The Marketing Framework

The Marketing Concept
Customer Value

Internal Analysis
(The Company)
Company resources and competencies
Existing competitive advantages

External Analysis
(The Marketing Environment)
Macro level
Meso level (business and industry)
Determining buying behaviour on
BtC and BtB markets

SWOT Analysis

Strategic Marketing
Setting goal and objectives
Defining marketing strategies

Market Research and Statistics

Gathering Market Information
Market Research: Customers, Competitors, Suppliers, Stakeholders
Trends in the market
Estimating market potential

Analysing Market Information
The competitive environment, Consumer markets,
Business markets, The SWOT analysis

Innovation and Internationalisation

Segmentation, Targeting and Positioning
Innovation and Internationalisation
Segmentation of the market, selection of target groups
Positioning and branding strategies
Innovations and new product development
Internationalisation
Relationship Marketing

The Marketing Plan and the Sales Strategy

Marketing Planning (Tactical Marketing)
Planning the marketing actions using the parametres: Product, Price, Place, Promotion
Designing the service delivery: planning the Physical evidence, Processes and People

Defining the sales strategy

Action plan: fixing the actions, timing and responsibility
Implementing the marketing plan

Figure 1.1: Market research and collection of information

Figure 1.2: Types of information

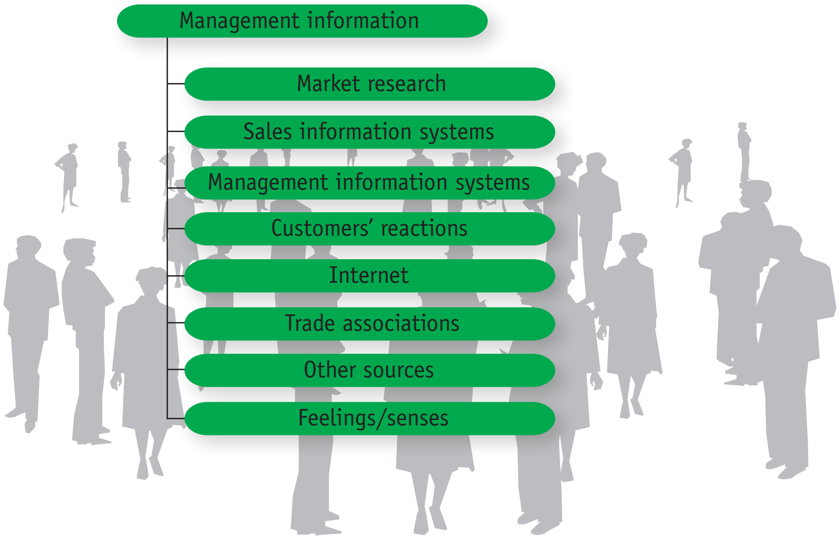


Figure 1.3: Primary and secondary data

	Primary data	**Secondary data**
Purpose	Specific problem	Other/general problems
Process	Individual	Collective
Expenses	High	Low
Timeline	Long	Short
General advantages	Target orientated	Fast/simple/economic

