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Commerce Executive v/s Mathematical Modeling

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Abstract: Mathematics can be second-hand to represent real-world situations. Mathematical Models are used that scrutinize historical data and use probability distribution as input for predicting the future principles. For the Commerce administrative statistical or quantitative aspects of the various components of the dilemma are the most important. When we build a mathematical model and put into symbols for constants and variables, which for the most part stand for numbers in Commerce executive. Break-even analysis/Cost-volume-profit model, quantitative model, inventory models are very useful for the Commerce enrichment. In processing executive accounting business, the combination of mathematical models and the actual stipulation of enterprises and communal institutions can effectively solve various organization problems and evade different outfitted risks, But according to the Commerce executive theory, scientific executive accounting is not post-executive, but need the establishment of highly-adaptive mathematical models according to certain mathematical management ideas and principles to measure relevant parameter indexes, solve various difficult problems relating to enterprise supervision, and achieve effective executive. This is of great connotation to the prophecy, planning and control of enterprise procedure tricks.

Keywords: Commerce, Executive, Mathematical Modeling.

1. Introduction

Different Mathematical Model in Commerce Executive Mathematical models involved in supervision secretarial provides evidences for running decisions by making quantitative and qualitative analyses on the correlation between different economic normality factors through mathematical and thinking logic in the objective perception and reflecting the intention states of the economic factors based on the scientificity and meticulousness of mathematical logical thinking. Considering the practical operation and practices of enterprise management, the mathematical models involved in enterprise management accounting mainly include general mathematical model, mathematical analysis model, input-output model, linear planning model and probability statistic model.Most executive science analysis is executed with the aid of mathematical models which utilize mathematical symbols. These are general rather than specific and can describe assorted situations. additionally they can be manipulated easily for purposes of carrying out tests and prediction.

2. Mathematical Modeling Structures in Commerce Executive

Mathematical models are usually composed of relationships and variables. Relationships can be described by operators, such as algebraic operators, functions, differential operators, etc. Variables are abstractions of system parameters of interest, that can be quantified.Several classification criteria can be used for mathematical models according to their structure:

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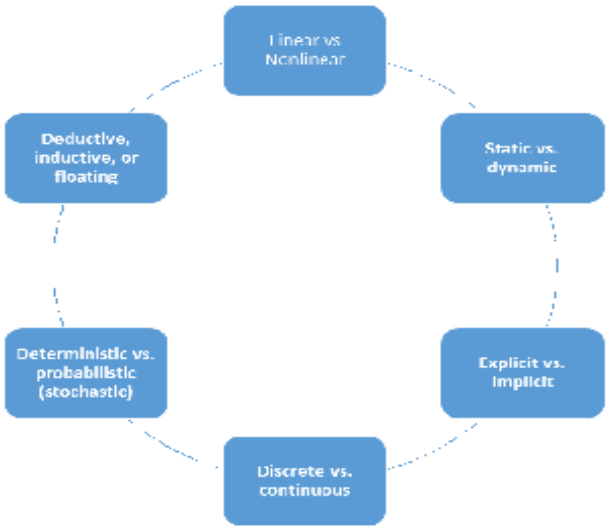
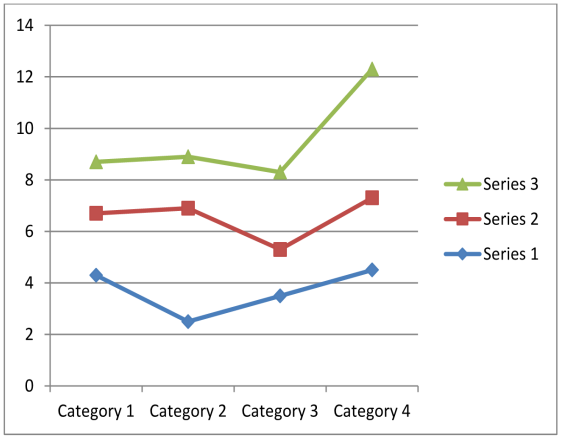


These mathematical models structures are very useful in business fields. Mathematical models are typically in the form of equations or other mathematical statements. For example, the relationship between cost, revenue and profit can be expressed as $Profit = Revenue - cost$.

