4.3 Sales forecasting

*Doubt is the key to knowledge.* Persian proverb

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<thead>
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<th>HL content</th>
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<tr>
<td>Up to four-part moving average, sales trends and forecast (including seasonal, cyclical and random variation) using given data</td>
<td>AO4</td>
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<tr>
<td>The benefits and limitations of sales forecasting</td>
<td>AO3</td>
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Sales, trends and forecasting

Sales forecasting is a quantitative management technique used to predict a firm’s level of sales over a given time period. It is important because sales forecasts can help a firm to identify problems and opportunities in advance. However, trying to predict what will happen in the future is difficult because there are so many variables that are subject to change. Hence, the forecasts may turn out to be completely inaccurate.

To make realistic and accurate forecasts, managers use several sales forecasting techniques, such as:

- **Extrapolation** – This forecasting technique identifies the trend by using past data and extending this trend to predict future sales. For example, if a firm’s sale revenues have increased by an average of 5% each year for the past several years, then it might be expected that this trend continues in the near future. Graphically, the trend can be identified by a line of best fit and extrapolation simply extends this line to make predictions (see Figure 4.3.a). Extrapolation works well if there is a clear correlation (relationship) between two sets of numbers, such as sales revenue over a period of time or the correlation between marketing expenditure and sales growth.

- **Market research** – Identifying and forecasting the buying habits of consumers can be vital to a firm’s prosperity and survival. For example, despite being the top global producer of cars for 76 years, General Motors grew complacent and overproduced cars, failing to recognise the changing demands of customers. With soaring oil prices and greater concerns for the environment, Toyota took over as the top motor manufacturer in 2006, with its highly successful fuel efficient and hybrid vehicles.

- **Time series analysis** – This technique attempts to predict sales levels by identifying the underlying trend from a sequence of actual sales figures recorded at regular intervals in the past. There are three main elements to time series analysis:
Section 4 Marketing

- **Seasonal variations** – periodic fluctuations in sales revenues over a specified time period (see Box 4.3.a), such as months or quarters of the year.

In practice, businesses are likely to use a combination of sales forecasting methods. The choice depends on several factors, such as:

- **How accurate the forecasts need to be** – The greater the degree of certainty needed, the more thorough the methods of sales forecasting need to be. For example, it is more meaningful to use monthly or quarterly data to forecast the sales of ice cream; using annual figures would not reveal seasonal fluctuations in demand. However, this involves more time so incurs higher costs.

- **How far ahead forecasts need to be** – It is relatively easy to forecast sales for the next day, week or month. However, to predict sales levels over the next several years is much more ambitious. Extrapolation is only useful if predictions apply to the near future.

- **The availability and cost of data and information collection** – If there is widespread access to a wealth of information at no or very little cost, then this can make forecasting more accurate. However, if it proves difficult to find appropriate and up-to-date information, or if access to information is highly expensive, this will affect the choice of forecasting methods.

- **The stage in a product’s life cycle** – Market research rather than time series analysis will be used during both the ‘Research and Development’ and ‘Launch’ stages (see Unit 4.5). More data and information become available during the growth and maturity stages.

Figure 4.3.b Holiday destinations such as Nha Trang, Vietnam are subject to seasonal fluctuations

- **Cyclical variations** – recurrent fluctuations in sales linked to the economic cycle of booms and slumps. Unlike seasonal variations, cyclical variations can last longer than a year.

- **Random variations** – unpredictable fluctuations in sales revenues caused by erratic and irregular factors that cannot be practically anticipated.

Box 4.3.a Examples of seasonal demand

Seasonal fluctuations in demand are caused by variations in the demand for certain goods and services during different time periods. For example, they can be caused by changing seasons in the year or religious festivals such as Christmas, Easter, Diwali, Ramadan and Chinese New Year. Examples of seasonal demand include:

- Clothing (winter and summer)
- Easter eggs
- Fireworks
- Flights (for holidays)
- Gift cards, e.g. Mothers’ Day cards or Valentine’s cards
- Sun lotion
- Sunglasses
- Textbooks

Figure 4.3.c Sales forecasting is useful for predicting demand for seasonal goods such as Christmas crackers
4.3 Sales forecasting

Statistical techniques in sales forecasting

There are several statistical techniques that can be used to analyse sales forecasting data:

- **Mean** – The arithmetic mean is the sum of all items divided by the number of items in a data set.

- **Median** – When all numbers are ranked in numerical order, the median is the middle number in the data set.

- **Mode** – This is the number that occurs more frequently than any other value in the data set.

- **Range** – This is the numerical difference between the highest and the lowest numbers in a data set.

- **Standard deviation** – This measures the difference (or digression) of a variable from the mean value in a data set.

Moving averages

The most frequently used method of calculating averages is the arithmetic mean. However, moving averages are a more accurate method of identifying trends so they are a more useful tool for sales forecasting. A moving average is used to establish underlying trends by smoothing out variations in the data set that are caused by seasonal, cyclical and random variations. To illustrate this point, consider the data in Table 4.3.a for Devendar Rawat Clothing Ltd.

The arithmetic mean is the sum of the sales figures ($555 000) divided by the number of items in the data set (in this case, there are five). Hence, the arithmetic mean is $111 000 for the period.

<table>
<thead>
<tr>
<th>Table 4.3.a Devendar Rawat Clothing Ltd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Month 1</td>
</tr>
<tr>
<td>Sales ($)</td>
</tr>
</tbody>
</table>

The moving average helps to identify the trend that exists within a data set (as above) by smoothing out fluctuations that might exist. There are a few ways to calculate moving averages with the most common being three-part (quarterly) and four-part moving averages. For example, to calculate a ‘three-year moving average’ for Devendar Rawat Clothing Ltd, average out three consecutive numbers in the data series:

- Work out the mean for the first three data items, i.e. \((100k + 110k + 120k) ÷ 3 = $110 000\)

- Repeat this for the next three data items, i.e. months 2, 3 and 4. This gives a mean of \((110k + 120k + 95k) ÷ 3 = $108 333\)

- Continue this process for the final 3-month period in the data set (i.e. years 3, 4 and 5). This gives \((120k + 95k + 130k) ÷ 3 = $115 000\)

Whilst more time consuming to calculate than the simple arithmetic mean, moving averages show how the underlying trend changes over the 5-month period, by smoothing out irregular fluctuations in the series of data. Although a four-part moving average smooths out the trend more so than a three-part moving average, the latter method is easier and quicker to calculate. The moving average can also be used to measure variations (seasonal, cyclical or random) from the trend, as shown in Table 4.3.b.

<table>
<thead>
<tr>
<th>Table 4.3.b Devender Rawat Clothing Ltd. – variation from the trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Month 1</td>
</tr>
<tr>
<td>Sales ($)</td>
</tr>
<tr>
<td>3-point moving average</td>
</tr>
<tr>
<td>Variation (actual – trend)</td>
</tr>
</tbody>
</table>

Exam tip!

Given that most new products fail to get established on the market, this implies that businesses often over-predict their sales, i.e. sales forecasting is not an exact science and you need to be aware of the limitations.
Exam tip!

Worked example

Alric Chong, a sole trader, sells organic farm products. Based on historical data, Alric has forecast his sales for the next 6 days as follows:

<table>
<thead>
<tr>
<th>Sales revenue ($)</th>
<th>Mon</th>
<th>Tues</th>
<th>Wed</th>
<th>Thurs</th>
<th>Fri</th>
<th>Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200</td>
<td>870</td>
<td>1179</td>
<td>1281</td>
<td>2202</td>
<td>2511</td>
<td></td>
</tr>
</tbody>
</table>

**Question:** Calculate the three-part moving average and comment on your findings. [5 marks]

**Answer:**

Mon to Wed = \((1200 + 870 + 1179) \div 3\) = $1083

Tues to Thur = \((870 + 1179 + 1281) \div 3\) = $1110

Wed to Fri = \((1179 + 1281 + 2202) \div 3\) = $1554

Thur to Sat = \((1281 + 2202 + 2511) \div 3\) = $1998

The calculations show a clear trend in rising sales throughout the week, despite the dip on Tuesdays. Without using moving averages, it is difficult to identify the underlying trend in Alric Chong’s sales due to the variations within the data. For example, it is less busy on a Tuesday but far busier towards the weekend. By calculating moving averages it is possible to remove some of these variations.

