

# Importance of business mathematics in management essay sample

[Business](#), [Management](#)



Management is the process of reaching organizational goals by working with and through people and other organizational resources.

Or

1. It is a process or series of continuity and related activities.
2. It involves and concentrates on reaching organizational goals.
3. It reaches these goals by working with and through people and other organizational resources.

What is business?

An organization, which works for the purpose to earn profit.

What is business mathematics?

A particular problem for management is that most decisions need to be taken in the light of incomplete information. That is, not everything will be known about current business processes and very little (if anything) will be known about future situations. The technique described in “ business mathematics and statistics” enable structures to be built up which helps management to alleviate this problem. The main areas included in the manual are:

- a) Statistical method
- b) Management mathematics
- c) Probability

## 1. Statistical Method:

Statistical method can be described as:

- i) The selection; collection and organization of basic facts into meaningful data.
- ii) The summarizing, presentation and analysis of data into meaningful information.

The gap between facts as they are recorded (anywhere in the business environment) and information which is useful to management is usually a large one.

The process that enable this gap to be bridged for example management would find percentage defect rates of the fleets of lorries in each branches more useful than the daily tachometer readings of individual vehicles. That is, management generally require summarized values which represent large areas under their control, rather than detailed figures describing individual instances which maybe untypical.

## 2. Management Mathematics:

The two areas can be described as “ Management mathematics” are as follows

- a) The understanding and evaluation of the finances involved in business investments. This involves considering interest, depreciation, the worth of

future cash flows (present value); various ways of repaying loans and comparing the value of competing investment projects.

b) Describing and evaluating physical production processes in quantitative terms. Techniques associate with this area enable the determination of the level of production and crisis that will minimize costs or maximize the revenue and profits of production processes.

Involved in both of the above are the manipulation of algebraic expressions, graph drawing and equation solving.

### 3. Probability:

Probability can be thought of as “ the ability to attract limits to areas of uncertainty. For example: company profit for next year is an area of uncertainty, since there will never be the type of information available that will enable management to forecast its value precisely. What can be done however, given the likely state of the market and a range of production capacity, is to calculate the limits within which profit is likely to lie. Thus calculations can be performed which enable statements such as “ there is a 90% chance that company profit next year will lie between \$292, 000 and \$296, 000 to be made.

### IMPORTANCE OF BUSINESS MATHEMATICS IN MANAGEMENT:

Organizational resources would be complete without the mention of management skills, perhaps the primary determinant of how effective and efficient managers will be.

According to a classic article by Robert L. Katz; managerial success depends primarily on performance rather than on personality traits.

Katz indicated that three types of skills are important for successful management performance: technical skills, human skills and conceptual skills.

\* Technical skills: involve using specialized knowledge and expertise in executing work-related techniques and procedures. Examples of these skills are engineering, computer programming and accounting. Technical skills are mostly related to working with “ things”-processes or physical objects.

\* Human skills: are skills that are involved in the ability to build co-operation within the team being led.

\* Conceptual skills: are skills that are involved in the ability to see the organization as a whole.

## 2. STATISTICAL INVESTIGATIONS:

Management decisions are based on numerous pieces of information obtaining from many different sources. They may have used one, some or all of the techniques, which have been described as statistical method, management mathematics or probability. What the decisions will all have in common however is that they are the final product of a general structure (or set of processes) known as an investigation or survey. Some significant factors are listed as follows.

a) Investigations can be fairly trivial affairs, such as looking at today's orders to see which are to be charged to credit or cash. Others can be major undertakings, involving hundreds of staff and a great deal of expense over a number of years, such as the United Kingdom population census (which is carried out every ten years).

b) Investigations can be carried out in isolation or in conjunction with others. For e. g., the calculations of the official monthly Retail Price Index involves a major (on going) investigation which includes using the results of the family expenditure survey which is used also for other purposes. However information needed for first line management to control the settings of machine on a production line might depend only on sampling at regular interval.

c) Investigations can be regular (routine or on going) or " one-off"- for e. g.: the preparation of a company's hail balance as against a special investigation to examine the calculation of stock re-order levels.

d) Investigation is carried out on population. A population is the entirety of people or items (technically known as members) being considerate. Thus, if a company wanted information consist of all the jobs started in the last calendar year say.

For primary characteristics are usually present in situations in which management science techniques are applied.

1. The management problems studied is so complicated that managers need to help analyzing a large number of variables. Management science techniques increase the effectiveness of the manager's decision making in such a situation.

2. A management science application generally uses economic implication as guideline for making a particular decision.

Perhaps this is because management science techniques are best suited for analyzing quantifiable factors such as sales, expenses; and unit of production.

3. The uses of mathematical model to investigate the decision situation is typical in management science application.

Model constructed to represent world situation might be improved.

Today managers use such management science tools as inventory control models, network models and probability models to aid them in the decision making process.

Management information system and the scientific method are important tools for managers and researches.

By the business mathematics, managers can record the daily transaction, which occurs. Many terminologies used in the field of business without these mathematical terms, the organization can't live.

There are so many different concepts where mathematics are used in business such as, future value, present value, annuity, perpetuities, growth rate; loan amortization, ARR, book value, depreciation; payback period, net present value profitability index, IRR.

Formulas to “predict out” the calculation

1. Future value: it is compound value, is the amount to which a present amount of money or a series of payment will grow over time when compounded at a given interest rate.

$$Fv = Pv (1+i)^n$$

2. Present value: present value is the current value of a future amount of money, or series of payments, evaluate an approximate discount rate.

$$Pv = Fv$$

$$(1+i)^{-n}$$

3. Annuity: Equal amount with equal intervals. Equal stream of period with an equal time of period.

Ordinary annuity:  $PvoAn = A \frac{1 - (1+i)^{-n}}{i} = 1$

$$t = \frac{1}{i} (1+i)^t$$

4. Loan amortization: an amortized loan involves a series of equal installments over the life of a loan, each which includes both interest and repayment of principle.



$$A = Pvo A$$

$$PvIFAi'n$$

5. ARR: It is the average rate of

$$ARR = \text{average net income after taxes}$$

Average book value

6. NPV: Net present value

It is the net present value of capital budgeting project is the dollar amount of change in the value of the firm as a result of undertaking the project.

$$NPV = PVI - PVO$$

7. PI: profitability index

$$PI = PVI$$

PVO

8. IRR: the internal rate of return is the estimate rate of return for a proposed project, given the project's incremental cash flows.

Importance of percentage in management:

Percentage: the term percent means "for each hundred".

Thus, if you get 90 answers right out of 100 in a math's test, you can say that 90 percent (%) of your answers are correct.

\* Percent (%) means for each hundred. The rate is always a percent.

\* Percent indicates an actual quantity.

To find out the rate, divide the percentage by the base.

Rate = Percentage

Base

Percentage in management:

Percentage has great importance in the field of management.

In many businesses, when the firm is going to undertake the project, they have needed to know the “ net price value (NPV) of capital budgeting project” which is the dollar amount of change in the value of the firm as a result of undertaking the project.

Or

NPV is the difference between the present value of cash inflow from the investment and its cost.

NPV create some problem for management.

1. It is difficult to explain NPV to people who are not formally trained in finance.

2. A second problem is that the NPV method result are in dollars, not in percentages.

This is why it becomes very difficult to work. Many owners and managers prefer to work with percentages because percentages can easily be compared to other alternatives. Business people calculate the percent of increase or decrease in transactions such as sales, costs, expenses and profits. Government employees compute the percent of economic growth and unemployment.