The Data Group | The Data Institute

Methodology

Contents

Brands covered by the Methodology described:

Market Research Methodology

It is very difficult in a limited discussion to adequately describe the Methodology used by DataGroup and The Data Institute. The systems and software in use have been for the past 35 years, and even more so today, by far the most advanced in the world and thus DataGroup are at the apex of the application of artificial intelligence and information technology.

The first important aspect to remember about DataGroup databases and reports is that they are entirely computerized - from initial survey interviewing to the online database or report DVD finally published; and this means that DataGroup clients are assured of a uniform standard and quality with all DataGroup products.

The computerization, development of the methodology and the programs took over thirty five years and DataGroup believe that the generation of their databases and reports are the most advanced in the world. No other company has such advanced techniques or such thorough methodology.

The fact that the DataGroup interview methodology is so automated means that their units costs per question or per survey are much lower than that of competitors, thus one can offer clients very competitive prices for online databases, reports DVDs, and for other information products.

Research Methodology

Data Collection

Data collection for the databases have been researched and developed for over many years. During that period the extent and depth of data has proliferated greatly and this now enables the production of research data which has an unparalleled degree of detail and accuracy.

Depth of Research

DataGroup have been collecting original data since 1974 and as each successive layer of data is added to the databases the statistical significance of the core data and the reliability of the data modelling becomes more accurate and credible.

One can monitor individual product, each market segment and corporate developments at each company over time. Old products become obsolete and new products are introduced. Market segments decline and are replaced by new market areas. Companies fail or are acquired, and new companies emerge and fill corporate vacuums. The monitoring of this activity significantly adds to the reservoir of data.

Research Methods

Qualitative & Quantitative Studies require process and outcome analysis measurements of the effectiveness of products and companies. DataGroup design and conducted thousands of surveys, in-depth interviews, semi-structural observation, and focus groups and therefore there is substantial in-house expertise in these areas. DataGroup collect data in program evaluations, refine questionnaires, and develop concrete interactions with respondents. DataGroup use qualitative and quantitative methods singly or in combination to provide a comprehensive picture, depending on the needs of the particular survey. DataGroup combine subject-area expertise with technical skills in research design, mathematical modelling, and statistical analysis. The performance of survey methodology needs the development of outcome measures and appropriate baselines, the examination of program processes in relation to outcomes, and the development of models to isolate program effects from exogenous factors.

Many inter-personal techniques are used, including face-to-face interviews, video-conferencing focus groups, intensive focus groups of 5-10 participants, expert brain-storming of participants selected for their specific knowledge of the topics under investigation or their importance as a target group, et cetera. Human Factor research is important in many areas, and DataGroup design and conduct studies to improve the flow of participants through data collection protocols, this includes automated interview techniques, research web sites, social networks and novel inter-action and communication methods. This also involves cognitive research laboratories for conducting in-depth one-on-one interviews, focus groups, cognitive testing of survey instruments and product usability studies.

Original Research

DataGroup databases are founded on original research. There is limited confidence in company accounts, credit reports, government or trade statistics and thus one has to approach the problem of getting corporate intelligence and market data from a number of independently verifiable standpoints.

Primary Original Data Sources

	Type	Credibility	Significance	Limitations
1	Group sessions	Good	Limited	Subjective
2	Online Omnibus Surveys	Good	Good	Verification
3	Follow-up Telephone Interviews with Online Surveys key decision makers	Good	Good	Time limitations
4	Personal Interviews	Very Good	Limited	Subjective
5	Omnibus Telephone Interviews	Good	Very Good	Time limitations

Primary data collection sources are designed to collect data at distinct product levels and individual company operational levels. Whereas government and trade data is necessarily generalised or arranged into broad product groups, with original research one can focus on highly discrete product definitions, market segments and corporate data at individual operating levels. Thus whereas government and trade data is organized into census or statistical product coding schemes, DataGroup can classify products according to their individual physical or performance characteristics, or by application or market sectors. This allows for a far more focussed analysis.

With Primary data collection one can isolate the respondent more effectively. The respondents are specifically targeted because they conform to the necessary criteria; this may be because the respondent designs, produces, sells, distributes or purchases a specific product.

Primary Data Sources at Industry -v- Market Levels

For example, data on a target supplier company, its materials consumed and suppliers, internal operations, products, competitors and markets is examined at four levels of commercial activity:-

The Input Level:

An analysis of the *Input* materials, supplies and services bought or consumed by the target company, the type of goods or services bought, value products bought, quantities sourced, prices paid, scheduling of purchases, et cetera.

The Process Level:

An exploration of the internal processes at the target company which combined the *Input* products with the procedures that manipulate the inner components (Financial + Capital resources, Management, Labour, Equipment usage, Physical processes, Product production, Premises & Locations, Distribution, Marketing, etcetera) to produce the *Output* product - whether that be physical products or services.

The Competitor Level:

An investigation into the major competitors of the target company and the company's relative performance, its product offerings, its service, its quality, et cetera, in relation and relative to the other competitors.

The Market Level:

One needs an appraisal of the interaction of the target company with the various distribution and market elements. The problems and opportunities for the target company within the markets in which the company operates and within the market in which the company may potentially operate in the future.

For example, the market consumption data provided in the databases will be based on three independent sources:-

i. A statistically accurate survey of End Users, i.e. the market.

ii. A statistically accurate survey of the Distribution System.

iii. A survey of all major Competitors, i.e. the industry base.