Figure 1.4: Validity and reliability

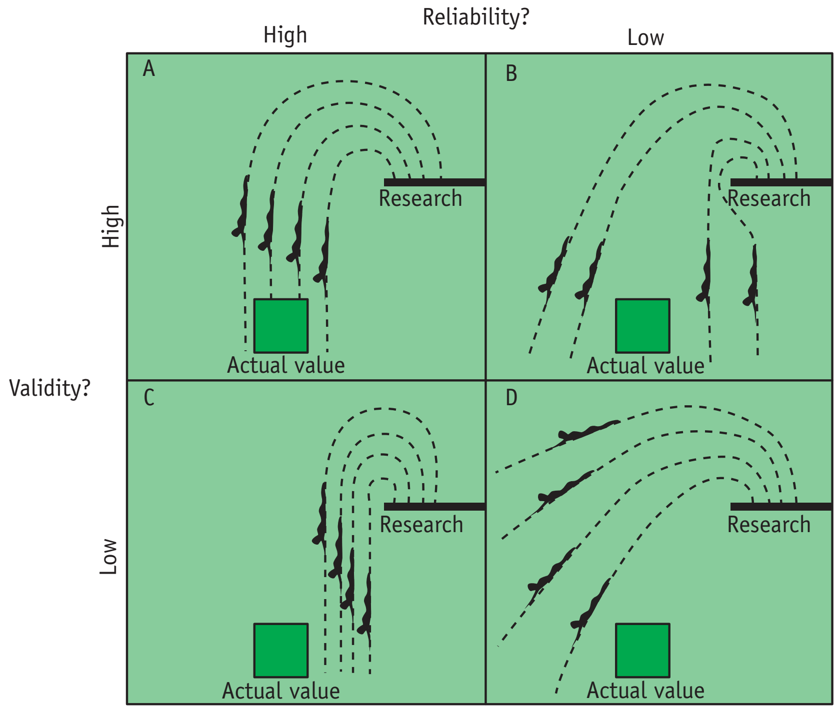


Figure 1.5: Overview of analytical methods

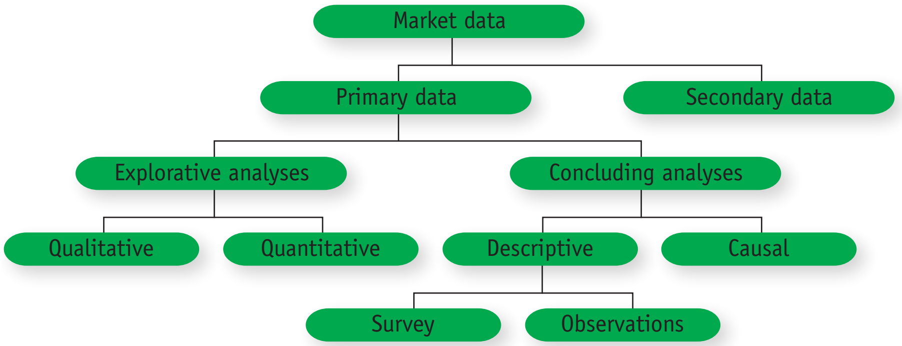


Figure 2.1: Survey process

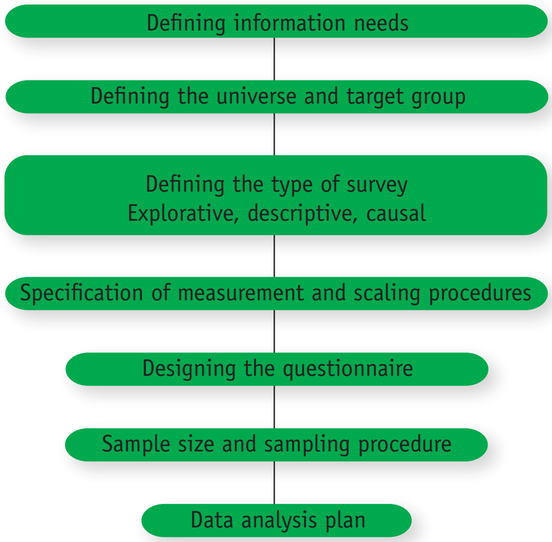


Figure 2.2: Market map

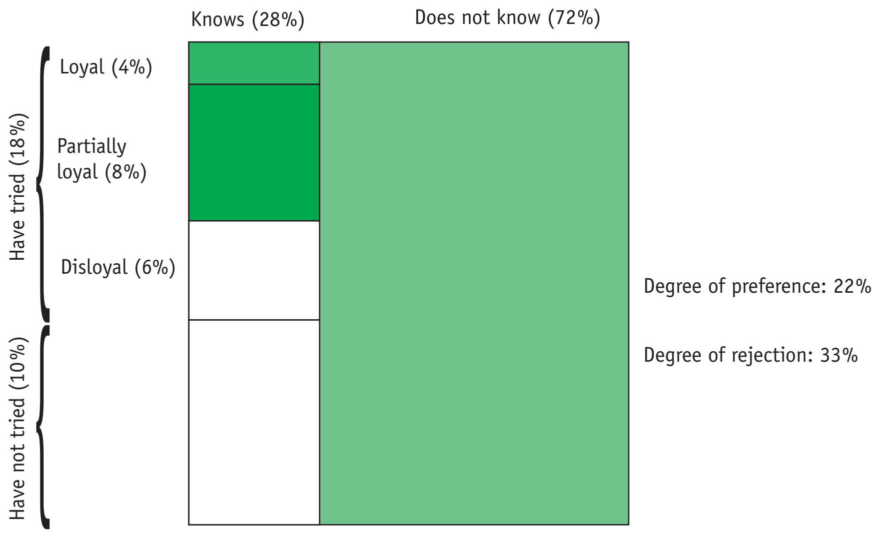


Figure 2.3: Types of analyses

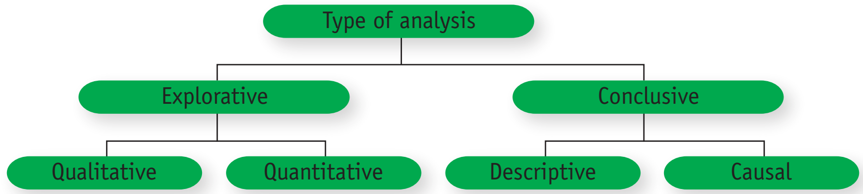
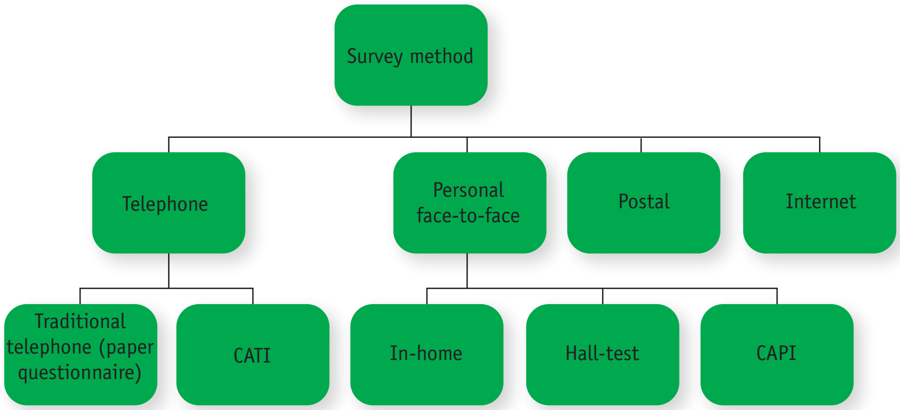


Figure 3.1: Types of surveys



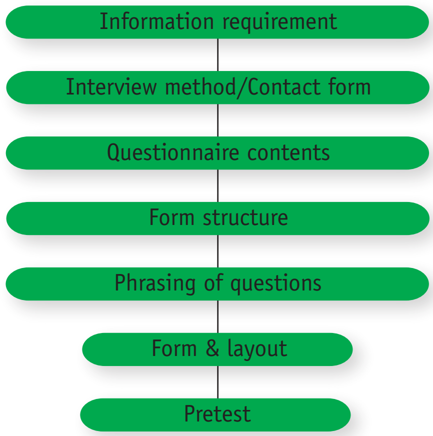


Figure 4.1: The process of designing a questionnaire – from the information required to testing of the form