Different Mathematical Models used to defined the different equation for the business executives: Mathematical analysis models combine multiple functions with management accounting practice and applied elastic analysis and marginal analysis in management accounting. Input-output models are applied to control Enterprise system executive and wide-ranging balance. Linear planning models and probability statistic models are used for performing Mathematical investigation on enterprise related data and solving problems based on the characteristics of executive accounting. As a result, project executive staffs can scientifically and intuitively understand association process situation and capital procession possibility level to improve association executive level.

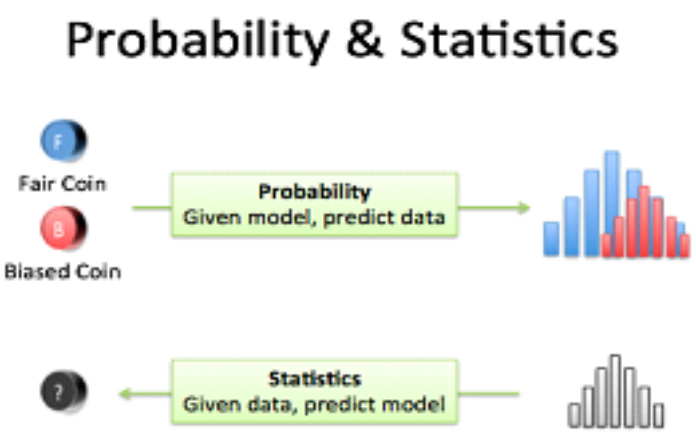
General Mathematical Model Structures in Commerce: These are usually used in case of new product launch, change in strategy, investment needs, expansion projects, etc. In such cases, predictive mathematical models are used that analyze historical data and use probability distribution as input for predicting the future value. Regression analysis is one of the most commonly used techniques for predictive models. Mathematical Models help us to predicting the values and for the decision making statement. The Regression lines Y on X and X on Y help us for predicting the values $Y = a + bX$ and $X = a + bY$.

Decision making statistical models can be of great use here. Such models use input variables and a set of conditions to be fulfilled to help executive arrive at a decision. One of the most rare supervisory problems faced by any business is the savings resolution. For Example Mathematical Models help us to taking decision and describing the values in form of graph



	Series 1	Series 2	Series 3
Category 1	4.3	2.4	2
Category 2	2.5	4.4	2
Category 3	3.5	1.8	3
Category 4	4.5	2.8	5

Probability and Statistics Model in Commerce: Amodel, which is based on statistics and probability and into which a decision maker introduces uncertainties/risks pertaining to real events, is called probabilistic. A likelihood distribution is a statistical model that shows the probable outcomes of a particular event or way of action as well as the statistical likelihood of each event. For example, a company might have a probability allocation for the change in sales given a particular marketing operation. The values on the "tails" or the left and right end of the circulation are much less likely to occur than those in the middle of the curve. The Probabilistic model is very useful companies face decisions, both large and small, every day. There are many ways that commerce decisions can be made. One type of decision-making investigation involves using probabilities and monetary procedures to make decisions.A Marketing manager needs to gather and investigate a large amount of data pertaining to market dynamics and target customers. Ideally, marketing approach depends up on the outcomes of a advertise research, which involves statistical methods for collecting and analyzing data, application of variety techniques and evaluating the effect of various promotion strategies. There are different statistics models like Binomial Distribution, Poisson distribution, Normal Distribution help us for the Decision Making and For Prediction the value when So many Samples are given



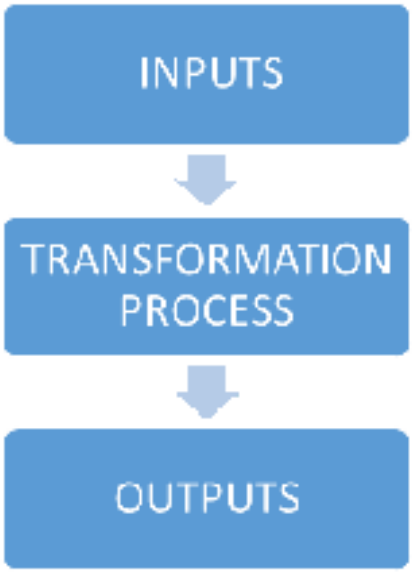
Linear Programming Models in Commerce :Linear Programming model is one of the most important models which help us to optimizing the solution of the problem maximizing the profit and minimizing the expenditure of industrialist. It is disturbed with realization of an best possible position in relation to some objective, usually minimization of costs or maximization of profits. Difficulty of technology because of multifarious associations that exist between cost, profit, resources utilization, labour utilize, mechanism moment in time, production volumes, energy, allotment and time. Linear Programming Models deals with Transportation problems, Allocation Problem, subsistence of many possible combinations in respect of products, processes, capacities, volumes, timing, storage, transportation tribulations