To calculate a four-point moving average, the same technique is used, although ‘centreing’ is used to average two moving averages (see Table 4.3.c):

- The first 4-point moving average is found by the sum of the sales in the first 4 months ($425 000) divided by 4 months = $106 250.
- The next data set (months 2 to 5) gives an average of $455 000 \div 4 = $113 750
- The centred trend is found by average these two numbers, i.e. \((106 250 + 113 750) \div 2 = $110 000\). From this centred figure, it is possible to work out the variation in month 3, i.e. $120 000 – $110 000 = + $10 000.

Table 4.3.c Calculating a four-point moving average

<table>
<thead>
<tr>
<th>Month</th>
<th>Sales ($)</th>
<th>4-point moving average (trend)</th>
<th>Centred trend ($)</th>
<th>Variation ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>110 000</td>
<td>106 250</td>
<td>110 000</td>
<td>+ 10 000</td>
</tr>
<tr>
<td>3</td>
<td>120 000</td>
<td>113 750</td>
<td>115 625</td>
<td>– 20 625</td>
</tr>
<tr>
<td>4</td>
<td>95 000</td>
<td>117 500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>130 000</td>
<td>119 500</td>
<td>118 500</td>
<td>+ 11 500</td>
</tr>
<tr>
<td>6</td>
<td>125 000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>128 000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Exam tip!
When analysing sales forecasts, make sure you can calculate percentage changes to show what has happened to sales revenue during the time period given. This can help to improve your argument. To calculate percentage changes, work out the numerical difference and divide this by the original number and express as a percentage, i.e. (New figure – Old figure) ÷ Old figure × 100.

Theory of knowledge
Which way of knowing is of most significance when making sales forecasts – faith, intuition, memory or reasoning?

Case study
The McBig Mistake
In 1998, McDonald’s celebrated its 25th anniversary in the UK by offering a ‘Buy One, Get One Free’ deal on its best-selling product – the Big Mac. McDonald’s doubled their supply of Big Macs for the special offer, but failed to forecast the additional demand that the BOGOF deal would bring. Many McDonald’s restaurants had sold out of Big Macs by 11am on the first day, upsetting customers across the country. The special promotion went on to become one of the biggest marketing mistakes in UK business history.

Question 4.3.1 Esswood Campers
Nicola Esswood owns and runs her own camping site in New Plymouth, New Zealand. Located near the waterfront, Esswood Campers thrives in the summer season but suffers from a lack of tourists in the winter months. Her sales forecasts for the next twelve months, based on past data, are shown below:

<table>
<thead>
<tr>
<th>Sales ($)</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
</tr>
</thead>
<tbody>
<tr>
<td>3500</td>
<td>3000</td>
<td>3000</td>
<td>2500</td>
<td>2800</td>
<td>2600</td>
<td>2900</td>
<td>3000</td>
<td>3600</td>
<td>4500</td>
<td>4200</td>
<td>4000</td>
<td></td>
</tr>
</tbody>
</table>

(a) Calculate the mean, median and modal averages from the sales data above. [3 marks]
(b) Calculate the range and comment on your findings. [3 marks]
(c) Calculate the four-point moving average for Esswood Campers. [4 marks]
(d) Using the four-point moving average method, calculate the variation from the trend. [4 marks]
(e) Examine how the above sales forecasting calculations might be of use to Esswood Campers. [6 marks]
Question 4.3.2 Chatterjee Travel Ltd.

Chatterjee Travel Ltd. is a London-based company that specialises in travel services for wealthy Finnish customers from around the world who are fanatics of The English Premier League (the world’s most watched and lucrative sports league). Ira Chatterjee, the CEO, has built a wide customer base of wealthy clients who mainly fly from Finland, Holland and Italy. Sales figures for the latter part of the football (soccer) season last year are shown below:

<table>
<thead>
<tr>
<th>Sales (£’000)</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30</td>
<td>28</td>
<td>32</td>
<td>35</td>
<td>28</td>
<td>0</td>
</tr>
</tbody>
</table>

(a) Outline why Chatterjee Travel Ltd. might be described as operating in a niche market. [2 marks]

(b) Calculate the three-part moving averages for Chatterjee Travel Ltd. for the period shown. [4 marks]

(c) Construct an appropriate graph to show the actual sales figures and the moving averages. [5 marks]

(d) Comment on the trend and seasonal fluctuations from your graph and outline how such fluctuations might affect Chatterjee Travel Ltd. [4 marks]

Benefits of sales forecasting

The benefits of sales forecasting. AO3 © IBO, 2014

- Improved working capital and cash flow (see Unit 3.7) – Sales forecasting can help a business to identify seasonal fluctuations in the demand for its products, and hence the implications for the firm’s liquidity position. If managers have a clear idea of expected costs and revenues, they are more likely to have better cash flow management in the coming months.

- Improved stock control – Accurate sales forecasts help to ensure that the correct levels of stocks are available for use in production at different times of the year. Holding excessive or insufficient inventory can create problems (see Unit 5.5). Sales forecasting helps managers to optimize their purchasing plans.

- Improved productive efficiency (see Unit 5.3) – The ability to plan for the correct level of production means better use of a firm’s resources. For example, many retailers temporarily hire part-time staff during peak holiday trading periods due to the high seasonal demand. Accurate sales forecasting therefore allows managers to devote time to strategic planning to develop the business, rather than deal with operational problems caused by a lack of production planning (see Unit 5.5).

- Helps to secure external sources of finance – Accurate and realistic sales forecasting can help a business to obtain external financing from investors and lenders. This is especially important for new businesses as sales forecasts are a common requirement in business plans (see Unit 1.1).

- Improved budgeting – Accurate sales forecasting helps managers to anticipate changes in the economy and therefore to adjust budgets accordingly. For example, changes in sales trends (the buying habits of customers) make it easier for production managers to know how much inventory to hold and for marketing managers to know how many sales staff to hire at different times of the year.

Essentially, the benefits of sales forecasting should help managers to have better control by giving them an informed idea of what to expect in the near future, thereby optimising their marketing plans. This enables the business to operate more efficiently and more profitably.
Question 4.3.3  Acosta Adventures

Jeffrey Acosta runs a cultural tourism business in the Maekok River Resort in Northern Thailand. His company, Acosta Adventures, operates a range of activities for tourists, including elephant trekking, river rafting, boat trips, mountain biking and hikes in the beautiful rural surroundings. Most of his customers come from the Asia Pacific region including China, Taiwan, Japan, Australia and New Zealand. The Indian Ocean tsunami (2004) and political unrest (2014) have caused fluctuations in the number of tourists to Thailand. Sales data in Thai baht (THB) are shown below.