Figure 4.2: Bar chart based on nominally scaled data

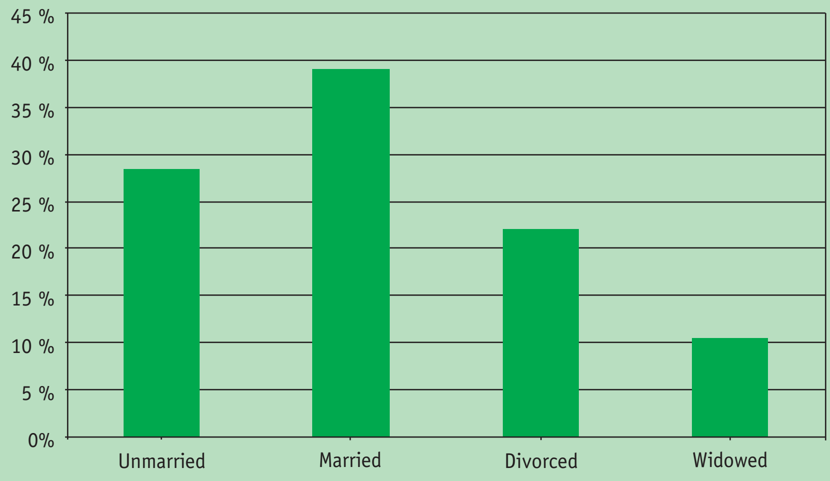


Figure 4.3: Functions in Microsoft Excel

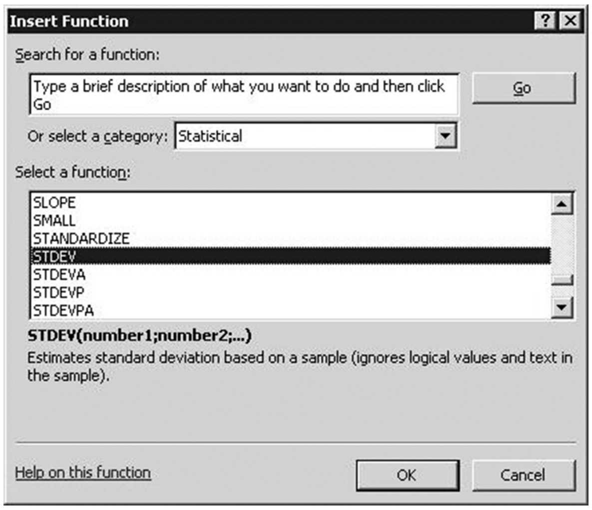


Figure 4.4: Treatment of responses on a ratio scale

12 respondents' answers concerning the assessment of a city council's service level on a five point scale (1-5)	
Respondent 1	2
Respondent 2	3
Respondent 3	3
Respondent 4	1
Respondent 5	4
Respondent 6	5
Respondent 7	1
Respondent 8	1
Respondent 9	2
Respondent 10	2
Respondent 11	5
Respondent 12	4
Mean value	2.75
Variance	2.20
Standard deviation	1.48

Figure 4.5: Example of a continuous response scale

What do you think of the taste of OTA oatmeal?

Very bad ◄——————————————► Very good

Figure 4.6: Examples of response alternatives on a Likert scale

The classic Likert scale is typically used to rate a given object such as a brand or product.

Think of the coffee you just tasted. To which degree do you agree or disagree with the following statements? You can respond with these possible answers (the interviewer shows the list of possible answers):

The coffee was too sweet:
I totally agree
I partly agree
I neither agree nor disagree
I partially disagree
I totally disagree
I do not know

The coffee was too bitter:
I totally agree
I partly agree
I neither agree nor disagree
I partially disagree
I totally disagree
I do not know

The coffee had a nice aroma:
I totally agree
I partly agree
I neither agree nor disagree
I partially disagree
I totally disagree
I do not know