By gaining information from these levels of market activity one can produce a very accurate picture of the market.

The same thorough methodology prevails throughout the entire study and for this reason the databases are of such a high quality.

Product Flow and Value Chains

An essential part of the DataGroup methodology is to monitor Product Flows and Value Chains to track products from the primary supplier through the distribution channels to the End User.

The Value Chains also require the monitoring of the input materials and services which are used by the primary suppliers the distribution channels. It is for this reason that all DataGroup databases are available at each point in the Value Chain (Input Material/Service Level, Process & Production Level, Wholesale Level, Retail Level and End User Level).

	Type	Credibility	Significance	Limitations
1	Input Material/Service Level. Sales by Suppliers & Purchases by Trade Buyers.	Good	Good	Data capture
2	Process & Production Level. Sales by Suppliers & Purchases by Distribution Channels.	Good	Good	Data capture
3	Wholesale Level. Sales by Wholesale Level & Purchases by Retail Distribution Channels.	Good	Good	Data capture
4	Retail Level. Sales by Retail Level & Purchases by End Users.	Good	Good	Data capture

Channel Flows

The various components of a supplier's supply and distribution channels are inter-connected by formalized lines of communications known as Channel Flows.

It will be seen that the Channel Flows encompass both down-stream flows, i.e. between the industry and the End User, as well as up-stream flows, i.e. the suppliers and sources of the industry.

These Channel Flows are as follows:-

1 - Physical flow

2 - Title flow

3 - Payment flow

4 - Information flow

5 - Promotional flow

The physical flow describes the actual movements of physical products from input goods and services to products for the End User. This flow moves forwards and downwards.

The title (or ownership) flow describes the actual passage of title (of ownership) from one level in the distribution channel to another. This flow moves forwards and downwards.

The payment flow shows the customer paying his bill to the supplier, and so on up the distribution channel. This flow moves backwards and upwards.

The information flow describes how information is exchanged among the institutions in the distribution channel. Information of many types flow both ways.

The promotion flow describes directed flows of influence (advertising, personal selling, sales promotion and publicity) from one party to next party in the system. This flow is usually forwards and downwards.

Were all of these flows to be superimposed on one diagram, they would emphasize the tremendous complexity of the supplier's distribution channels. This complexity goes even further, once the company starts distinguishing among different operational units and product lines and different final customers.

It is the quantitative measurements of these channel flows which can accurately provide value and volume measurements at the various levels.

Survey Methodology

DataGroup believe that the only reliable way to analyze and evaluate the market-place is by conducting statistically accurate analyses of the Suppliers, Bankers, Financiers, Service Providers of the target company and then the Distribution Channels and End Users of the company's products and services. Surveys are also necessary for the Competitors of the company and the overall Industry and Market environment. By correlating the results of these analyses one can provide highly accurate data and analyses on the target company, its Competitors, the Markets, the Products, the Marketing, the Industry, the Distribution and the Customers.

Survey Research:

Surveys are the cornerstone of all research and a rigorous approach to survey design, sampling, and analysis ensures highly accurate data.

Survey Instrument Design:

Survey instrument design, evaluation, and analysis apply qualitative research methods to designing and revising surveys. A wide range of survey modes are used, including self-administered (e.g., paper, ACASI, CAPI), interviewer administered, Web, online, interactive voice response (IVR), et cetera. Methods include expert review, cognitive interviews, usability interviews, forms review, and focus groups. Detailed knowledge is applied to:

- Instrument evaluation
- Design, monitoring and redesign
- Pretesting and usability evaluation
- Interviewee parameters and psychographics
- Questionnaire translation

Telephone Survey Methodology:

State-of-the-Art Solutions

DataGroup have since the 1970s pioneered the use of computerised interviewing technologies, today on-screen intelligent interactive dialogues, touchscreens interfaces and Audio Computer-Assisted Self-Interviewing (ACASI) methods are commonly used. ACASI consists of a computer that displays questions and answers dialogues, reads these to the respondents, and prompts respondents to simply touch their answer on the screen. These dialogues are intelligent and this means that respondents are fully engaged in the process and are only required to answer pertinent and qualified questions. ACASI's benefits include participant privacy and ease of use, as well as decreased study costs and increased data quality.

DataGroup have used for some years Intelligent Survey Systems (ISS) and interactive voice response (IVR) applications that simulate natural conversation with telephone respondents. The system talks to the respondent by asking the questions, understands the spoken responses, and stores them in database formats. These ISS and IVR technologies help substantially decrease costs in large data collection projects.

Intelligent Questionnaires

DataGroup use Intelligent Questionnaires which not only feed the interviewers with the questions, but then check the responses against known parameters.

The computer firstly displays the respondent's name and telephone number. A percentage of the telephone numbers displayed are "check" numbers and the interviewers have to identify these; this assures that all the interviews are being conducted and therefore guarantees the integrity of the survey.

The questionnaire displayed is interactive and intelligent and will not allow the interviewer to input answers which do not comply to certain range checks, input screening, and correlation with preceding answers.

The interviewer's computer also:

1. Monitors the number of interviews done for each questionnaire and thereby ensures that the correct sample size is achieved.
2. Records spoiled questionnaires which have been rejected because of insufficient data received or incorrect input ranges. These are then analysed to establish why answers did not correspond to the range checks.
3. Records changes of contact names or job functions.
4. Monitors and ensures that the required numbers of 'check' respondents have been identified and thereby ensures the integrity of the sample.
5. Provides notes and explanations for interviewers and respondents which facilitate the understanding of the questions asked.