<table>
<thead>
<tr>
<th>Year</th>
<th>Quarter</th>
<th>Sales (THB million)</th>
<th>3-part moving average (trend)</th>
<th>Variation (THB million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last year</td>
<td>1</td>
<td>7.89</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>7.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>9.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>6.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>This year</td>
<td>1</td>
<td>7.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>7.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>9.98</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>6.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Next year</td>
<td>1</td>
<td>7.92</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>7.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>10.32</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(a) Explain how sales forecasting can be beneficial to businesses such as Acosta Adventures. [2 marks]

(b) Complete the table above for Acosta Adventures, showing the three-part moving average and the variation from the trend. [4 marks]

(c) Extrapolate the trend for Quarter 4 of next year. [2 marks]

(d) Explain how the sales forecasting data above can help the operations of Acosta Adventures. [4 marks]
Limitations of sales forecasting

The limitations of sales forecasting. AO3
© IBO, 2014

- **Limited information** – Sales forecasting is a prediction based on past data and trends. Sales forecasting does not reveal the whole picture (as the tool is based on assumptions), without any consideration of qualitative factors. As sociologist William B. Cameron (1963) said, “Not everything that can be counted counts, and not everything that counts can be counted”. Forecasts are only as good as the information and data that are available at the time the forecasts are made.

- **Inaccuracy of predictions** – Critics argue that sales forecasting is part fact part guesswork. There can be an element of bias or subjectivity in sales forecasting. Even accurate sales forecasts are based on assumptions. Whilst change might be inevitable, sales forecasts can be wrong for many reasons, e.g. figures used might be overly optimistic. Past trends are not indicative of the future. Having no or very limited historical data (because the product is new, for example) can make sales forecasting extremely difficult or inaccurate.

- **Garbage in garbage out (GIGO)** – If the data and information used to predict sales forecasts are outdated, irrelevant or biased, then the forecasts are unrealistic. For example, some managers might deliberately underestimate sales forecasts so that it is easier to reach their targets.

- **External influences** – The external business environment (see Unit 1.5) causes change that may not be predictable, e.g. natural disasters, oil price hikes, fierce competition from abroad, unexpected fluctuations in the business cycle or adverse weather conditions. Such factors can significantly distort sales forecasts.

---

**Theory of knowledge**

Is sales forecasting an art or a science?

**Common mistake**

Some students are often quick to condemn the skills of sales forecasters, stating that the data collected is either biased or unrepresentative. Sales forecasting techniques can be extremely sophisticated (beyond the scope of your IB exams) and give reliable data for marketers. Of course, if actual sales figures vary significantly from the forecasts then questions should be asked; but don’t assume that sales forecasts are unreliable simply because they don’t match the predicted figures.

---

**Theory of knowledge**

Is the ability to predict essentially the same as the ability to know? Does knowing allow us to predict?

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Figure 4.3.d Unexpected adverse weather conditions will affect sales forecasts
4.3 Sales forecasting

Question 4.3.4 Bhave Bakery

Shobha Bhave runs Bhave Bakery, a small bakery in Pune, India. She has recently introduced cookies to her product portfolio to cater for a wider customer base. However, she is having difficulties in forecasting sales of her cookies. Shobha’s bank manager has suggested that she calculates the 4-weekly average to extrapolate the trend. Bhave Bakery’s sales data for the first 10 weeks of selling cookies is shown below. Figures are in Indian rupees (INR).

<table>
<thead>
<tr>
<th>Week</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales (INR)</td>
<td>7347</td>
<td>6123</td>
<td>6735</td>
<td>7347</td>
<td>7041</td>
<td>7531</td>
<td>7837</td>
<td>6061</td>
<td>6000</td>
<td>6368</td>
</tr>
</tbody>
</table>

(a) Explain what it means to extrapolate the trend. [2 marks]
(b) Use the data for Bhave Bakery to calculate the four-weekly moving average. [4 marks]
(c) Explain how random fluctuations make sales forecasting difficult. [4 marks]

Sales forecasting and the CUEGIS concepts

Changes in the external business environment can quite easily affect the results of sales forecasting. For example, the political unrest in Thailand in 2014 was estimated to cost the economy over $2.7 billion in lost tourism revenue. An economic downturn would have an adverse impact on sales forecasts. Multinational companies are also exposed to fluctuations in exchange rates which also have an impact on sales forecasts. Technological progress that helps reduce average production costs can boost sales if average prices fall.

The culture of the organization or the sub-culture of the sales department will have an impact on ‘how things are done’ within the business. Organizational culture has a direct impact on the motivation level of staff (see Unit 2.4), which clearly affects sales forecasting. Risk adverse cultures will tend to be more pessimistic with their forecasts whereas innovative cultures might be more optimistic, albeit somewhat unrealistic perhaps in their forecasts.

Ethical considerations also play a key role in sales forecasting. If predictions are made on subjective grounds, using unreliable data, then there are clearly ethical questions to be asked. Managers may overestimate sales forecasts in an attempt to sway decision making. For example, over-predicting sales forecasts may be used to secure financial backing from investors. However, there are ethical implications of such practices; any strategy that depends too heavily on sales forecasts has added risks.

Innovations can positively affect sales forecasts. For example, product innovations such as smartphones have ensured Samsung and Apple enjoy the benefits of market leadership. In particular, the internet has enabled many small businesses in particular to reach markets they were unable to access in the past. Whilst this change boosts sales revenue, it can make sales forecasting less accurate, at least in the short term. Similarly, the globalization of markets can improve future sales but make sales forecasting less precise.

Marketers can use sales forecast data to make decisions about expanding to overseas markets. The most common basis for forecasting sales of new products is to rely on quantitative primary research data (see Unit 4.4). This is usually combined with test marketing before launching a product to the market.
Test marketing is a strategy that complements sales forecasting as a decision-making tool. This strategy involves launching a new product to a selected panel of customers, often in a particular geographical location to gauge customer acceptance and responses to the new product. The data from test marketing can be used to forecast sales prior to the product being launched nationally or internationally. Although this strategy can be rather expensive and produce unrepresentative results, it tends to provide more reliable sales forecasts, thus reduces the risks of product launches.

**IB Learner Profile – Be a thinker**

Alibaba.com, the world’s largest online retailer and B2B operator, floated its shares in the USA in an attempt to make the organization more global. Consider how such a move might make sales forecasting more difficult to existing businesses that adopt Alibaba.com’s B2B platform.

Consider how the CUEGIS concepts (change, culture, ethics, globalization, innovation and strategy) apply across the content discussed in this unit on sales forecasting.

**REVIEW QUESTIONS**

1. What is meant by sales forecasting?
2. What are correlation and extrapolation?
3. How can market research assist sales forecasting?
4. Distinguish between seasonal, cyclical and random variations.
5. What are moving averages?
6. What is meant by a four-part moving average?
7. Outline the benefits of sales forecasting.
8. Explain the limitations of sales forecasting.

**KEY TERMS**

**Correlation** shows the degree to which two sets of numbers or variables are related, e.g. sales revenue over a period of time. Marketers are interested in establishing a strong correlation between marketing expenditure and sales growth.

**Cyclical variations** are recurrent fluctuations in sales linked to the economic cycle of booms and slumps. Unlike seasonal variations, cyclical variations can last longer than a year.

**Extrapolation** is a forecasting technique used to identify the trend by using past data and extending this trend to predict future sales.

**Moving averages** are used to find underlying trends by smoothing out variations in a data set caused by seasonal, cyclical and random variations. It is common to use up to four-part moving averages, i.e. averaging sales figures for four consecutive time periods.

**Sales forecasting** is a quantitative management technique used to predict a firm’s level of sales over a given time period.

**Seasonal variations** are periodic fluctuations in sales revenues over a specified time period, such as certain months or quarters of the year.

**Random variations** are unpredictable fluctuations in sales revenues caused by erratic and irregular factors that cannot be practically anticipated.