Figure 4.7: Example of a Likert scale

Figure 4.8: Example of the result of a question based on a Likert scale

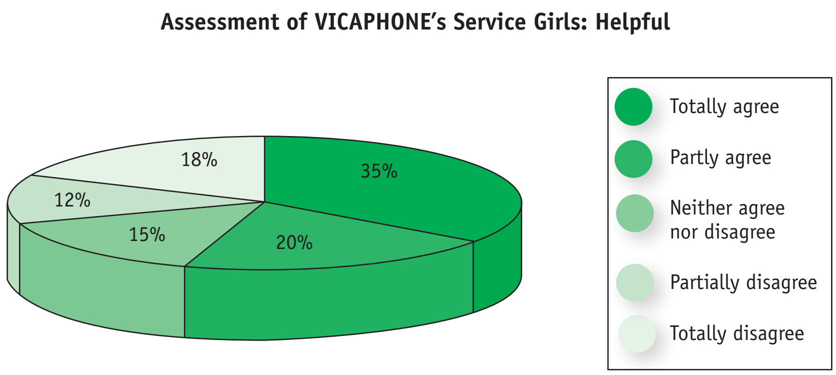


Figure 4.9: Input from interviews on a semantic differential scale

Figure 5.1: Establishment of a sample

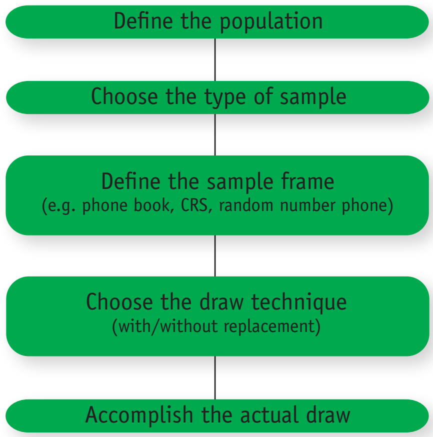


Figure 5.2: Types of samples

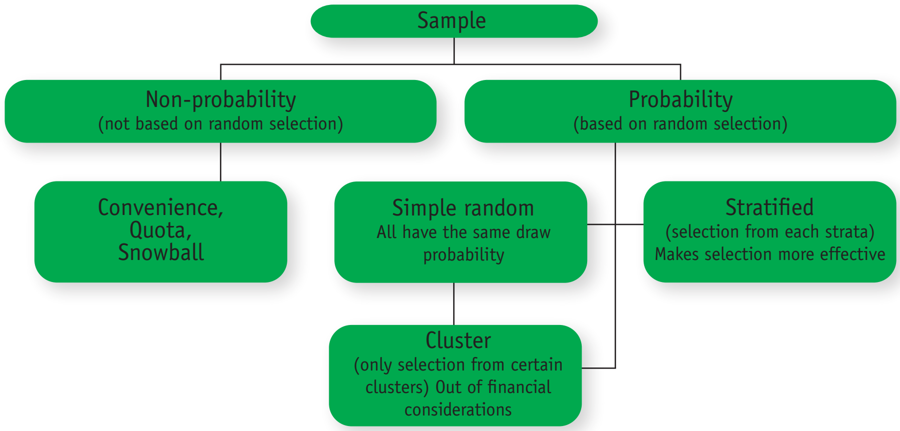


Figure 5.3: Examples of selection probabilities

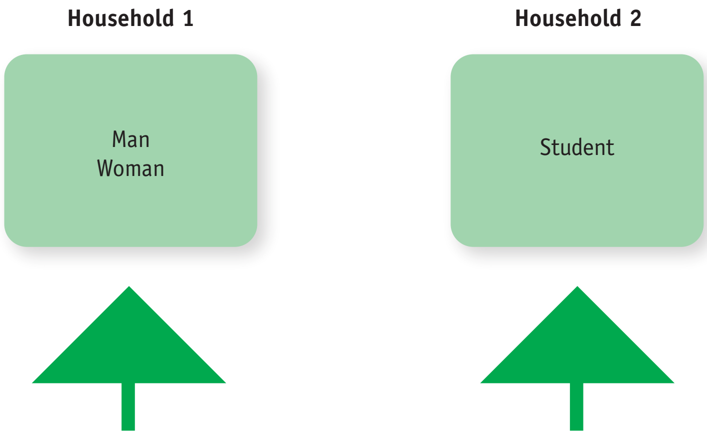


Figure 5.4: Advantages and disadvantages of different types of sample selection

Method	**Advantages**	**Disadvantages**
Convenience	Cheapest, fastest, easy	Selection bias, being representa-tive
Judgement	Cheap, fast, convenient	Impossible to project results onto population
Quota	Control with certain (important) variables	Selection bias, doubt about being representative
Snowball	Can be used for detecting rare occurrences	Selection bias, doubt about being representative
Simple random	Easy to comprehend, can be projected	Often problematic to carry out
Stratified	Includes all important subgroups, precision	Difficult to choose stratification variables, expensive
Cluster	Easy to implement, cost-effective	Inaccurate

Figure 5.5: Example of weighting the sample

	Population	Sample	Weighed sample	Weights
Men	49	41	49	1,195
Women	51	59	51	0,854
Central Copenhagen	22	18	22	1,222
The rest of Sealand	30	28	30	1,071
Funen and other islands	10	15	10	0,667
Jutland	38	39	38	0,974
Age 15-29	20	10	20	2,000
Age 30-49	35	40	35	0,875
Age 50+	45	50	45	0,900

Figure 6.1: Interpretation of standard deviation by a bell-shaped set of observations

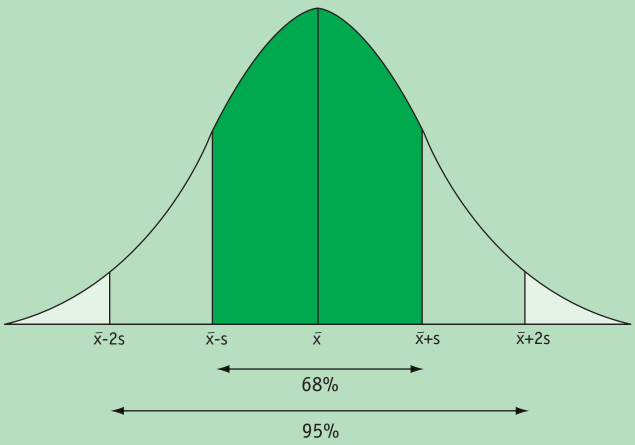
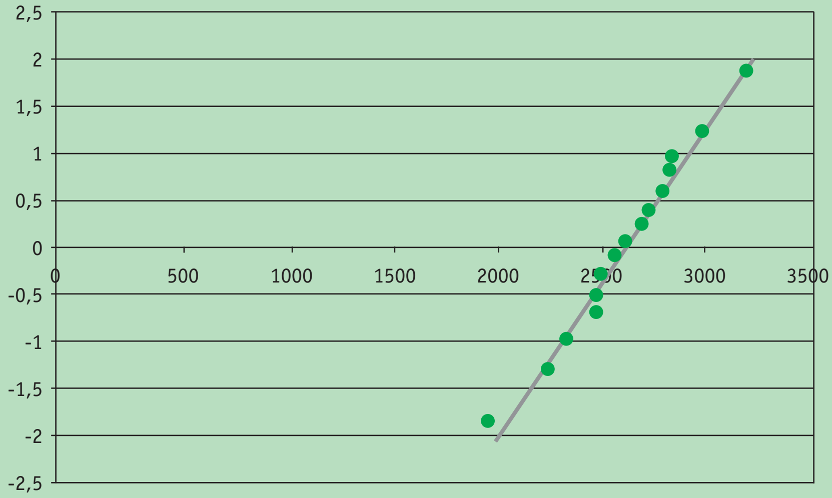


Figure 6.2: Normal quantile diagram for example 6.1



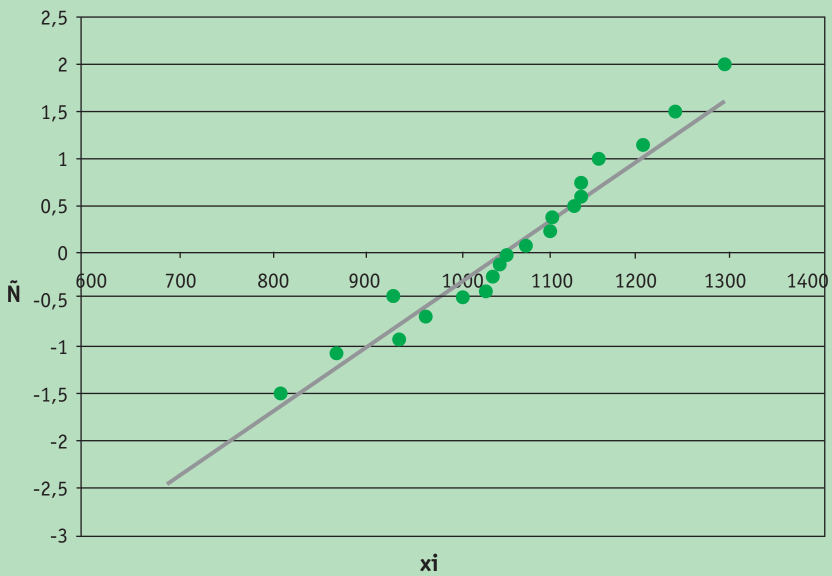
Example 6.12

An electric light bulb manufacturer, Brighter Bulbs, has studied the burn time for its new low-energy-saving light bulbs as part of a general product quality study. A sample of 20 bulbs was picked from the day's production, and burn times were measured in hours. The outcome figures in the table below:

824	1,073	1130	1040	875
950	922	1026	1100	1156
1043	1229	1032	1286	1000
1127	689	1100	1131	1200

Set a 95 percent confidence interval for the deviation and the variance of burn time.