In this way relatively non-technical interviewers can be used to survey technical and specialist products and markets without the risk of the accuracy of the input data being compromised.

EXAMPLE:

If an interviewer is surveying a truck operator then the computer will format the questionnaire according to the makes and models of trucks operated by the respondent. The computer also imposes range checks and input screening according to particular makes and type of trucks; therefore, if the interviewer asks questions about the engine life or gearbox life the computer will only accept answers within certain ranges. These ranges will be based on the known average life of engines or gearboxes of particular truck makes. The computer monitors answers and will amend the known standard deviation of response ranges. As answers change (due to technological or product development, changes in buying patterns, et cetera) the ranges and input screens are automatically amended.

EXAMPLE:

If an interviewer is surveying electronic components buyers then the computer will format the questionnaire according to the equipment being manufactured at the respondent's factory or plant. Therefore, if the respondent's factory is manufacturing televisions, the respondent will be questioned specifically about components used in television manufacture. The range checks imposed by the computer will also be critical to the product quantities manufactured; therefore, the computer will only accept input data (on passive components, sub-assemblies, et cetera) which complies with known parameters. Thus, for a given number of television sets manufactured, the computer will expect to input certain numbers of each component or sub-assembly which is critical to both the products and the quantity manufactured.

Survey Response Evaluation:

Surveys of course depend on the evaluation questions being put to respondents and often one must develop and implement customised evaluation approaches for specific surveys. These evaluations are large and small; local, national and trans-national; multisite and single site; long term and short term. The application and exploration of program evaluation, personnel evaluation, technology, and a great variety of other forms of evaluation is the goal. Evaluation involves assessing the strengths and weaknesses of all the elements in order to improve their effectiveness.

End User Surveys

The most important part of the base data collection is the End Users Surveys, (i.e. the customers of a target company and the various competitors), as these reveal the true nature of the market-place.

The END USER SURVEYS conducted by DataGroup use the following formula:-

1. SELECTION OF INTERVIEW PANELS. The prospective interviewee panel is selected from lists which are maintained by named respondent in each of the research areas.
2. MAILSHOT/EMAIL TO POTENTIAL INTERVIEWEES. A letter or email is sent to the potential (Industrial or Commercial) interviewees explaining the nature of the survey and the products and markets they wish to cover and asking if the respondent would help. (Industrial & Commercial markets)
3. PILOT SURVEY (5% OF SAMPLE). A Pilot Survey is conducted with 5% of the sample to evaluate and modify the survey and isolate potential response problems.
4. MAIN SURVEY (90% OF SAMPLE). The Main Survey is conducted amongst 90% of the sample using the modified questionnaire.
5. CHECK SURVEY (5% OF SAMPLE). A Check Survey is conducted with the remaining 5% of the sample to check outstanding points and verify any problem areas.
6. CONSUMER / END USER PERSONAL SURVEYS. Where telephone surveys are not appropriate, personal or face-to-face surveys are conducted with respondents.

Sample Structure:

It is a standard technique of the surveys of End Users, the Distribution Channels and Suppliers to interview three levels of respondents:-

1. the majority of the sample is taken from respondents **CURRENTLY** involved with the company and/or the product,
2. a sample is taken of respondents **FORMERLY** involved with the company and/or the product, and
3. a sample is taken from respondents who are **POTENTIALLY** likely to be involved with the product or company in the future.

This method gives a very accurate picture of the development of the product and market over a period of time.

Thus it is possible to evaluate and analyse the reasons:-

i. why respondents currently supply, distribute or consume the products

ii. why respondents have ceased (for reasons of technical or technological developments, product obsolescence or substitution, et cetera) to be involved with the product, and

iii. lastly why respondents are planning to become involved in the product (for reasons of new product development, new production facilities, acquisition, diversification, et cetera).

Total Survey Sample:

The samples of the Distribution Channels and End Users are composed of a stratified random sample. The stratification of the sample reflects analysis and modelling of frequency variables (e.g. level & value of product flow), sample dispersion (e.g. type of respondents in the universe), distribution skewness, product correlations, regression, probability and significance, time projection and trends.

DataGroup guarantee a minimum VALID sample size for each of the databases. Sample sizes vary from market to market, however the following examples show the parameters that apply:-

Sample Sizes:

	Agriculture Consumer Travel Catering	Electronics Industrials Consumables	Engineering Motor Transport Components	Capital Goods Property Financial Public Sector
Country	*Average Sample Size*			
U.S.A.	3500	2000	2500	1000
China	4000	2500	3000	1500
India	3500	2000	2500	100
Russia	2500	1500	1500	900
Brazil	2500	1500	1500	800
Japan	3000	1000	1500	800
France	2000	1000	1500	600
Germany	3000	1000	1500	800
Italy	1500	800	1000	500
Netherlands	900	800	500	600
Norway	800	500	400	500
Spain	1000	600	800	900
Sweden	900	600	600	900
Switzerland	800	500	500	600
United Kingdom	1500	1000	1000	700

Interviewing Method:

Sampling is carried out by personal and/or telephone interview. The exact interviewing method used depends on the complexity of the product or market as well as the depth of information sought.