**Time series analysis** is a sales forecasting technique that attempts to predict sales levels by identifying the underlying trend from a sequence of actual sales figures.
4.4 Market research

Those who have knowledge don’t predict. Those who predict don’t have knowledge.
Lao Tzu (604–531 BCE), Chinese philosopher

The role of market research

Market research refers to marketing activities designed to discover the opinions, beliefs and preferences of potential and existing customers, i.e. it serves to identify and anticipate the wants and needs of customers. Market research can involve collecting data and information on competitors and market trends to gain insight into a specific market. Market research can be ad hoc or continuous:

- **Ad hoc research** takes place on an ‘as and when necessary’ basis. The focus of the research is on specific marketing problems or issues and tends to be on a one-off basis.

- **Continuous research** takes place on a regular and ongoing basis. For example, governments usually calculate the cost of living based on the price data of a representative sample of products bought by the average household. Market research firms report annual league tables containing information such as the most popular brands in a certain country, region or the world. The movie and music industries also compile weekly ‘Top 10’ lists based on sales figures.

The role of market research serves several purposes:

- Gives businesses up-to-date information. This is particularly important in fast-paced industries that are always changing, e.g. the fashion and consumer electronics industries.

<table>
<thead>
<tr>
<th>SL/HL content</th>
<th>Assessment objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why and how organizations carry out market research</td>
<td>AO2</td>
</tr>
<tr>
<td>The following methods/techniques of primary market research:</td>
<td>AO2</td>
</tr>
<tr>
<td>• surveys</td>
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<td>• interviews</td>
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<td>• focus groups</td>
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<td>• observations</td>
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<td>The following methods/techniques of secondary market research:</td>
<td>AO2</td>
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<tr>
<td>• market analyses</td>
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<td>• academic journals</td>
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<td>• government publications</td>
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<td>• media articles</td>
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<tr>
<td>Ethical considerations of market research</td>
<td>AO3</td>
</tr>
<tr>
<td>The difference between qualitative and quantitative research</td>
<td>AO2</td>
</tr>
<tr>
<td>The following methods of sampling:</td>
<td>AO2</td>
</tr>
<tr>
<td>• quota</td>
<td></td>
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<tr>
<td>• random</td>
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<td>• stratified</td>
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<td>• cluster</td>
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<td>• snowballing</td>
<td></td>
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<tr>
<td>• convenience</td>
<td></td>
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<tr>
<td>Results from data collection</td>
<td>AO2</td>
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</tbody>
</table>

© IBO, 2014
• Enables businesses to improve their marketing strategies by using a distinct marketing mix for each customer target market.

• Assesses customer reactions to a new product by testing it on a small group of customers. This can prevent huge losses had it been un-successfully launched on a mass scale.

• Gives businesses an understanding of the activities and strategies used by their rivals.

• Helps businesses to predict what is likely to happen in the future. Understanding the likely trends will enable firms to react accordingly in order to maximise future opportunities.

Effective market research helps to reduce the risk of failure by investigating the needs and wants of customers. If the research findings show that customers react negatively to the product, then the business can either make necessary adjustments or scrap the project altogether (without having spent huge amounts of money on a national launch). Market research can therefore be used to answer questions such as:

• Are customers likely to buy the product?

• Which market segments are interested in the product?

• How much are customers willing to pay?

• How often are they likely to purchase the product?

• Which brands do customers see as being rivals to the marketed product?

• What are the preferred (most effective) methods of promotion?

• Where and how should the products be sold?

Ultimately, as a strategic planning tool, market research helps to reduce risks. Being able to accurately forecast future market trends gives businesses a greater chance of success, despite the limitations of market research.

Market research can be conducted in two broad ways: primary and secondary research.

Primary market research

The following methods/techniques of primary market research: surveys, interviews, focus groups and observations. AO2 © IBO, 2014

Primary research is market research that involves gathering new data first-hand for a specific purpose. For example, if an organization wants to know how staff feel about the working environment then it would use primary market research. Primary research (also known as field research or bespoke research) is often used to gather data and information from customers to identify their buying patterns and to anticipate changes in market trends. There are several methods of conducting primary research, including: surveys (questionnaires), interviews, focus groups and observations.

Common mistake

Students often assume that primary research is always conducted by the business itself. However, many businesses hire specialist research agencies to conduct the market research on their behalf.

Surveys (or questionnaires)

A survey or questionnaire is a document that contains a series of questions used to collect data for a specific purpose. They are the most common method of primary research. There are several types of surveys, such as:

• Self-completed surveys are completed by a sample of people, e.g. many hotels and restaurants use these questionnaires to gather views from their customers. The information can help to identify problems, trends and suggestions for improvement.

• Personal surveys are conducted face-to-face, rather like an interview. The interviewer can address any questions that might arise from the questionnaire (such as clarifying what certain questions mean). It is also quicker for the interviewer to complete the survey due to familiarity with the questions.

• Telephone surveys are similar to personal surveys but use telecommunications technology. The benefit of this is that a larger number of people in a wider geographical spread can be covered. The main drawbacks are the relatively
higher costs and the low response rate as a large number of people are not willing to take part in telephone surveys.

- **Online surveys** such as Zoomerang.com or Google Forms are an increasingly popular way of gathering primary data. For example, many schools use online surveys to find out the views of staff and students on a range of issues, such as getting feedback on school uniform and staff training programmes. They are much cheaper than other forms of primary research such as paper-based surveys or telephone surveys. Computer software can also help researchers to collate quantitative research data, thereby saving a lot of time and resources.

- **Postal surveys** are sent to people’s home or office address for them to complete in their own time. A drawback is that people might simply treat the surveys as junk mail, so ignore them. To create an incentive for people to return postal surveys, firms often provide free postage (the business pays for this) or offer prizes and gifts (but this clearly adds to the costs).

Figure 4.4.a Time lags with the post means postal surveys are less popular than online surveys

Due to the potential benefits of using surveys and the potentially high costs, effective survey design is of real importance. Therefore, surveys should:

- Avoid bias in order to collect meaningful and useful data. The wording of questions should not distort answers from respondents, e.g. asking people how much they like Coca-Cola is not as good a question as asking them which brand of cola they prefer.

- Avoid jargon (technical language) so that respondents understand the questions. This minimises potentially misrepresentative answers.

- Include both closed and open-ended questions. Closed questions (such as ‘yes or no’ questions or multiple choice options) make it easier and quicker to complete a survey. They also aid quantitative analysis. Open-ended questions allow the researcher to obtain qualitative answers, such as the reasons why respondents prefer a particular brand. They can also provide ideas or suggestions that enable the business to make better decisions.

- Be tried and tested. Before using a survey for market research, it is common for it to be trialled (tested) with a small group of people. This can help to identify any errors or omissions in the initial survey so that the results from the final research better serve the needs of the researcher.

- Allow the objectives of the survey to be met by gathering only relevant data, e.g. unnecessary questions should be avoided and the length of the survey should be limited as far as possible.

A major benefit of surveys is the ability to generate quantitative and qualitative answers specific to the needs of the researcher. If designed properly, they can also be very simple to complete thereby making the process easier to gather market research data. However, using surveys for market research can be very costly and time-consuming since it is necessary to use a large sample to get statistically representative findings. There might also be reservations with the results due to bias or dishonest answers from respondents.

Exam tip!

Consider the above factors when designing your own survey (if used) for your Internal Assessment. Quite often, students produce poorly designed questionnaires which result in impractical findings.
Table 4.4.a Advantages and disadvantages of primary research

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Relevance</strong></td>
<td><strong>Time consuming</strong></td>
</tr>
<tr>
<td>Primary research is carried out for a specific purpose, so directly addresses the questions that need to be answered. By contrast, secondary data is not always in a format that can be easily used by a firm.</td>
<td>It can be a very tedious and lengthy task to collect primary data that is accurate and representative. This can delay decision-making and could lead to lost market opportunities in the short term.</td>
</tr>
<tr>
<td><strong>Up to date</strong></td>
<td><strong>Costly</strong></td>
</tr>
<tr>
<td>Secondary market research data tends to be more dated and therefore often less reliable than primary research findings.</td>
<td>Collecting primary data is often costly, due to the time involved to collect quality data or because the data is difficult to collect.</td>
</tr>
<tr>
<td><strong>Confidential and unique</strong></td>
<td><strong>Validity</strong></td>
</tr>
<tr>
<td>Since the research is done first-hand, no one else (including rivals) has access to the information.</td>
<td>Faults in market research (e.g. poor questionnaire design or sampling errors) will lead to misleading or biased results.</td>
</tr>
</tbody>
</table>

Theory of knowledge

Given the complications of survey designs and sample size, can primary market research data ever be truly reliable?

