WASSCE Performance: The same challenge was faced from WAEC despite being pre-informed about the study at the conception. This challenge referred the study to the use of PLS-SEM which was a better alternative.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter presents the results of the statistical analysis of data obtained from the administration of research instruments, and the discussion of findings.

Results

4.1 Research Question 1(I): What is the magnitude and direction of correlations existing among the variables in the English language achievement Model [school location, school type, principal tenure-length, organisational leadership, organisational culture, learner-centeredness(English language) and professional development, teachers' effectiveness(English language), students' non-cognitive outcomes, students' achievement in English Language]?

Table 4.1: Correlation Matrix for the Relationship between Exogenous and Endogenous Variables in the English language model.

Note *

	LOC	SCHTYP	PTL	TL	IL	ORGCU	PRODEV1	PRODEV2	LC	TEFF1	TEFF2	NONCOG1	NONCOG2	MACH
LOC	1													
SCHTYP	-0.03	1												
PTL	0.060	-0.27	1											
TL	-0.09	-0.04	0.23	1										
IL	-0.07	-0.14	0.21	0.860	1									
ORGCU	-0.13	0.03	0.22	0.445	0.47	1								
PRODEV1	-0.06	0.04	0.27	0.355	0.27	0.563	1							
PRODEV2	-0.01	-0.07	0.21	0.360	0.32	0.549	0.464	1						
LC	0.071	0.13	0.12	0.097	0.08	0.052	0.161	0.264	1					
TEFF1	-0.03	0.12	0.14	0.115	0.06	0.158	0.329	0.241	0.640	1				
TEFF2	0.145	0.10	0.11	0.104	0.05	0.123	0.252	0.186	0.774	0.894	1			
NONCOG1	-0.49	-0.01	0.11	0.093	0.13	0.140	0.267	0.106	0.349	0.254	0.146	1		
NONCOG2	-0.14	-0.03	0.11	0.114	0.14	0.061	0.000	0.114	0.389	-0.05	0.014	0.556	1	
EACH	0.158	-0.44	0.10	-0.03	0.10	0.145	0.084	0.140	-0.22	-0.06	-0.16	-0.12	-0.09	1

Correlations are significant at $p<0.05$

Key: X_1 = Location, X_2 = School type, X_3 = Principal tenure-length, X_4 = Organisational leadership, X_5 = Organisation culture, X_6 = Professional development, X_{7e} = Learner-centeredness (English language), X_{7m} = Learner-centeredness (mathematics), X_{8e} = teachers' effectiveness (English language), X_9 = Students' Non-cognitive Outcomes, XT_e = Students' achievement in English Language, XT_m = Students' achievement in mathematics.

4.2: Research Question 1(II): What is the magnitude and direction of correlations existing among the variables in the mathematics achievement model[school location, school type, principal tenure-length, organisational leadership, organisational culture, learner-centeredness(mathematics) and professional development, teachers' effectiveness (mathematics), students' non-cognitive outcomes, students' achievement in mathematics]?

Table 4.2: Correlation Matrix for the Relationship between Exogenous and Endogenous Variables in the Mathematics model.

	LOC	SCHTYP	PTL	TL	IL	ORGCU	PRODEV	LC	TEFF1	TEFF2	NONCOG1	NONCOG2	MACH
LOC	1												
SCHTYP	-0.03	1											
PTL	0.06	-0.265	1										
TL	-0.19	-0.078	0.23	1									
IL	-0.075	0.018	0.22	0.72	1								
ORGCU	-0.03	-0.179	0.06	0.551	0.63	1							
PRODEV	-0.00	-0.241	0.07	0.454	0.55	0.748	1						
LC	0.20	-0.038	0.20	0.095	0.24	0.104	0.064	1					
TEFF1	0.069	0.113	0.17	-0.03	0.18	0.037	0.075	0.721	1				
TEFF2	0.015	0.081	0.23	-0.00	0.21	0.061	0.106	0.588	0.919	1			
NONCOG1	-0.49	-0.027	0.11	0.055	0.03	0.025	-0.08	0.269	0.251	0.255	1		
NONCOG2	-0.14	-0.034	0.13	0.122	0.14	0.169	-0.007	0.319	-0.00	-0.06	0.554	1	
MACH	0.341	-0.299	0.13	0.113	0.15	0.169	0.301	-0.04	-0.03	-0.01	-0.255	-0.097	1

A number of analytical and evaluative steps were observed in reaching statistical and empirical conclusion on research questions (2-5). They include the estimation and assessment of the measurement and structural model. In answering the questions, SmartPLS was employed to generate the statistics of relationships among the observed and latent variables in the models and test the strength of these relationships. The procedures followed were;

1. Assessment of the measurement model to establish how variables were measured with questionnaire items. The measurement metrics evaluated with this procedure are;
    a. Inner VIF(collinearity)
    b. Internal consistency
    c. Convergent validity
    d. Discriminant validity
2. Assessment of the structural model for;
    a. Collinearity
    b. Path co-efficients
    c. R^2 level
    d. Effect size f^2
    e. Predictive relevance Q^2

4.3 Research question 2(I): Are the measurement and structural models which explain the causal model existing among the variables in the models consistent with the empirical data in determining students' achievement in English Language?

For assessing the measurement model of reflective constructs in the English language achievement model, the following PLS Algorithm results were verified.

Collinearity Statistics: All variables of EACH have a VIF value < 5 as shown on table 4.3. Hence, there is no collinearity issue present between the indicators.

Table 4.3 Outer Variance Inflation Factors Values

	X1	X2	X3	X4	X5	X6	X7	X8	X9	Xt
X1				1.004	1.014	1.028	1.030	1.034	1.036	1.282
X2				1.076	1.077	1.094	1.094	1.129	1.153	1.154
X3				1.079	1.130	1.164	1.196	1.208	1.211	1.222
X4					1.064	1.329	1.345	1.349	1.353	1.354
X5						1.354	1.964	2.020	2.026	2.028
X6							1.819	1.953	1.978	1.980
X7								1.135	2.222	3.169
X8									2.294	2.612
X9										1.726
Xt										

Table 4.4 Construct reliability and validity

Variables	Composite Reliability	Average Variance Extracted (AVE)
X1	1.000	1.000
X2	1.000	1.000
X3	1.000	1.000
X4	0.964	0.930
X5	1.000	1.000
X6	0.845	0.732
X7	1.000	1.000
X8	0.973	0.947
X9	0.875	0.778
Xt	1.000	1.000
Criteria	**>0.7**	**>0.5**

Key: X_1 = Location, X_2 = School type, X_3 = Principal tenure-length, X_4 = Organisational leadership, X_5 = Organisation culture, X_6 = Professional development, X_{7e} = Learner-centeredness (English language), X_{7m} = Learner-centeredness (Mathematics), X_{8e} = teachers' effectiveness (English language), X_9 = Students' non-cognitive outcomes, XT_e = Students' achievement in English Language.

Composite Reliability: The CR of latent constructs is shown in Table 4.4. The composite reliability of all the latent constructs were above 0.7 threshold value which demonstrated high levels of internal consistency reliability for all the latent constructs.

Convergent Validity: Convergent Validity is assessed by AVE value and shown in Table 4.3. The AVE values for all latent constructs are above 0.5 which means the measure of all latent constructs have high level of convergent validity.

Discriminant Validity: The Fornell-Larcker criterion, and cross-loadings, discriminant validity assessment outcomes. As recommended by SmartPLS, this study used the HTMT criterion to assess discriminant validity. It is suggested that if the HTMT value is below 0.90, discriminant validity has been established between two latent constructs. The results on Table 4.4 shows that all the latent constructs have HTMT values of discriminant validity <0.90. This means the constructs on the model fulfilled the validity threshold.

Table 4.5 Heterotrait-Monotrait Ratio (HTMT)

	X1	X2	X3	X4	X5	X6	X7	X8	X9	Xt
X1										
X2	0.032									
X3	0.060	0.265								
X4	0.085	0.095	0.233							
X5	0.133	0.033	0.220	0.494						
X6	0.057	0.079	0.353	0.518	0.816					
X7	0.071	0.128	0.123	0.097	0.052	0.312				
X8	0.090	0.184	0.132	0.094	0.149	0.391	0.748			
X9	0.416	0.028	0.147	0.169	0.134	0.240	0.495	0.163		
Xt	0.158	0.438	0.104	0.073	0.145	0.164	0.218	0.111	0.137	

Figure 4.1 shows hypothesized recursive model for achievement in English Language. For assessing this structural model of reflective constructs in the English language achievement model, the following PLS Algorithm results were verified.

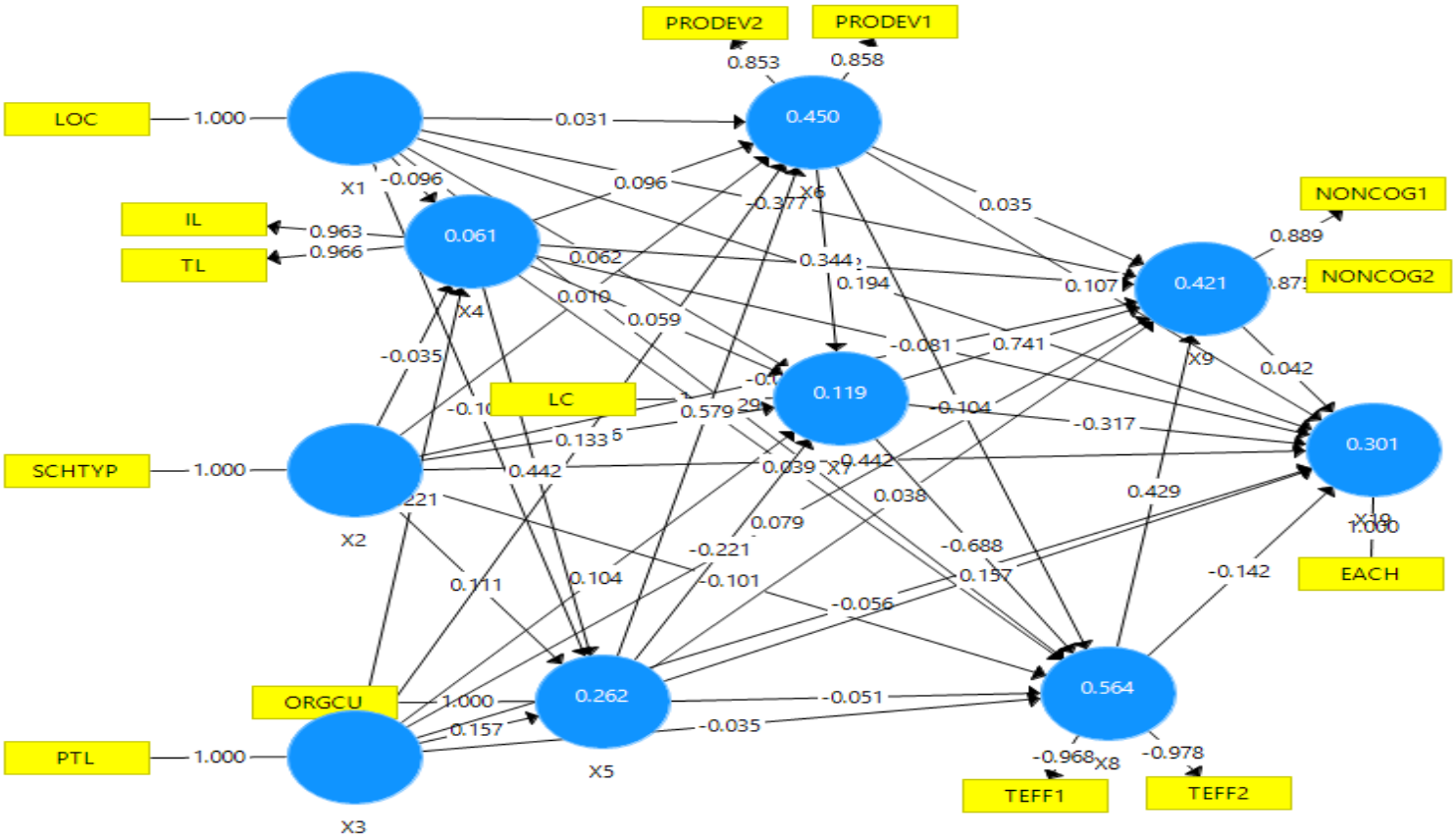

Figure 4.1: Hypothesized Recursive Model for Achievement in English Language

Key;

X_1 = Location, X_2 = School type, X_3 = Principal tenure-length, X_4 = Organisational leadership, X_5 = Organisation culture, X_6 = Professional development, X_7 = Learner-centeredness, X_8 = teachers' effectiveness, X_9 = Students' Non-cognitive Outcomes, X_T = Students' achievement in English Language.

Colinearity issues of structural model:

Colinearity issue of the constructs was assessed by validating VIF values which should be less than 5. The VIFs of constructs are shown on table 4.6. All VIFs found were < 5; hence we concluded that colinearity issue is not present between the constructs.

Table 4.6 Inner Variance Inflation Factors (VIF) Values

	VIF
EACH	1.000
IL	3.839
LC	1.000
LOC	1.000
NONCOG1	1.448
NONCOG2	1.448
ORGCU	1.000
PRODEV1	1.274
PRODEV2	1.274
PTL	1.000
SCHTYP	1.000
TEFF1	4.987
TEFF2	4.987
TL	3.839

Key: LOC = Location, SCHTYP = School type, PTL= Principal tenure-length, TL= Transformational leadership, IL=Instructional leadership ORGCU= Organisation culture, PRODEV1 = Professional learning enhancement, PRODEV2 = Professional engagements, LC = Learner-centeredness, TEFF1 = teachers' intellectual and communication skills, TEFF2 = Effective use of teaching methods and materials, NONCOG1= Students' social psyche skills, NONCOG2= Students' social affective skills, EACH = Students' achievement in English Language.

Path Coefficients

PLS algorithm calculation in SmartPLS provided path coefficients (along the arrows)

i.e. relationships between the constructs for structural model. Within the structural model, each path connecting two latent variables represented a hypothesis. Based on the analysis conducted on the structural model, the coefficient allows the researcher to confirm or disconfirm each hypothesis as well as understand the strength of the relationship between dependent and independent variables as common with confirmatory studies. Bootstrapping procedure reports significance of path coefficient values used for this type of assessment. The path coefficients values (in between +1 to -1) are used for analysing of the strength of the hypothesized relationships. The path coefficients values close to +1 represent strong positive relationship whereas a value near 0 represents weak relationship.

Table 4.7 Path coefficients

Paths	Estimates	Paths	Estimates
X1 -> X4	-0.100	**X4 -> X5**	0.461
X1 -> X5	-0.099	**X4 -> X6**	0.128
X1 -> X6	0.040	**X4 -> X7**	-0.007
X1 -> X7	0.040	**X4 -> X8**	0.064
X1 -> X8	-0.025	**X4 -> X9**	0.016
X1 -> X9	-0.446	**X4 -> Xt**	-0.111
X1 -> Xt	0.201	**X5 -> X6**	0.721
X2 -> X4	-0.037	**X5 -> X7**	-0.619
X2 -> X5	0.112	**X5 -> X8**	0.101
X2 -> X6	0.013	**X5 -> X9**	-0.021
X2 -> X7	0.169	**X5 -> Xt**	0.001
X2 -> X8	-0.110	**X6 -> X7**	0.821
X2 -> X9	-0.026	**X6 -> X8**	-0.297
X2 -> Xt	-0.432	**X6 -> X9**	0.131
X3 -> X4	0.229	**X6 -> Xt**	0.307
X3 -> X5	0.148	**X7 -> X8**	-0.647
X3 -> X6	0.166	**X7 -> X9**	0.891
X3 -> X7	0.013	**X7 -> Xt**	-0.377
X3 -> X8	-0.009	**X8 -> X9**	0.555
X3 -> X9	0.083	**X8 -> Xt**	-0.128
X3 -> Xt	-0.085	**X9 -> Xt**	0.061

Coefficient of Determination (R^2)

The R^2 value indicates the amount of variance in dependent variables that is explained by the independent variables. Thus, a larger R^2 value increases the predictive ability of the structural model. In this study, SmartPLS algorithm function is used to obtain the R^2 values. The R^2 values of the endogenous constructs are shown inside the circles (see Figure 4.1) The R^2 coefficient of determination values for EACH are shown on Fig. 4.1 and Table 4.8).

Table 4.8 R^2 for hypothesized EACH Model

	R Square	R Square Adjusted
X4	0.061	0.024
X5	0.262	0.223
X6	0.450	0.414
X7	0.119	0.048
X8	0.564	0.522
X9	0.421	0.356
Xt	0.301	0.212

Effect Size f^2

The adjustment in the value of R^2, when an exogenous construct is precluded from the model can be utilized to assess whether the discarded construct substantively affects the endogenous constructs (Hair et al., 2014). For assessing f^2 values: 0.02, 0.15, and 0.35, respectively, represent small, medium, and large effects (Cohen, 1988) of the exogenous latent variable. With reference to this study (Table 4.9), it is generally observed that the effect size of most variables are small (< 0.15), except for six cases where there were substantial effect sizes of 0.237, 0.242, 0.248 (> 0.15) and large effect size of 0.450, 0.426 and 0.957 (>0.35) respectively.

Table 4.9

	X1	X2	X3	X4	X5	X6	X7	X8	X9	Xt
X1				**0.010**	**0.014**	**0.002**	**0.004**	**0.002**	**0.237**	0.042
X2				**0.001**	**0.015**	**0.000**	0.032	0.021	**0.001**	**0.242**
X3				0.048	0.029	0.028	**0.010**	**0.002**	**0.009**	**0.004**
X4					**0.248**	**0.013**	**0.003**	**0.003**	**0.001**	**0.007**
X5						**0.450**	0.028	**0.003**	**0.001**	**0.017**
X6							0.074	**0.013**	**0.001**	**0.008**
X7								**0.957**	**0.426**	0.045
X8									0.139	**0.011**
X9										**0.001**
Xt										

Predictive Relevance Q^2

While the R square values denotes predictive accuracy, the predictive relevance Q^2 indicates the model's predictive relevance which is called 'Stone-Geisser's Q^2 value' (Geisser, 1974; Stone, 1974). The Q^2 values larger than zero for a certain reflective endogenous latent variable indicate the path model's predictive relevance for the construct (Hair et al., 2014). The Q^2 value of latent variables in the PLS path model is obtained by using the blindfolding procedure. In the EACH model, it is observed that the Q^2 values are greater than zero except for leadership (X4, -0.005) as shown in Table 4.9. The farther the Q^2 value from zero, the higher the predictive relevance . This indicates that the EACH path model's predictive relevance is substantial.

Table 4.10 EACH Q^2

	Q^2 (=1-SSE/SSO)
X1	
X2	
X3	
X4	-0.005
X5	0.166
X6	0.276
X7	0.012
X8	0.472
X9	0.240
Xt	0.120

Key: X_1 = Location, X_2 = School type, X_3 = Principal tenure-length, X_4 = Organisational leadership, X_5 = Organisation culture, X_6 = Professional development, X_{7e} = Learner-centeredness (English language), X_{7m} = Learner-centeredness (mathematics), X_{8e} = teachers' effectiveness (English language), X_9 = Students' non-cognitive outcomes, , XT_e = Students' achievement in English Language.

Table 4.11 EACH Model fitness

	Saturated Model
SRMR	0.059
d_ULS	0.364
d_G1	0.746
d_G2	0.394

4.4 Research question 2(II): Are the measurement and structural models which explain the causal model existing among the variables in the models consistent with the empirical data in determining students' achievement in mathematics?

For assessing the measurement model of reflective constructs in the mathematics achievement model, the following PLS algorithm results were verified.

