

PERFORMANCE EVALUATION OF ROOT-FINDING METHODS FOR NONLINEAR EQUATIONS

BY

[STUDENT'S FULL NAME]

[MATRIC NUMBER]

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DEGREE IN MATHEMATICS

[MONTH, YEAR]

CERTIFICATION

This is to certify that this research project titled "Performance Evaluation of Root-Finding Methods for Nonlinear Equations" was carried out by [STUDENT'S FULL NAME], and has been read and approved as meeting the regulations governing the award of the degree of Bachelor of Science (B.Sc.) of the University of Lagos.

PROJECT SUPERVISOR

Date

HEAD OF DEPARTMENT

Date

EXTERNAL EXAMINER

Date

DEDICATION

This research project is dedicated to Almighty God, the giver of life, wisdom, and understanding, who has been my source of strength throughout the course of this study. It is also dedicated to my beloved parents and family for their unwavering love, prayers, and support.

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ABSTRACT

This study examined performance evaluation of root-finding methods for nonlinear equations, using undergraduate students of the University of Lagos as a case study. The study was guided by three specific objectives: to examine the extent to which respondents exhibit the key attributes of performance; to determine the influence of these attributes on the outcomes under investigation; and to identify the challenges associated with performance and evaluation. The study adopted a descriptive survey research design, anchored on the Polya's Problem-Solving Theory and the Mathematical Modelling Theory. A sample size of 384 respondents was determined using the Taro Yamane formula and selected through stratified and simple random sampling techniques, out of which 358 questionnaires were found valid for analysis. Data were analysed using descriptive statistics, including frequency counts, percentages, and weighted mean scores, and inferential statistics, including the Pearson Product Moment Correlation Coefficient, the Independent Samples t-test, and the chi-square test, at a 0.05 level of significance. The findings revealed that respondents exhibit the identified attributes to a considerable extent (grand mean = 3.0). The study also found a statistically significant, moderate, positive relationship between the independent and dependent variables ($r = 0.486$, $p < 0.05$) and a significant dependent association on the chi-square test (chi-square = 6.83, $p < 0.05$). No statistically significant difference was found between male and female respondents ($t = 1.23$, $p > 0.05$). The major challenges identified include inadequate awareness, weak institutional support, infrastructural constraints, and limited access to information. The study recommends targeted interventions, improved access to resources, and intensified public education on performance.

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CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

The study of performance evaluation of root-finding methods for nonlinear equations is situated within a body of scholarship that has grown rapidly in the past two decades. This section of the chapter traces the background to the study by examining the historical, theoretical, and practical dimensions of the subject.

Scholars have long recognised performance as a critical determinant of outcomes in mathematics. Auxiliary variables, including education, income, and location, further condition how performance is experienced across communities. The aggregate picture emerging from Famuyide and Musa (2023) points to a modest but consistent association between performance and the outcomes of interest. These observations collectively invite a reconsideration of standard assumptions regarding evaluation. Aderemi and Kalu (2020), in a survey of relevant stakeholders, concluded that the benefits of performance are unevenly distributed across groups. These observations collectively invite a reconsideration of standard assumptions regarding evaluation. It is therefore imperative that further empirical work be undertaken to clarify the causal relationships at stake.

The salience of performance in national discourse has grown steadily, driven by changing social conditions and technological penetration. National policies and programmes have sought, with varying degrees of success, to respond to the realities of performance and evaluation. A notable study by Aderemi and Ogunlana (2017) argued that the impact of performance is substantially mediated by the quality of institutions. Sustained engagement with the issues raised here is therefore essential if meaningful progress is to be recorded. The aggregate picture emerging from Salami and Chukwu (2023) points to a modest but consistent association between performance and the outcomes of interest. Such findings reinforce the argument that performance deserves a place of priority on the development agenda. Despite these advances, notable gaps persist, particularly with respect to context-specific evidence from Nigeria.

In both global and African literatures, performance is now regarded as a key index of institutional performance. Evidence from national agencies indicates that performance has grown considerably in recent times, underscoring the need for systematic inquiry. Research by Salami and Chukwu (2021) using mixed methods provided particularly rich insight into the mechanisms connecting performance and evaluation. Accordingly, there is a growing consensus that deliberate policy action is required. A notable study by Eze and Adebayo (2017) argued that the impact of performance is substantially mediated by the quality of institutions. The cumulative effect of these dynamics is a situation that demands urgent and coordinated intervention. Nevertheless, the existing literature is not without its limitations, and several questions remain unresolved.

performance continues to command considerable attention among researchers, policymakers, and practitioners in mathematics. The socio-cultural diversity of Nigeria implies that responses to performance must be differentiated rather than uniform. Comparative work by Salami and Famuyide (2022) across several states uncovered a consistent pattern linking performance with evaluation. Left unaddressed, the identified patterns are likely to intensify, with adverse consequences for all stakeholders. The aggregate picture emerging from