Question 4.4.1 Questioning questionnaires

Study the survey below and answer the questions that follow.

Survey Research

*Is it feasible to open another branch of Pawlyn Greetings Cards in Kennedy Town Centre?*

1. Name .................................
3. Gender:
4. Where do you live? .................................
7. Do you shop in Pawlyn Greetings Cards? ............ 8. Why? ............
9. What item(s) do you buy there? .................................
10. If a new Pawlyn Greetings Cards store were to open in Kennedy Town Centre, would you use it? Yes □

Thank you!

(a) Describe any three mistakes in the questionnaire. [6 marks]

(b) Use examples from the questionnaire to distinguish between quantitative and qualitative primary market research. [4 marks]
Interviews

Interviews involve one-to-one discussions between an interviewer and interviewee, such as individual customers, to investigate their personal circumstances and opinions. Beliefs, attitudes and feelings can also be examined in detail. Interviews are usually carried out in person (face-to-face) although telephone interviews can also be used. The findings from all interviews are analysed to identify the views that respondents share. Identifying the differences can also be important as it can help a business to refine its marketing strategies. In-depth interviews are often used when a business is planning to introduce change and new initiatives as they can be used to investigate the views of respondents to a new proposal.

However, interviews often provide a range of non-quantifiable information that might prove to be difficult to analyse or to make any extrapolations from. In addition, such interviews tend to be very time consuming. There is also huge scope for interviewer bias which can have an impact on the way in which respondents answer.

Focus groups

Focus groups involve forming small discussion groups to gain insight into the attitudes and behaviour of respondents. The group is typically made up of participants who share a similar consumer profile, such as teenage boys who like to play online computer games. They can provide important information to help a business to devise and refine its marketing strategies. For example, they are often used when a firm plans to launch a new product. The focus group might be asked to discuss the merits of alternative advertisements or to give feedback on the prototypes of a product. By using a focus group, detailed questions can be asked and participants are more likely to engage in discussions to generate insightful information. To aid market research analysis, audiovisual recordings of the discussions and observations of the behaviour of the participants are often used.

One drawback of using focus groups is that only extroverts tend to take part; those who shy from group discussions and debates are unlikely to participate and therefore their views are unregistered. In an open forum, there might also be some pressure for group members to conform to the majority view rather than to express their own opinions. Another potential limitation is that focus group participants often have to be paid, either in cash or in lieu (such as a meal voucher) for their time and input. This expense raises the overall costs of market research.

A variation of focus groups is the use of consumer panels – small groups of consumers within a business’s target market who are used for regular market research. By using the same group, it saves the business from having to find new respondents (as in the case of focus groups). Also, as panelists are usually specialists, such as food critics (food tasters), they are particularly useful for conducting market research that requires specialist knowledge rather than using a random sample. For example, prior to launching new models, car manufacturers often use consumer panels formed by a group of loyal and specialist customers.

Observations

This method of primary research involves watching how people behave and respond in different situations. It can be done under controlled conditions (rather like a laboratory test) or as real-life situations (where people do not know that they are being observed). Observations can be carried out using surveillance filming, photographic evidence or in person (by using a checklist or tally charts). Traffic audits, for example, use all of these methods to measure the flow of traffic on certain roads or in certain areas. Observations are often used by businesses such as restaurants, theme parks, health clinics, call centres and the post office to measure the average time it takes to serve a customer (queuing times).

A benefit of using observations is that they record people’s actual behaviour rather than what people say they would do (as in the case of interviews and surveys). However, observations do not necessarily reveal why a person behaves or responds in the way they do. The only way to establish the reasons behind a person’s motivation is to ask them, either directly or indirectly.

Secondary research

The following methods/techniques of secondary market research:

- Market analyses, academic journals, government publications, and media articles. AO2

Secondary research (or desk research) involves the collection of second-hand data and information that already exists. This means that the data and information have previously been gathered by others, such as government publications or news articles.

Secondary research can be collected from internal and external sources. Internal sources are those that have already been gathered by the organization itself, such as company annual reports and sales records. External sources come from outside the business, e.g. market analyses, academic journals, government publications, and media articles (including the internet).
Section 4 Marketing

Market analyses
A market analysis reveals the characteristics and the outlook (trends) for a particular product or industry, e.g. market size, market share and market growth rate. It can help to measure how well a business is doing compared with its rivals. New businesses often rely on market analysis to formulate their business plans (see Unit 1.1) and strategies. Market analysis data and information can be found in commercial sources and public information sources, such as:

- Market research firms – Specialist market research firms supply a huge range of market analyses, usually only accessible to subscribing clients. Examples include Nielsen, Mintel, Euromonitor and J.D. Power & Associates (see Question 4.2.7).
- Competitors – Company annual reports and websites of competitors are easily accessible and could contain a wealth of data and information.
- Trade publications – These are specialist magazines targeted at a specific industry, e.g. The Grocer is a popular trade publication used in the supermarket industry. Many Business Management teachers around the world subscribe to the Economics, Business and Enterprise Association (EBEA), which publishes the latest trends and thinking in these subjects.

![Figure 4.4.b The EBEA magazine (www.ebea.org.uk) is an example of a trade publication](image)

Government publications
Governments publish a broad range of data, such as: population census, social trends, labour market developments, trade statistics, unemployment figures, inflation rates and so on. Government websites (such as www.statistics.gov.uk and www.usa.gov) are popular sources of secondary market research data.

Media articles
The general media can contain valuable data and information as part of secondary market research. Media articles are widely available online, making them a useful source of secondary market research.

Examples of media articles include:
- Newspapers, e.g. The Financial Times and The Wall Street Journal
- Business-related journals, e.g. The Economist, Forbes and Bloomberg Businessweek
- Television documentaries, e.g. Super-Size Me, An Inconvenient Truth and Food, Inc.
- Books, e.g. biographies, autobiographies, and texts about specific companies or business and management themes (such as corporate social responsibility)
- The World Wide Web, e.g. company websites, blogs and social media.

Academic journals
Academic journals are periodical publications from educational and research institutions. Data and information relating to a particular academic discipline are published in these journals. For example, the Harvard Business Review is a globally recognised business management magazine from Harvard University. Academic journals publish educational, peer-reviewed articles and findings written by industry experts and academics. The purpose is to distribute and share theoretical work and market research findings, rather than to sell the information for profit.

Theory of knowledge
When does academic research become accepted as knowledge?
In reality, it is common for market researchers to use both primary and secondary data and information. This is because neither method is necessarily better than the other as it depends on what data or information a firm needs to collect. Secondary research is generally quicker and cheaper to gather but might be out of date or might not be sufficiently appropriate. Primary research findings could contain bias or errors, but can provide information not available through secondary data sources.

### The internet

All of the above methods of secondary market research (market analyses, academic journals, government publications and media articles) can be conducted via the internet. Many people start their secondary research by ‘Googling’ the topic or using other websites such as Wikipedia. The internet can provide a range of invaluable information, if not a good starting point to find other sources of secondary market research data and information. Online providers of secondary market research data and information often charge for their services, although careful and tactful use of the internet can reap plenty of useful information without cost to the researcher.