First and foremost, check whether the sample originates from a normal distribution. This is done by constructing a quantile diagram:



Hypothesis test 7.1

Testing mean value of normal distribution with unknown variance (t-test)			
Prerequisites	X is normally distributed		
Hypotheses	Two-sided: $H_0 : \mu = \mu_0$ $H_A : \mu \neq \mu_0$	Left-sided: $H_0 : \mu \geq \mu_0$ $H_A : \mu < \mu_0$	Right-sided: $H_0 : \mu \leq \mu_0$ $H_A : \mu > \mu_0$
Test statistic	$t = \frac{\overline{x} - \mu_0}{s / \sqrt{n}}$ is $t(n-1)$ distributed		
p-value	$p = 2P(T \geq \lvert t \rvert)$	$p = P(T \leq t)$	$p = P(T \geq t)$
	in which T is $t(n-1)$ distributed.		

Hypothesis Test 7.2

Testing for mean value with a large sample (z-test)			
Prerequisites	Sample size is large, i.e. $n \geq 30$.		
Hypotheses	Two-sided: $H_0 : \mu = \mu_0$ $H_A : \mu \neq \mu_0$	Left-sided: $H_0 : \mu \geq \mu_0$ $H_A : \mu < \mu_0$	Right-sided: $H_0 : \mu \leq \mu_0$ $H_A : \mu > \mu_0$
Test statistic	$z = \frac{\bar{x} - \mu_0}{s / \sqrt{n}}$		
p-value	$p = 2(1 - \Phi(\|z\|))$	$p = \Phi(z)$	$p = 1 - \Phi(z)$

Hypothesis Test 7.3

Test for proportion of population (z-test)			
Prerequisites	$np_0(1-p_0) > 9$		
Hypotheses	Two-sided: $H_0: p = p_0$ $H_A: p \neq p_0$	Left-sided: $H_0: p \geq p_0$ $H_A: p < p_0$	Right-sided: $H_0: p \leq p_0$ $H_A: p > p_0$
Test statistic	$z = \dfrac{\hat{p} - p_0}{\sqrt{p_0(1-p_0)/n}}$		
p-value	$p = 2(1-\Phi(\lvert z \rvert))$	$p = \Phi(z)$	$p = 1-\Phi(z)$

Hypothesis Test 7.4

Test for standard deviation in a normal distribution (χ^2-test)			
Prerequisites	X is a normally distributed quantity		
Hypotheses	Two-sided: $H_0 : \sigma = \sigma_0$ $H_A : \sigma \neq \sigma_0$	Left-sided: $H_0 : \sigma \geq \sigma_0$ $H_A : \sigma < \sigma_0$	Right-sided: $H_0 : \sigma \leq \sigma_0$ $H_A : \sigma > \sigma_0$
Test statistic	$Q = \frac{(n-1) \cdot s^2}{\sigma_0^{\ 2}}$ is $\chi^2(n-1)$ distributed		
	$p = 2\min(P_1, P_2)$ where $P_1 = P(\chi^2 < Q)$ and $P_2 = P(\chi^2 > Q)$	$p = P(\chi^2 < Q)$	$p = 1 - P(\chi^2 < Q)$
	where χ^2 is $\chi^2(n-1)$ distributed		

Hypothesis Test 7.5

Test the difference between two standard deviations (F-test)			
Prerequisites	X and Y are of a normally distributed quantity		
Hypotheses	Two-sided: $H_0 : \sigma_x = \sigma_y$ $H_A : \sigma_x \neq \sigma_y$	Left-sided: $H_0 : \sigma_x \geq \sigma_y$ $H_A : \sigma_x < \sigma_y$	Right-sided: $H_0 : \sigma_x \leq \sigma_y$ $H_A : \sigma_x > \sigma_y$
Test statistic	$f = \frac{s_x{}^2}{s_y{}^2}$ is $F(f_x, f_y)$-distributed		
p-value	$p = 2(1 - P(F \leq f))$	$p = P(F \leq f)$	$p = P(F \geq f)$
	where F is $F(f_x, f_y)$-distributed		

Hypothesis Test 7.6

Test for the difference between two means (z-test)			
Prerequisites	The samples are large, i.e. $n_x \geq 30$ and $n_y \geq 30$		
Hypotheses	Two-sided: $H_0 : \mu_x - \mu_y = D$ $H_A : \mu_x - \mu_y \neq D$	Left-sided: $H_0 : \mu_x - \mu_y \geq D$ $H_A : \mu_x - \mu_y < D$	Right-sided: $H_0 : \mu_x - \mu_y \leq D$ $H_A : \mu_x - \mu_y > D$
Test statistic	$z = \frac{\bar{x} - \bar{y} - D}{\sqrt{\frac{s_x^2}{n_x} + \frac{s_y^2}{n_y}}}$ is approximately located $n(0,1)$-distributed		
p-value	$p = 2(1 - \Phi(\lvert z \rvert))$	$p = \Phi(z)$	$p = 1 - \Phi(z)$

Hypothesis Test 7.7

Test for the difference between two mean values (t-test)			
Prerequisites	1) X and Y are normally distributed 2) The standard deviations are identical: $\sigma_x = \sigma_y$		
Hypotheses	Two-sided: $H_0 : \mu_x - \mu_y = D$ $H_A : \mu_x - \mu_y \neq D$	Left-sided: $H_0 : \mu_x - \mu_y \geq D$ $H_A : \mu_x - \mu_y < D$	Right-sided: $H_0 : \mu_x - \mu_y \leq D$ $H_A : \mu_x - \mu_y > D$
Test statistic	$t = \dfrac{\overline{x} - \overline{y} - D}{s_f \sqrt{\dfrac{1}{n_x} + \dfrac{1}{n_y}}}$ is $t(f)$-distributed		
p-value	$p = 2P(T \geq \lvert t \rvert)$	$p = P(T \leq t)$	$p = P(T \geq t)$
	where T is $t(f)$-distributed		