Collinearity Statistics: All variables of MACH have a VIF value < 5 as shown in Table 4.3. Hence, there are no collinearity issue present between the indicators

Table 4.12 Outer VIF Values

	X1	**X2**	**X3**	**X4**	**X5**	**X6**	**X7**	**X8**	**X9**	**Xt**
X1				1.004	1.028	1.037	1.040	1.095	1.123	1.550
X2				1.076	1.077	1.153	1.197	1.197	1.276	1.277
X3				1.079	1.153	1.205	1.210	1.232	1.274	1.304
X4					1.090	1.949	2.010	2.056	2.096	2.137
X5						1.849	2.794	2.796	2.806	2.938
X6							2.411	2.419	2.512	2.579
X7								1.122	2.114	2.616
X8									2.051	2.118
X9										1.636
Xt										

Table 4.13 Construct reliability and validity

	Composite Reliability	**Average Variance Extracted (AVE)**
X1	1.000	1.000
X2	1.000	1.000
X3	1.000	1.000
X4	0.924	0.859
X5	1.000	1.000
X6	1.000	1.000
X7	1.000	1.000
X8	0.979	0.959
X9	0.872	0.773
Xt	1.000	1.000
Criteria	>0.7	>0.5

Key: X_1 = Location, X_2 = School type, X_3 = Principal tenure-length, X_4 = Organisational leadership, X_5 = Organisation culture, X_6 = Professional development, X_{7e} = Learner-centeredness (English language), X_{7m} = Learner-centeredness (mathematics), X_{8e} = teachers' effectiveness (English language), X_9 = Students' non-cognitive outcomes, XT_m = Students' achievement in mathematics.

Composite Reliability: The CR of latent constructs is shown on table 4.4. The composite reliability of all the latent constructs were above 0.7 threshold value which demonstrated high levels of internal consistency reliability for all the latent constructs.

Convergent Validity: Convergent validity is assessed by AVE value and shown in Table 4.3. The AVE values for all latent constructs are above 0.5 which means the measure of all latent constructs have high level of convergent validity.

Discriminant Validity: This is usually assessed by the Fornell-Larcker criterion, and cross-loadings, and HTMT. As recommended by SmartPLS, this study is using the HTMT criterion to assess discriminant validity. It is suggested that if the HTMT value is below 0.90, discriminant validity has been established between two latent constructs. The results on Table 4.14 shows that all the latent constructs have HTMT values of discriminant validity <0.90. This means the constructs on the model fulfilled the discriminant validity threshold.

Table 4.14 Heterotrait-Monotrait Ratio (HTMT)

	X1	X2	X3	X4	X5	X6	X7	X8	X9	Xt
X1										
X2	**0.032**									
X3	**0.060**	**0.265**								
X4	**0.153**	**0.057**	**0.266**							
X5	**0.027**	**0.179**	**0.056**	**0.693**						
X6	**0.001**	**0.241**	**0.065**	**0.592**	**0.748**					
X7	**0.201**	**0.038**	**0.201**	**0.195**	**0.104**	**0.064**				
X8	**0.044**	**0.101**	**0.206**	**0.130**	**0.052**	**0.095**	**0.683**			
X9	**0.423**	**0.041**	**0.160**	**0.135**	**0.130**	**0.059**	**0.395**	**0.199**		
Xt	**0.341**	**0.299**	**0.132**	**0.152**	**0.169**	**0.301**	**0.037**	**0.016**	**0.237**	

Figure 4.2 shows hypothesized Recursive Model for Achievement in Mathematics, for assessing this Structural model of reflective constructs in the Mathematics achievement model, the following PLS Algorithm results were verified.

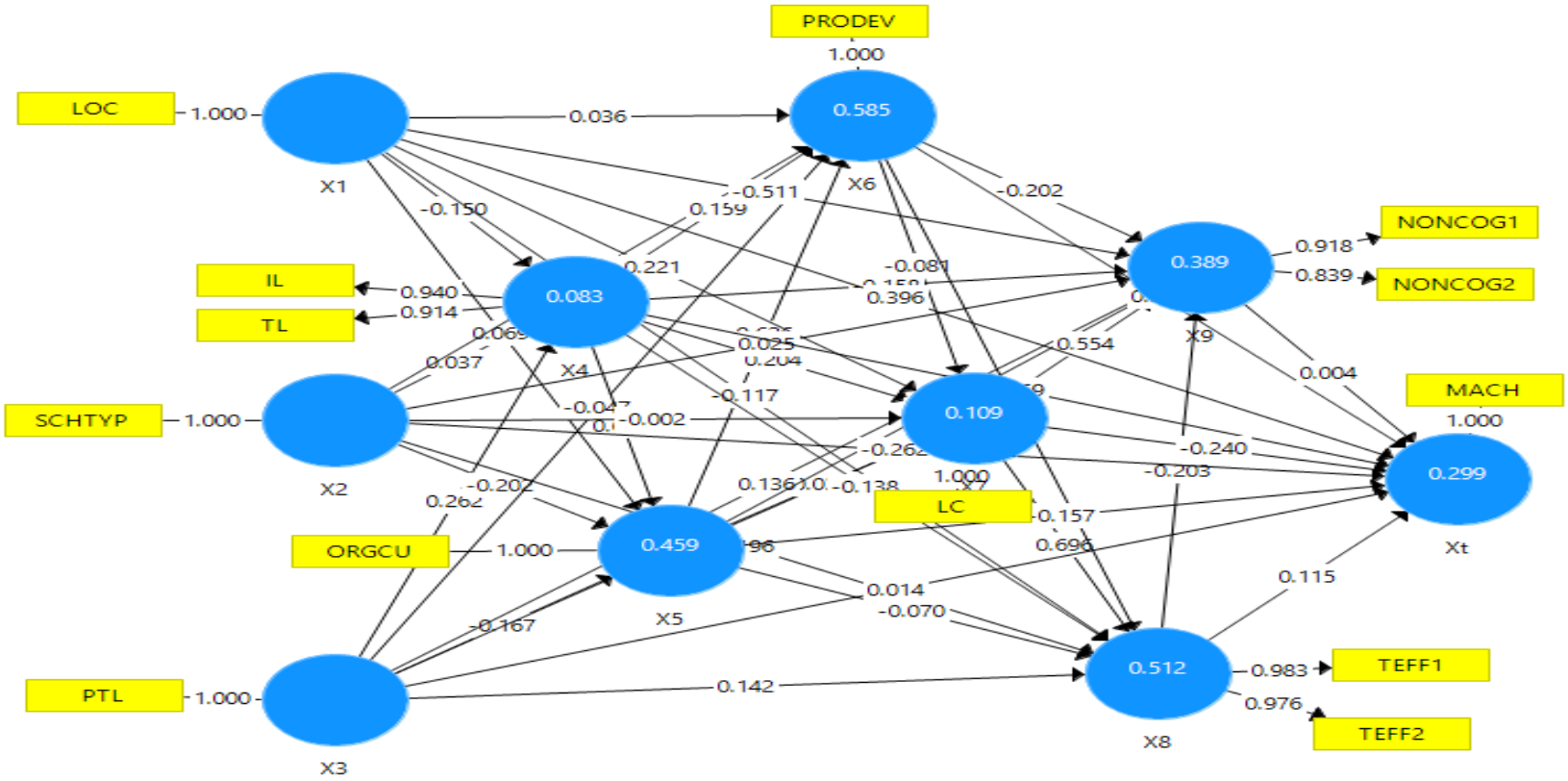

Figure 4.2: Hypothesized Recursive Model for Achievement in mathematics

Key;

X_1 = Location, X_2 = School type, X_3 = Principal tenure-length, X_4 = Organisational leadership, X_5 = Organisation culture, X_6 = Professional development, X_7 = Learner-centeredness, X_8 = teachers' effectiveness, X_9 = Students' Non-cognitive Outcomes, X_T = Students' achievement in mathematics.

Colinearity issues of structural model:

Colinearity issue of the constructs was assessed by validating VIF values which should be less than 5. The VIFs of constructs are shown on table 4.15. All VIFs found < 5; hence we concluded that colinearity issue is not present between the constructs.

Table 4.15 Inner Variance Inflation Factors (VIF) Values

	VIF
IL	**2.078**
LC	**1.000**
LOC	**1.000**
MACH	**1.000**
NONCOG1	**1.443**
NONCOG2	**1.443**
ORGCU	**1.000**
PRODEV	**1.000**
PTL	**1.000**
SCHTYP	**1.000**
TEFF1	**6.399**
TEFF2	**6.399**
TL	**2.078**

Key: LOC = Location, SCHTYP = School type, PTL= Principal tenure-length, TL= Transformational leadership, IL=Instructional leadership, ORGCU= Organisation culture, PRODEV = Professional development, LC = Learner-centeredness, TEFF1 = teachers' intellectual and communication skills, TEFF2 = Effective use of Teaching Methods and Materials, X_9 NONCOG1= Students' social psyche skills, NONCOG2= Students' social affective skills, MACH = Students' achievement in mathematics.

Path Coefficients

PLS algorithm calculation in SmartPLS provided path coefficients (along the arrows)

i.e. relationships between the constructs for structural model. Within the structural model, each path connecting two latent variables represented a hypothesis. Based on the analysis conducted on the structural model, the coefficient allows the researcher to confirm or disconfirm each hypothesis as well as understand the strength of the relationship between dependent and independent variables as common with confirmatory studies. Bootstrapping procedure reports significance of path coefficient values which is used for this type of assessment. The path coefficients values (in between +1 to -1) are used for analysing the strength of the hypothesized relationships. The path coefficients values close to +1 represent strong positive relationship whereas a value near 0 represents weak relationship.

Table 4.16 Path coefficients

Paths	Estimates	Paths	Estimates
X1 -> X4	-0.150	**X4 -> X5**	0.681
X1 -> X5	0.069	**X4 -> X6**	0.159
X1 -> X6	0.036	**X4 -> X7**	0.204
X1 -> X7	0.221	**X4 -> X8**	-0.138
X1 -> X8	-0.117	**X4 -> X9**	-0.158
X1 -> X9	-0.511	**X4 -> Xt**	0.169
X1 -> Xt	0.396	**X5 -> X6**	0.626
X2 -> X4	0.037	**X5 -> X7**	0.032
X2 -> X5	-0.202	**X5 -> X8**	-0.070
X2 -> X6	-0.136	**X5 -> X9**	0.285
X2 -> X7	-0.002	**X5 -> Xt**	-0.157
X2 -> X8	0.196	**X6 -> X7**	-0.081
X2 -> X9	0.025	**X6 -> X8**	0.213
X2 -> Xt	-0.262	**X6 -> X9**	-0.202
X3 -> X4	0.262	**X6 -> Xt**	0.268
X3 -> X5	-0.167	**X7 -> X8**	0.696
X3 -> X6	-0.047	**X7 -> X9**	0.554
X3 -> X7	0.141	**X7 -> Xt**	-0.240
X3 -> X8	0.142	**X8 -> X9**	-0.203
X3 -> X9	0.136	**X8 -> Xt**	0.115
X3 -> Xt	0.014	**X9 -> Xt**	0.004

Coefficient of Determination (R^2)

The R^2 value indicates the amount of variance in dependent variables that are explained by the independent variables. Thus, a larger R^2 value increases the predictive ability of the structural model. In this study, SmartPLS algorithm function is used to obtain the R^2 values. The R^2 values of the endogenous constructs are shown inside the circles (see Figure 4.2) The R^2 coefficient of determination values for MACH are shown on Fig. 4.2 and Table 4.17).

Table 4.17 R^2 for hypothesized MACH Model

	R Square	R Square Adjusted
X4	0.083	0.047
X5	0.459	0.431
X6	0.585	0.558
X7	0.109	0.036
X8	0 .512	0.466
X9	0.389	0.321
Xt	0.299	0.210

Effect Size f^2

The adjustment in the value of R^2, when an exogenous construct is precluded from the model can be utilized to assess whether the discarded construct substantively affects the endogenous constructs (Hair et al., 2014).. For assessing f^2 values: 0.02, 0.15, and 0.35, respectively, represent small, medium, and large effects (Cohen, 1988) of the exogenous latent variable. With reference to this study (Table 4.8 and Fig. 4.8), it is generally observed that the effect size of most variables are small (< 0.15), except for the effect of six cases where there were substantial effect sizes of 0.237 (>0.15) and large effect size of 0.380, 0.512, 0.787 and 0.884(>0.35) respectively.

Table 4.18

	X1	X2	X3	X4	X5	X6	X7	X8	X9	Xt
X1				0.024	**0.009**	**0.003**	0.053	0.026	**0.380**	0.144
X2				**0.001**	0.070	0.039	**0.000**	0.066	**0.001**	0.077
X3				0.069	0.045	**0.004**	**0.018**	0.033	0.024	**0.000**
X4					**0.787**	0.031	0.023	**0.019**	**0.020**	**0.019**
X5						**0.512**	**0.000**	**0.004**	0.047	**0.012**
X6							**0.003**	0.038	0.027	0.040
X7								**0.884**	**0.237**	0.031
X8									0.033	**0.009**
X9										**0.000**
Xt										

Predictive Relevance Q^2

While the R^2 values denotes predictive accuracy the predictive relevance Q^2 Indicates the model's predictive relevance which is called ‘Stone-Geisser's Q^2 value (Geisser, 1974; Stone, 1974). The Q^2 values larger than zero for a certain reflective endogenous latent variable indicate the path model's predictive relevance for the construct (Hair et al., 2014). The Q^2 value of latent variables in the PLS path model is obtained by using the blindfolding procedure. In the MACH model, it is observed that the Q^2 values are greater than zero except for learner-centredness (X7, -0.005) as shown in Table 4.19. The farther the Q^2 value from zero, the higher the . This indicates that the MACH model's predictive relevance is substantial.

Table 4.19 MACH Q^2

	Q^2 (=1-SSE/SSO)
X1	
X2	
X3	
X4	0.046
X5	0.367
X6	0.513
X7	-0.078
X8	0.43
X9	0.209
Xt	0.150

Key: X_1 = Location, X_2 = School type, X_3 = Principal tenure-length, X_4 = Organisational leadership, X_5 = Organisation culture, X_6 = Professional development, X_{7e} = Learner-centeredness (English language), X_{7m} = Learner-centredness (mathematics), X_{8e} = teachers' effectiveness (English language), X_9 = Students' non-cognitive outcomes, XT_m = Students' achievement in mathematics.

Table 4.20 MACH Model Fitness

	Saturated Model
SRMR	0.060
d_ULS	0.322
d_G1	0.545
d_G2	0.273

Research question 3 : Preamble

Henseler, Hubona and Ray (2016) specify that once the measurement model is deemed to be of sufficient quality, the analyst can proceed and assess the structural model. If OLS is used for the structural model, the endogenous constructs R^2 values would be the point of departure. They indicate the percentage of variability accounted for by the precursor constructs in the model. The adjusted R^2 values take into account model complexity and sample size, and are thus helpful to compare different models or the explanatory power of a model across different data sets. It represents the quality of the model variables (Hair et al., 2010). If the analyst's aim is to predict, the assessment should focus on blindfolding (Tenenhaus, Esposito, Chatelin and Lauro, 2005) and the model' s performance with regard to holdout samples. The specification of the structural model addresses two questions: Which constructs should be included in the model? And how are they hypothesized to be interrelated? (Henseler, Hubona and Ray; 2016).

As with the case of this study being exploratory in nature, an assessment of the measurement and structural model in research in (Table 4.1-4.20) and (Figure 4.1-4.2) gives a general overview of the quality criteria of the model. Hence, the criteria for trimming and model respecification is the use of the blindfolding procedure. Blindfolding is a samples re-use technique. It allows calculating Stone-Geisser's Q^2 value (Stone, 1974; Geisser, 1974), which represents an evaluation criterion for the cross-validated of the PLS path model.

Therefore, the study adopted the R^2 and Q^2 criterion that is; statistical accuracy, relevance and predictive power for the trimming exercise. These two criteria were used to avoid a situation where path coefficient of lower magnitude would be found to be insignificant because of small sample size. Hence, the term 'significance', with respect to this study connotes statistical quality, as well as meaningfulness. Therefore, the non-significant paths were not trimmed out of the model but rather the irrelevant constructs were removed to reproduce the most meaningful ones that contributed to the model prediction.

4.5 Research Question 3(I): What is the most meaningful causal model explaining Students' Achievement in English Language?

Table 4.10 shows the summary of construct cross-validated redundancy as a check on construct that are not contributing to the model (< 0) and statistically not relevant to the model prediction. Table 4.10 shows that X4 has no to the model and is therefore espunged from the model that predicts the English language (Figure 4.3).

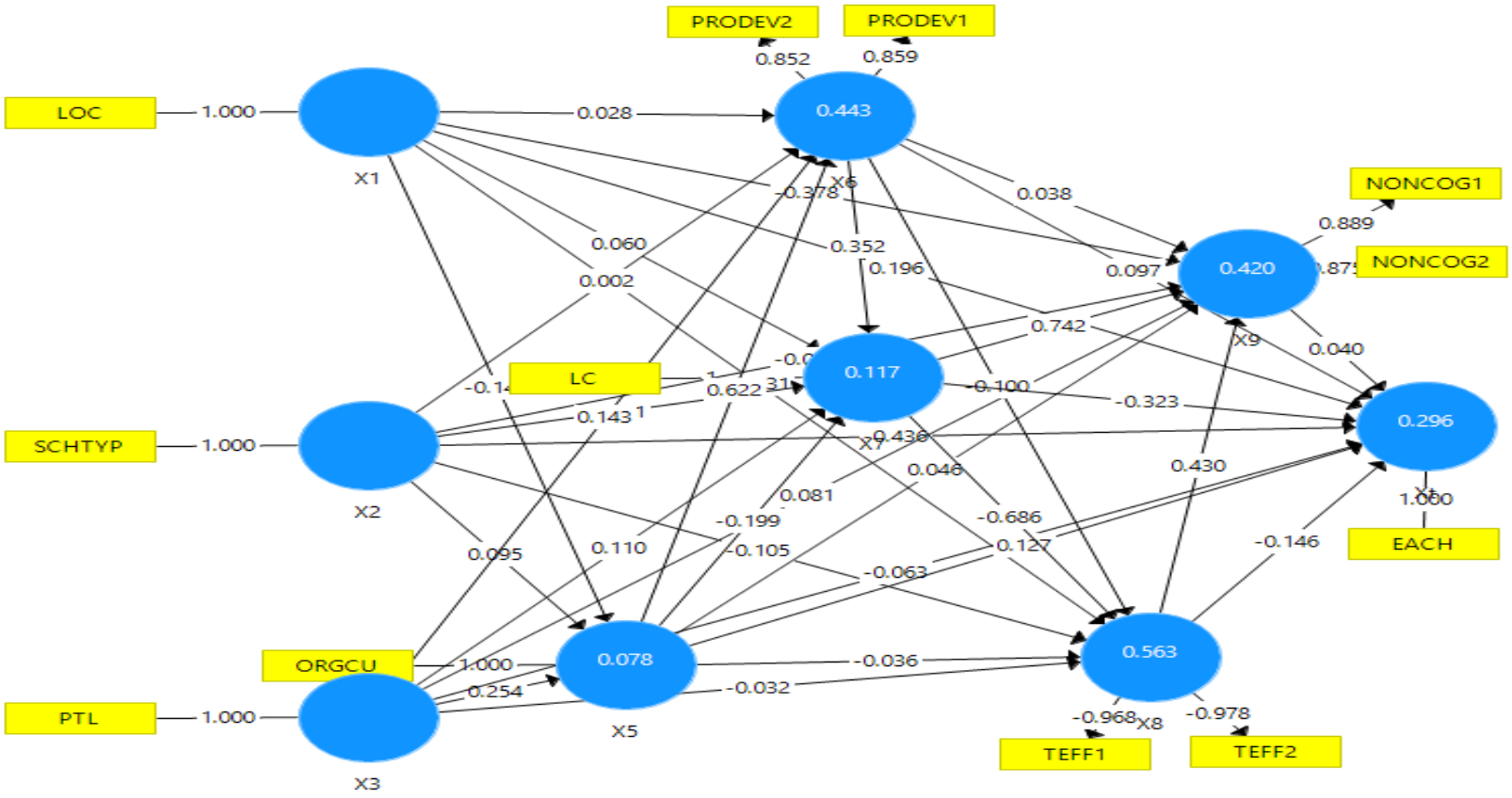

Figure 4.3: Re-specified Recursive Model for Achievement in Mathematics

X_1 = Location, X_2 = School type, X_3 = Principal tenure-length, X_4 = Organisational leadership, X_5 = Organisation culture, X_6 = Professional development, X_{7m} = Learner-centeredness (English Language), X_{8e} = teachers' effectiveness (English Language), X_9 = Students' non-cognitive outcomes, X_{te} = Students' achievement in English Language.