### Question 4.4.2  Zaffran Craftphoria

Wahida Mostafa runs a small business in Dhaka, Bangladesh, where she sells craft products such as table mats, coasters, table runners and embroidered pencil cases. These products are handmade by Wahida. She is keen to get customer feedback on the appeal and quality of her products by using **primary market research**. Zaffran Craftphoria, the name of her business, has recently launched a Facebook website (www.facebook.com/zcraftphoria).

(a) Define the term **primary market research**.  

(b) Explain the value of primary market research to small businesses such as Zaffran Craftphoria.
Ethical considerations of market research

In most countries, marketers need to consider the ethical issues of conducting market research, such as not to access confidential data for personal gain. The use of photography or visual recordings for primary market research can be perceived as an invasion of privacy, especially if used inappropriately. With advances in internet technologies, it is easier than ever before for businesses to connect directly with their customers and to collect research information for future marketing purposes. Businesses may need to face public criticism if its market research practices are perceived to be unethical.

Market research needs to be systematic, consistent and unbiased. It must be conducted honestly, as must the presentation of the findings. For example, it would be unethical for a market researcher to manipulate the findings in favour of personal preferences. Indeed, many countries impose laws to ensure market researchers adhere to relevant guidelines and regulations.

Ethical market research requires investigators to be reasonable, objective and accurate in the process of planning, collecting, processing and reporting research information. Unethical market research can be remembered by the 5Ds©. These form the guiding principles to avoid when carrying out market research.

- Damage – Market researchers must protect the people in their samples by ensuring the information collected is never used in such a way to harm them. The contents of an interview, for example, should be kept for research purposes only and not shared with other parties.

- Deceitful – Market researchers need to be trustworthy in their attempt to obtain usable data for marketing purposes. Acting ethically in the research process is a key way to encourage trust, e.g. being open and transparent about how the research data will be used and not sharing personal information, unless the research subjects have given their prior approval. Distorting market research findings to misinterpret numerical data is a further example. Plagiarism and the lack of referencing for secondary market research is also regarded as unethical. In some countries, deceitful acts such as those above are not only unethical but are regarded as fraudulent and unlawful.

- Deceptive – Deceptive practices and misleading methods to access and gather data about customers is an ethical problem, e.g. not telling customers that their telephone interview is being recorded, that surveillance (hidden) cameras are being used for market research purposes or that information is being collected when customers visit the company’s website (such as LinkedIn, Amazon.com, Facebook and Google’s Gmail).

- Disclosure – A major ethical issue involved in market research is the potential invasion of privacy and the breach of confidentiality. Researchers have the ability to collect, store, match and share (or sell) customer information that can infringe a customer’s privacy rights. Third parties might use this information to target customers with direct marketing materials (such as spam email or junk mail). Any unauthorised disclosure of customer information is unethical.

- Detachment – Market researchers need to be detached from personal biases and be objective in their work. Marketing activities can have a huge impact on public perceptions. Bias and prejudices skew the conduct of market research, thus cause distorted results. For example, deliberately asking misleading questions in a survey will mean misleading and unrepresentative data are collected.

It is equally important to remember that people are not always honest in their own responses to certain market research questions (such as their age, income level or their ability to pay certain prices for a product). Cultural differences and people’s suspicions of the intention of the researcher might also affect the responses given.

Theory of knowledge

Is it ethical for a Head of Department in an IB World School to carry out market research of the best subject resources, resulting in a ‘recommendation’ to all students to buy the textbook personally written by that Head of Department?
Qualitative and quantitative market research

The difference between qualitative and quantitative research, A02 © IBO, 2014

In addition to classifying market research as primary or secondary methods, qualitative or quantitative market research can also be used.

Qualitative market research involves getting non-numerical answers and opinions from respondents. It is commonly used as part of primary research. The main purpose of using qualitative data is to understand the behaviour, attitudes and perceptions of customers, employees or other respondents. ‘Soft’ answers (people’s views/opinions rather than hard facts/figures) are sought by the researcher. This might be done by using in-depth interviews or by asking open-ended questions. The two main types of qualitative research methods are focus groups and in-depth interviews.

Quantitative market research relies on a much larger number of responses to get ‘hard’ answers (factual and measurable information rather than people’s opinions). Like qualitative market research, it involves using a representative sample to gauge the views of the population. Two quantitative techniques found in primary research (such as surveys and questionnaires) are:

- Closed questions which allow respondents to choose from a given list of options, e.g. gender, age group, income level, true or false questions, and multiple choice questions.
- Ranking or sliding scales which are used to ask customers to rank options, e.g. the extent to which they agree with a given statement (using a scale from ‘strongly agree’ to ‘strongly disagree’).

Secondary research methods can also supply a wealth of quantitative data such as market share, sales trends, profitability, or forecast changes in consumer income levels.

The advantages and disadvantages of quantitative market research are the opposite of those for qualitative methods, as outlined above. For example, quantitative market research methods do not have the flexibility of qualitative methods because preset questions are used. However, since the findings can be collated and represented numerically, the results are easier to analyse.

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is better than quantitative research for exploring the driving forces (motivators) and restraining forces (demotivators) concerning the behaviour and attitudes of respondents.</td>
<td>Due to the small sample size typically used in qualitative research, the findings might not be representative of the whole population. Further research might therefore be necessary.</td>
</tr>
<tr>
<td>Information gathered from qualitative research can be very rich. Unlike a questionnaire, there is flexibility in the process so extra and useful information from interviews can be gathered.</td>
<td>It can be very time consuming to conduct and to interpret the findings. Quantitative responses are easier and quicker to collate than qualitative responses. Hence, analysis of the results can be somewhat limited.</td>
</tr>
<tr>
<td>Due to the low number of respondents involved in qualitative market research, it can be inexpensive yet provide detailed information to the market researchers.</td>
<td>A high level of interviewing expertise is required to engage and encourage respondents. The costs of hiring skilled interviewers can therefore be high.</td>
</tr>
<tr>
<td>With one-to-one interviews, respondents are not under the pressure of conforming to the views and opinions of the majority. This should help to generate more honest and representational answers.</td>
<td>Interviewer bias might be introduced to serve the researcher’s own purpose (to deliberately skew the results). Hence, the validity of the findings from qualitative market research can become questionable.</td>
</tr>
</tbody>
</table>
Theory of knowledge
How important are the opinions of market researchers in the search for knowledge?

Exam tip!
All sampling methods have their limitations. Sampling errors occur if the sample is not representative of the population.

Sampling methods

The following methods of sampling: quota, random, stratified, cluster, snowballing and convenience. AO2

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All the potential customers of a particular market make up what researchers call the population. Since a market can comprise thousands or even millions of potential customers (such as the market for laptop computers), businesses lack the time and resources to conduct market research on every person in the population. Besides, this would be unnecessary to get statistically valid results. Instead, a sample of the population is selected for market research. Sampling is the practice of selecting a small group (or sample) of the population for a particular market for primary research purposes.

The key questions to ask when deciding on the type of sampling method to use are: who needs to be asked, what needs to be asked and whether the costs of the market research can be justified. The ‘best’ sampling method will entail research from a large enough sample to generate representative responses. The six main methods of sampling are: quota, random, stratified, cluster snowballing and convenience.

Quota sampling

Quota sampling is the most commonly used sampling method, whereby a certain number of people (known as the quota) from different market segments is selected. The sample is grouped according to shared characteristics such as age, gender or occupation. For example, in a firm with 1000 people, a researcher might want to interview 50 middle managers and five senior managers about specific work-related issues.

An advantage of using quota sampling is that a relatively representative sample can be obtained quickly. Also, the findings are more reliable than simply asking anyone on a random basis to participate in the market research.

