Unit 31: Statistics for Management

Unit code	**R/508/0570**
Unit level	**5**
Credit value	**15**

Introduction

The aim of this unit is to provide students with an understanding of how management information and decision-making are enhanced by the application of statistical methods. Students will learn about a range of statistical techniques and how they can inform management thinking. While studying the unit they will develop their numerical abilities and increase their confidence in handling data in order to create information and knowledge.

Learning Outcomes

By the end of this unit a student will be able to:

1 Evaluate business and economic data/information obtained from published sources.

2 Analyse and evaluate raw business data using a number of statistical methods.

3 Apply statistical methods in business planning.

4 Communicate findings using appropriate charts/tables.

Essential Content

LO1 **Evaluate business and economic data/information obtained from published sources**

Interpretation of business and economic data:

The nature of data and information, and how data can be turned into information and information into knowledge.

Interpreting data from a variety of sources using different methods of analysis: descriptive, exploratory and confirmatory.

LO2 **Analyse and evaluate raw business data using a number of statistical methods**

Statistical methods that are used to analyse and evaluate data:

Differences between qualitative and quantitative raw data analysis.

Descriptive statistics:

Measures of central tendency (e.g. mean, median).

Measures of variability (e.g. range, standard deviation).

Application to business data (e.g. finding average earnings, measuring variability in business processes such as queuing times and customer arrival rates).

Inferential statistics:

The difference between sample and population.

Different sampling techniques and methods.

Measuring association:

Use of scatter plots, correlation and regression analysis, simple forecasting.

Business applications such as the association between output and cost, advertising and sales.

Evaluating use of software such as Excel and SPSS to perform raw data analysis.

Applying the appropriate methods and tools for evaluation of raw data.

LO3 **Apply statistical methods in business planning**

Statistical methods for business planning:

Applying statistical methods to a number of areas of business planning and operations management, including inventory management and capacity management.

Measures of variability:

The issue of variability in business processes (e.g. arrival rates of customers and time taken to deal with customers), and how this leads to a trade-off between waiting time and process utilisation.

Statistical process control in quality management.

Measures of probability:

Probability distributions and application to business operations and processes.

Normal distribution (e.g. weights and measures regulations and statistical process control),

Poisson distribution (e.g. customer arrival rates) and binomial distribution (e.g. inspection sampling).

Inference (e.g. margins of error and confidence limits).

LO4 **Communicate findings using appropriate charts/tables**

Different variables:

Choosing the most effective way of communicating the results of your analysis and variables.

Nominal, ordinal and interval/ratio levels.

Different types of charts/tables and diagrams:

The use of frequency tables, simple tables, pie charts, histograms, frequency curves and normal curve.

Advantages and disadvantages of different types of methods.

Presentation of information using tables and charts.

Software for producing charts/tables (e.g. Excel).

Learning Outcomes and Assessment Criteria

<table>
<tr><th>Pass</th><th>Merit</th><th>Distinction</th></tr>
<tr><td colspan="2">LO1 Evaluate business and economic data/information obtained from published sources</td><td rowspan="5">LO1 & 2
D1 Critically evaluate the differences in application between methods of descriptive, exploratory and confirmatory analysis of business and economic data.</td></tr>
<tr><td>P1 Evaluate the nature and process of business and economic data/information from a range of different published sources.
P2 Evaluate data from a variety of sources using different methods of analysis.</td><td>M1 Critically evaluate the methods of analysis used to present business and economic data/information from a range of different published sources.</td></tr>
<tr><td colspan="2">LO2 Analyse and evaluate raw business data using a number of statistical methods</td></tr>
<tr><td>P3 Analyse and evaluate qualitative and quantitative raw business data from a range of examples using appropriate statistical methods.</td><td>M2 Evaluate the differences in application between descriptive statistics, inferential statistics and measuring association.</td></tr>
<tr><td colspan="2">LO3 Apply statistical methods in business planning</td><td rowspan="2">D2 Make valid recommendations and judgements for improving business planning through the application of statistical methods.</td></tr>
<tr><td>P4 Apply a range of statistical methods used in business planning for quality, inventory and capacity management.</td><td>M3 Evaluate and justify the use of appropriate statistical methods supported by specific organisational examples</td></tr>
<tr><td colspan="2">LO4 Communicate findings using appropriate charts/tables</td><td></td></tr>
<tr><td>P5 Using appropriate charts/tables communicate findings for a number of given variables.</td><td>M4 Justify the rationale for choosing the method of communication.</td><td>D3 Critically evaluate the use of different types of charts and tables for communicating given variables.</td></tr>
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Recommended Resources

Textbooks

ANDERSON, D. et al (2010). *Statistics for Business and Economics.* 2nd Ed. Cengage Learning.

MORRIS, C. (2012) *Quantitative Approaches in Business Studies.* 8th Ed. Harlow: Pearson Prentice Hall.

DAVIS, D. and PECAR, B. (2013) *Business Statistics Using Excel.* 2nd Ed. Oxford: Oxford University Press.

SLACK, N. and BRANDON-JONES, A. (2008) *Quantitative Analysis in Operations Management.* Harlow: Pearson Prentice Hall.

Links

This unit links to the following related units:

Unit 5: Management Accounting

Unit 6: Managing a Successful Business Project

Unit 25: Principles of Operations Management

Unit 11: Research Project

Unit 13: Financial Reporting