4.6 Research Question 3(II): What is the most meaningful causal model explaining Students' Achievement in Mathematics?

Table 4.19 shows the summary of Construct Cross-validated Redundancy as a check on construct that are not contributing to the model(< 0) and statistically not relevant to the model prediction. Table 4.19 shows that X7 has no to the model and is therefore expunged from the model that predicts the Mathematics Achievement. [see assessment of structural models (Figure 4.4)

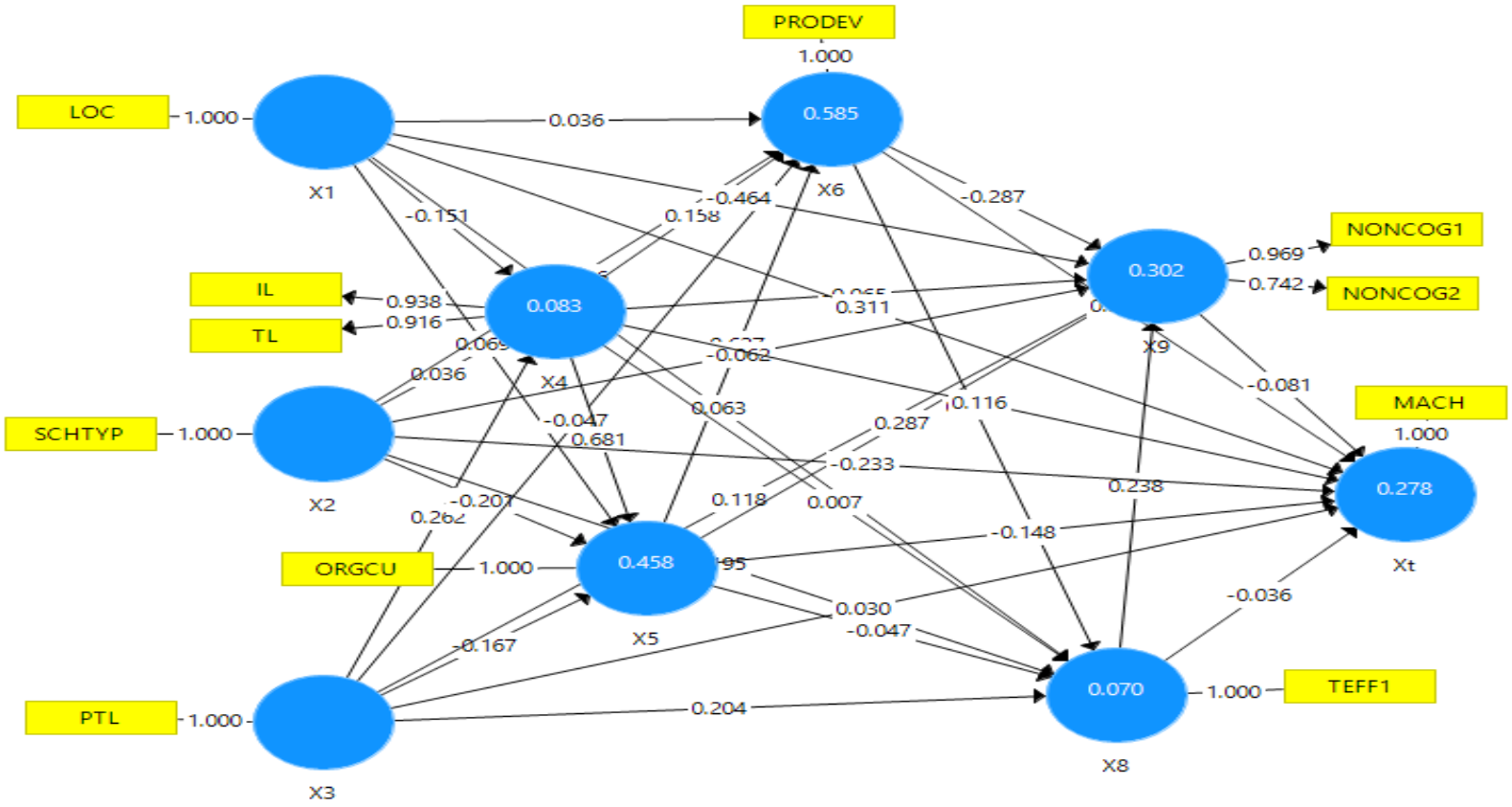

Figure 4.4: Re-specified Recursive Model for Achievement in Mathematics

X_1 = Location, X_2 = School type, X_3 = Principal tenure-length, X_4 = Organisational leadership, X_5 = Organisation culture, X_6 = Professional development, X_{8m} = teachers' effectiveness (mathematics), X_9 = Students' non-cognitive outcomes, X_{tm} = Students' achievement in mathematics.

4.7 Research Question 4(I): What are the percentages of variance accounted for by the latent variables in the parsimonious model for Students' Achievement in English Language?

Table 4.21

Dependent Construct	Independent Indicators	R^2	% of variance accounted for
Xt (English Language achievement)	X1,X2,X3,X5,X6,X7,X8,X9	0.296	29.6
X9(Students non-cognitive outcomes)	X1,X2,X3,X5,X6,X7,X8	0.420	42.0
X8(Teachers effectiveness)	X1,X2,X3,X5,X6,X7	0.563	56.3
X7(Learner centredness)	X1,X2,X3,X5,X6,	0.117	11.7
X6(Professional development)	X1,X2,X3,X5	0.443	44.3
X5(Organisational culture)	X1,X2,X3	0.078	7.8

4.8 Research Question 4(II): What are the percentages of variance accounted for by the latent variables in the parsimonious model for students' achievement in mathematics?

Table 4.22

Dependent Construct	Independent Indicators	R^2	% of variance accounted for
Xt (Mathematics)	X1,X2,X3,X4,X5,X6,X8,X9	0.278	27.8
X9 (Students non-cognitive outcomes)	X1,X2,X3,X4,X5,X6,X8	0.302	30.2
X8 (Teachers effectiveness)	X1,X2,X3,X4,X5,X6	0.070	7.0
X6 (Professional development)	X1,X2,X3,X4, X5	0.585	58.5
X5(Organisational culture)	X1,X2,X3,X4	0.458	45.8
X4(Organisational leadership)	X1,X2,X3	0.083	8.3

4.9 Research Question 5(I): What are the estimated direct, indirect and total effects of the endogenous variables on students' achievement in English Language?

Table 4.23

Paths	Total Effects	Indirect Effects	Direct Effects
X1 -> X5	-0.145	-0.046	-0.099
X1 -> X6	-0.077	-0.117	0.04
X1 -> X7	0.067	0.027	0.04
X1 -> X8	-0.066	-0.041	-0.025
X1 -> X9	-0.432	0.014	-0.446
X1 -> Xt	0.145	-0.056	0.201
X2 -> X5	0.095	-0.017	0.112
X2 -> X6	0.077	0.064	0.013
X2 -> X7	0.174	0.005	0.169
X2 -> X8	-0.238	-0.128	-0.11
X2 -> X9	0.004	0.03	-0.026
X2 -> Xt	-0.439	-0.007	-0.432
X3 -> X5	0.254	0.106	0.148
X3 -> X6	0.379	0.213	0.166
X3 -> X7	0.165	0.152	0.013
X3 -> X8	-0.188	-0.179	-0.009
X3 -> X9	0.174	0.091	0.083
X3 -> Xt	-0.022	0.063	-0.085
X5 -> X6	0.721		0.721
X5 -> X7	-0.026	0.593	-0.619
X5 -> X8	-0.096	-0.198	0.102
X5 -> X9	-0.004	0.018	-0.022
X5 -> Xt	0.244	0.244	0
X6 -> X7	0.821		0.821
X6 -> X8	-0.828	-0.531	-0.297
X6 -> X9	0.403	0.272	0.131
X6 -> Xt	0.128	-0.179	0.307
X7 -> X8	-0.647		-0.647
X7 -> X9	0.532	-0.359	0.891
X7 -> Xt	-0.262	0.115	-0.377
X8 -> X9	0.555		0.555
X8 -> Xt	-0.094	0.034	-0.128
X9 -> Xt	0.061		0.061
	1.435	0.183	1.252

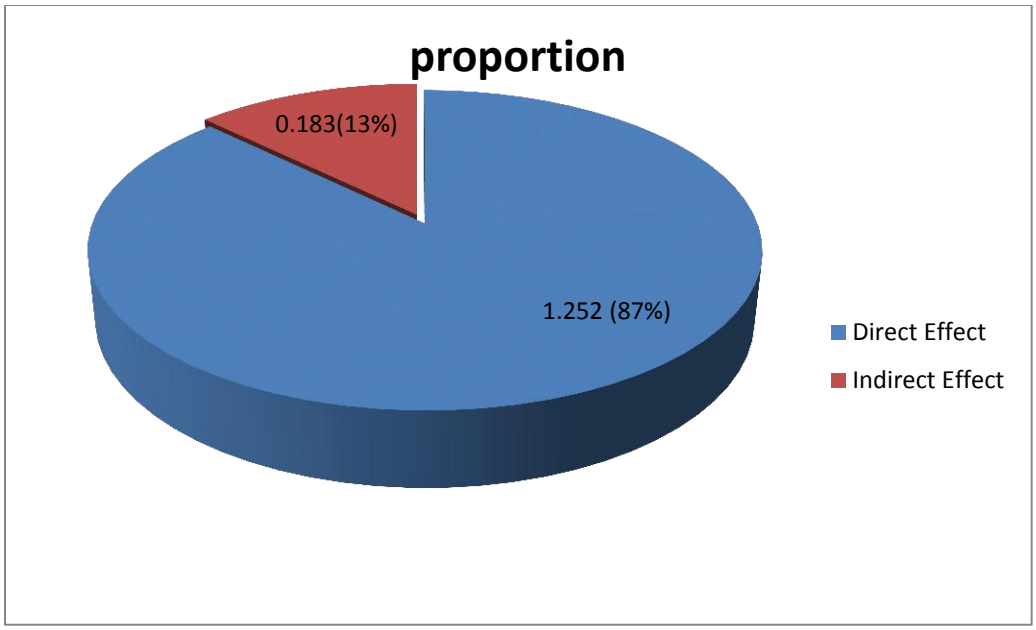

Figure 4.5 Proportion of Total, Direct and Indirect Effect of Variables on English Language

4.10 Research Question 5(II): What are the estimated direct, indirect and total effects of the endogenous variables on Students' achievement in mathematics?

Table 4.24

Paths	Total Effects	Indirect Effects	Direct Effects
X1 -> X4	-0.151		-0.151
X1 -> X5	-0.033	-0.102	0.069
X1 -> X6	-0.009	-0.045	0.036
X1 -> X8	0.062	-0.001	0.063
X1 -> X9	-0.447	0.018	-0.465
X1 -> Xt	0.330	0.019	0.311
X2 -> X4	0.036		0.036
X2 -> X5	-0.177	0.024	-0.201
X2 -> X6	-0.241	-0.105	-0.136
X2 -> X8	0.170	-0.025	0.195
X2 -> X9	-0.005	0.056	-0.061
X2 -> Xt	-0.278	-0.045	-0.233
X3 -> X4	0.262		0.262
X3 -> X5	0.011	0.178	-0.167
X3 -> X6	0.002	0.049	-0.047
X3 -> X8	0.206	0.002	0.204
X3 -> X9	0.152	0.035	0.117
X3 -> Xt	0.039	0.009	0.03
X4 -> X5	0.681		0.681
X4 -> X6	0.585	0.427	0.158
X4 -> X8	0.057	0.050	0.007
X4 -> X9	-0.024	0.041	-0.065
X4 -> Xt	0.183	0.068	0.115
X5 -> X6	0.627		0.627
X5 -> X8	0.041	0.088	-0.047
X5 -> X9	0.117	-0.170	0.287
X5 -> Xt	0.021	0.170	-0.149
X6 -> X8	0.141		0.141
X6 -> X9	-0.253	0.033	-0.286
X6 -> Xt	0.304	0.016	0.288
X8 -> X9	0.238		0.238
X8 -> Xt	-0.055	-0.019	-0.036
X9 -> Xt	-0.081		-0.081
	2.511	0.771	1.74

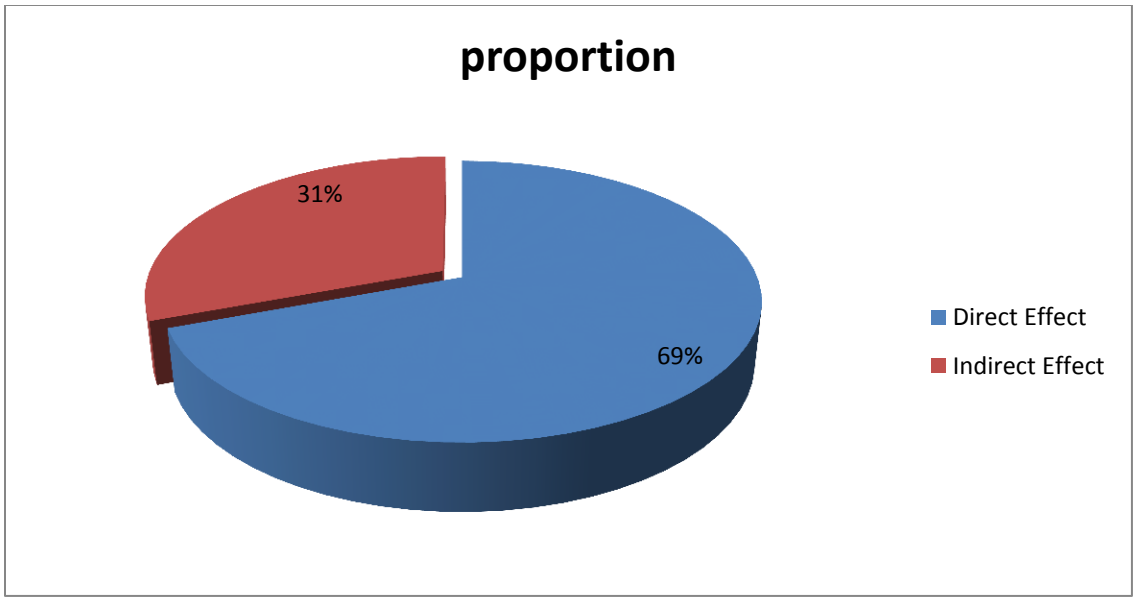

Figure 4.6 Proportion of Total, Direct and Indirect Effect of Variables on Mathematics

Discussion of Findings on Research Questions

Research Question 1

Table 4.1 and 4.2 presents the result of Pearson Product Moment correlation coefficient for the relationship between all the exogenous and endogenous variables in the English language and mathematics model respectively.

On the English language model, school location had significant positive relationship with principal tenure length (0.06), learner-centredness (0.071), teacher effectiveness (TEFF2- 0.145) and students achievement in English language (EACH-0.158). It has negative correlations with all other factors. Likewise, school type has significant positive relations with organisational culture (.033), collaborative and collegial activities (PRODEV1-0.039), learner-centredness (0.128) and teachers effectiveness (TEFF1- 0.115 and TEFF2 – 0.104). It has negative insignificant relationship with other variables. This shows that the location of a school (states) affects the products of the classroom and schooling experience. The more a state gets involved in positioning educational quality, the better the educational affairs of principal, students and teachers. The resultant effect is an increase in students' performance.

Meanwhile, school ownership is not controlled by the state government. Thus, the State may not have an absolute control of educational experience in non-governmental educational institutions. This will invariably affect the leadership, culture and professional development needs of different schools within a state. This result shows that school type contributes to the quality of educational delivery because a school that supports quality delivery in the areas of good positive culture, professional learning and collaboration, learner-centredness and teacher effectiveness will promote educational quality. However, there are significant differences in the learning experiences offered in public and private schools. This is in line with Adepoju and Oluchukwu 2011), who affirmed that school type makes a difference in academic performance.

The tenure length of a principal is observed to have a positive and significant correlation with all the factors and variables: organisational leadership (transformational leadership 0.227 and instructional leadership 0.206), organisational culture (0.220) , professional development (0.269 and 0.212), learner-centredness in English (.123), teacher effectiveness in English (0.136 and 0.112), students non-cognitive outcomes

(0.106 and 0.113) and students achievement in English language (0.104) respectively. It therefore implies that the longer a principal has stayed in the leadership position, the better, the conditions of the variables of this study and many other school variables. A principal that has held the position for some time is better informed of responses to the school's needs. The findings of Brockmeier, Starr, Green, Pate and Leech (2013) confirms that, as the length of a principal's tenure at a school increases, so do the school's mean scale scores increase.

Transformational leadership is positively correlated with all variables and factors except students' achievement in English language. This implies that excellent transformational leadership of the principal does not guarantee high achievements in English language. However, it is observed that instructional leadership factor has significant positive relationship with all other factors and variables, including achievement in English language. This implies that principal's instructional leadership is more needed in boosting achievement in English language, and mathematics. This corroborates the findings of Gaziel (2007) who proclaimed that leadership practices are better captured by measures of instructional leadership and has better impact on achievement. Organisational leadership is found to have positive and significant correlations with all other variables. This ascertains the position of leadership as that of providing direction and influence to all other school-related variables (Leithwood, 2012).

The results of correlations among variables also revealed further that organisational culture is positively and significantly correlated with all the variables in the study, except location. The more positive a school culture, the better the performance of all stakeholders and variables. It is also observed that the relationship between organisational culture, leadership (.445 and0.472 respectively), and professional development (0.563 and 0.549 respectively) are strong. Rautiola (2009) studied the effects of leadership styles and students' academic achievement and discovered that school leadership has both direct and indirect implications leading to students' achievement. These indirect influences lead to increased collective efficacy and improved school culture. It also validates the assertion that the ability to understand and work within a culture is a prerequisite to leadership effectiveness (Hennessey, 1998). In the same vein, Quin, Deris, Bischoff, and Johnson (2015) found positive correlations

between leadership, culture and achievement and also that leadership practices indirectly impact student achievement through creating a positive school culture. The studies of Sackney, (1998), Sweetland and Hoy (2000), Le clear (2005) also found that school culture had significant positive relationship with students achievement. The depth and type of professional development available to teachers is facilitated by the school organisational cultures. A strong, positive, professional culture fosters learning (Gulamhussein, 2013).