The disadvantage of quota sampling is that the number of people interviewed in each segment and how randomly they are chosen for interview, are not always representative of the population. For example, if a researcher had a quota of 100 female customers to interview, then the first 100 women might be asked to take part in the market research, without considering whether these respondents are representative of the population. Sampling errors are therefore likely to occur since not everyone gets an equal chance to be sampled.

Random sampling

Random sampling involves giving everyone in the population an equal chance of being selected for the sample. The respondents are often randomly chosen by a computer using information from a database. Random sampling is useful when all members of a population have the same or very similar characteristics, e.g. airlines might use this method to get feedback from their passengers travelling on business and first-class. Parents of children in a school may be randomly selected to get their views on school uniform and other school-related issues.

An advantage of random sampling is that it is quite easy to get a sample. Also, everyone has an equal chance of being selected so this might help to minimise bias or unrepresentative samples being judgmentally selected (as in the case of quota samples).
The main drawback of random sampling is that it is indiscriminate, i.e. it might select people who are not part of the target group due to the randomness of selection. Therefore, sample sizes need to be large enough to get representative and meaningful results.

**Stratified sampling**

Stratified sampling is similar to quota sampling in that it involves segmentation. The population is likely to be heterogeneous so needs to be subdivided into segments (known as strata) that share homogeneous or very similar characteristics. The difference is that stratified sampling chooses a number of respondents from each stratum that is proportional to the population and then randomly selects them as the sample. For example, if the retired population of a country accounted for 20% of the overall population, then one in five chosen for the sample would be a retired person.

This method benefits from using samples that are more representative of a particular market segment as it involves only using those with key characteristics required for the sample. Sampling is usually random (known as stratified random sampling) but with clearer focus so the findings will be more relevant and with less sampling errors.

One disadvantage of stratified sampling is that it can be difficult to select relevant strata, especially if the subgroups of a population are largely homogeneous. It can also be an expensive task to generate accurate information about the population and then to further subdivide this into representative subgroups.

### Exam tip!

#### Worked example

Assume the management team at a school is proposing to change the timings of the school day. This will involve an earlier start to the day, but an earlier finish too. The management team is seeking the views of teaching staff and wishes to use a stratified sample of 30 from a total of 100 teachers. The demographics of the staff are as follows:

- Full-time teachers: 40 male and 30 female staff
- Part-time teachers: 10 male and 20 female staff

**Question:** In order to get their stratified sample, calculate how many people should be sampled from each segment according to the above information.  

**Answer:**

Apply the formula for stratified sampling:

\[
\text{Group size} \times \frac{\text{Total size}}{\text{Sample size}}
\]

Step 1: Calculate the percentage of staff in each stratum group

Step 2: Stratify each group according to the percentages found in Step 1 (see below)

<table>
<thead>
<tr>
<th>Stratum group</th>
<th>Percentage (per stratum)</th>
<th>Stratified sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time</td>
<td>Males: (40/100 = 40%)</td>
<td>40% of 30 = 12</td>
</tr>
<tr>
<td></td>
<td>Females: (30/100 = 30%)</td>
<td>30% of 30 = 9</td>
</tr>
<tr>
<td>Part-time</td>
<td>Males: (10/100 = 10%)</td>
<td>10% of 30 = 3</td>
</tr>
<tr>
<td></td>
<td>Females: (20/100 = 20%)</td>
<td>20% of 30 = 6</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>30 staff</td>
</tr>
</tbody>
</table>

The above calculations tell the management team to select (for the sample of 30) the following from each stratum group:

- 12 male full-time teachers to represent 40% of the teaching population
- 9 female full-time teachers to represent 30% of the population
- 3 male part-time teachers to represent 10% of the teaching staff
- 6 female part-time teachers to represent 20% of the teachers.
Cluster sampling is used when getting feedback from respondents involves too much time, travelling or money. For example, it would be too time consuming and costly for a multinational company to randomly interview people across all the countries that it operates in. Instead, it is more cost-effective to select several geographical areas (known as clusters) and then to randomly interview people within each of the chosen clusters. For example, a firm selling travel insurance might choose to survey people living in towns near airports. The opinions from the selected clusters are used to represent the views of the population.

The main advantages of using cluster sampling are that it is quicker, easier and cheaper than other methods of sampling if the population is widely dispersed over different geographical areas. In particular, where characteristics of customers are homogeneous, then it is not necessary to sample people from every location.

The main potential drawbacks of using cluster sampling are bias and sampling error. By selecting and using just a few locations, the results might be biased as people living in the same area are likely to share similar views or characteristics, such as lifestyle and social status. Increasing the number of clusters in the sample would reduce bias and sampling errors but will clearly add to costs and prolong data analysis.

Snowballing refers to market research carried out with individuals who then suggest other friends, family members or colleagues to increase the sample size. Businesses use snowballing when they are unable to get hold of appropriate respondents as the population is not clear. Snowballing is common in the financial services sector (such as health insurance, life assurance and personal financial planning). Firms can gain access to a huge number of people for market research purposes from an individual's acquaintances. Essentially, snowballing uses ‘word of mouth’ to enlarge the sample size.

The main advantage of snowballing is that it can be cheap and quick to get hold of relevant contacts for enlarging the sample. However, due to the nature of such respondent-driven sampling, it is often difficult to determine unbiased findings from the sample. For example, a wealthy person’s acquaintances are likely to have similar lifestyles and attitudes thereby enlarging potential bias in the sample.

Convenience sampling uses subjects that are easy (convenient) to reach. For example, students often use their classmates and friends in a research study. A news reporter might conveniently interview passers-by in a shopping mall or on the street. Convenience sampling relies on ease of reach and volunteers because of their availability.

The main advantages of convenience sampling is the ease (availability and the quickness) of data collection. It is particularly useful when time or cost is a factor for market researchers or if they want to quickly determine whether further market research is necessary.

However, the main disadvantage is that market researchers inadvertently exclude a large proportion of the population, thus the findings are often highly skewed and unrepresentative of the population. For example, a study conducted during a weekday afternoon to determine the average amount that customers spend at a restaurant is unlikely to give the same results as if the study was conducted during a Saturday evening.

Market research is not a perfect science so the results from data collection might not be absolutely reliable. For example, there is always the chance that respondents do not give representative or truthful answers. Sampling errors occur when findings from the sample differ from the actual population. The larger the sample size, the more statistically reliable answers are in reflecting the views of the population, but the more expensive this becomes. Careful sample design (the process of sample selection, sample structure and the plans for interpreting the results) can also help to reduce sampling errors. There are two types of potential errors in the results from data collection:

- **Non-sampling errors** are caused by human error or human behaviour. They arise from the researcher’s mistakes in recording, processing or analysing data. They can also occur because respondents do not always give truthful and honest answers. Such errors distort the final results of the research. Statisticians use confidence levels to allow for a margin of error. This measures the extent to which certainty can be attached to market research findings. Most statisticians accept nothing less than 95% confidence levels, i.e. only a 5% chance (2.5% either way of the predictions) that the results are inaccurate.
• **Sampling errors** are caused by mistakes made in the sample design, such as:
  
  - The sample size is too small to get statistically valid answers within desired confidence levels (margins of error). Hence, there will be large sampling discrepancies (differences in the views of the actual population and the selected sample).
  
  - The sample selected is not representative of the population, perhaps due to poor sample design. Asking only smokers about their views on banning smoking in public places will produce highly biased results!
  
  - An inappropriate sampling method is used. Random sampling will, in theory, have little bias since everyone has an equal chance of being selected, but snowballing is less likely to generate such results.
  
  - There is bias in the research. This usually comes from bad sample design, but bias can also arise from misleading questions in an interview or survey.

