



Basic Concepts and Applications of Experimental Designs and Analysis

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Dedication

This book is dedicated to our families and friends for their constant support in course of writing this book. It is time to celebrate the successes we have chalked together.

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Preface

Researchers, academics and students are engaged in one form of research or the other that requires designing. However be it as it may, most of these individuals are not conversant with selecting the appropriate experimental designs that should best suit their respective researches or studies. To some understanding the concepts and basis of these designs are quite a challenge. Still others have a huge challenge handling these designs because of the complex mathematics underpinning these designs.

In addition there is no one stop book that treats in details the various designs and the mathematical principles underlying them. One might advance the argument that computer applications aid analyzing of these designs but the same cannot be said of these designing and selecting the appropriate designs for individuals in the conduct researches.

This book covers thoroughly the explanations of the concepts and basic terms in almost all the known experimental designs; the mathematics underlying these; how to select the appropriate designs for a study and a logical sequence of analyzing these designs. For each of these designs, hypothetical examples of experiments have been provided with stepwise approaches towards analyzing them. It treats complex designs in a simplified way to enhance the understanding of its readership. The designs are arranged in a systematic order of increasing complexity.

Albeit the underlying principles of experimental designs and analysis are based on mathematic, the other aspect of designs, which is the actualization or practising is equally challenging. Oftentimes when it comes to mounting of an experiment using a particular design, people understand the mathematical basis, however identifying and allocating the different treatments or levels or factors of treatments to each plot or experimental units (as to whether they are

homogeneous or heterogeneous) become a dilemma to them. This book does not only deal with the mathematics behind each design but also how to identify the treatments; levels of treatments; whether a plot or a unit is homogenous or heterogeneous; and explains and demonstrate with practical examples on how to identify and allocate factor in the design as main factors or sub factors based when applicable.

Each chapter dwells extensively and exhaustively on a particular design with hypothetical data analysed and interpretations to aid the readers understanding of the design.

This is thus a must read book for all involved in designing of experiments in diverse fields.

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