The result of correlations between the variables showed that there is an inverse relationship between achievement and teacher effectiveness. This means that teacher effectiveness does not imply increased students achievement. This contradicts many findings that have found out that teaching effectiveness increased students performance (Omeonu 2013, Onabamiro 2014, Adu and Olatundun 2007, Adediwura and Tayo 2007, Wan and Jamal 2012, UNICEF 2002, UNESCO 2004, Wallace Foundation 2013). The inverse relationship between achievement and teacher effectiveness could however be attributed to students rating. In practice, students who are not focused rate good teachers badly among their peers. It could also be alluded to the fact that teachers effectiveness is a function of other variables like, leadership, culture, professional development and practice of learner-centredness without which effectiveness of teachers would not be as remarkable. Likewise, indices of correlations between students' non-cognitive outcomes suggest an inverse relationship between measures of students non-cognitive outcomes and students' achievement in English language. Thus, it can be concluded that principal tenure-length, instructional leadership, organisational culture, and professional development are the major variables that may be accountable for increased students achievement in English language and better education quality performance.

The result of correlations on the mathematics achievement model showed similar patterns of correlations as the English language model except for correlations between professional development and students non-cognitive outcomes which are negatively correlated. On the mathematics achievement model (MACH), students achievement in mathematics had negative correlations with school type (-0.299), learner-centredness (-0.037), teacher effectiveness (TEFF1- -0.026 and TEFF2- -0.006) and students non-cognitive outcomes (NONCOG1- -0.255 and NONCOG2- -0.097). Whereas, the

relationship with organisational leadership, organisational culture and professional development were found to be significant and positive. School location also had significant positive relationship with principal's tenure length (0.06), learner-centeredness (0.201), teacher effectiveness (TEFF1- 0.069 and TEFF2- 0.015) and students achievement in mathematics (MACH- 0.341). It has negative correlations with all other factors. Likewise, school type has significant negative relations with transformational leadership (-0.078) organisational culture (0.179), professional development (-0.241), learner-centredness (-0.038).

Principal tenure length is also positively correlated with all variables and factors aside school type (-0.265). This reiterates the fact that the length of duration of principalship affects the grasp of situations with other school variables. Transformational leadership has inverse relationship with school type and teacher effectiveness whereas instructional leadership is positively correlated. Organisational culture has significant positive relations with principal's tenure length and all other endogenous variables. Teacher effectiveness is positively correlated with all the variables in the mathematics achievement model except transformational leadership (TEFF1- -0.033 and TEFF2- -0.002) and students non-cognitive outcomes (TEFF1- -0.002 and TEFF2- -0.061).

Research Question 2

Before analyzing the structural model, reliability and validity of the model were evaluated and established. To estimate reflective measurement models, outer loadings, composite reliability, average variance extracted, and discriminant validity were evaluated. The results on Table 4.3 - 4.5 show results on measurement model. Measurement component consists of the relationships between the constructs and their indicators, i. e. the items that are used to measure the constructs. A measurement model is said to have satisfactory construct reliability and validity when Cronbach's Alpha is at least 0.7; composite reliability is >0.7 and average variance extracted is >0.5. Based on the analysis, all items in the EACH measurement model have Cronbach's Alpha >0.7. It is ranging from a lower bound of 0.715 to an upper bound of 1.000. Composite reliability also ranged from 0.845 – 1.000 while the average variance extracted (AVE) were ranging from a lower bound of 0.732 to an upper bound of 1.000

Table 4.5, shows the discriminant validity of variables on the EACH measurement model, all the latent constructs have HTMT values of discriminant validity <0.90(0.032 - 0.816). This means the constructs on the model fulfilled the reliability and validity thresholds. Colinearity issue of the constructs was assessed by validating VIF values less than 5. The VIFs of constructs are shown in Table 4.3 and 4.6. All VIFs were < 5; hence colinearity issue is not present between the constructs in the EACH model. To this end, based on the available literature, the EACH measurement model adequately fitted the data which gains support for the proposed theoretical model.

In the same vein, the results on Table 4.12 - 4.14 show results on MACH measurement model. It is deemed satisfactory when composite reliability is >0.7 and average variance extracted is >0.5. Based on the analysis, all items in the MACH measurement model have Cronbach's Alpha >0.7 ranging from a lower bound of 0.713 to an upper bound of 1.000. Composite reliability also ranged from 0.872 – 1.000 while the average variance extracted (AVE) were ranging from a lower bound of 0.773 to an upper bound of 1.000.

Table 4.14, shows the discrimant validity of variables on the MACH measurement model. All the latent constructs have HTMT values of discriminant validity <0.90(0.001 - 0.748). This means the constructs on the model fulfilled the reliability and validity thresholds. Colinearity issue of the constructs was assessed by validating VIF values less than 5. The VIFs of constructs are shown in Table 4.15. All VIFs except teacher effectiveness (TEFF1 and TEFF2 – 6.699) were found to be < 5; hence, the colinearity issue present between the teacher effetiveness factors in the MACH model was treated by retaining only one of the factors in the MACH model. To this end, based on the available literature, the EACH measurement model adequately fitted the data which gains support for the proposed theoretical model.

The structural component of the PLS model consists of the relationships between the variables. The results on Table 4.3-4.5 shows results on EACH structural model [school location, school type, principal tenure-length, organisational leadership, organisational culture, learner-centeredness (English language) and professional development, teachers' effectiveness (English language), students' non-cognitive outcomes, students' achievement in English Language] while the results on Table 4.12-

4.14 show results on MACH structural model [school location, school type, principal tenure-length, organisational leadership, organisational culture, learner-centeredness (mathematics) and professional development, teachers' effectiveness (mathematics), students' non-cognitive outcomes, students' achievement in mathematics]. The assumed relationships between those constructs can be seen from the hypothesized recursive model (Fig. 4.1 and 4. 2). Once the construct measurements were confirmed as reliable and valid, the researcher judged the structural model to examine the model's predictive abilities and the relationships between the model components. The results asserted that the structural model has .

The path coefficients, display how strong the effect of one variable is on the other variable. Moreover, the weight of each path coefficients allows the researcher to rank variables' statistical importance. Table 4.7 shows that among the paths in the EACH model (4.1), the paths between X6-X7, X5-X6, X8-X9, X6-Xt, X4-X5, X3-X4,, X3-X6, X3-X5 have better statistical importance over other paths while X7-X8, X4-X5, X5-X6, X7-X9, X5-X9, X6-Xt, X4-X7, X1-Xt, X1-X7 also have better statistical importance over other paths in the MACH model (Table 4.16). Fiftteen of the hypothesized path relationships among the variables in the EACH model are considered statistically significant because their standard path coefficients are shown to be higher than 0.1 while seventeen paths are significant in the MACH model. This is because the path coefficients values that are positive and close to +1 indicate better strength for analysing the hypothesized relationships. This further explains that organisational leadership has strong effects on organisational culture. Harris 2000; Leclear 2010; and Tsai 2011, found positive and significant relationship between the variables which has been described as intertwining relationship (Harris 2000). Hence, it can be said that organisational leadership and culture influence one another. Also, the relationship between effective teaching and effective leadership is reinforced in the vital role of school culture (Hsin-Hsiange & Mao-neng, 2015)..

The support given to professional development by organisational leadership fosters change and improvement in professional culture and school effectiveness. Principals and administrators are needed to lead educational improvement, foster effective change efforts, lead the implementation of new standards, and are central to

shaping strong, professional school cultures (Deal & Peterson, 1998). According to Ohlson, Swanson, Adams-Manning, and Byrd (2016), culture impacts the staff development and professional growth that happens place within a school. OECD (2009) affirms that the measure of professional development embraced by educators is fundamentally associated with teachers' reported self-efficacy and improved classroom disciplinary climate thereby making learning environment more productive.

Similarly, Magno and Sembrano (2009) elucidate that the use of learner-centred practices in teaching has a significant direct effect on teaching efficacy and effective teaching characteristics. A teacher who uses a learner-centred approach in teaching obtains efficacy in teaching and becomes effective. When a teacher delivers instructions through learner-centred pedagogy, the method increases students participative activities and cognitive focus. An increase in participation and cognitive focus contribute to student achievement (White, 2007).

Numbers within the circles in the hypothesized model illustrate how much the variance of the latent variable is being explained by other latent variables. As Figure 4.1 shows, the coefficient of determination R^2 for EACH model is 0.301 for the achievement in English language variable and Fig. 4.2 (0.299) achievement in mathematics. All other variables had R^2 above 0 .20 except X4 and X7. According to Rigdon (2012), values of 0.20 are considered high in consumer studies. The R^2 generated for EACH structural model is thus, satisfactory. This means that all the variables in the model have predictive ability towards achievement and thus, education quality performance.

As shown on Table 4.9, Cohen's indicator (f^2) is gotten by the consideration and rejection of model constructs (one by one). Exactly how useful each construct is for the adjustment model is evaluated. Values of 0.02, 0.15 and 0.35 are considered small, medium, and large respectively (HAIR et al., 2014) It is generally observed in the EACH model that the effect size of most variables are small (< 0.15), except for the effect of six cases where there were substantial effect sizes of 0.237, 0.242, 0.248 (>0.15) and large effect size of 0.450, 0.426 and 0.957 (>0.35) respectively. On Table 4.18, it is observed that the effect size of most variables on the MACH model are small (< 0.15), except for the effect of six cases where there were substantial effect sizes of 0.237 (>0.15) and large effect size of 0.380, 0.512, 0.787 and 0.884 (>0.35) respectively. Effect size is essential

considering the way effect size guide researchers to pass judgement on the overall contribution of a research study, as Chin, Marcolin, and Newsted (1996) declared that researchers ought not just report whether the relationship between variables is critical or not, but in addition, report the effect size between these variables.

The Stone-Geisser indicator (Q^2) assesses how much the model approaches what was anticipated from it (or the model prediction quality or accuracy of the adjusted model). As criteria of the evaluation, values greater than zero were obtained (HAIR et al., 2014). A perfect model would have $Q^2 = 1$ (shows that the model reflects reality – without errors). Both are obtained by using the blindfolding module on the SmartPLS. The values of Q^2 are obtained by reading the general redundancy of the models. Table 4.10 (X4 = -0.005) and Table 4.19 (X7 = - 0.078) are less than zero and are therefore considered to be redundant in the model. The values of Q^2 indicate the variables that are redundant in the model. All other constructs are important for the general adjustment of the model because they have Q^2 values greater than zero.

Although the SmartPLS team gave a note of caution on the application of model fit indices to PLS-SEM. Hair et al. (2017a) reiterates that researchers should be very cautious to report and use model fit in PLS-SEM because many of the proposed criteria are in their early stages of research and are not fully understood (e.g., the critical threshold values). This research has therefore reported only the prominent model specification criteria (i.e SRMR).

The SRMR is defined as the difference between the observed correlation and the model implied correlation matrix. Henseler and Sarstedt (2014) introduced SRMR as a goodness of fit measure for PLS-SEM that can be used to avoid model misspecification. The SRMR allows assessing the average magnitude of the discrepancies between observed and expected correlations as an absolute measure of (model) fit criterion. A value less than 0.10 and of 0.08 (in conservative sense) are considered a good fit (Hair et al., 2014). The PLS bootstrapping procedure provides the SRMR criterion. The SRMR still offers the most acceptable model specification on PLS-SEM. Table 4. 13(EACH - 0.059) and Table 4.22(MACH- 0.060) SRMR metrics show that the models are well specified because it is observed here that SRMR values are less than 0.08; hence it is safe to conclude that the model is meeting the goodness of fit criteria.

Research Question 3

The result of findings based on Table 4.8 and 4.10 for the EACH model and Table 4.17 and 4.19 for the MACH model is used to assess the overall meaningfulness of the model. The coefficient of determination (R^2 value) delineates the structural model's predictive accuracy and is determined as the squared correlation between a particular endogenous construct's actual and predicted values (Hair et al., 2014). According to Cohen 1988, in the area of social and behavioural sciences, R^2 value of 2% is classified with a small effect, R^2=13% as a median effect and R^2=26% as a large effect (Cohen, 1988).

It is observed that the R^2 range of the EACH model is 0.06 to 0.56. Most of the R^2 values in the model are within the median-upper range except for X4 which is 0.06 below the small effect. Likewise, in the MACH model, it is observed that the R^2 range is 0.03 to 0.56. Most of the R^2 values in the model are within the median-upper range except for X4 (0.04) and X7 (0.05) which falls below small effect metrics.

Hair et al (2017b), posit that in addition to assessing the magnitude of the R^2 values which is a basis for predictive accuracy, researchers should also examine Stone-Geisser's Q^2 value. The Q^2 value of all variables in the model gives better insight into the predictive capability of the endogenous constructs. The Stone-Geisser Indicator (Q^2) evaluates how much the model approaches what was expected of it (or the model prediction quality or accuracy of the adjusted model). $Q^2 > 0$ in a reflective endogenous variable indicates the model predictive relevance while a value of $Q^2 < 0$ indicates the lack of predictive capability of the model; A perfect model would have $Q^2 = 1$ (shows that the model reflects reality – without errors). The extracted cross validated redundancy determines the predictability of the endogenous constructs and thus, reveals the model quality. According to Hair et al.,(2012), Q^2 assesses not only values built around the model but also the parameter estimates of the model.

Table 4.12 shows that X4 (-0.005) has no predictive relevance to the model and is therefore expunged from the model that predicts the English language (Fig 4.5) while Table 4.21 shows that X7 (-0.078) has no predictive relevance to the model and is therefore expunged from the model that predicts the mathematics achievement (4.13).

The EACH (Fig. 4.5) and MACH (Fig 4.13) models were re-specified (Fig. 4.17 and Fig 4.18) after expunging the redundant variables. The parsimonious models have R^2 values and Q^2 values that meets the metric threshold. Hence, we can conclude that the explanatory power of the model of this study based on the R^2 and Q^2 is satisfactory.

Research Question 4

The R^2 gives us the combined effects of independent variables on the dependent variable i.e. it represents the amount of variance in the endogenous constructs explained by all of the exogenous constructs linked to it (Hair et al., 2014). The R^2 value ranges (0 to 1) and value near to 1 indicates high predictive accuracy. Acceptable R^2 values depend on the model complexity and the research discipline (Hair et al., 2014). According to Cohen 1988, in the area of social and behavioral sciences, R^2 value of 2% is classified with a small effect, R^2=13% as a median effect and R^2=26% as a large effect while Rigdon (2012) stipulate that values of 0.20 are considered high in consumer studies.

Tables 4.21 (EACH) and 4.22 (MACH) show the R2 value for different variables in the parsimonious models. The R^2 value of students achievement in English Language (dependent variable) for this study is 0.296 i.e. the combined effect of all the independent variables can cause 29.6% variation in students achievement in English Language (dependent variable). The R^2 value (0.420) means that only 42% of the variance in students non-cognitive outcomes was accounted for by location, school type, principal tenure length, organisational culture, professional development, learner-centredness and teacher effectiveness. The remaining percentage variance was as a result of other variables not included in the EACH model.

Similarly, the R^2 value (0.563) means that only 56.3% of the variance in teacher effectiveness was accounted for by location, school type, principal tenure length, organisational culture, professional development and learner-centredness. An R^2 value (0.117) means that only 11.7% of the variance in learner-centredness was accounted for by location, school type, principal tenure length, organisational culture and professional development. Also, an R^2 value (0.443) means that only 44.3% of the variance in professional development was accounted for by location, school type, principal tenure length and organisational culture while An R^2 value(0.078) means that only 7.8% of the variance in professional development was accounted for by location, school type and

principal tenure length. Thus, it can be observed that the percentages of variance accounted for by the latent variables in the parsimonious model for students' achievement in English Language all had large effects except for the variance in learner-centredness and organisational culture which were below median effects. Since many of the percentages of variance accounted for by other variables in the model are large, we can conclude that the explanatory power of the EACH model of this study is quite high.

The percentages of variance illustrated on the MACH model shows that The R^2 value of students achievement in mathematics (dependent variable) for this study is 0.278 i.e. the combined effect of all the independent variables can cause 27.8% variation in students achievement in mathematics (dependent variable). The R^2 value (0.302) means that only 30.2% of the variance in students non-cognitive outcomes was accounted for by location, school type, principal tenure length, organisational leadership, organisational culture, professional development, and teacher effectiveness. The remaining percentage variance was as a result of other variables not included in the MACH model.

Similarly, the R^2 value(0.070) means that only 7% of the variance in teacher effectiveness was accounted for by location, school type, principal tenure length, organisational leadership, organisational culture and professional development. An R^2 value (0.585) means that only 58.5% of the variance in professional development was accounted for by location, school type, principal tenure length, organisational leadership and organisational culture while an R^2 value (0.458) means that only 7.8% of the variance in organisational culture was accounted for by location, school type, principal tenure length and organisational leadership while an R2 of (0.083) means that only 8.3% of the variance in organisational leadership was accounted for by location, school type and principal tenure length. Thus, it can be observed that the percentages of variance accounted for by the latent variables in the parsimonious model for students' achievement in mathematics all had large effects except for the variance in teacher effectiveness and organisational leadership which were below median effects. Since many of the percentages of variance accounted for by other variables in the model are large, we can conclude that the explanatory power of the MACH model of this study is quite high.

Research Question 5

Tables 4.23 and 4.24 show the estimated direct, indirect and total effects of variables in the EACH and MACH models. The interpretation of direct, indirect and total effects of both models will be done in steps.

Direct Effects

The direct effects presented on the table 4.23 are the changes in standard deviation unit of criterion variables (in the re-specified EACH model). The coefficient give change (increase or decrease) in the criterion variable in standard deviation units when there is one full standard deviation (above the mean) change in the predictor. Table 4.23 shows that the direct effect of school location on organisational culture is -0.099. This implies that organisational culture decreased by 0.099 for every one standard deviation increase in location, controlling for other predictors. So also is professional development (0.04 increase), learner-centredness (0.04 increase), teacher effectiveness (0.025 decrease), students non-cognitive outcomes (0.446 decrease) and students achievement in English language (0.201 increase) for every one standard deviation increase in location, controlling for other predictors.

The direct effect of school type on organisational culture is 0.112. This implies that organisational culture increased by 0.112 for every one standard deviation increase in school type, controlling for other predictors. So also is professional development (0.013 increase), learner-centredness (0.169 increase), teacher effectiveness (0.11 decrease), students non-cognitive outcomes (0.026 decrease) and students achievement in English language (0.432 decrease) for every one standard deviation increase in school type controlling for other predictors. Similarly, the direct effect of principal tenure length on organisational culture is 0.148. This implies that organisational leadership increased by 0.148 for every one standard deviation increase in principal tenure length, controlling for other predictors. This is also true of professional development (0.166 increase), learner-centredness (0.013 increase), teacher effectiveness (0.009 decrease), students non-cognitive outcomes (0.083 increase) and students achievement in English language (0.085 decrease) for every one standard deviation increase in principal tenure length controlling for other predictors.

In the same vein, the direct effect of organisational culture on professional development is 0.721. This implies that professional development increased by 0.721 for every one standard deviation increase in organisational culture, controlling for other predictors. So also is learner-centredness (0.619 decrease), teacher effectiveness (0.102 increase), students non-cognitive outcomes (0.022 decrease) while students achievement in English language (0.000 – no direct effect) for every one standard deviation increase in organisational culture controlling for other predictors.

The direct effect of professional development on learner-centredness is 0.821. This implies that learner-centredness increased by 0.821 for every one standard deviation increase in professional development, controlling for other predictors. This applies to teacher effectiveness (0.297 decrease), students non-cognitive outcomes (0.131 increase) and students achievement in English language (0.307 increase) for every one standard deviation increase in professional development controlling for other predictors. Also, the direct effect of learner-centredness on teacher effectiveness is -0.647. This implies that teacher effectiveness decreased by 0.647 for every one standard deviation increase in learner-centredness, controlling for other predictors. Similarly students' non-cognitive outcomes (0.891 increase) and students achievement in English language (0.377 decrease) for every one standard deviation increase in learner-centredness controlling for other predictors.