Hypothesis Test 7.8

Test for the difference between two proportions (z-test)			
Prerequisites	$n_x \hat{p}_x (1-\hat{p}_x) > 9$ and $n_y \hat{p}_y (1-\hat{p}_y) > 9$		
Hypotheses	Two-sided: $H_0 : p_x - p_y = D$ $H_A : p_x - p_y \neq D$	Left -sided: $H_0 : p_x - p_y \geq D$ $H_A : p_x - p_y < D$	Right-sided: $H_0 : p_x - p_y \leq D$ $H_A : p_x - p_y > D$
Test statistic	$z = \frac{\hat{p}_x - \hat{p}_y - D}{\sqrt{\frac{\hat{p}_x(1-\hat{p}_x)}{n_x} + \frac{\hat{p}_y(1-\hat{p}_y)}{n_y}}}$ is approximately located n(0,1) distributed		
p-value	$p = 2(1-\Phi(\lvert z \rvert))$	$p = \Phi(z)$	$p = 1-\Phi(z)$

Hypothesis Test 7.9

Test for the difference between two proportions (z-test)			
Prerequisites	$n_x\,\hat{p}_x(1-\hat{p}_x) > 9$ and $n_y\,\hat{p}_y(1-\hat{p}_y) > 9$		
Hypotheses	Two-sided: $H_0: p_x = p_y$ $H_A: p_x \neq p_y$	Left-sided: $H_0: p_x \geq p_y$ $H_A: p_x < p_y$	Right-sided: $H_0: p_x \leq p_y$ $H_A: p_x > p_y$
Test statistic	$z = \dfrac{\hat{p}_x - \hat{p}_y}{\sqrt{\hat{p}_0(1-\hat{p}_0)(\frac{1}{n_x}+\frac{1}{n_y})}}$, where $\hat{p}_0 = \dfrac{x+y}{n_x+n_y}$, is approximately located n(0,1) distributed		
p-value	$p = 2(1-\Phi(\lvert z\rvert))$	$p = \Phi(z)$	$p = 1-\Phi(z)$

Figure 8.1: Extract from the questionnaire

1. Are you a man or a woman?
   - ☐ Man ☐ Woman

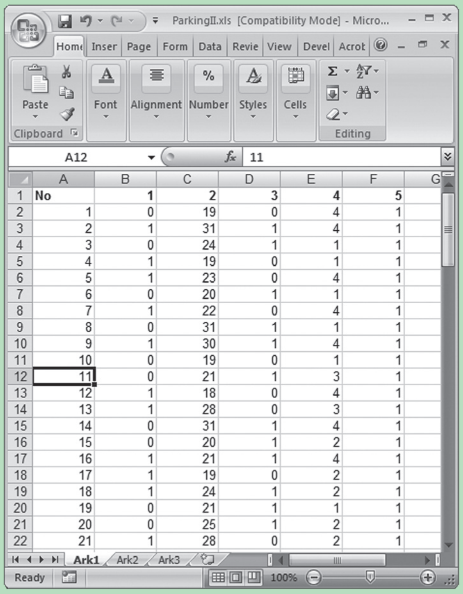
2. How old are you?
   Give your age: ___________

3. Where are you studying?
   - ☐ Harbour Road ☐ Louise Street

4. Do you have your own car?
   - ☐ Yes ☐ No

5. How satisfied are you with the parking facilities?
   - ☐ Very dissatisfied ☐ Dissatisfied
   - ☐ Satisfied ☐ Very satisfied

Figure 8.2: Encoded data



	A	B	C	D	E	F
1	No	1	2	3	4	5
2	1	0	19	0	4	1
3	2	1	31	1	4	1
4	3	0	24	1	1	1
5	4	1	19	0	1	1
6	5	1	23	0	4	1
7	6	0	20	1	1	1
8	7	1	22	0	4	1
9	8	0	31	1	1	1
10	9	1	30	1	4	1
11	10	0	19	0	1	1
12	11	0	21	1	3	1
13	12	1	18	0	4	1
14	13	1	28	0	3	1
15	14	0	31	1	4	1
16	15	0	20	1	2	1
17	16	1	21	1	4	1
18	17	1	19	0	2	1
19	18	1	24	1	2	1
20	19	0	21	1	1	1
21	20	0	25	1	2	1
22	21	1	28	0	2	1

