

INTRODUCTION

The aim of every organization, company or firm is to make profit as that is what guarantees its continuous existence and productivity. Overtime, issues have been raised about the closure or liquidation of organizations, these chief amongst others may be as a result of lack of effective and sustainable profit maximization.

Businesses can only grow and expand when profit is made as profit is the major reason people go into business. In order to ensure economic development and generation of jobs, government and its stakeholders in the corporate world need to ensure that profit is being maximized as failure to do so would result to fatal economic and social consequences of retrenchment and economic underdevelopment. In the labour market, a lot have been done to ensure profit maximization in Nigeria, ranging from retrenchment of workers which is an anti-people approach to ensuring strict compliance to the mathematical or economic principles of profit maximization. The latter, as good as it sounds have been elusive to companies and corporations, this has made companies and establishments to take the easy way out of lack of maximization of profit by retrenching or downsizing their workers. One of the mathematically proven ways to ensure profit maximization is the linear programming method.

Linear programming (LP) can be defined as a mathematical technique for determining the best allocation of a firm's limited resources to achieve optimum goal. It is also a mathematical technique used in Operation Research (OR) or Management Sciences to solve specific types of problems such as allocation, transportation and assignment problems that permits a choice or choices between alternative courses of action (Yahya, 2004). Linear programming is a term that covers a whole range of mathematical techniques that is aimed at optimizing performance in terms of combinations of resources (Lucey, 1996).

Linear Programming being the most prominent OR technique, it is designed for models with linear objective and constraint functions. A LP model can be designed and solved to determine the best course of action as in a product mix subject to the available constraints.

Generally, the objective function may be of maximization of profit (which is the focus of this paper) or minimization of costs or labor hours. Moreover, the model also consists of certain structural constraints which are set of conditions that the optimal solution should justify. Examples of the structural constraints include the raw material constraints, Production time constraint, and skilled labour constraints to mention a few. An optimum solution is a solution that fulfills both the constraints of the problem and the set objective to be met.

The term "linear", as stated by Akingbade (1996), implies proportionality, which means that the elements in a situation are so connected that they appear as straight line when graphed. While the "programming" indicates the solution method which can be carried out by an iterative process in which a researcher advances from one solution to better solution until a final solution is reached which cannot be improved upon. This final solution is termed the optimal solution of the LP problem.

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While the “programming” indicates the solution method which can be carried out by an iterative process in which a researcher advances from one solution to better solution until a final solution is reached which cannot be improved upon. This final solution is termed the optimal solution of the LP problem. This work demonstrates the pragmatic use of linear programming methods in maximization of profit at the crunches fried chicken.

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1.2. STATEMENT OF THE GENERAL PROBLEM

The current alarming level of organizational liquidation which has led to the increase in unemployment or under employment has been a clog in the wheel of the economic advancement of the nation, the current high level of unemployment amongst our youths has led to the increase in social vices with youths resorting to other illegal means of livelihood, all these is actually as a result of the liquidation of companies and organizations who would have gainfully employed these youths and help in the contribution to the nation's gross domestic products (GDP).

1.3. OBJECTIVE OF THE STUDY

The main objective of this study is to examine the application of linear programming in profit maximization. Other objectives of the study include;

1. To highlight the peculiarities of using linear programming technique at the crunches fried chicken and prove that despite the obstacles, the application of the technique in determining the profit maximization in Crunches fried chicken would be more profitable than otherwise.

2. To encourage companies to adopt the application of linear programming technique in ensuring maximization of profit. It seeks to illustrate the profitability of using the technique despite the peculiarities of applying it in the particular economic environment.

1.4. SIGNIFICANCE OF THE STUDY

The finds from this study would be of immense importance to government establishments, captains of industries and employers of labour as it would help them in profit maximization and organizational growth and expansion. This study would equally benefit students, scholars

and researchers who are interested in the linear programming research.

1.5. RESEARCH METHODOLOGY

Crunches fried chicken is chosen for this study for two main reasons. First, it uses the trial-and-error method in arriving at major management decisions even when the research department feels that a linear programming approach would have given a better result. Secondly, Crunches fried chicken produces eight different products which makes the determination of the quantity combinations of the products produced an important and major management decision. The research is designed to cover one month, 1st to 31st July, 2016. Researchers have investigated the overall quantity combination of the eight products produced by Crunches fried chicken, Uyo during the research period and the allocation of resources to the various products. This has been made possible by the records kept by the Production Line Manager and the Sales Department relating to the different brands of products produced by the firm, the technical coefficients, the raw materials available and their relative prices. Researchers also had personal interview with a representative of the management. Researchers then applied linear programming to determine a new quantity combination. The total contribution to profit of each of the products for the month using the new quantity will now be compared with the total profit contribution made by the former product mix determined by the trial-and-error method. The problems encountered in the process will be noted and from personal interviews and relevant records, other peculiarities shall be established. When there are n choice variables and m constraints, the linear programming takes the general form with a linear objective function, a set of linear inequality constraints and a set of non-negativity restrictions as its major ingredients. The generalized n variable linear programme can be stated as below:

1.6. SCOPE OF THE STUDY

This study would be restricted to the application of linear programming in profit maximization using the crunches fried chicken uyo as a case study.

1.7. LIMITATION OF THE STUDY

The researcher was constrained by time as time frame for the submission of this research was short for an expansive research.

The researcher equally encountered financial limitation as lack of sponsorship from corporate

bodies thus; the researcher's little resources could not cover more areas.

1.8. DEFINITION OF TERMS

Linear programming: a mathematical method of solving practical problems (as the allocation of resources) by means of linear functions where the variables involved are subject to constraints

Development: the act or process of growing or causing something to grow or become larger or more advanced

Profit Maximization: A process that companies undergo to determine the best output and price levels in order to maximize its return. The company will usually adjust influential factors such as production costs, sale prices, and output levels as a way of reaching its profit goal. There are two main profit maximization methods used, and they are Marginal Cost-Marginal Revenue Method and Total Cost-Total Revenue Method. Profit maximization is a good thing for a company, but can be a bad thing for consumers if the company starts to use cheaper products or decides to raise prices.

THE APPLICATION OF LINEAR PROGRAMMING IN PROFIT MAXIMIZATION (A CASE STUDY OF CRUNCHES FRIED CHICKEN AKA ROAD)

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