Survey Analysis:

Personal interviews are recorded on a tablet computer or data sheets which are then encoded and processed by the DataGroup computers. Telephone interviews are conducted by interviewers who place the information received directly into a computer or intelligent terminal. The data is then transferred directly to the main computers for batch processing.

Distribution Channel Surveys

The Distribution Channel Surveys use the same methodology, Interview Method and Survey Analysis as do the End User Surveys.

Country	Agriculture Consumer Travel Catering	Electronics Industrials Consumables	Engineering Motor Transport Components	Capital Goods Property Financial Public Sector
	Average Sample Size as a % of the Total Universe			
U.S.A.	10	15	15	15
China	10	15	15	15
India	10	15	15	15
Russia	10	15	10	15
Brazil	10	20	15	15
Japan	15	20	20	15
France	10	20	15	15
Germany	15	20	20	20
Italy	10	20	15	15
Netherlands	10	25	25	25
Norway	10	20	20	15
Spain	10	25	25	25
Sweden	10	20	20	25
Switzerland	10	20	20	25
United Kingdom	10	30	20	25

SAMPLE SIZE: Sample sizes for the Distribution Channel Surveys are based on a percentage of the total number of companies distributing the product/s concerned. The percentage interviewed depends on the industry in question and the complexity of the product. In general however the above average sample size are used.

Suppliers Surveys

The Surveys of Suppliers and Service Providers use the same methodology as the surveys above.

SUPPLIER SAMPLES. The sample of Suppliers represents at least 70 to 75% of the total universe. The surveys of Suppliers yields confirmation of supplier output, product information, financial data and future plans. Suppliers are regarded as being a reliable source of information as they tend to be keen to discuss their selling prowess, are informed about the procurement of the company and are knowledgeable about the products purchased by their customers and thus their internal processes.

Competitor Surveys

The Surveys of Competitors the same methodology as the surveys above.

COMPETITOR SAMPLES. The sample of Competitors represents at least 70 to 75% of the total universe. The survey of Competitors provides verification of product output & specifications, financial data and future product and market plans. Competitors are considered a reasonable source of information on markets as they are inclined to promote their future plans, marketing activities and product performance as well as their expertise in market and competitive conditions.

Satisfaction Surveys

DataGroup draw on over 35 years in survey research to design, conduct, and analyze customised surveys to assess satisfaction among the users of products and services. This research helps organizations determine the performance and utility of existing products, services and business offerings, to identify unsatisfied needs or customer perceptions, and to allocate resources more effectively and efficiently.

DataGroup conduct focus groups and cognitive interviews, and perform a fully researched testing regime to develop these surveys. Results include statistical assessments, quantified reasoning, a knowledge base, a learning curve, and recommendations for improving performance.

Usability Testing

DataGroup offers a cohesive, research-based set of evaluation services to help clients understand the usability and impact of their products, services and systems, marketing and selling activities, and communications. DataGroup researchers can assess the user experience and recommend the best methods for improving performance.

Usability evaluation includes:-

- Cognitive interviewing techniques, conducting concurrent and retrospective "think-aloud" and brain-storming procedures
- Comparative user studies, statistically comparing performance and attitude measures from two points in time or across products or systems
- Experimental analyses, using experts trained in evidence-based usability design to review the systems and products
- Focus groups, convening sessions on site focus group room, or online
- Prototyping, creating testable versions of products or systems early in the design or redesign process
- User modelling, employing analytic techniques to build models of user behaviour

DataGroup have several usability testing facilities for conducting in-depth one-on-one interviews; cognitive testing; and usability studies of products, systems, applications, and other projects where the user interface is a critical issue.

Consumer Usability testing facilities designed to support the information gathering process:-

- Digital video recording from both the high-resolution digital cameras and/or the respondent's computer screen
- Event recording using a suite of data capture and behavioural coding software
- Full analytic capabilities by exporting data from the laboratory for use with statistical analysis software
- Remote usability testing through synchronized network applications and video conferencing capabilities
- Robotic control for each of the video cameras
- Unobtrusive observation of user behaviour via one-way glass and video monitoring
- Video switching and picture-in-picture (PIP) display

Psychometric Evaluation

Psychometrics are not only used when developing, and validating measurement scales or survey questionnaires, but also are an objective assessment and knowledge base to help researchers construct methodology that will collect reliable and valid data. One can increase survey precision by using psychometrics to specifically target respondents; one can design and construct methodologies for specific target populations and for specific situations and circumstances; one can incorporate error reduction and error checking algorithms which improve accuracy.

In addition to using Psychometrics as a survey development tool, Psychometrics Evaluation of Respondents is often a useful data gathering method. Psychometrics evaluation of survey respondents can yield useful insights into the motivations and drivers of purchasers and decision makers.

Dynamic Network Analysis

Dynamic Network Analysis is the methodology which merges traditional Social Network Analysis, Link Analysis and Multi-Agent Systems within network research and network theory.

These tools, especially in a consumer context, are used to the structure of formal and informal relationships among and between people and groups, measuring who knows whom, who shares what information with whom, and who likes what. These tools are used to identify key consumers and decision makers, their role, their purchasing power, and the flow of information across the network, as well as relational insight enabling targeting of information and resources, this data provides real-time inputs to forecasting methodologies.

Decision Analysis

The uncertainties of the decision processes of the decision makers and that impact on the market are represented through probabilities and probability distributions. The decision maker's attitude to risk is represented by utility functions and their attitude to trade-offs between conflicting objectives can be made using multi-attribute value functions or multi-attribute utility functions, if and where there is risk involved. In some cases, utility functions can be replaced by the probability of achieving uncertain objective levels.