The direct effect of teacher effectiveness on students non-cognitive outcomes is 0.555 This implies that students non-cognitive outcomes increased by 0.555 for every one standard deviation increase in teacher effectiveness, controlling for other predictors. So also is students achievement in English language (0.128 decrease) while the direct students non-cognitive outcomes on students achievement in English language is 0.061 increase in students non-cognitive outcomes for every one standard deviation increase in learner-centredness controlling for other predictors.

The results of direct effects presented on table 4.24 shows the changes in standard deviation unit of criterion variables (in the re-specified MACH model). There is a coefficient change (increase or decrease) in the criterion variable in standard deviation units when there is one full standard deviation (above the mean) change in the predictor. Table 4.24 shows that the direct effect of school location on organisational leadership is -

0.151. This implies that organisational leadership decreased by 0.151 for every one standard deviation increase in location, controlling for other predictors. So also is organisational culture (0.069 increase) and professional development (0.036 increase), teacher effectiveness (0.063 increase), students non-cognitive outcomes (0.465 decrease) and students achievement in mathematics (0.311 increase) for every one standard deviation increase in location, controlling for other predictors.

The direct effect of school type on organisational leadership is 0.036. This implies that organisational leadership decreased by 0.036 for every one standard deviation increase in school type, controlling for other predictors. So also is organisational culture (0.201 decrease), professional development (0.136 decrease), teacher effectiveness (0.195 increase), students non-cognitive outcomes (-0.061 decrease) and students achievement in mathematics (0.233 decrease) for every one standard deviation increase in school type controlling for other predictors. Similarly, the direct effect of principal tenure length on organisational leadership is 0.262. This implies that organisational leadership increased by 0.262 for every one standard deviation increase in principal tenure length, controlling for other predictors. So also is organisational culture (0.167 decrease), professional development (0.047 decrease), teacher effectiveness (0.204 increase), students non-cognitive outcomes (0.117 increase) and students achievement in mathematics (0.03 increase) for every one standard deviation increase in principal tenure length controlling for other predictors.

The direct effect of organisational leadership on organisational culture is 0.681. This implies that organisational culture increased by 0.681 for every one standard deviation increase in organisational leadership, controlling for other predictors. So also is professional development (0.158 increase), teacher effectiveness (0.007 increase), students non-cognitive outcomes (0.065 decrease) and students achievement in mathematics (0.115 increase) for every one standard deviation increase in organisational leadership controlling for other predictors. In the same vein, the direct effect of organisational culture on professional development is 0.627. This implies that professional development increased by 0.627 for every one standard deviation increase in organisational culture, controlling for other predictors. So also is teacher effectiveness (0.047 decrease), students non-cognitive outcomes (0.287 inecrease) while students

achievement in mathematics (0.149 decrease) for every one standard deviation increase in organisational culture controlling for other predictors.

The direct effect of professional development on teacher effectiveness is 0.141. This implies that teacher effectiveness decreased by 0.141 for every one standard deviation increase in professional development, controlling for other predictors. So also is students non-cognitive outcomes (0.286 decrease) and students achievement in mathematics (0.288 increase) for every one standard deviation increase in professional development controlling for other predictors.

The direct effect of teacher effectiveness on students non-cognitive outcomes is 0.238. The implication is that students non-cognitive outcomes decreased by 0.238 for every one standard deviation increase in teacher effectiveness, controlling for other predictors. This applies to students achievement in mathematics (0.036 decrease) while the direct students non-cognitive outcomes on students achievement in mathematics is -0.081 increase in students non-cognitive outcomes for every one standard deviation increase in learner-centredness controlling for other predictors.

Indirect Effects

The indirect effect is statistically estimated as the product of direct effects, i.e the standardized regression coefficients of their paths. SmartPLS gives a comprehensive table of specific indirect paths which shows the indirect linkages of variables in the EACH and MACH models with their standardized coefficients . The EACH and MACH specific indirect paths are shown in appendix XI

Total Effects

The total effects are the sum of all direct and indirect effects of one variable on the other. For instance, table 4.23 (EACH model) showed that the total effect of school location on organisational culture was -0.145. This implies that organisational culture decreased by 0.145 for every one standard deviation increase in location via all presumed direct and indirect causal links between them. So also is professional development (0.077 decrease), learner-centredness (0.067 increase), teacher effectiveness (0.066 decrease), students non-cognitive outcomes (0.432 decrease) and students achievement in English

language (0.145 increase) for every one standard deviation increase in location, via all presumed direct and indirect causal links between them.

The total effect of school type on organisational culture is 0.095. This implies that organisational culture increased by 0.095 for every one standard deviation increase in school type, via all presumed direct and indirect causal links between them. So also is professional development (0.077 increase), learner-centredness (0.174 increase), teacher effectiveness (0.238 decrease), students non-cognitive outcomes (0.004 increase) and students achievement in English language (0.439 decrease) for every one standard deviation increase in school type via all presumed direct and indirect causal links between them. Similarly, the total effect of principal tenure length on organisational culture is 0.254. This implies that organisational culture increased by 0.254 for every one standard deviation increase in principal tenure length, via all presumed direct and indirect causal links between them. So also is professional development (0.379 increase), learner-centredness (0.165 increase), teacher effectiveness (0.188 decrease), students non-cognitive outcomes (0.174 increase) and students achievement in English language (0.022 decrease) for every one standard deviation increase in principal tenure length via all presumed direct and indirect causal links between them.

In the same vein, the total effect of organisational culture on professional development is 0.721. This implies that professional development increased by 0.721 for every one standard deviation increase in organisational culture, via all presumed direct and indirect causal links between them. So also is learner-centredness (0.026 decrease), teacher effectiveness (0.096 decrease), students non-cognitive outcomes (0.004 decrease) while students achievement in English language (0.244 increase) for every one standard deviation increase in organisational culture via all presumed direct and indirect causal links between them. the total effect of professional development on learner-centredness is 0.821. This implies that learner-centredness increased by 0.821 for every one standard deviation increase in professional development, via all presumed direct and indirect causal links between them. So also is teacher effectiveness (0.828 decrease), students non-cognitive outcomes (0.403 increase) and students achievement in English language (0.128 increase) for every one standard deviation increase in professional development via all presumed direct and indirect causal links between them. The total effect of learner-

centredness on teacher effectiveness is -0.647. This implies that teacher effectiveness decreased by 0.647 for every one standard deviation increase in learner-centredness, via all presumed direct and indirect causal links between them. So also is students non-cognitive outcomes (0.532 increase) and students achievement in English language (0.262 decrease) for every one standard deviation increase in learner-centredness via all presumed direct and indirect causal links between them.

The total effect of teacher effectiveness on students' non-cognitive outcomes is 0.555. This implies that students non-cognitive outcomes increased by 0.555 for every one standard deviation increase in teacher effectiveness, via all presumed direct and indirect causal links between them. So also is students achievement in English language (0.094 decrease), while the total effect of students' non-cognitive outcomes on students' achievement in English language is 0.061 increase for every one standard deviation increase in learner-centredness via all presumed direct and indirect causal links between them.

Table 4.26 (MACH model) also shows that the total effect of school location on organisational leadership is -0.151. This implies that organisational leadership decreased by 0.151 for every one standard deviation increase in location via all presumed direct and indirect causal links between them. So also is organisational culture (0.033 decrease) and professional development (0.009 decrease), teacher effectiveness (0.062 increase), students non-cognitive outcomes (0.447 decrease) and students' achievement in mathematics (0.330 increase) for every one standard deviation increase in location, via all presumed direct and indirect causal links between them.

The total effect of school type on organisational leadership is 0.036. This implies that organisational leadership increased by 0.036 for every one standard deviation increase in school type, via all presumed direct and indirect causal links between them. So also is organisational culture (0.177 decrease), professional development (0.241 decrease), teacher effectiveness (0.170 increase), students non-cognitive outcomes (0.005 decrease) and students achievement in English language (0.278 decrease) for every one standard deviation increase in school type via all presumed direct and indirect causal links between them. Similarly, the total effect of principal tenure length on organisational leadership is 0.262. This implies that organisational leadership increased by 0.262 for

every one standard deviation increase in principal tenure length, via all presumed direct and indirect causal links between them. So also is organisational culture (0.011 increase), professional development (0.002 increase), teacher effectiveness (0.206 increase), students non-cognitive outcomes (0.152 increase) and students achievement in Mathematics (0.039 increase) for every one standard deviation increase in principal tenure length via all presumed direct and indirect causal links between them.

The total effect of organisational leadership on Organisational culture is 0.681. This implies that organisational culture increased by 0.681 for every one standard deviation increase in organisational leadership, via all presumed direct and indirect causal links between them. So also is professional development (0.585 increase), teacher effectiveness (0.057 increase), students non-cognitive outcomes (-0.024 decrease) and students achievement in mathematics (0.183 increase) for every one standard deviation increase in organisational leadership controlling for other predictors. In the same vein, the total effect of organisational culture on professional development is 0.627. This implies that professional development increased by 0.627 for every one standard deviation increase in organisational culture, via all presumed direct and indirect causal links between them. So also is teacher effectiveness (0.041 increase), students non-cognitive outcomes (0.117 increase) while students achievement in mathematics (0.021 increase) for every one standard deviation increase in organisational culture via all presumed direct and indirect causal links between them.

The total effect of professional development on teacher effectiveness is 0.141. This implies that teacher effectiveness increased by 0.141 for every one standard deviation increase in professional development, via all presumed direct and indirect causal links between them. So also is students non-cognitive outcomes (0.253 decrease) and students achievement in mathematics (0.304 increase) for every one standard deviation increase in professional development via all presumed direct and indirect causal links between them.

The total effect of teacher effectiveness on students non-cognitive outcomes is 0.238. This implies that students non-cognitive outcomes increased by 0.238 for every one standard deviation increase in teacher effectiveness, via all presumed direct and indirect causal links between them. So also is students achievement in mathematics

(0.055 decrease) while the total effect of students non-cognitive outcomes on students achievement in mathematics is -0.081 increase for every one standard deviation increase in students achievement in mathematics via all presumed direct and indirect causal links between them.

In conclusion, Fig 4.5 presents the summary of proportions of direct, indirect and total effects of variables in the EACH model. The result reveals that all the variables in the EACH model have about 87% direct causal effects among variables (organisational variables, teacher effectiveness, students non-cognitive outcomes and students achievement in English language) while the remaining proportion, 13% of the causal relationship among the variables in the model, are indirect. Similarly, Fig 4.6 shows that all the variables in the MACH model have about 69% direct causal effects on students achievement in mathematics while the remaining proportion, 31% of the causal relationship among the variables in the model, are indirect. This shows that the variables in the EACH and MACH models have greater direct than indirect effect. This result is in line with the recommendation that it is better for variables in the model to be directly influenced by the criterion variable than for the effects to be indirect (Blalock 1961 in Kerlinger and Lee; 2000).

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

Based on the results highlighted in Chapter Four, this chapter presents the summary of the findings, their educational implications, conclusion, recommendations as well as suggestions for further studies.

5.1 Summary of findings

Educational quality performance has been associated with factors delineating the standards or quality in education. A number of factors that may be peculiar to school organisation have been reported to be a catalyst through which some educational quality can be pursued, enhanced and ascertained. This study investigated the impact of some school organisational dynamics by determining the extent to which school location, school type, principal tenure-length, organisational leadership, organisational culture, learner-centeredness and professional development, teachers' effectiveness, students' non-cognitive outcomes, students' achievement in English language and students' achievement in mathematics have causal relationships.

In an attempt to integrate these variables and present a comprehensive analysis of factors that could explain the variance in students achievement in English language and mathematics, two models of presumed causal relationships among the variables were hypothesized and tested. The variables were observed through the use of correlational data. The sample included 3331 students, 162 teachers and 81 principals drawn from three states (Lagos, Oyo and Ondo) in south-western Nigeria. Seven instruments were used to collect data for the study. The findings of this study are summarized as follows:

1. There existed a significant causal relationships among the variables in EACH and MACH models.
2. The pattern of the correlations in the observed data for EACH and MACH were found to be consistent with the new models (the discrepancy between original and

reproduced correlation were minimal). The new models are therefore considered tenable in explaining the causal interaction among the selected variables

3. The exogenous and endogenous variables were significantly correlated with students' achievement in English language and mathematics.
4. The large proportion of the variation observed in EACH and MACH was directly caused by school organisational variables and other education quality performance indicators while the indirect causal relationship accounted for was minimal. A large percentage of the variation in MACH was accounted for by professional development, organisational culture and students non-cognitive outcomes while a larger percentage of the variation in EACH was accounted for by teacher effectiveness, professional development and students' non-cognitive outcomes respectively.
5. The results of the estimations and assessment of measurement and structural models show that the data fit the models
6. Teacher effectiveness was most influential in the EACH model while professional development was most influential in the MACH model.
7. Organisational leadership was not relevant in the prediction of the EACH model while learner-centredness was not relevant to the prediction of the MACH model.
8. The proportion of all direct effects is greater than the total indirect effects of variables on EACH and MACH
9. Students non-cognitive outcomes have only direct causal effects on EACH and MACH models
10. The causal relationship between learner-centredness and teacher effectiveness had the largest effect size in EACH and MACH models.

5.2 Conclusion

Based on the findings, it could be concluded that organisational factors are key factors that predetermine the educational quality performance variables. From the sampled schools in south-western Nigeria, it is observed that regardless of a school location, school type or policies guiding a school, a school as an institution where there are interactions of various facets and different stakeholders should have its own methods,

and techniques that are unique to school operations. This is because quality improvements in schools and in educational performance require institutional changes that will bring about positive developments to a school organisation. As observed with organisational leadership, culture and professional development, these variables are pivotal to the good structuring and productivity levels of a school because when effective leaders operate with professional culture in a positive cultural environment, it is spontaneous for productivity to increase and for other school variables to be affected positively.

It is also noted that principal's tenure-length had positive correlations and was directly or indirectly linked to the organisational variables. A large proportion of the variance in the models was accounted for by organisational leadership. This also justifies the position of leadership as that of direction and influence; the more a leader is acquainted with a school's climate and functioning , the better the impact that could be made by the principal or felt on other school variables. Therefore, it is safe to conclude that organisational variables have significant influence on education quality performance through enhancement of school effectiveness and positioning of ideal practices in school organisations.

5.3 Recommendations

The study exposed so many ideals that should be promoted within school organisations. For instance, school organisational leadership should not be promotional but be based on proficiency because of the central role it assumes and its influence and associations on other variables. Therefore, efforts should be made to develop principals professionally before they assume leadership role. Likewise, instability of the tenure of school principals may dampen the change efforts in a school organisation. Principals should be given enough time (minimum of three years) to impact on school systems.

This research has helped stakeholders to illustrate that building positive school culture is very important to school functioning and quality improvement, it should be given priority and checkmated from time to time

Professional learning and development should be structured, systematic and evaluated to establish its effectiveness and suitability. Deliberate effort should be made to

incorporate professional school culture that enhances learner-centredness and supports teacher effectiveness. This will make school goals more achievable.

Since the organisational variables generally affect educational quality performance, efforts should be made by school owners to institutionalize the ideal school organisational setup before establishing schools. This will keep them in check from time to time. Only professionally inclined persons that are capable of building solid foundations of professional school culture should be absorbed into the academic profession.

The extent of learner-centredness of a teacher or school leaders should form a fundamental basis for absorption and promotion of teachers and teacher professional bodies. Thus, efforts should be made to standardize instruments to examine teachers at points of entry into teaching profession and ascertain the level of psychological preparedness for their roles.

Summarily, only teachers willing learn, unlearn and relearn through various professional learning opportunities should be absorbed. There should be a sstandard for ascertaining that teachers mandatorily engage in professional development activities and this should also form a basis for their promotions.

5.4 Study Limitations

i. This study was limited to south-western Nigeria. It was also limited to public and private schools.
ii. The study adopted only exploratory approach and PLS-SEM.
iii. The study made use of data for only a year.
iv. The study made use of survey research design.
v. The relied on paper and pencil pattern of eliciting information.
vi. The study relied on data from examining body (WAEC).

5.5 Suggestions for Further Studies

i. The study could be replicated with focus on other states in Nigeria with the inclusion of federal, military and missionary schools.
ii. A confirmatory approach and CB-SEM can be used for

iii. A trend analysis can be used to further ascertain the findings of the study in relation to the sampled schools.

iv. The study can be conducted experimentally.

v. The method of eliciting response could be replaced with a computerised programme which may make respondents more sincere and objective with their responses.

vi. The study could be carried out nation-wide to increase the sample size of schools and obtain more generalizable results.

vii. A standardized teacher-made test that will be uniformly administered on students across the nation can be prepared instead of relying solely on the examination bodies.

viii. This type of research should be conducted at intervals on a national scale. This will assist in early diagnoses and remediation for qualitative education.

5.6 Contribution to Knowledge

This study has made significant contributions to knowledge in the following areas:

i. It investigated the causal link between organisational variables and educational quality performance

ii. The study attempted filling the research gap from previous studies by providing empirical data to establish predictive ability of orgnanisational variables on education quality performance variables.

iii. It generated a theory through parsimonious causal modelling of school organisational dynamics and education quality performances which can be further verified.

iv. The method of data gathering and analysis has openned up new areas to generate more interesting findings about how organisational dynamics, predict or determine education quality performance

v. The study established the causal relationships between/among the variables of study and explained their effects of the linkages.

vi. The study divulged information to education stakeholders on the importance of each of the organisational varables on the success or achievement of educational goals.

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APPENDICES

APPENDIX I

(for EACH and MACH model)

INTERNATIONAL CENTRE FOR EDUCATIONAL EVALUATION

UNIVERSITY OF IBADAN

Principal Leadership Practices Questionnaire (PLPQ)

Dear Teachers,

Researchers have studied many variables affecting the quality education being provided by different school organisations as it affects student performance. The purpose of this study is to explore on how some of the variables below affect school outcomes. Your school has been chosen to participate in this study. This survey will provide the researcher with information regarding your perspective of some organisational dynamics relative to the improvement in academic achievement of students and quality education in Nigeria. All participants' responses are confidential. Thank you as you take out time to complete this survey despite your already lined up activities.

Yours faithfully,

Hafsat O. Akanni

Demographic information

1. Type of school: Private School ☐ Public School ☐ Unity School ☐
2. School name: _____
3. State: _____
4. Local Govt. Area: _____
5. Gender: Female ☐ Male ☐
6. Years of teaching experience: 0-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ ☐ 20+
7. Years working with current principal: ≤1 ☐ 2-3 ☐ 4-5 ☐ 6+ ☐
8. Highest Level of education: Bachelor degree: ☐ Masters' degree: ☐ Doctorate degree:

Section B: Transformational Leadership Practices

This part is meant to elicit responses about the practices your principal engage in as a school leader.

Instruction: Please respond by considering how well each statement applies to your school principal. Using the following key, circle the number that represents your answer to each of the items on the scale below.

Key: 1- Strongly disagree **2-** Disagree **3-** Agre**e** **4-** Strongly agree

S/N	Item	DEGREE OF AGREEMENT			
1.	has the capacity to overcome most challenges in the school.	1	2	3	4
2.	commands respect from teachers and students	1	2	3	4
3.	Allows teachers to take leadership roles.	1	2	3	4
4.	symbolizes success and accomplishment within the profession of education.	1	2	3	4
5.	set good examples for teaching staff members to follow.	1	2	3	4
6.	provides for extended training to help develop my knowledge and skills relevant to teaching.	1	2	3	4
7.	provides the necessary resources to support my implementation of the school's programmes.	1	2	3	4
8.	treats me as an individual with unique expertise.	1	2	3	4
9.	takes my opinion into consideration when initiating actions that affect my work.	1	2	3	4
10.	provides moral support that make me feel appreciated for my contribution.	1	2	3	4
11.	stimulates me to think about what I am doing for my students.	1	2	3	4
12.	provides information that helps me think of ways to improve my teaching	1	2	3	4
13.	insists on only the best performance from the school's teachers.	1	2	3	4
14.	shows us that there are high expectations for the teachers.	1	2	3	4
15.	does not settle for second best in the performance of our work as school teaching staff.	1	2	3	4

Section C: Instructional Leadership Practices

Instruction: Please respond by considering how well each statement applies to your school principal. Using the following key, circle the number that represents your answer to each of the items on the scale below.

