

COMBINATORIAL COUNTING TECHNIQUES IN SCHEDULING AND ALLOCATION PROBLEMS

BY

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DEGREE IN MATHEMATICS

[MONTH, YEAR]

CERTIFICATION

This is to certify that this research project titled "Combinatorial Counting Techniques in Scheduling and Allocation Problems" 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.

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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 combinatorial counting techniques in scheduling and allocation problems, 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 combinatorial; to determine the influence of these attributes on the outcomes under investigation; and to identify the challenges associated with combinatorial and counting. 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 386 respondents was determined using the Taro Yamane formula and selected through stratified and simple random sampling techniques, out of which 363 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 = 3.15). The study also found a statistically significant, moderate, positive relationship between the independent and dependent variables ($r = 0.599$, $p < 0.05$) and a significant dependent association on the chi-square test (chi-square = 9.35, $p < 0.05$). No statistically significant difference was found between male and female respondents ($t = 1.25$, $p > 0.05$). 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 combinatorial.

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CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

The study of combinatorial counting techniques in scheduling and allocation problems 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.

The relationship between combinatorial and counting has been the subject of sustained academic interest across several disciplines. Within Lagos State, the country's most populous commercial hub, the dynamics of combinatorial are observed in their starkest form. The work of Ogbeide and Adeniyi (2023) extended earlier analyses by demonstrating that counting reinforces the effects of combinatorial. Accordingly, there is a growing consensus that deliberate policy action is required. A notable study by Nnamdi and Okonkwo (2017) argued that the impact of combinatorial is substantially mediated by the quality of institutions. The cumulative effect of these dynamics is a situation that demands urgent and coordinated intervention. Despite these advances, notable gaps persist, particularly with respect to context-specific evidence from Nigeria.

combinatorial, when examined in relation to counting, reveals complex and often paradoxical dynamics. The Nigerian context presents peculiar challenges, ranging from infrastructural deficits to institutional weaknesses, which shape the manner in which combinatorial unfolds. Findings reported by Adebayo and Adeniyi (2018) observed that respondents with greater exposure to combinatorial recorded markedly different results. Sustained engagement with the issues raised here is therefore essential if meaningful progress is to be recorded. A notable study by Ogunlana and Obiora (2017) argued that the impact of combinatorial is substantially mediated by the quality of institutions. The weight of evidence therefore points toward a renewed commitment to evidence-based decision-making. It is therefore imperative that further empirical work be undertaken to clarify the causal relationships at stake.

Scholars have long recognised combinatorial as a critical determinant of outcomes in mathematics. Nigeria's federal structure and its diverse cultural geography ensure that the experience of combinatorial varies considerably from one region to another. An examination by Ogunlana and Obiora (2019) attributed much of the observed variation in outcomes to institutional capacity and policy continuity. Such findings reinforce the argument that combinatorial deserves a place of priority on the development agenda. Bello and Osinachi (2020), in a survey of relevant stakeholders, concluded that the benefits of combinatorial are unevenly distributed across groups. Such findings reinforce the argument that combinatorial deserves a place of priority on the development agenda. A recurring weakness in the literature concerns the difficulty of isolating the precise influence of $\{k_0\}$ from confounding factors.

The relationship between combinatorial and counting has been the subject of sustained academic interest across several disciplines. Globalisation and technological change have intensified both the opportunities and the challenges associated with combinatorial. Field evidence gathered by Umeh and Musa (2016) suggested that stakeholder engagement materially improves the results achieved in matters of combinatorial. The