Figure 8.3: The design of a pivot table

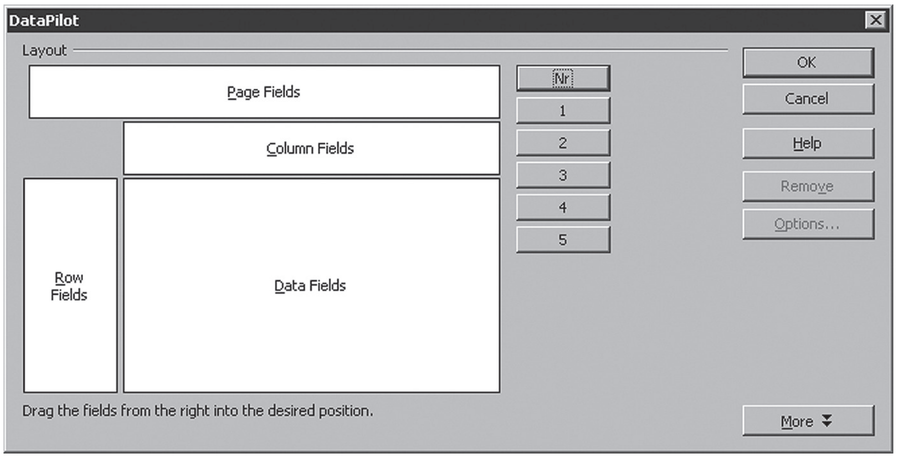


Figure 8.4: Construction of a pivot table, sum of No

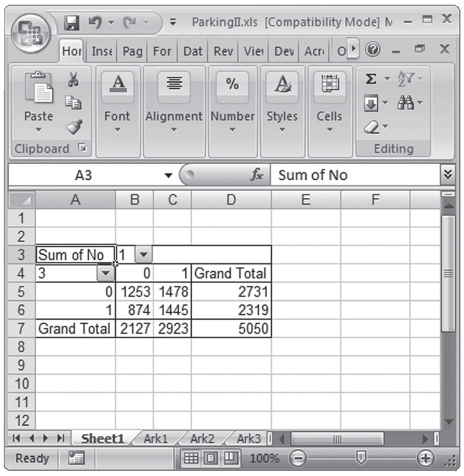
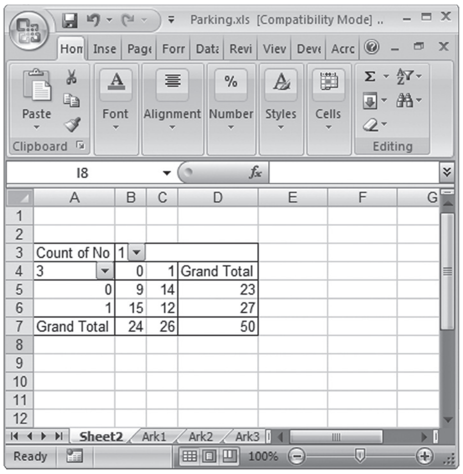
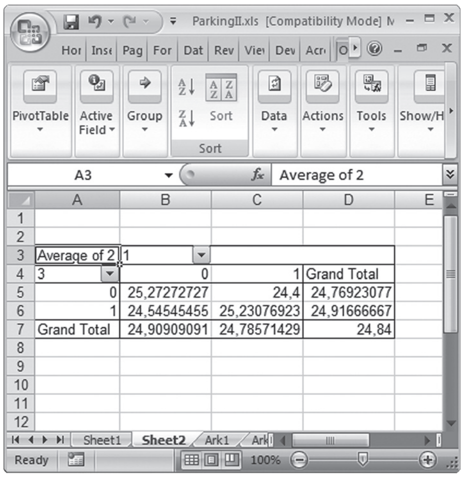


Figure 8.5: Construction of a pivot table, the amount of No



	A	B	C	D
3	Count of No	1		
4	3	0	1	Grand Total
5	0	9	14	23
6	1	15	12	27
7	Grand Total	24	26	50

Figure 8.6: Construction of a pivot table, the average age



Hypothesis Test 8.1

Goodness-of-fit test for representativeness	
We have a sample with N observations divided in k categories. The observed number in each category is $O_1, O_2, ..., O_K$. We expect that the probability of being in category i is q_i.	
Prerequisites	All expected values $E_i = Np_i > 3$
Hypotheses	H_0 : For all i is $p_i = q_i$ H_A : For at least one i is $p_i \neq q_i$
Test statistic	$Q = \sum_{i=1}^{K} \frac{(O_i - E_i)^2}{E_i}$
p-value	$p = P(\chi^2 \geq Q)$ where χ^2 is $\chi^2(k-1)$ distributed

Hypothesis Test 8.2

Goodness-of-fit test for independece in a contigency table	
We have a sample with N elements grouped into *rc* categories in a contigency table. We want to test whether or not there is independence between the 'horizontal' and 'vertical' category classification	
Prerequisites	All expected values $E_{i,j} = \frac{C_i R_j}{N} > 3$
Hypotheses	H_0 : There is independence between the two category divisions H_A : There is no independence
Test statistic	$Q = \sum_{i=1}^{r} \sum_{j=1}^{c} \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$
p-value	$p = P(\chi^2 \geq Q)$ where χ^2 is $\chi^2((r-1)(c-1))$ distributed

Figure 9.1: Differences between quantitative and qualitative analyses

	Qualitative	**Quantitative**
Purpose	Understand the underlying motivation and reasons	Quantify data and project it onto the universe
Sample	Small, non-representative	Large, representative
Data collection	Unstructured Can be done both individually and with several respondents	Structured Always individual respondents
Data analysis	Non-statistical	Statistical
Result	Understanding	Final recommendations

Figure 9.2: Organisation of a focus group

Figure 9.3: Types of qualitative analyses

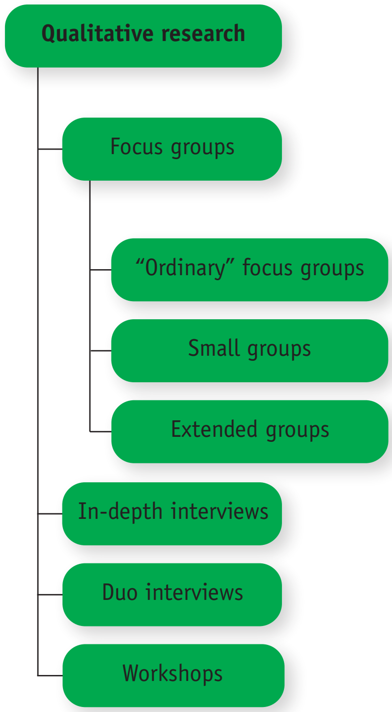


Figure 10.1: From marketing issues to analysis

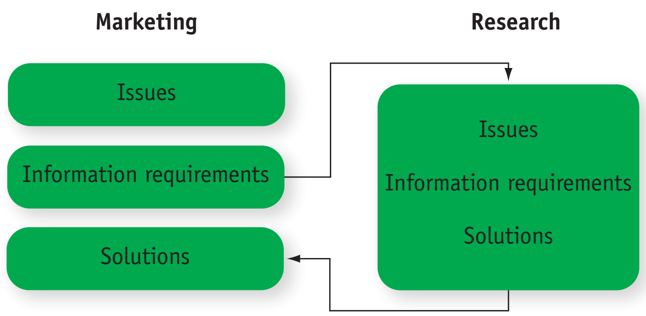


Figure 10.2: Example of a pie chart

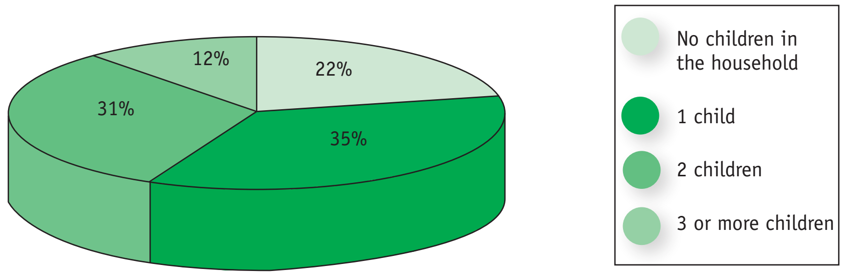


Figure 10.3: Example of a histogram: Percentage of housewives who have tried certain washing powder brands within the last year (figures are fictitious)