Key: 1- Not at all, **2-** once in a while, **3-** Sometimes, **4-** fairly often, **5-** Frequently if not always.

S/N	Items	Frequency				
1.	Develops school goals which promote high standards and expectations for all students	1	2	3	4	5
2.	Visits the classroom to ensure classroom instruction aligns with school goals	1	2	3	4	5
3.	Communicates the school's academic goals to teaching staffs	1	2	3	4	5
4.	Ensures that curricular materials are consistent with the school goals (e.g are materials available and adequate to support goals of teaching-learning)	1	2	3	4	5
5.	Develops school goals that are well defined (e.g., responsibilities, time frames, and evaluation criteria)	1	2	3	4	5
6.	Develops data-driven academic records in collaboration with teachers	1	2	3	4	5
7.	Provides private feedback to student effort	1	2	3	4	5
8.	Works with students on academic tasks	1	2	3	4	5
9.	Ensures that instructional time is not interrupted	1	2	3	4	5
10.	Provides public praise of outstanding student performance	1	2	3	4	5
11.	Provides public praise of outstanding teacher performance	1	2	3	4	5
12.	Evaluates teachers to improve instructional practice	1	2	3	4	5
13.	Works with teachers to interpret assessment data for instructional implications	1	2	3	4	5
14.	Encourages teachers to use data analysis of student academic progress	1	2	3	4	5
15.	Encourages teachers to attend professional development activities that are aligned with school goals	1	2	3	4	5
16.	Schedules the school day for common planning time	1	2	3	4	5
17.	Observes teachers for professional development instead of evaluation	1	2	3	4	5
18.	Plans professional learning activities around teacher needs	1	2	3	4	5
19.	Supports individualized professional development plans	1	2	3	4	5

Thank you for taking your time to complete this questionnaire

APPENDIX II

(for EACH and MACH model)

INTERNATIONAL CENTRE FOR EDUCATIONAL EVALUATION

UNIVERSITY OF IBADAN

School Culture Survey (SCS)

Dear Teachers,

The instrument below is meant to know your views about the norms, practices and how you do things in your school.

Yours faithfully,

Hafsat O. Akanni

Demographic information

1. Type of school: Private School ☐ Public School ☐ Unity School ☐
2. School name: _____
3. State: _____
4. Local Govt. Area: _____
5. Gender: Female ☐ Male ☐
6. Years of teaching experience: 0-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ ☐ 20+
7. Years working with current principal: ≤1 ☐ 2-3 ☐ 4-5 ☐ 6+ ☐
8. Highest Level of education: Bachelor degree: ☐ Masters' degree: ☐ Doctorate degree: ☐

Instruction: Using the following key, circle the number that represents your answer to each of the statements below. Please respond by answering - to what extent each of the statements are true of your school.

Key: 1- definitely not true **2-** not true, **3-** somehow true, **4-** , true, **5-** certainly true.

In my school, _____

S/N	Item	Degree of Certainty				
1.	Leaders value teachers' ideas	1	2	3	4	5
2.	Leaders take time to praise teachers that perform well.	1	2	3	4	5
3.	Leaders in our school facilitate teachers working together	1	2	3	4	5
4.	Teachers are kept informed on current issues in the school	1	2	3	4	5
5.	My involvement in policy or decision-making is taken seriously	1	2	3	4	5
6.	Teachers are rewarded for trying out new ideas and techniques.	1	2	3	4	5
7.	Teachers are encouraged to share ideas	1	2	3	4	5
8.	Teachers spend considerable time planning together	1	2	3	4	5
9.	Teachers take time to observe each other teaching	1	2	3	4	5
10.	Teachers are generally aware of what other teachers are teaching	1	2	3	4	5
11.	Teachers work together to develop and evaluate programs and projects	1	2	3	4	5
12.	Teaching practice disagreements are voiced openly and discussed	1	2	3	4	5
13.	Teachers utilize professional networks to obtain information and resources for classroom instruction.	1	2	3	4	5
14.	The school mission provides a clear sense of direction for teachers.	1	2	3	4	5
15.	Teachers understand the mission of the school	1	2	3	4	5
16.	Teachers are willing to help each other out whenever there is a problem	1	2	3	4	5
17.	Teachers ideas are valued by other teachers	1	2	3	4	5
18.	Teachers work cooperatively in groups	1	2	3	4	5

19.	Parents trust teachers professional judgements	1	2	3	4	5
20.	Students generally accept responsibility for their schooling; for example, they engage mentally in class and complete homework assignments.	1	2	3	4	5

Thank you for taking your time to complete this questionnaire

APPENDIX III

(MACH MODEL)

INTERNATIONAL CENTRE FOR EDUCATIONAL EVALUATION

UNIVERSITY OF IBADAN

Teachers' Professional Development Activities Inventory (TPDAI)

Dear Teacher,

The instrument below is meant to elicit your responses about the professional learning activities you engage in as a teacher.

Yours faithfully,

Hafsat O. Akanni

Section A: Demographic information

1. Type of school: Private School ☐ Public School ☐ Unity School ☐
2. School name: _____
3. State: _____
4. Local Govt. Area: _____
5. Gender: Female ☐ Male ☐
6. Years of teaching experience: 0-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ ☐ 20+
7. Years working with current principal: ≤1 ☐ 2-3 ☐ 4-5 ☐ 6+ ☐
8. Highest Level of education: Bachelor degree: ☐ Masters' degree: ☐ Doctorate degree: ☐

Instruction: The items below are meant to elicit your responses about your stance, the procedure and your engagement in professional development or learning activities in your school. Respond by ticking in the appropriate box either 1- Not at all, 2- hardly, 3- sometimes, 4- quite often, 5- all the time

B	Professional learning activities	1	2	3	4	5
1.	The use of technology is evident in my school's professional learning					
2.	Leaders develop the capacity to accommodate professional learning activities					
3.	Practicing and applying new skills with students are important learning experiences in my school					
4.	Time is designated for professional learning activities					
5.	Participation in online professional learning opportunities is considered as a way to learn					
6.	Teachers have opportunities to observe each other for learning purposes					
7.	Staffs meet several times per week to collaborate					
8.	Staffs demonstrate effective communication and relationship skills					
9.	Teachers are welcomed to give opinion to school management					
		Never	Rarely	Sometimes	Fairly often	Always
10.	Adapt way of teaching to students' needs					
11.	Help students to learn study skills					
12.	Ask students feedback after lessons					

13.	Engage in Informal dialogue to improve teaching					
14.	Initiate activities that help students understand					
		N	R	S	F	A
15.	Use colleagues' materials in own lessons					
16.	Reflect about teaching practices and strategies					
17.	Share way of teaching with colleagues					
18.	Participate in in-service training with colleagues					
19.	Provide new opportunities for students to learn					
		N	R	S	F	A
20.	Join committees at school					
21.	Share ideas about educational improvement					
22.	Talk about teaching problems with colleagues					
23.	Share ideas about education with colleagues					
24.	Share teaching resources with colleagues					
		N	R	S	F	A
25.	Build professional tie with foreigners on the internet					
26.	Keep in touch with professionals in other academic institutes					

27.	Have a contact to get professional mails, help or information					
28.	Attend seminars outside own community					
29.	Participate in online professional learning opportunities					

Thank you for taking your time to complete this questionnaire

APPENDIX IV

(for EACH MODEL)

INTERNATIONAL CENTRE FOR EDUCATIONAL EVALUATION

UNIVERSITY OF IBADAN

Teachers' Professional Development Activities Inventory (TPDAI)

Dear Teacher,

The instrument below is meant to elicit your responses about the professional learning activities you engage in as a teacher.

Yours faithfully,

Hafsat O. Akanni

Section A: Demographic information

1. Type of school: Private School ☐ Public School ☐ Unity School ☐
2. School name: _____
3. State: _____
4. Local Govt. Area: _____
5. Gender: Female ☐ Male ☐
6. Years of teaching experience: 0-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ ☐ 20+
7. Years working with current principal: ≤1 ☐ 2-3 ☐ 4-5 ☐ 6+ ☐
8. Highest Level of education: Bachelor degree: ☐ Masters' degree: ☐ Doctorate degree: ☐

Instruction: The items below are meant to elicit your responses about your stance, the procedure and your engagement in professional development or learning activities in your school. Respond by ticking in the appropriate box either 1- Not at all, 2- hardly, 3- sometimes, 4- quite often, 5- all the time

I	**Collegial Professional learning activities**	**1**	**2**	**3**	**4**	**5**
1.	The use of technology is evident in my school's professional learning					
2.	Leaders develop the capacity to accommodate professional learning activities					
3.	Time is designated for professional learning activities					
4.	Participation in online professional learning opportunities is considered as a way to learn					
5.	Teachers have opportunities to observe each other for learning purposes					
6.	Keep in touch with professionals in other academic institutes					
7.	Have a contact to get professional mails, help or information					
8.	Attend seminars outside own community					
9.	Participate in online professional learning opportunities					
II	**Professional Engagement**	Never	Rarely	Sometimes	Fairly often	Always
10.	Staffs demonstrate effective communication and relationship skills					
11.	Teachers are welcomed to give opinion to school management					

12.	Adapt way of teaching to students' needs					
13.	Help students to learn study skills					
14.	Ask students feedback after lessons					
15.	Engage in Informal dialogue to improve teaching					
16.	Initiate activities that help students understand					
17.	Use colleagues' materials in own lessons					
18.	Reflect about teaching practices and strategies					
19.	Share way of teaching with colleagues					
20.	Participate in in-service training with colleagues					
21.	Provide new opportunities for students to learn					
22.	Join committees at school					
23.	Share ideas about educational improvement					
24.	Talk about teaching problems with colleagues					
25.	Share ideas about education with colleagues					
26.	Share teaching resources with colleagues					

Thank you for taking your time to complete this questionnaire

APPENDIX V

(for EACH and MACH Models)

INTERNATIONAL CENTRE FOR EDUCATIONAL EVALUATION

UNIVERSITY OF IBADAN

Students Non-cognitive Outcomes Scales (SNOS)

Instruction: This questionnaire is aimed at finding out your learning outcomes in social and affective domains. It is for academic purpose and your responses will be treated with utmost confidentiality. Please give your candid opinion for each statement by putting a tick [√] in any of the columns representing your true disposition.

Yours faithfully,

Hafsat O. Akanni

Section A: Demographic Information (please tick the appropriate box)

1. Type of School: Private school ☐ Public school ☐ Unity school ☐
2. Gender: Male ☐ Female ☐
3. State: _____
4. Local Government Area: _____
5. Name of School: _____
6. WASCCE CANDIDATES NUMBER(May/June 2018).: _____

Section B: Please read each statements carefully and choose the answer that best represents your dispositions.

	Social Psyche Skills	Not True of me	Somehow True of me	Quite True of me	Extremely True of me
1.	I am happy with my school performance				
2.	I attract positive attention from people older than me				
3.	I attract positive attention from my peers				
4.	I am aware of my personal				

	strengths				
5.	I feel good about myself.				
6.	I feel appreciated by others.				
7.	I take responsibility for what I do.				
		Never	Rarely	Sometimes	Always
8.	I show seriousness when doing school work				
9.	I enjoy reading				
10	I like to pay attention to my teachers				
11	I enjoy learning.				
12	I can learn what I need to know				
		Not True of me	Somehow True of me	Quite True of me	Extremely True of me
13	I share my belongings with others				
14	I feel sorry when I hurt someone				
15	I show appreciation of others				
16	I treat people politely				
17	I cannot hide my feelings when I see something bad				
18	I think it is important to help other people.				
*	**Socio-affective skills**	Never	Rarely	Sometimes	Always
19	I respect other people's opinion				
20	I respect people of high moral standards				
21	I support social equality				

22	I think justice should be done in the society				
		Not True of me	Somehow True of me	Quite True of me	Extremely True of me
23	I take steps to achieve goals				
24	I have high expectations for myself about the future				
25	I can bring out something good from anything that is available				
26	I overcome challenges in positive ways.				
		Not quite important	Somewhat important	Very important	Surely important
27	To get certified in my area of interest				
28	To acquire a Good social status				
29	To get a life partner				
30	To build my career				
31	To lead an healthy life				
32	To set a standard for myself				

Thank you for taking your time to complete this questionnaire

APPENDIX VI

INTERNATIONAL CENTRE FOR EDUCATIONAL EVALUATION

UNIVERSITY OF IBADAN

STUDENTS' EVALUATION OF TEACHING EFFECTIVENESS IN MATHEMATICS SCALE (SETEMS)

INTRODUCTION

This is an instrument for collecting information on teaching effectiveness. You are assured that the responses will be used strictly for research work only. Thanks for your cooperation.

Yours faithfully,

Hafsat O. Akanni.

Section A: Demographic Information (please tick the appropriate box)

1. Type of School: Private school ☐ Public school ☐ Unity school ☐
2. Gender: Male ☐ Female ☐
3. State: _____
4. Local Government Area: _____
5. Name of School: _____
6. WASCCE CANDIDATES NUMBER(May/June 2018).: _____

SECTION B: TEACHING EFFECTIVENESS

Instruction: For each of the items below, rate your Mathematics teacher on your perceived level of his/her teaching effectiveness. 1 = Poor, 2 = Fair, 3 = Good, 4 = Very Good and 5 = Excellent

S/N	ITEMS	1	2	3	4	5
I	**Teachers Intellectual and communication skills** ***Mathematics Teacher:***					
1	Displays a good knowledge of the subject.					
2	Presents information and facts that are correct.					
3	Answers students' questions without reading from his/her notes/textbooks.					

4	Gives and solves enough examples.					
5	Explains the various steps to follow in solving a given problem.					
6	Uses simple and clear English while teaching.					
7	Speaks loud enough for everybody in the class to hear					
8	Stops briefly to find out if students understand him or her.					
9	Tries to ensure that majority of students are following the steps in solving problems.					
10	Relates what he is teaching to objects and things we find in our classrooms and homes.					
II	**Effective use of Teaching Methods and Materials** ***Mathematics Teacher:***					
11	Ensures that no student prevents/disturbs another student from listening during his classes.					
12	Ensures that every student participates in the class activities					
13	Makes effective use of class time					
14	Ensures that every student sits where he/she can see the chalk-board or whatever is being presented.					
15	Makes the learning of the subject interesting					
16	Tells us that the potential to do well in Mathematics is in us					
17	Praises students when they give the right answer to his/her questions.					
18	Encourages students to work hard					
19	Allows us to freely ask questions on what we do not understand					
20	Uses more than one method in solving a given problem.					
21	At times brings real objects to class to demonstrate certain topics					
22	Makes good use of examples and illustrations to make the					

	topic more understanding					
23	Uses other materials apart from the chalkboard to teach to make us understand the lesson better.					
24	Uses shapes, drawings like cone, cylinder etc, in teaching related topics					
25	Makes it compulsory for us to use Mathematical Set during construction lessons					
26	Knows students by name and some of their peculiar problems					
27	Establishes good relationships or rapport with us students					
28	Uses some jokes or stories to drive home some lesson points					
29	Allows us to come to him/her during free periods to clarify misconception					
30	Is fair in the handling of examination and award of marks					
31	Gives us test more than twice a term					
32	Asks us questions at the end of each class lesson.					
33	Explains clearly how marks will be awarded.					

APPENDIX VII

INTERNATIONAL CENTRE FOR EDUCATIONAL EVALUATION

UNIVERSITY OF IBADAN

STUDENTS' EVALUATION OF TEACHING EFFECTIVENESS IN ENGLISH LANGUAGE SCALE (SETEES)

INTRODUCTION

This is an instrument for collecting information on teaching effectiveness. You are assured that the responses will be used strictly for research work only. Thanks for your cooperation.

Yours faithfully,

Hafsat O. Akanni

Section A: Demographic Information (please tick the appropriate box)

1. Type of School: Private school ☐ Public school ☐ Unity school ☐
2. Gender: Male ☐ Female ☐
3. State: _____
4. Local Government Area: _____
5. Name of School: _____
6. WASCCE CANDIDATES NUMBER(May/June 2018).: _____

SECTION B: TEACHING EFFECTIVENESS

Instruction:

For each of the items below, rate your Mathematics teacher on your perceived level of his/her teaching effectiveness. 1 = Poor, 2 = Fair, 3 = Good, 4 = Very Good and 5 = Excellent

S/N	ITEMS	1	2	3	4	5
I	**Teachers Intellectual and communication skills** ***English Teacher:***					
1	Displays a good knowledge of the subject in all aspects of English Language					
2	Presents information and facts that are correct.					
3	Answers students' questions without reading from his/her notes/textbooks.					
4	Have a high level of proficiency with English vocabulary.					
5	Is fully familiar with English grammar.					
6	Uses simple and clear English while teaching.					
7	Speaks loud enough for everybody in the class to hear					
8	Uses eye contact to find out if students understand him or her.					
9	Tries to ensure that majority of students are following the passage being read					
10	Provide opportunities to use English through meaningful tasks and activities					
II	**Effective use of Teaching Methods and Materials** ***English Teacher:***					
11	Captures the attention of the entire class while teaching.					
12	Ensures that no student prevents/disturbs another student from listening during his classes.					
13	Ensures that every student participates in the class activities					
14	Makes effective use of class time					
15	Ensures that every student sits where he/she can see the chalk-board or whatever is being presented.					
16	Makes the learning of the subject interesting					
17	V provide activities that arouse student's interest in learning English					

18	Praises students when they make a fair attempt to contribute class interactions					
19	Encourages students to work hard					
20	Allows us to freely ask questions on what we do not understand					
21	Uses more than one method to explain a lesson					
22	At times brings real objects to class to demonstrate certain topics					
23	Teach English adapted to students' English proficiency levels.					
24	Sometimes gives inter-class English quiz					
25	Sometimes gives us project work to carry out in some topics					
26	Uses other materials apart from the chalkboard to teach to make us understand the lesson better.					
27	Uses demonstrations in teaching related topics					
28	Sometimes takes a walk outside the class with us to observe some of the topics/issues being taught					
29	Makes it compulsory for us to use different notebooks for different aspects of English Language					
30	Knows students by name and some of their peculiar problems					
31	Establishes good relationships or rapport with us students					
32	Uses some jokes or stories to drive home some lesson points					
33	Teach how to learn English outside the classroom (teach language learning strategies).					
34	Is fair in the handling of examination and award of marks					
35	Gives us test more than twice a term					
36	Asks us questions at the end of each class lesson.					
37	Explains clearly how marks will be awarded for different aspects of English Language					

Thank you for taking your time to complete this questionnaire

APPENDIX VIII

INTERNATIONAL CENTRE FOR EDUCATIONAL EVALUATION

UNIVERSITY OF IBADAN

LEARNER-CENTEREDNESS QUESTIONNAIRE FOR STUDENTS (LCPQS)

Instructions: Please read each of the following statements carefully. Then decide how often your MATHEMATICS and ENGLISH LANGUAGE teachers in the classroom does what is described in each statement -- almost never, sometimes, often, or almost always. PLEASE ANSWER EVERY QUESTION. Kindly circle one answer only. Your responses will be strictly confidential. They will NOT be shown to any teacher. Thank you for your help in this research project. Use the following key only:

Key: 1- Almost Never, 2- Sometimes, 3- Often, 4- Almost Always

Yours faithfully,

Hafsat O. Akanni

Section A: Demographic Information (please tick the appropriate box)

1. Type of School: Private school ☐ Public school ☐ Unity school ☐
2. Gender: Male ☐ Female ☐
3. State: _____
4. Local Government Area: _____
5. Name of School: _____
6. WASCCE CANDIDATES NUMBER(May/June 2018).: _____

Section B:

S/N	Item	Frequency			
	My Mathematics teacher ...	Almost Never	Sometimes	Often	Almost always
1.	shows me that he or she appreciates me as an individual.				
2.	provides support and encouragement when I'm worried I won't perform well.				