Example: A small factory produces two types of toys: trucks and bicycles. In the manufacturing process two machines are used: the lathe and the assembler. The table shows the length of time needed for each toy:

	Time on lathe (hours	Time on assembler (hours)
Bicycle	4	2
Truck	5	6

The lathe can be operated for 16 hours a day and there are two assemblers which can each be used for 12 hours a day. Each bicycle gives a profit of £16 and each truck gives a profit of £14. Formulate and solve a linear programming problem so that the factory maximizes its profit. Manager can select the best solution with the help of LP by evaluating the cost and profit of various alternatives.

Input Output Model in Commerce: Input is the process of taking something in, while output is the process of sending something out. An input-output model shows the relationship of those factors going in (input) so that a company can produce a final good (output). Some examples of inputs include money, supplies, knowledge, and labor. It is used for macroeconomics analysis. It includes all inputs into production, and records materials flow and financial connections among different units within a corporation and between the company and the outside market.The inputs represent the flow of data and materials into the process from the outside. The dealing out step includes all tasks required to effect a translation of the inputs. The outputs are the data and resources curving out of the conversion process.



It can be used to provide information and analytical support for making business decisions.The input-output analysis consists of two parts: the construction of the input-output table.

Example: In input-output work, a fundamental assumption is that the interindustry flows from i to j-recall that these are for a given period, say a year-depend entirely on the total output of sector j for that same time period. Clearly, no one would argue against the idea that the more cars produced in a year, the more steel will be needed during that year by automobile producers. Where argument does arise is over the exact nature of this relationship. In input-output analysis it is as follows: Given z_{ij} and x_j-for example, input of aluminium (i) bought by aircraft producers (j) last year and total aircraft production last year-form the ratio of aluminum input to aircraft output, z_{ij}/x_j [the units are ($/$)], and denote it by a_{ij}

$$a_{ij} = z_{ij}/x_j = \text{(value of aluminum bought by aircraft producers last year)/ value of aircraft production last year}$$

This ratio is called a technical coefficient; the terms input-output coefficient.

Inventory Mathematical Model in Commerce Inventory: model is a mathematical model that helps commerce in determining the optimum level of inventories that should be maintained in a fabrication progression, organization regularity of ordering, deciding on quantity of goods or raw materials to be stored, and tracking flow of supply of raw materials.

The mathematical approach is typically formulated as follows: a store has, at time k, x_k items in stock. It then orders (and receives) u_k items, and sells w_k items, where w follows a given probability distribution. Thus $x_{k+1} = x_k + u_k - w_k$, $u_k \geq 0$. Whether x_k is allowed to go negative, consequent to back-ordered items, will depend on the specific situation; if allowed there will usually be a penalty for back orders. The store has costs that are related to the number of items in store and the number of items ordered:

$c_k = c(x_k, u_k)$. Often this will be in additive form: $c_k = p(x_k) + h(u_k)$. The store wants to select u_k in an optimal way, i.e. to minimize $\sum_{k=0}^{T} c_k$. Inventory Model is very help for Cost of the goods and supply, production and large orders will

increase the amount of inventory on hand, which is costly, but may benefit from volume discounts. Numerous orders are costly to process, and the consequential small inventory levels may increase the probability of stock outs, primary to loss of customers. In principle all these factors can be calculated mathematically and the optimum found.

Forecasting human resource demand: Forecasting human resource demand is the process of estimating the future human resource requirement of right quality and right number. As discussed earlier, potential human resource requirement is to be estimated keeping in view the organisation's plans over a given period of time. Analysis of employment trends; replacement needs of employees due to death, resignations, retirement termination; productivity of employees; growth and expansion of organisation; absenteeism and labour turnover are the relevant factors for human resource forecasting. Demand forecasting is affected by a number of external and internal factors. Job analysis and forecasting about the quality of potential human resource facilitates demand forecasting. So, existing job design must be thoroughly evaluated taking into consideration the future capabilities of the present employees.