The results from data collection can be presented in several different ways, depending on the purpose. For example:

- **Bar charts** are useful for showing frequencies and for ease of comparison

- **Pie charts** are used for expressing percentage figures, such as data on market share

- **Line graphs** show time-series data, such as sales figures during the past twelve months

- **Histograms** are useful for showing trends over time.

The results from market research should be treated with some caution due to the limitations, which include the following:

- Findings are only as good as the research methodology used. This concept of **garbage-in-garbage-out** (GIGO) applies, whereby unreliable or inaccurate input data generates poor quality output of information. For example, pointless results will be generated if customers are asked whether they are willing to pay higher prices or if smokers are asked if smoking should be banned from public areas.

- Data and information can also be inaccurate or unreliable due to bias. For example, company annual reports or company websites will understandably report on the more positive aspects of business performance. Interviewer bias can also distort the results of market research.

- The cost of good market research is often very high. For instance, postal and telephone questionnaires can be expensive. Data analysts also need time and money to generate and analyse the results from market research.

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**Exam tip!**

So which sampling method is the best method? Each technique has its own strengths and weaknesses. There is always the risk that a sample does not truly represent the population, whichever sampling method is chosen. Sampling errors (such as bias or an inadequate sample size) will hinder the validity of the findings. The ‘best’ method of sampling for a business depends on its size, financial resources, the purpose of its market research and the extent to which customers have homogeneous or heterogeneous tastes. It is important, as always, to write your answers in the context of the business.

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**Market research and the CUEGIS concepts**

The pace of change in many industries has fuelled the need for market research. The dynamic nature of change means marketers have to rethink the way they conduct research. Even established brands have to adapt to change – think about the decline of Blockbuster (video rentals) Motorola and Nokia (mobile phones), Kodak (camera film) and MySpace (social media). These were all brand leaders that ruled their markets but have been challenged by new entrants that have changed the business landscape. Hence, in a world of continual yet erratic change, market research must adapt in order to allow businesses to know what and how things are changing.

Culture also has an effect on market research. With globalization and the spread of international marketing (see Unit 4.8), marketers are spending an increasing amount of time and resources trying to understand cultural differences. Regional cultures can have an impact on how marketers conduct their research, e.g. in some cultures, people feel uncomfortable being...
frank (direct) or confrontational so will refrain from saying ‘no’ even if they want to. Disagreeing is regarded as being rude, yet in other cultures this generates discussion and negotiated outcomes. Observations are a common method for gaining an understanding of how to refine products for different market segments in different parts of the world. Car manufacturers, such as Honda, Toyota and Audi, observed that women in the USA with long fingernails carrying their handbags often had difficulties finding their keys, opening the door and starting the engine. Hence, the introduction of remote control locks and keyless engine starters helped to better meet the needs of their customers.

Cultural sensitivity should also be considered when conducting interviews and questionnaires. What is culturally acceptable in one country is not necessarily so in others. For example, in some cultures it is rude to ask for a person’s age or their income level, but this is absolutely fine in other cultures. International marketers must also be aware of possible errors in the translation of questions.

There are potentially huge ethical issues surrounding the practice of market research. Marketers may be questioned about whether their research methods comply with an ethical code of conduct within the organization. In compliance with corporate social responsibility (CSR), the collection, processing and management of personal data needs to done in an ethical manner. Passing on personal data to third parties (often by selling the data) without consent is generally regarded as unethical business practice. Apple, Barclays, Facebook and Google have all be sued in recent years for allegations of selling personal data without consent.

Globalization causes market research to be integral to business strategy in overseas markets. Differences in language, culture and etiquette can create both opportunities and threats for businesses. For example, Durex is a highly popular brand of condoms in many parts of the world. However, Durex is also a registered brand in Brazil for adhesive tape; in Mexico it is a brand of socks; in Canada, it is the name of a steel company; and in the USA it is also a brand name of badminton racquets! Hence, careful strategic planning is important in communicating the correct marketing message to the correct target audience in different regions of the world.

Technological innovations have changed how market researchers conduct their work. For example, many firms have switched to using social media to gain market research data from the likes of Facebook, Google+, LinkedIn and Twitter. There is also an array of dedicated software to collect, process and present data. Ultimately, technological innovations have enabled businesses to gain a better understanding of their customers.

Consider how the CUEGIS concepts (change, culture, ethics, globalization, innovation and strategy) apply across the content discussed in this unit on market research.

**REVIEW QUESTIONS**

1. What is market research?
2. Distinguish between field research and desk research.
3. Distinguish between the main methods of primary market research.
4. Outline the advantages and disadvantages of using surveys for market research.
5. Outline the main methods of conducting secondary market research.
6. What are the ethical issues that market researchers should take into consideration?
7. Distinguish between quantitative and qualitative market research.
8. What is sampling and why do market researchers use it?
9. Distinguish between quota, random, stratified, snowballing, convenience and cluster sampling methods.
10. Distinguish between sampling and non-sampling errors in market research.
4.4 Market research

KEY TERMS

Academic journals are periodical publications from educational and research institutions that publish data and information relating to a particular academic discipline.

Cluster sampling is used when getting feedback from respondents involves too much time, travelling or money. For example, it would be too time consuming and costly for a company to randomly interview people across all the countries that it operates in.

Convenience sampling uses subjects that are easy (convenient) to reach, e.g. students often use their classmates and friends in a research study. It relies on ease of reach and volunteers because of their availability.

Focus groups involve forming small discussion groups to gain insight into the attitudes and behaviour of respondents. The group is typically made up of participants who share a similar customer profile, such as teenage boys who like to play online computer games.

Interviews are a type of primary research that involve discussions between an interviewer and interviewees to investigate their personal circumstances and opinions. Beliefs, attitudes and feelings can be examined in detail.

A market analysis reveals the characteristics and the outlook (trends) for a particular product or industry, e.g. market size, market share and market growth rate.

Market research refers to marketing activities designed to discover the opinions, beliefs and preferences of potential and existing customers in order to identify and anticipate their wants and needs.

Non-sampling errors are caused by human error or human behaviour. They arise from the researcher’s mistakes in recording, processing or analysing data, or because respondents do not always give truthful and honest answers.

Observations are a method of primary research that involves watching how people behave or respond in different situations. It can be done under controlled conditions (like a laboratory test) or as real-life situations (where people do not know that they are being watched).

The population, in marketing terms, refers to all potential customers of a particular market.

Primary research (also known as field research or bespoke research) is market research that involves gathering new data first-hand for a specific purpose. Methods of primary research include: surveys (questionnaires), interviews, focus groups and observations.

Qualitative market research involves getting non-numerical answers and opinions from respondents. The main purpose is to understand the behaviour, attitudes and perceptions of customers, employees or other respondents.

Quantitative market research is about collecting and using factual and measurable information rather than opinions.

Quota sampling is the most common sampling method, involving a certain number of people (known as the quota) from different market segments being used for research.

Random sampling gives everyone in the population an equal chance of being selected for the sample.

A sample is a selected proportion of the population used for primary market research purposes.

Sampling errors are caused by mistakes made in the sample design, such as an unrepresentative sample being used or the sample size being too small.

Secondary research (or desk research) involves the collection of second-hand data and information that already exists, previously gathered by others. Examples include government publications and news articles.

Snowballing refers to market research carried out with individuals who then suggest other friends, family members or colleagues, thereby increasing the sample size. It is used when firms are unable to get hold of appropriate respondents as the population is not clear.

Stratified sampling involves subdividing the market into segments (known as strata) that share homogeneous or very similar characteristics. A number of respondents from each stratum that is proportional to the population is then randomly selected for the sample.

A survey (or questionnaire) is a document that contains a series of questions used to collect data for a specific purpose. It is the most common method of primary research.