3.	makes me feel that he or she cares about me.				
4.	makes me feel that he or she appreciates me for who I am, not just for how well I do.				
5.	helps me feel like I belong in the class.				
My Mathematics teacher ...		Almost Never	Sometimes	Often	Almost always
6.	lets me express my own thoughts and beliefs.				
7.	provides opportunities for me to learn how to take someone else's perspective.				
8.	encourages me to challenge myself while learning.				
9.	helps me understand different points of view.				
10.	encourages me to think things out for myself while learning.				
11.	asks me to listen to and think about my classmates' opinions, even when I don't agree with them.				
My Mathematics teacher ...		Almost Never	Sometimes	Often	Almost always
12.	helps me learn how to organize what I'm learning so I can remember it more easily.				
13.	helps me think through what I'm interested in learning.				
14.	helps me put new information				

	together with what I already know so that it makes sense to me.				
15.	helps me learn how to check how well I understand what I am learning.				
My Mathematics teacher ...		Almost Never	Sometimes	Often	Almost always
16.	encourages me to work with other students when I have trouble with an assignment.				
17.	encourages me to tell him or her the way I would like to learn.				
18.	teaches me how to deal with stress that affects my learning.				
19.	makes an effort to get to know me and my background.				

SECTION C:

S/N	Item	Frequency			
	My English teacher ...	Almost Never	Sometimes	Often	Almost always
1.	shows me that he or she appreciates me as an individual.				
2.	provides support and encouragement when I'm worried I won't perform well.				
3.	makes me feel that he or she cares about me.				
4.	makes me feel that he or she appreciates me for who I am, not just for how well I do.				
5.	helps me feel like I belong in the class.				
	My English teacher ...	Almost Never	Sometimes	Often	Almost always
6.	allows me express my own thoughts and beliefs.				
7.	provides opportunities for me to learn how to take someone else's perspective.				
8.	encourages me to challenge myself while learning.				
9.	helps me understand different points of view.				
10.	encourages me to think things out for myself while learning.				
11.	asks me to listen to and think about my classmates' opinions, even when I don't				

	agree with them.				
My English teacher ...		Almost Never	Sometimes	Often	Almost always
12.	helps me learn how to organize what I'm learning so I can remember it more easily.				
13.	helps me think through what I'm interested in learning.				
14.	helps me put new information together with what I already know so that it makes sense to me.				
15.	helps me learn how to check how well I understand what I am learning.				
My English teacher ...		Almost Never	Sometimes	Often	Almost always
16.	encourages me to work with other students when I have trouble with an assignment.				
17.	encourages me to tell him or her the way I would like to learn.				
18.	teaches me how to deal with stress that affects my learning.				
19.	makes an effort to get to know me and my background.				

Thank you for taking your time to complete this questionnaire

APPENDIX IX

INTERNATIONAL CENTRE FOR EDUCATIONAL EVALUATION
UNIVERSITY OF IBADAN
Principal Information Questionnaire

Dear Principal,

Researchers have studied many variables affecting the quality education being provided by different school organisations as it affects student performance. The purpose of this study is to explore on how some of the variables below affect school outcomes. Your school has been chosen to participate in this study. This survey will provide the researcher with information regarding your perspective of some organisational dynamics relative to the improvement in academic achievement of students and quality education in Nigeria. All participants' responses are confidential. Thank you as you take out time to complete this survey despite your already lined up activities.

Yours faithfully,

Hafsat O. Akanni

1. Type of school: Private School ☐ Public ☐ School Unity School ☐
2. School name: _____
3. School year of establishment: _____
4. School WASSCE Centre No.: _____
5. State: _____
6. Local Govt. Area: _____
7. Gender: Female ☐ Male ☐
8. Highest Level of education: Bachelor degree: ☐ Masters' degree: ☐
   Doctorate degree: ☐
9. Years of educational experience: ≤ 14 years ☐ 15-24 years ☐ 25+ ☐
10. For how long have you been the principal of this school?
    1 year ☐ 2-3 years ☐ 4 and above ☐
11. How many principals have you had in this school over the last 10 years?
    1 or 2 principals ☐ 3 principals ☐ 4 or more principals ☐
12. What is the population of students in your school? _____

Thank you for taking your time to complete this questionnaire

APPENDIX

Table EACH Model specific indirect paths

	Paths	Specific Indirect Effects	Paths	Specific Indirect Effects
1.	**X1 -> X5 -> X6**	-0.090	**X3 -> X5 -> X6 -> Xt**	0.013
2.	**X2 -> X5 -> X6**	0.059	**X1 -> X7 -> Xt**	-0.019
3.	**X3 -> X5 -> X6**	0.158	**X2 -> X7 -> Xt**	-0.055
4.	**X1 -> X5 -> X7**	0.029	**X3 -> X7 -> Xt**	-0.035
5.	**X2 -> X5 -> X7**	-0.019	**X1 -> X5 -> X7 -> Xt**	-0.009
6.	**X3 -> X5 -> X7**	-0.050	**X2 -> X5 -> X7 -> Xt**	0.006
7.	**X1 -> X6 -> X7**	0.010	**X3 -> X5 -> X7 -> Xt**	0.016
8.	**X2 -> X6 -> X7**	0.001	**X1 -> X6 -> X7 -> Xt**	-0.003
9.	**X3 -> X6 -> X7**	0.050	**X2 -> X6 -> X7 -> Xt**	0.000
10.	**X1 -> X5 -> X6 -> X7**	-0.032	**X3 -> X6 -> X7 -> Xt**	-0.016
11.	**X2 -> X5 -> X6 -> X7**	0.021	**X1 -> X5 -> X6 -> X7 -> Xt**	0.010
12.	**X3 -> X5 -> X6 -> X7**	0.056	**X2 -> X5 -> X6 -> X7 -> Xt**	-0.007
13.	**X1 -> X5 -> X8**	0.001	**X3 -> X5 -> X6 -> X7 -> Xt**	-0.018
14.	**X2 -> X5 -> X8**	-0.001	**X1 -> X8 -> Xt**	-0.010
15.	**X3 -> X5 -> X8**	-0.002	**X2 -> X8 -> Xt**	0.012
16.	**X1 -> X6 -> X8**	0.005	**X3 -> X8 -> Xt**	0.006
17.	**X2 -> X6 -> X8**	0.001	**X1 -> X5 -> X8 -> Xt**	0.000
18.	**X3 -> X6 -> X8**	0.026	**X2 -> X5 -> X8 -> Xt**	0.000
19.	**X1 -> X5 -> X6 -> X8**	-0.017	**X3 -> X5 -> X8 -> Xt**	0.000
20.	**X2 -> X5 -> X6 -> X8**	0.011	**X1 -> X6 -> X8 -> Xt**	0.001
21.	**X3 -> X5 -> X6 -> X8**	0.029	**X2 -> X6 -> X8 -> Xt**	0.000
22.	**X1 -> X7 -> X8**	0.035	**X3 -> X6 -> X8 -> Xt**	0.004
23.	**X2 -> X7 -> X8**	0.100	**X1 -> X5 -> X6 -> X8 -> Xt**	-0.003
24.	**X3 -> X7 -> X8**	0.064	**X2 -> X5 -> X6 -> X8 -> Xt**	0.002
25.	**X1 -> X5 -> X7 -> X8**	0.017	**X3 -> X5 -> X6 -> X8 -> Xt**	0.005
26.	**X2 -> X5 -> X7 -> X8**	-0.011	**X1 -> X7 -> X8 -> Xt**	0.006
27.	**X3 -> X5 -> X7 -> X8**	-0.030	**X2 -> X7 -> X8 -> Xt**	0.017
28.	**X1 -> X6 -> X7 -> X8**	0.006	**X3 -> X7 -> X8 -> Xt**	0.011
29.	**X2 -> X6 -> X7 -> X8**	0.001	**X1 -> X5 -> X7 -> X8 -> Xt**	0.003
30.	**X3 -> X6 -> X7 -> X8**	0.030	**X2 -> X5 -> X7 -> X8 -> Xt**	-0.002
31.	**X1 -> X5 -> X6 -> X7 -> X8**	-0.019	**X3 -> X5 -> X7 -> X8 -> Xt**	-0.005

32.	**X2 -> X5 -> X6 -> X7 -> X8**	0.012	**X1 -> X6 -> X7 -> X8 -> Xt**	0.001
33.	**X3 -> X5 -> X6 -> X7 -> X8**	0.033	**X2 -> X6 -> X7 -> X8 -> Xt**	0.000
34.	**X1 -> X5 -> X9**	-0.004	**X3 -> X6 -> X7 -> X8 -> Xt**	0.005
35.	**X2 -> X5 -> X9**	0.002	**X1 -> X5 -> X6 -> X7 -> X8 -> Xt**	-0.003
36.	**X3 -> X5 -> X9**	0.006	**X2 -> X5 -> X6 -> X7 -> X8 -> Xt**	0.002
37.	**X1 -> X6 -> X9**	0.002	**X3 -> X5 -> X6 -> X7 -> X8 -> Xt**	0.005
38.	**X2 -> X6 -> X9**	0.000	**X1 -> X9 -> Xt**	-0.017
39.	**X3 -> X6 -> X9**	0.008	**X2 -> X9 -> Xt**	-0.002
40.	**X1 -> X5 -> X6 -> X9**	-0.005	**X3 -> X9 -> Xt**	0.003
41.	**X2 -> X5 -> X6 -> X9**	0.003	**X1 -> X5 -> X9 -> Xt**	0.000
42.	**X3 -> X5 -> X6 -> X9**	0.009	**X2 -> X5 -> X9 -> Xt**	0.000
43.	**X1 -> X7 -> X9**	0.038	**X3 -> X5 -> X9 -> Xt**	0.000
44.	**X2 -> X7 -> X9**	0.107	**X1 -> X6 -> X9 -> Xt**	0.000
45.	**X3 -> X7 -> X9**	0.069	**X2 -> X6 -> X9 -> Xt**	0.000
46.	**X1 -> X5 -> X7 -> X9**	0.018	**X3 -> X6 -> X9 -> Xt**	0.000
47.	**X2 -> X5 -> X7 -> X9**	-0.012	**X1 -> X5 -> X6 -> X9 -> Xt**	0.000
48.	**X3 -> X5 -> X7 -> X9**	-0.032	**X2 -> X5 -> X6 -> X9 -> Xt**	0.000
49.	**X1 -> X6 -> X7 -> X9**	0.006	**X3 -> X5 -> X6 -> X9 -> Xt**	0.000
50.	**X2 -> X6 -> X7 -> X9**	0.001	**X1 -> X7 -> X9 -> Xt**	0.002
51.	**X3 -> X6 -> X7 -> X9**	0.032	**X2 -> X7 -> X9 -> Xt**	0.005
52.	**X1 -> X5 -> X6 -> X7 -> X9**	-0.020	**X3 -> X7 -> X9 -> Xt**	0.003
53.	**X2 -> X5 -> X6 -> X7 -> X9**	0.013	**X1 -> X5 -> X7 -> X9 -> Xt**	0.001
54.	**X3 -> X5 -> X6 -> X7 -> X9**	0.035	**X2 -> X5 -> X7 -> X9 -> Xt**	0.000
55.	**X1 -> X8 -> X9**	0.019	**X3 -> X5 -> X7 -> X9 -> Xt**	-0.001
56.	**X2 -> X8 -> X9**	-0.021	**X1 -> X6 -> X7 -> X9 -> Xt**	0.000
57.	**X3 -> X8 -> X9**	-0.011	**X2 -> X6 -> X7 -> X9 -> Xt**	0.000
58.	**X1 -> X5 -> X8 -> X9**	0.000	**X3 -> X6 -> X7 -> X9 -> Xt**	0.001
59.	**X2 -> X5 -> X8 -> X9**	0.000	**X1 -> X5 -> X6 -> X7 -> X9 -> Xt**	-0.001
60.	**X3 -> X5 -> X8 -> X9**	0.001	**X2 -> X5 -> X6 -> X7 -> X9 -> Xt**	0.001
61.	**X1 -> X6 -> X8 -> X9**	-0.002	**X3 -> X5 -> X6 -> X7 -> X9 -> Xt**	0.001
62.	**X2 -> X6 -> X8 -> X9**	0.000	**X1 -> X8 -> X9 -> Xt**	0.001
63.	**X3 -> X6 -> X8 -> X9**	-0.008	**X2 -> X8 -> X9 -> Xt**	-0.001
64.	**X1 -> X5 -> X6 -> X8 -> X9**	0.005	**X3 -> X8 -> X9 -> Xt**	0.000
65.	**X2 -> X5 -> X6 -> X8 -> X9**	-0.003	**X1 -> X5 -> X8 -> X9 -> Xt**	0.000
66.	**X3 -> X5 -> X6 -> X8 -> X9**	-0.009	**X2 -> X5 -> X8 -> X9 -> Xt**	0.000
67.	**X1 -> X7 -> X8 -> X9**	-0.011	**X3 -> X5 -> X8 -> X9 -> Xt**	0.000

68.	**X2 -> X7 -> X8 -> X9**	-0.031	**X1 -> X6 -> X8 -> X9 -> Xt**	0.000
69.	**X3 -> X7 -> X8 -> X9**	-0.020	**X2 -> X6 -> X8 -> X9 -> Xt**	0.000
70.	**X1 -> X5 -> X7 -> X8 -> X9**	-0.005	**X3 -> X6 -> X8 -> X9 -> Xt**	0.000
71.	**X2 -> X5 -> X7 -> X8 -> X9**	0.003	**X1 -> X5 -> X6 -> X8 -> X9 -> Xt**	0.000
72.	**X3 -> X5 -> X7 -> X8 -> X9**	0.009	**X2 -> X5 -> X6 -> X8 -> X9 -> Xt**	0.000
73.	**X1 -> X6 -> X7 -> X8 -> X9**	-0.002	**X3 -> X5 -> X6 -> X8 -> X9 -> Xt**	0.000
74.	**X2 -> X6 -> X7 -> X8 -> X9**	0.000	**X1 -> X7 -> X8 -> X9 -> Xt**	0.000
75.	**X3 -> X6 -> X7 -> X8 -> X9**	-0.009	**X2 -> X7 -> X8 -> X9 -> Xt**	-0.001
76.	**X1 -> X5 -> X6 -> X7 -> X8 -> X9**	0.006	**X3 -> X7 -> X8 -> X9 -> Xt**	-0.001
77.	**X2 -> X5 -> X6 -> X7 -> X8 -> X9**	-0.004	**X1 -> X5 -> X7 -> X8 -> X9 -> Xt**	0.000
78.	**X3 -> X5 -> X6 -> X7 -> X8 -> X9**	-0.010	**X2 -> X5 -> X7 -> X8 -> X9 -> Xt**	0.000
79.	**X1 -> X5 -> Xt**	-0.019	**X3 -> X5 -> X7 -> X8 -> X9 -> Xt**	0.000
80.	**X2 -> X5 -> Xt**	0.013	**X1 -> X6 -> X7 -> X8 -> X9 -> Xt**	0.000
81.	**X3 -> X5 -> Xt**	0.034	**X2 -> X6 -> X7 -> X8 -> X9 -> Xt**	0.000
82.	**X1 -> X6 -> Xt**	0.002	**X3 -> X6 -> X7 -> X8 -> X9 -> Xt**	0.000
83.	**X2 -> X6 -> Xt**	0.000	**X1 -> X5 -> X6 -> X7 -> X8 -> X9 -> Xt**	0.000
84.	**X3 -> X6 -> Xt**	0.012	**X2 -> X5 -> X6 -> X7 -> X8 -> X9 -> Xt**	0.000
85.	**X1 -> X5 -> X6 -> Xt**	-0.007	**X3 -> X5 -> X6 -> X7 -> X8 -> X9 -> Xt**	0.000
86.	**X2 -> X5 -> X6 -> Xt**	0.005		

APPENDIX

Table MACH Model specific indirect effects

	Paths	Specific Indirect Effects	Paths	Specific Indirect Effects
1.	**X1 -> X4 -> X5**	-0.102	**X3 -> X4 -> X5 -> Xt**	-0.028
2.	**X2 -> X4 -> X5**	0.025	**X1 -> X6 -> Xt**	0.010
3.	**X3 -> X4 -> X5**	0.178	**X2 -> X6 -> Xt**	-0.036
4.	**X1 -> X4 -> X6**	-0.024	**X3 -> X6 -> Xt**	-0.013
5.	**X2 -> X4 -> X6**	0.006	**X1 -> X4 -> X6 -> Xt**	-0.006
6.	**X3 -> X4 -> X6**	0.042	**X2 -> X4 -> X6 -> Xt**	0.002
7.	**X1 -> X5 -> X6**	0.043	**X3 -> X4 -> X6 -> Xt**	0.011
8.	**X2 -> X5 -> X6**	-0.126	**X1 -> X5 -> X6 -> Xt**	0.012
9.	**X3 -> X5 -> X6**	-0.105	**X2 -> X5 -> X6 -> Xt**	-0.034
10.	**X1 -> X4 -> X5 -> X6**	-0.064	**X3 -> X5 -> X6 -> Xt**	-0.028
11.	**X2 -> X4 -> X5 -> X6**	0.016	**X1 -> X4 -> X5 -> X6 -> Xt**	-0.017
12.	**X3 -> X4 -> X5 -> X6**	0.112	**X2 -> X4 -> X5 -> X6 -> Xt**	0.004
13.	**X1 -> X4 -> X8**	0.021	**X3 -> X4 -> X5 -> X6 -> Xt**	0.030
14.	**X2 -> X4 -> X8**	-0.005	**X1 -> X8 -> Xt**	-0.013
15.	**X3 -> X4 -> X8**	-0.036	**X2 -> X8 -> Xt**	0.022
16.	**X1 -> X5 -> X8**	-0.005	**X3 -> X8 -> Xt**	0.016
17.	**X2 -> X5 -> X8**	0.014	**X1 -> X4 -> X8 -> Xt**	0.002
18.	**X3 -> X5 -> X8**	0.012	**X2 -> X4 -> X8 -> Xt**	-0.001
19.	**X1 -> X4 -> X5 -> X8**	0.007	**X3 -> X4 -> X8 -> Xt**	-0.004
20.	**X2 -> X4 -> X5 -> X8**	-0.002	**X1 -> X5 -> X8 -> Xt**	-0.001
21.	**X3 -> X4 -> X5 -> X8**	-0.013	**X2 -> X5 -> X8 -> Xt**	0.002
22.	**X1 -> X6 -> X8**	0.008	**X3 -> X5 -> X8 -> Xt**	0.001
23.	**X2 -> X6 -> X8**	-0.029	**X1 -> X4 -> X5 -> X8 -> Xt**	0.001
24.	**X3 -> X6 -> X8**	-0.010	**X2 -> X4 -> X5 -> X8 -> Xt**	0.000
25.	**X1 -> X4 -> X6 -> X8**	-0.005	**X3 -> X4 -> X5 -> X8 -> Xt**	-0.001
26.	**X2 -> X4 -> X6 -> X8**	0.001	**X1 -> X6 -> X8 -> Xt**	0.001
27.	**X3 -> X4 -> X6 -> X8**	0.009	**X2 -> X6 -> X8 -> Xt**	-0.003
28.	**X1 -> X5 -> X6 -> X8**	0.009	**X3 -> X6 -> X8 -> Xt**	-0.001
29.	**X2 -> X5 -> X6 -> X8**	-0.027	**X1 -> X4 -> X6 -> X8 -> Xt**	-0.001
30.	**X3 -> X5 -> X6 -> X8**	-0.022	**X2 -> X4 -> X6 -> X8 -> Xt**	0.000
31.	**X1 -> X4 -> X5 -> X6 -> X8**	-0.014	**X3 -> X4 -> X6 -> X8 -> Xt**	0.001
32.	**X2 -> X4 -> X5 -> X6 -> X8**	0.003	**X1 -> X5 -> X6 -> X8 -> Xt**	0.001
33.	**X3 -> X4 -> X5 -> X6 -> X8**	0.024	**X2 -> X5 -> X6 -> X8 -> Xt**	-0.003