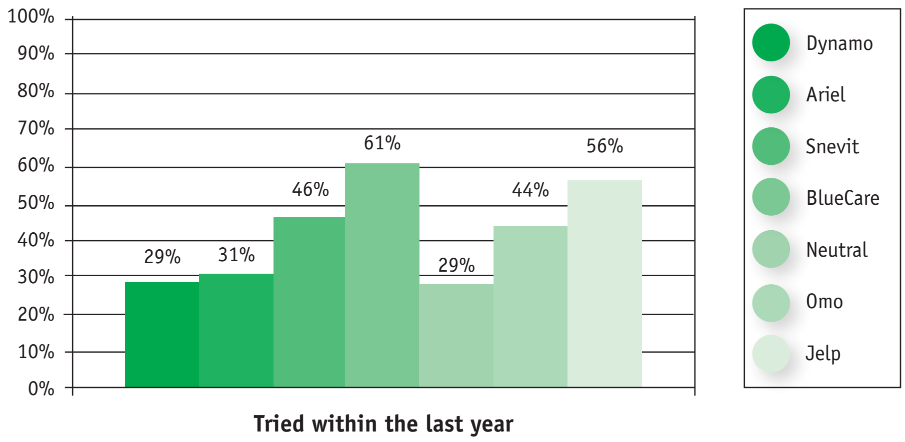


Figure 10.4: Washing powder brands tried within the last year (figures are fictitious)

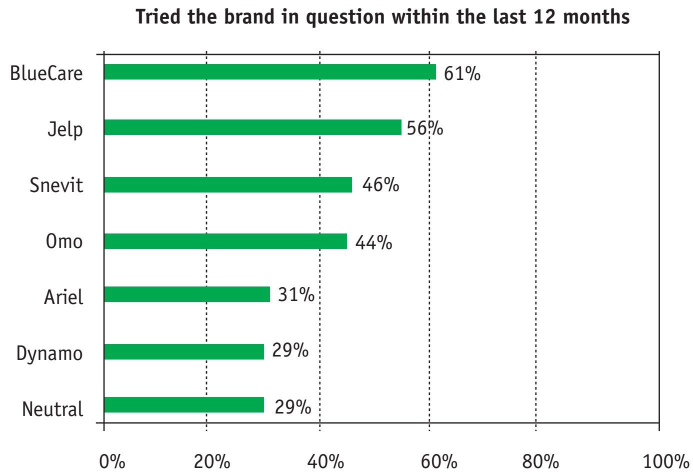


Figure 10.5: The proportion of men and women who prefer respectively, solid and liquid hand soap (figures are fictitious)

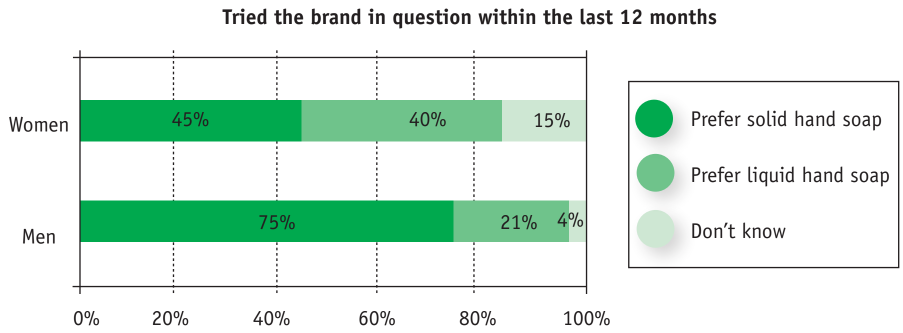
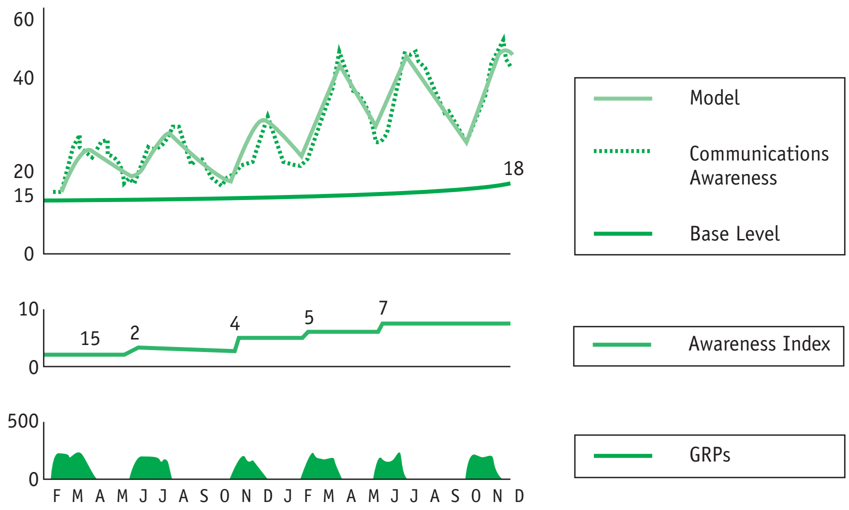
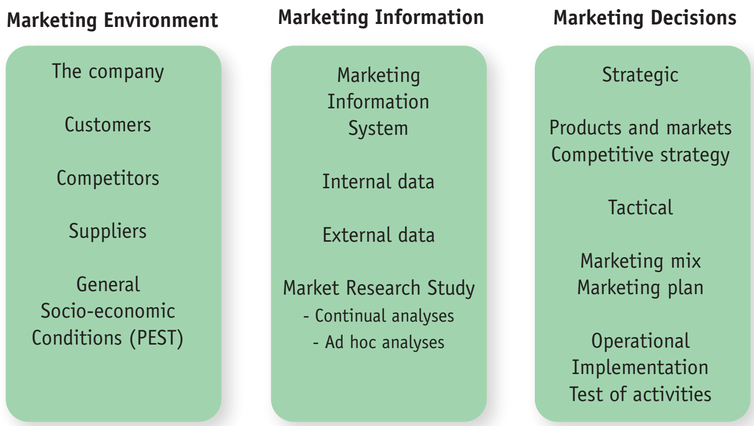


Figure 10.6: Graphic from the Millward Brown tracking system DYNAMIC TRACKING



Source: Andersen (2007)

Figure 10.7: Market research in a marketing frame of reference



Source: Jobber (2007)

Figure 10.8: Results of flavour and packaging tests

	Preferred flavour variant:		
	A	**B**	**C**
Total	21%	16%	63%
Men	20%	10%	70%
Women	19%	4%	78%

	Preferred packaging design:			
	1	**2**	**3**	**4**
Total	6%	12%	25%	57%
Men	13%	3%	19%	65%
Women	2%	20%	35%	43%