Decision analysis supports choosing that decision whose consequences have the maximum expected utility (or which maximize the probability of achieving the uncertain objective level). Such decision analytic methods are used in a wide variety of commercial activities, including business (planning, marketing, and negotiation), social, healthcare and educational research and management, asset purchases and development, opportunity exploration, mitigated resolution systems, et cetera.

Decision Analysis spans normative / idealized decision models (for example, game theory models, purchase utility, rational decision models) to cognitive models that take into account personal factors (for example, risk, propensity to consume, choice heuristics, et cetera) and decision task effects (for example, decision structure, stakeholders, time pressures, et cetera).

These models are used to produce the various real-world scenarios in the databases and these allow the users to have a substantial insight into primary decision makers thought processes and thereby gain a solid understanding of their goals and thereby identify the most likely scenarios.

The Decision Analysis (DA) cycle is the top-level procedure for carrying out a decision analysis. The traditional cycle consists of four phases:

- Basis appraisal.
- Basis development
- Deterministic sensitivity analysis
- Probabilistic analysis

Decision Making Unit and the Decision Making Process:

All purchasing decisions breaks down into two components: the decision making unit (DMU) and the decision making process (DMP).

The DMU decision making unit:

The DMU consists of all of the people who will play a role in the decision to purchase a product. The marketing mix program must understand the needs of each of these individuals and find a way to communicate the marketing message to each of them. These people are typically identified as:

- Buyer – the person who actually pays for the product
- Decider – the person that actually says this is the product wanted
- Influencer – whomever helps the decider decide
- User – the individual who actually uses the product and derives benefit from it

The DMP decision making process:

The people included in the decision making unit (DMU) interact to make the purchasing decision.

The (DMP) is a description of this interaction. By understanding this process one can best understand who, how, and when to work on getting the customer to buy.

Experimental Research

Three types of experimental research are conducted:-

- Controlled experiments where one compares the results obtained from an experimental sample against a control sample, which is practically identical to the experimental sample except for the one aspect whose effect is being tested (the independent variable). The testing of Independent Variables is essential for research on Scenarios.
- Field experiments are used for real-world issues where one is studying social, economic or consumer issues involving an uncontrolled respondent universe.
- Natural experiments relies on observations of the variables of the system under study; rather than manipulation of just one or a few variables as occurs in controlled experiments.

Experimental research provides an empirical approach to acquiring data about the real world through the proper design of the experiment and the application of rigorous methodology to the process.

Population & Market Ethnography

Ethnography refers to the consumers' life style and choices, their behaviours, customs, economic circumstances, motives, beliefs, and values. All consumer and social product and market forecasting has to have a substantial ethnographic element to properly represent the real-world situation amongst the population being observed.

Focus Groups

Focus group form the basis of much qualitative research whereby groups of people are interviewed, in an interactive socialised setting, about their perceptions, opinions, beliefs, and attitudes towards products, services, concepts, advertisements, ideas, and other social or commercial topics.

Communication Research

For all businesses, for all markets, effective communications is the essential element which determines whether a business will survive and prosper. DataGroup are able to offer highly detailed research and evaluation of client communications modes and effectiveness. The methodology include initial developmental research, which usually include stakeholder interviews and focus groups to inform the development of communication products and strategies, research webs and panels to experimentally test the effectiveness of individual messages and materials with target audiences, and population-based surveys to assess the impact of national or trans-national campaigns on knowledge, attitudes, re-actions, stimuli, and elements of behavioural psychology.

DataGroup evaluation systems include both process and performance evaluations. Process evaluation is designed to monitor program activities during implementation and guide decisions about potential changes in strategy as a program matures. Performance or impact evaluation allows program planners to measure program impact, describe successes, document experiences, assign tasks, and improve the understanding of the process.

Communication Content Analysis

Content analysis or textual analysis is a used for studying the content of communication, especially commercial communication and advertising to decision makers. The data is often used in Surveys and Focus Groups to test the impact of content on the target audience.

Marketing Campaign Development & Implementation

DataGroup undertake the development and implementation of marketing campaigns designed to test, evaluate, develop and define marketing effectiveness. By evolving a systematic appreciation of the needs, attributes, and perceptions of the target audiences DataGroup can test scenarios, tactics and strategies for each campaign design. DataGroup help clients assess the issues to be addressed; define campaign goals; and recommend how best to reach a range of market segments.

Digital & Social Media

As more and more people seek online interaction, the cyberspace is become the prime media for communication, message dissemination, dialogue, and audience engagement. DataGroup offer inventive digital and social media strategies, technologies, and tools to both identify and engage target audiences. DataGroup arranges networks and partnerships to create engagement, raise awareness, position brands, stimulate and motivate action, and produce sales. DataGroup design and implement efficient campaigns that achieve their goals and deliver measurable results. DataGroup have experience in identifying and engaging decision makers and trend-leaders through the activation of social networks which raise awareness, share and recommend information, generate online and offline conversations and action, and lead to changes in knowledge, attitudes, behaviours, and purchasing actions.

Operations & Performance Evaluation

Companies and organisations are under constant pressure to improve the effectiveness of their operations, products and planning policies; business evaluations involving process and performance analyses are becoming an integral part of management planning. The use of DataGroup information systems enables clients to evaluate their operations and performance on an entirely objective basis, in comparison with industry norms and key competitors.