34.	**X1 -> X4 -> X9**	0.024	**X3 -> X5 -> X6 -> X8 -> Xt**	-0.003
35.	**X2 -> X4 -> X9**	-0.006	**X1 -> X4 -> X5 -> X6 -> X8 -> Xt**	-0.002
36.	**X3 -> X4 -> X9**	-0.041	**X2 -> X4 -> X5 -> X6 -> X8 -> Xt**	0.000
37.	**X1 -> X5 -> X9**	0.020	**X3 -> X4 -> X5 -> X6 -> X8 -> Xt**	0.003
38.	**X2 -> X5 -> X9**	-0.057	**X1 -> X9 -> Xt**	-0.002
39.	**X3 -> X5 -> X9**	-0.048	**X2 -> X9 -> Xt**	0.000
40.	**X1 -> X4 -> X5 -> X9**	-0.029	**X3 -> X9 -> Xt**	0.001
41.	**X2 -> X4 -> X5 -> X9**	0.007	**X1 -> X4 -> X9 -> Xt**	0.000
42.	**X3 -> X4 -> X5 -> X9**	0.051	**X2 -> X4 -> X9 -> Xt**	0.000
43.	**X1 -> X6 -> X9**	-0.007	**X3 -> X4 -> X9 -> Xt**	0.000
44.	**X2 -> X6 -> X9**	0.028	**X1 -> X5 -> X9 -> Xt**	0.000
45.	**X3 -> X6 -> X9**	0.009	**X2 -> X5 -> X9 -> Xt**	0.000
46.	**X1 -> X4 -> X6 -> X9**	0.005	**X3 -> X5 -> X9 -> Xt**	0.000
47.	**X2 -> X4 -> X6 -> X9**	-0.001	**X1 -> X4 -> X5 -> X9 -> Xt**	0.000
48.	**X3 -> X4 -> X6 -> X9**	-0.008	**X2 -> X4 -> X5 -> X9 -> Xt**	0.000
49.	**X1 -> X5 -> X6 -> X9**	-0.009	**X3 -> X4 -> X5 -> X9 -> Xt**	0.000
50.	**X2 -> X5 -> X6 -> X9**	0.026	**X1 -> X6 -> X9 -> Xt**	0.000
51.	**X3 -> X5 -> X6 -> X9**	0.021	**X2 -> X6 -> X9 -> Xt**	0.000
52.	**X1 -> X4 -> X5 -> X6 -> X9**	0.013	**X3 -> X6 -> X9 -> Xt**	0.000
53.	**X2 -> X4 -> X5 -> X6 -> X9**	-0.003	**X1 -> X4 -> X6 -> X9 -> Xt**	0.000
54.	**X3 -> X4 -> X5 -> X6 -> X9**	-0.023	**X2 -> X4 -> X6 -> X9 -> Xt**	0.000
55.	**X1 -> X8 -> X9**	0.024	**X3 -> X4 -> X6 -> X9 -> Xt**	0.000
56.	**X2 -> X8 -> X9**	-0.040	**X1 -> X5 -> X6 -> X9 -> Xt**	0.000
57.	**X3 -> X8 -> X9**	-0.029	**X2 -> X5 -> X6 -> X9 -> Xt**	0.000
58.	**X1 -> X4 -> X8 -> X9**	-0.004	**X3 -> X5 -> X6 -> X9 -> Xt**	0.000
59.	**X2 -> X4 -> X8 -> X9**	0.001	**X1 -> X4 -> X5 -> X6 -> X9 -> Xt**	0.000
60.	**X3 -> X4 -> X8 -> X9**	0.007	**X2 -> X4 -> X5 -> X6 -> X9 -> Xt**	0.000
61.	**X1 -> X5 -> X8 -> X9**	0.001	**X3 -> X4 -> X5 -> X6 -> X9 -> Xt**	0.000
62.	**X2 -> X5 -> X8 -> X9**	-0.003	**X1 -> X8 -> X9 -> Xt**	0.000
63.	**X3 -> X5 -> X8 -> X9**	-0.002	**X2 -> X8 -> X9 -> Xt**	0.000
64.	**X1 -> X4 -> X5 -> X8 -> X9**	-0.001	**X3 -> X8 -> X9 -> Xt**	0.000
65.	**X2 -> X4 -> X5 -> X8 -> X9**	0.000	**X1 -> X4 -> X8 -> X9 -> Xt**	0.000
66.	**X3 -> X4 -> X5 -> X8 -> X9**	0.003	**X2 -> X4 -> X8 -> X9 -> Xt**	0.000
67.	**X1 -> X6 -> X8 -> X9**	-0.002	**X3 -> X4 -> X8 -> X9 -> Xt**	0.000
68.	**X2 -> X6 -> X8 -> X9**	0.006	**X1 -> X5 -> X8 -> X9 -> Xt**	0.000
69.	**X3 -> X6 -> X8 -> X9**	0.002	**X2 -> X5 -> X8 -> X9 -> Xt**	0.000
70.	**X1 -> X4 -> X6 -> X8 -> X9**	0.001	**X3 -> X5 -> X8 -> X9 -> Xt**	0.000
71.	**X2 -> X4 -> X6 -> X8 -> X9**	0.000	**X1 -> X4 -> X5 -> X8 -> X9 -> Xt**	0.000
72.	**X3 -> X4 -> X6 -> X8 -> X9**	-0.002	**X2 -> X4 -> X5 -> X8 -> X9 -> Xt**	0.000
73.	**X1 -> X5 -> X6 -> X8 -> X9**	-0.002	**X3 -> X4 -> X5 -> X8 -> X9 -> Xt**	0.000
74.	**X2 -> X5 -> X6 -> X8 -> X9**	0.005	**X1 -> X6 -> X8 -> X9 -> Xt**	0.000

75.	**X3 -> X5 -> X6 -> X8 -> X9**	0.005	**X2 -> X6 -> X8 -> X9 -> Xt**	0.000
76.	**X1 -> X4 -> X5 -> X6 -> X8 -> X9**	0.003	**X3 -> X6 -> X8 -> X9 -> Xt**	0.000
77.	**X2 -> X4 -> X5 -> X6 -> X8 -> X9**	-0.001	**X1 -> X4 -> X6 -> X8 -> X9 -> Xt**	0.000
78.	**X3 -> X4 -> X5 -> X6 -> X8 -> X9**	-0.005	**X2 -> X4 -> X6 -> X8 -> X9 -> Xt**	0.000
79.	**X1 -> X4 -> Xt**	-0.025	**X3 -> X4 -> X6 -> X8 -> X9 -> Xt**	0.000
80.	**X2 -> X4 -> Xt**	0.006	**X1 -> X5 -> X6 -> X8 -> X9 -> Xt**	0.000
81.	**X3 -> X4 -> Xt**	0.044	**X2 -> X5 -> X6 -> X8 -> X9 -> Xt**	0.000
82.	**X1 -> X5 -> Xt**	-0.011	**X3 -> X5 -> X6 -> X8 -> X9 -> Xt**	0.000
83.	**X2 -> X5 -> Xt**	0.032	**X1 -> X4 -> X5 -> X6 -> X8 -> X9 -> Xt**	0.000
84.	**X3 -> X5 -> Xt**	0.026	**X2 -> X4 -> X5 -> X6 -> X8 -> X9 -> Xt**	0.000
85.	**X1 -> X4 -> X5 -> Xt**	0.016	**X3 -> X4 -> X5 -> X6 -> X8 -> X9 -> Xt**	0.000
86.	**X2 -> X4 -> X5 -> Xt**	-0.004		

MEAN PERFORMANCE EXTRACTION SHEET (PSES)

S/N	NAME OF SCHOOL	WASSCE CENTRE NO:	MEAN PERFORMANCE FOR SCHOOLS	
			MATHEMATICS	ENGLISH LANGUAGE
1.	GBAGADA SENIOR GRAMMAR SCHOOL, LAGOS	4251910		
2.	BAPTIST SNR HIGH SCHOOL LAGOS	4251913		
3.	IGBOBI COLLEGE, YABA, LAGOS	4251903		
4.	ANGUS MEMORIAL SENIOR HIGH SCHOOL, LAGOS	4251912		
5.	BAPTIST ACADEMY, OBANIKORO LAGOS	4251901		
6.	EVA ADELAJA GIRLS GRAMMAR SCHOOL LAGOS	4251904		
7.	LANRE AWOLOKUN HIGH SCHOOL GBAGADA LAGOS	4251934		
8.	CMS GIRLS SENIOR GRAMMAR SCHOOL, BARIGA LAGOS	4251914		
9.	NATIONAL COLLEGE GBAGADA LAGOS	4251905		
10.	SUPREME EDUCATION FOUNDATION HIGH SCHOOL LAGOS	4251427		
11.	EJIDEY COMPREHENSIVE HIGH SCHOOL LAGOS	4251422		
12.	CALEB INTERNATIONAL COLLEGE LAGOS	4251419		
13.	IMMACULATE HEART SENIOR HIGH SCHOOL, MARYLAND	4251409		
14.	MENDE SENIOR HIGH SCHOOL, MARYLAND LAGOS	4251462		
15.	OGUDU SENIOR GRAMMAR SCHOOL LAGOS	4251410		
16.	OJOTA SENIOR HIGH SCHOOL LAGOS	4251406		
17.	AYEDERE AJIBOLA SECONDARY SCHOOL LAGOS	4251413		
18.	AJEGUNLE SENIOR HIGH SCHOOL LAGOS	4251418		
19.	GOODWILL SECONDARY SCHOOL, IKORODU LAGOS	4251224		
20.	ORIWU SENIOR MODEL COLLEGE, IKORODU LAGOS	4251201		
21.	GOVERNMENT SENIOR COLLEGE, IKORODU LAGOS	4251205		
22.	HOMAT PIVOTAL COLLEGE LAGOS	4251227		
23.	LAGOS STATE CIVIL SERVICE SENIOR MODEL COLLEGE IGBOGBO LAGOS	4251225		
24.	STARS INTERNATIONAL COLLEGE, IKORODU LAGOS	4251226		

25.	MAJIDUN SENIOR GRAMMAR SCHOOL LAGOS	4251208		
26.	UNITED SENIOR HIGH SCHOOL LAGOS	4251206		
27.	YEWA SENIOR GRAMMAR SCHOOL IKORODU LAGOS	4251222		
28.	OKE-BADAN HIGH SCHOOL, IBADAN	4310707		
29.	LOYOLA COLLEGE SENIOR SECONDARY SCHOOL, IBADAN	4310701		
30.	BASHORUN HIGH SCHOOL, BODE WASIMI, IBADAN	4310709		
31.	QUEEN OF APOSTLE SECONDARY COMMERCIAL GRAMMAR SCHOOL, OLUYORO IBADAN	4310705		
32.	RATIBI COLLEGE, IBADAN	4310738		
33.	ST. CLARE'S GIRLS HIGH SCHOOL, OLUYORO IBADAN	4310725		
34.	AANO-OLU COLLEGE, OLUYORO IBADAN	4310730		
35.	EDUCARE COMPREHENSIVE COLLEGE, IBADAN	4310735		
36.	SOLAM MODEL COLLEGE IBADAN	4310878		
37.	QIBLAH HIGH SCHOOL, ALESHINLOYE IBADAN	4311064		
38.	ST CATHERINE COLLEGE, ALESHINLOYE IBADAN	4311046		
39.	SUNSHINE INTERNATIONAL HIGH SCHOOL IBADAN	4311045		
40.	ALAYANDE SCHOOL OF SCIENCE, OKE-BOLA IBADAN	4311027		
41.	IMG GRAMMAR SCHOOL, OKE-ADO IBADAN	4311008		
42.	ANSARUDEEN HIGH SCHOOL, LIBERTY IBADAN	4311026		
43.	PEOPLE'S GIRLS GRAMMAR SCHOOL IBADAN	4311018		
44.	IBADAN BOYS HIGH SCHOOL, OKE-BOLA IBADAN	4311003		
45.	OKE-BOLA COMPREHENSIVE HIGH SCHOOL IBADAN	4311009		
46.	MAVERICK COLLEGE IBADAN	4310839		
47.	ALL SOULS HIGH SCHOOL IBADAN	4310833		
48.	ABADINA COLLEGE IBADAN	4310802		
49.	WALBROOK COLLEGE IBADAN	4310827		
50.	OBA AKINBIYI HIGH SCHOOL, MOKOLA IBADAN	4310813		
51.	COMMUNITY GRAMMAR SCHOOL, MOKOLA IBADAN	4310819		
52.	IMMANUEL COLLEGE IBADAN	4310806		
53.	ST PATRICK'S GRAMMAR SCHOOL, BASHORUN IBADAN	4310801		
54.	METHODIST GRAMMAR SCHOOL, BODIJA IBADAN	4320810		
55.	BRILLIANT INTERNATIONAL COLLEGE AKURE	4290656		
56.	AQUINAS COLLEGE, AKURE	4290601		
57.	FABIAN COLLEGE, AKURE	4290658		
58.	MOTHERS PRIDE HIGH SCHOOL AKURE	4290677		
59.	IJOMIMO OLUWA HIGH SCHOOL AKURE	4290618		
60.	ST MICHAEL'S HIGH SCHOOL AKURE	4290621		
61.	AKURE SECONDARY COMMERCIAL SCHOOL AKURE	4290606		
62.	OMOLUOROGBO GRAMMAR SCHOOL AKURE	4290609		
63.	PARKER INTERNATIONAL HIGH SCHOOL, AKURE	4290631		

64.	JUBILEE COMMUNITY GRAMMAR SCHOOL,ONDO	4291607		
65.	VICTORY COMPREHENSIVE COLLEGE, ONDO	4291651		
66.	ONDO ANGLICAN GRAMMAR SCHOOL, ONDO	4291605		
67.	ST JOSEPH'S COLLEGE, ONDO	4291604		
68.	DEMONSTRATION SECONDARY SCHOOL, ONDO	4291630		
69.	SUCCESS INTERNATIONAL COLLEGE	4291635		
70.	ONDO BOYS HIGH SCHOOL	4291601		
71.	A.U.D. HIGH SCHOOL, ONDO	4291616		
72.	ST HELENS UNITY SECONDARY SCHOOL, ONDO	4291613		
73.	TEMIDIRE INTERNATIONAL COLLEGE	4291638		
74.	HOLY TRINITY GRAMMAR SCHOOL, ONDO	4291506		
75.	HOMAJ INTERNATIONAL SECONDARY SCHOOL	4291631		
76.	HALLMARK SECONDARY SCHOOL, ONDO	4291511		
77.	EKIMOGUN COMMUNITY GRAMMAR SCHOOL, ONDO	4291501		
78.	COMMUNITY GRAMMAR SCHOOL, ORISUNBARE	4291508		
79.	COMMUNITYCOMPREHENSIVE HIGH SCHOOL, FAGBO	4291505		
80.	OGO-OLUWA COMMUNITY GRAMMAR SCHOOL	4291507		
81.	TEMIDIRE COMMUNITY GRAMMAR SCHOOL	4291509		

UNIVERSITY OF IBADAN, IBADAN NIGERIA
INSTITUTE OF EDUCATION

LAUREATE OF THE 2014 ADEA/AfDB
ENABLING INSTITUTIONAL ENVIRONMENT FOR EDUCATIONAL RESEARCH

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Professor Folajogun V. Falaye

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OFFICE OF THE DIRECTOR:
Director: 08033800454
Secretary: 08160960977
E-mail: instituteofeducation2010@gmail.com

12th March, 2018.

The Principal,

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Dear Sir/Ma,

LETTER OF INTRODUCTION

I write to introduce the bearer Mrs Hafsat Omotola Akanni (Matric. No. 165708). She is a student of the International Centre for Educational Evaluation (ICEE), Institute of Education, University of Ibadan, Nigeria.

I humbly request for your permission and assistance in the collection of data from you, your teachers and SS3 students. All information obtained will be geared towards making useful recommendations that will be of benefit to the improvement of education quality in Nigeria.

I will like to assure you that all the information that will be supplied will be treated with utmost confidentiality.

Thanks for anticipated cooperation.

Yours Faithfully,

Adewale

Professor J.G. Adewale

Head, ICEE

LAGOS STATE GOVERNMENT

EDU/DIST II/ SA/062/183 27th March 2018

Mrs. Hafsat Omotola Akanni
Department of International Centre for Educational Evaluation (ICEE)
Institute of Education,
University of Ibadan, Oyo State, Nigeria.

APPROVAL TO CONDUCT RESEARCH.

Sequel to your application to conduct research work of students, Teachers and Principal in secondary school in **Education District II, Maryland** which involves questionnaire.

I am directed to convey the approval of the **Tutor General/Permanent Secretary, Education District II** to carry out the research in our schools.

Furthermore, your research work should be restricted to the under listed schools:

1. Eva Adelaja Girls Secondary School.(Senior)
2. Gbagada Girls Senior Secondary School
3. Gbagada Senior Grammar School, Gbagada
4. C.M.S Girls Senior Grammar School, Bariga
5. Angus Memorial Senior Grammar School, Somolu
6. Baptist Senior Grammar School
7. Immaculate Heart Senior High School, Maryland
8. Mende Senior High School, Maryland
9. Ojota Senior High School, Ojota
10. Ogudu Senior Grammar School, Ogudu
11. Comprehensive Senior High School, Alapere ketu
12. Community Senior High School, Alapere, Ketu
13. Ayangburen Senior High School, Ikorodu
14. United Senior Grammar School, Ikorodu
15. Ikorodu Senior High School, Ikorodu
16. Government Senior college, Ikorodu
17. Shamseldeen Senior Grammar School, Ikorodu
18. Ikorodu Senior Grammar School, Ikorodu

Please ensure strict compliance.

Thank you

Okereke M.M (Mr.)
For: Tutor General /Permanent Secretary

MINISTRY OF EDUCATION
EDUCATION DISTRICT II

Maryland Schools Complex, Maryland - Ikeja, Lagos, Nigeria. 08159794011
E-mail: educationdistrict2@yahoo.com, educationdistrict2@gmail.com

LAGOS STATE GOVERNMENT

EDU/DIST II/ SA/062/183 27th March 2018

The Principal
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LETTER OF INTRODUCTION

I am directed to introduce **Mrs. Hafsat Omotola Akanni** a student of the Department of International Centre for Educational Evaluation (ICEE),with Matric number 165708 of Institute of Education, University of Ibadan, Oyo State, Nigeria.

She has been granted approval to conduct a research which involves questionnaire in schools under **Education District II, Maryland, Lagos State, Nigeria.**

Thank you

Okereke M.M (Mr.)
For: Tutor General /Permanent Secretary.

MINISTRY OF EDUCATION
EDUCATION DISTRICT II

Maryland Schools Complex, Maryland - Ikeja, Lagos, Nigeria. 08159794011
E-mail: educationdistrict2@yahoo.com, educationdistrict2@gmail.com