Techniques of estimating human resources: Work-Study Technique: This technique is also known as 'work-load analysis'. This technique is suitable where the estimated work-load is easily measurable. Under this method, estimated total production and activities for a specific future period are predicted. This information is translated into number of man-hours required to produce per units taking into consideration the capability of the workforce. Past-experience of the management can help in translating the work-loads into number of man-hours required. Thus, demand of human resources is forecasted on the basis of estimated total production and contribution of each employee in producing each unit items. The following example gives clear idea about this technique. 4tw Let us assume that the estimated production of an organisation is 4.00.000 units.

The standard man-hours required to produce each unit are 4 hours. The past experiences show that the work ability of each employee in man-hours is 1600 hours per annum.

The work-load and demand of human resources can be calculated as under:

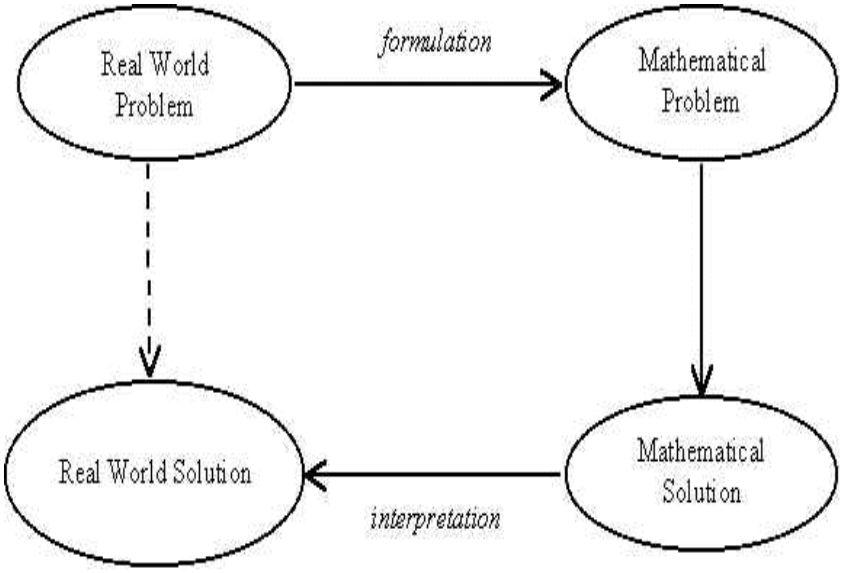
- Estimated total annual production = 400000 units
- Standard man-hours needed to produce each unit = 4 hrs
- Estimated man-hours needed to meet estimated annual production (i x ii) =1600000 hrs
- Work ability/contribution per employee in terms of man-hour = 1600 units
- Estimated no. of workers needed (iii / iv) = 1600000/1600 = 1000 units

The above example clearly shows that 400 workers are needed for the year. Further, absenteeism rate, rate of labour turnover, resignations, deaths, machine break-down, strikes, power-failure etc. should also be taken into consideration while estimating future demand of human resources/ manpower.

Ratio-Trend Analysis: Demand for manpower/human resources is also estimated on the basis of ratio of production level and number of workers available. This ratio will be used to estimate demand of human resources. The following example will help in clearly understanding this technique. Estimated production for next year = 1,40,000 units Estimated no. of workers needed (on the basis of ratio-trend of 1: 200) will be = 700.

Termination and Consequence: Mathematical Model deal with real world situation. It is very of assistance for business organization not only for the prediction but also for decision making, for the business accounting also for manage all the economy. Mathematical model provide the structures for inputs the data, provides mathematical equation for dispensation on it and for output it's provide the decision making statement for overcome the risks. Poles parts of Mathematical

Models also provide the comprehension to understand the how the real economy works. it also works on optimizing the variables, parameter to controlling the cost and maximization of the profit. Mathematical model is an generalization or oversimplification that allows us to précis (describe) a system. Once you have a mathematical model you have a list of inputs and a list of outputs and some sort of specific algorithm that tells you what the outputs will be given the input. Mathematical Executive ideas and principles to measure relevant parameter indexes, solve various difficult problems relating to enterprise regulation, and achieve effective executive. This is of great connotation to the foresight, planning and control of enterprise course of action tricks.Mathematical modeling gives us a recipe how to make simpler experiential occurrence and to arrive at a computationally tractable description. Mathematical basically deals with following real world situation in following Structures.



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