DataGroup applies expertise in specific programmatic areas and technical skills in research design, mathematical modelling, and statistical analysis and these are used by clients to provide an independent analysis of their process and performance indicators. DataGroup develop performance measurements, examine processes in relation to performance, and develop models to isolate performance effects from exogenous factors.

DataGroup have designed and conducted hundreds of surveys, focus groups, in-depth interviews, multimodal surveys, and structured observations to gather data. Those methodologies can also be used to enhance the understanding of a client company’s operations, products and business performance.

Operations Evaluation:

Grounded in a thorough understanding of operational assets and objectives, process evaluation is designed to monitor activities during implementation and guide decisions about potential changes in strategy as a program matures. Process evaluation helps ensure that a client’s planning is operating as intended and enhances its effectiveness as it proceeds.

Performance Evaluation:

Through describing planning successes and documenting the learning curve, performance evaluation takes an extended view to measure the realisation of short- term and long-term business goals. It assesses the changes in target audiences' awareness, knowledge, attitudes, and behaviours; and measures how these changes can be attributed to business performance.

The evaluation protocols are tailored to the specific client’s needs, and are sensitive to the objectives of stakeholders. They incorporate both qualitative and quantitative methods to capture key scenarios.

DataGroup techniques provide the information clients need to track and assess their business plan success or make essential changes in that planning.

One is able to statistically measure business performance and interpret the results of the client's business plan. Techniques include:-

- Accessibility studies
- Case studies
- Cognitive interviewing techniques
- Comparative user studies
- Empirical studies
- Focus groups
- In-depth interviews
- Online Surveys
- Plan prototyping
- Surveys
- Web site user modelling

One often combines these qualitative and quantitative methods with data from secondary sources to provide a comprehensive picture of a business operation and its processes, costs, and performance.

Evaluation of Performance -v- Compensation

Reforming business performance evaluation and compensation systems to increase management achievement is one of the most debated topics in companies today.

For companies and businesses, there are available objective, rigorous, medium and long-term evaluations that draw on the efficiency of combining quantitative and qualitative evaluation techniques.

Beyond fulfilling business requirements for summative evaluation of performance, DataGroup techniques supply business managers and investors with formative data enabling continuous improvement and informed decision-making.

The collaborative approach DataGroup consultants use with clients results in rigorous designs that accomplish concrete objectives while contributing to the broader awareness about systems improvements. Through technical reports, issue briefs, and presentations, DataGroup evaluation work informs managers, boards, and investors.

Operational Technology Transition & Support

Operational Technology Transition & Support allows for the implementation of technologies in the operational environment. This is not only theoretical solutions, but real-world support in the operational processes.

Technology Performance Evaluations

Technology Performance Evaluations assess how well a technology is working and allows performance measurements to provide on-going monitoring and reporting of that technology in relation to pre-established goals and internal tasks to undertake.

Technology Solution Analysis

Requirements Analysis & Technology Assessment provides for the analysis of applied requirements, and the identification of technology to fulfil those requirements. It encompasses those actions necessary to fulfil the needs or conditions to meet new technology, new product or new market challenges, by analysing the conflicting requirements of the various stakeholders, beneficiaries or users in relation to internal restraints. One needs to evaluate technologies in order to assist in the structuring of requirements and tasks, mapping those requirements of relevance to the technology areas, identifying potential technology capabilities, and evaluating the capabilities using a structured and candid methodology.

Thematic Issues

DataGroup have researchers, analysts, statisticians, methodologists, industrial psychologists, sociologists, specialists, technicians, and other professionals focused on longstanding issues as well as the most contemporary and pressing topics facing business.

DataGroup have collected data through surveys, analyses of business records and management achievement metrics, and in-person site visits. DataGroup have investigated numerous topics and issue which have the potential to impact companies and their customers.

Input from Technical Consultants and Specialists

When DataGroup use specialist inputs from technical consultants and experts, the data is formalised into templates which can be applied to the statistical methodology.

This means that the output from the technical consultants and experts are constrained by data formats which call for numerical evaluations which can then be directly input and applied to the database structures. Thus whereas the information provided by experts are qualitative in nature, the interpretation of the data is quantitative though the use of Structural Equation Models.

Structural Equation Models

Structural Equation Models (SEM) is the technique used for evaluating and estimating causal relations through a combination of statistical data and qualitative causal assumptions using a calculus of counterfactuals. SEM allows for both confirmatory and exploratory modelling and can be used for both theory testing and theory development. Confirmatory modelling starts out with a hypothesis that gets represented in a causal model. The concepts used in the model must then be operationalized to allow testing of the relationships between the concepts in the model. The model is tested against the obtained measurement data to determine how well the model fits the data. The causal assumptions embedded in the model often have falsifiable implications which can be tested against the data.

This methodology is invaluable when forecasting for dynamic or irrational market situations where variable, irrational or neurotic conditions impact on known predictors (for example, chauvinism, fashion, ideology, emotions, social attributions, et cetera) and multiple outcome variables (for example, fiscal policy, political actions, irrational commercial activities, media coverage, et cetera), while also testing whether any of these relationships are mitigated or elucidated by intervening variables.

Research Design & Analysis

In the research methodology a substantial effort is made to perfect statistical sample design, developing and testing survey instruments, qualitative and quantitative studies, human factors research, and field trials management. Research design incorporates a wide range of potential options:-

- Information sources. From published data to administrative records to in-depth interviews
- Methods. Statistically representative, quantitative, qualitative, human factors, random samples, re-action, opinion, and so forth.
- Sizes. From small, specialized field tests to large, national or trans-national statistically valid samples
- There are extensive security checks built into DataGroup survey methodology to ensure accuracy and confidentiality.

Efficient Processing of Data

In addition to the international on-line searches and the gathering of other public and private information, the results of survey interviews are entered by the DataGroup interviewers directly into a computer or intelligent terminal and after each interview session the results are directly transferred to one of the main DataGroup computers. This ensures virtual real-time access to data collection.

Data Analysis

Research analysis will include a very wide range of tools, including:

- Cluster analyses
- Econometric methods to simulate or forecast changes in program outcomes
- Factor analyses
- Generalized estimating equations
- Hierarchical linear modelling
- Linear, logistic, and random effects regression modelling
- Mathematical models to predict the answers to "what if" questions and scenarios
- Multidimensional scaling
- Multivariate inferential techniques
- Statistical methods to assess the effectiveness of hypothetical or experimental methodologies

Data Collection & Management

Data collection methodology is a diverse topic, however the most important elements are:-

- Data collection in households, companies, institutions, and other organizations
- Intelligent Survey Systems (ISS) and Computer-assisted interviewing (CAI) systems for telephone, in-person, and self-interviewing surveys
- Mail, telephone, interview, web-based, and multimode data collection in multiple languages
- On-site data abstraction at public and private sources

- Robust data security to protect both client and respondent confidentiality
- Warehousing and analysis of administrative or client data

With many years of experience developing survey instruments; training interviewers and researchers; tracing and recruiting respondents; and managing data quality, timeliness, and costs, DataGroup are experts in tailoring interviewer training and survey management methods to the needs of each study, national or trans-national, large or small, multisite or single site.

Through the use state-of-the-art technology to facilitate data collection and management and the development of advanced methods for automated, online and multimodal surveys, address-based samples, random respondent dialling, and computer-assisted interviewing (CAI), DataGroup have managed nationwide and international in-person studies involving as many thousands of respondents over multiple rounds of interviewing. DataGroup are able to deliver thousands of hours of telephone interviewing each week.

DataGroup regularly develop specialized procedures for the collection of physical documentation and data, physical samples, competitors' products, and retail or wholesale merchandise.

DataGroup staff training and quality control measures are thorough and complete in order to ensure standardisation and adherence to the survey methodologies.

Data Analysis and Validation

The collection of the data is the first step. That data require analysis and validation and this is done in three ways:-

- The automated analysis, modelling and data verification involves testing and validating the data. For example, the data is analysed for 'fit 'and 'standard deviation'.

  'Fit' means, for example, that when one is look at the production of Television Sets, the production output (***x*** units) must be equal to the manufacturer's purchasing of screens units ***x*** plus ***y*** units (which represents stock, spoilage, and so forth). The 'Fit' also implies that the production of Screens are ***x*** units plus ***y*** units plus ***z*** units (which represents stock, spoilage, and so forth). Generally the survey results will fall within a normal standard deviation; however when the survey data shows an anomalous scatter then this will reveal that either the survey data is at fault (and will need to be re-surveyed) or that there is some change in the specifications of the product or market, for example, the move from LCD screens to LED screens. In any event where survey results do not properly fit, or where they fall outside the standard deviation, then this alerts the methodology that further investigation is necessary. Because DataGroup use an aggregated approach to data collection, where the entire production (from component part to finished product) and distribution (from factory door to end user) must properly fit, DataGroup believe that this approach ensures the data is valid.

- Expert Opinion and Analysis. It is often the case, especially with fast moving or technology dependent products and markets, one needs to understand what is likely to occur in the near future by consulting with industry and market experts. This gives not only an understanding of the existing situation, but also contributes to the interpretation of the future situation, and thereby the forecasting parameters.

- The data is compared and benchmarked with external sources such as industry statistics, government databases, opinions of industry experts or key decision makers and the company market and financial performances.

Confirmatory statistical techniques on available databases allow the assessment of the validity of proposed measurement models for a variety of conceptual constructs.

Secondary Data Sources

	Type	Credibility	Significance	Limitations
1	Databases from supra-national bodies like the World Bank, IMF, OECD, GATT, and other international organisations	Limited	Good	Relies of government data
2	National Government Databases	Limited	Limited	Imprecise or unverified
3	Company Websites & published Annual Reports. Suppliers, Intermediaries & Buyers.	Good	Limited	Biased
4	Selling & Purchasing data (financial & bank transaction data, card data, sales tax data, etc.).	Good	Good	Variable quality
5	Scientific & Professional Publications	Good	Limited	Not market based
6	Trade data	Limited	Not good	Unverified
7	Online commercial databases	Limited	Limited	Unverified
8	Offline Databases, CD-ROMs and other digital data sources	Limited	Not good	Unverified
9	Printed and Electronics Publications which are Automatically Scanned and Digitised	Not good	Not good	Unverified
10	Published Research Reports	Not good	Not good	Unverified
11	Whitepapers	Not good	Not good	Unverified
12	Press & Media coverage	Not good	Not good	Unreliable

Secondary data sources can be used as supportive or confirmatory evidence, however much secondary data is deeply flawed. Even in countries like the United States, the U.S. Census data relies on modelling and data estimation. In most other countries the data gathering by governments can often produce highly speculative results.

National / Government Production Data & Trade Data on Imports & Exports

National data on Production and data on Imports and Exports do not reflect market consumption within each national market or geographic area.

A National Market Consumption calculation which is based on Production *plus* Imports *minus* Exports will very rarely reveal the actual National Market Consumption.

Production:

Products may be produced and then priced and transferred within the same company or group, the same product may then be priced and transferred to entities outside the production company or group, the same product may then be imported, the same product may then be re-exported, the same product may then be distributed and finally sold to the End User. Some products follows similar supply chain routes however they are then incorporated into other products, or re-packaged, which are then themselves classified as a production product; thereby the same process may occur again.

Some government data repeatedly captures data on the same item several times as it progresses through the supply chain.

Production data is rarely captured accurately by national governments because manufacturing censuses are inaccurate and sales tax recording uses an overall sales tax rates for products or services.

Imports & Exports:

With Import and Export data there is no clear evidence as to the point of Consumption.

Some Import and Export data are inter-company, inter-group, or factored. Some Import and Export data are only paper transactions done for accounting purposes. Some Import and Export is captured at ports of embarkation or disembarkation irrespective of where the item was produced or consumed. Some Import and Export data repeatedly captures data on the same item several times as it progresses through the supply chain. Some Import and Export data captures the same item several times as it traverses international borders.

Where importers and exports are required to report to government the type of products being transported they will use the most general classification as this saved administration costs. Similarly with freight forwarders and logistic companies the minimum reporting requirements are used.

Data collection by governments:

Data collection of Production, Imports and Exports, is inaccurate in many countries and non-existent in other countries.

In most countries there is no check that the actual item subject to Production, Import or Export data reporting is accurately classified. This is because the tax rates are very rarely product specific. Thus producers, importers and exports will use the broadest or most general product classification for tax purposes as there can be less costly and more flexible to administer internally. Furthermore in international trading areas, like the EU, where there for business-to-business transaction no sales taxes are added to the invoice, the need for the accurate specification of the product is unimportant.

In some countries, like the U.S.A., government data is subject to statistical modelling. Thus because the U.S. government is aware that U.S. companies do not accurate report data, or sometime omit to supply the data requested, a statistical model has to be applied to attempt to product a more realistic picture.

Consumption:

Finally, there is the question of the point of Consumption by the End User. With Capital Equipment or Consumer Durables the purchaser may be part of a financial transaction, for example a Car Leasing Company or a Television Rental company or Retailer providing 0% Deposit financing terms on Domestic Electrical Appliances where the product remains the property of the retailer until the final payment is made by the End User; all these financial transactions may be based in other (third party) countries for financial or organisational reasons. Even with products sold directly to the consumer there may be financial mechanisms in place which make it difficult to capture Import or Export data. For example, Amazon supply over US$20 Billion of product to consumer in the European Union, however for corporation tax avoidance reasons Amazon’s operations are based in a low corporation tax country (Ireland) and this volume of product sales to End Users is not captured by the national statistical data in the EU.

In general DataGroup does not rely on this type of Secondary Data as a source of primary information.

Database Generation

DataGroup forecasts are produced using an extremely comprehensive matrix of forecasting models which take the best features from a wide range of forecasting models and blended these into an interactive matrix which ensures a high level of certainty in forecasts produced.

Automatic Up-Dating

DataGroup reports are automatically up-dated by the computer when new surveys are completed or company / market / competitor conditions change and thus a new forecast is needed. This is done as often as may be necessary (and especially with Consumer, Seasonal or High Technology markets where up-dates are done weekly). The majority of databases need only to be updated monthly.

Database Matrix & Interactions

It is necessary when forecasting corporate, product and market trends to use a matrix of related databases in order to evaluate and analyse the movement of products and markets due to supply and demand, product and market forces, product life cycles, product obsolescence and substitution, new product developments, technical and technological innovations, market saturation, new markets, market and product segmentation, et cetera.

For Example, if one were to forecast revenue and sales for a target company which produces VEHICLE ENGINES & COMPONENTS, the database matrix and interaction would probably be as shown:

PRODUCT DATABASE	INDUSTRY DATABASE
New Product Research (Eg. Plastics)	Component Manufacture Database
Product Development (Eg. Turbos)	Complete Engine Manufacture
Product Substitution (Eg. Diesels)	Complete Vehicle Manufacture
Performance (Eg. Fuel Consumption)	Distribution Channel Database
Technical (Eg. Cylinder Heads)	Industry Database Matrix:
Technological (Eg. Electronics)	Investment / Fixed Capital
Product Database Matrix:	Productivity / Capital Intensity
Quality & Design	R + D / New Product Investment
Product Specifications	Plant + Equipment / Capacity
Product Operating Criteria	R.O.I. / Margins / Added Value
Product Life Cycles	Unit Costs + Pricing Policy
Product Pricing	Stocks & Stockbuilding
Product Purchasing Background	Production Facilities / Employment
Product Purchase Criteria	Competitors & Competitor Data
Critical Product Factors	Industry Strategic Developments
..... Et cetera.....	..... Et cetera.....
	TARGET COMPANY DATABASE
Market for Complete Vehicles	Supranational Databases
Market for Complete Engines	OECD
Market for Components	United Nations
Market for Original Equipment Parts	IMF
Market for Aftermarket Sales	GATT / WTO
End Users Databases	ECE / EU
Geographic Markets + Distribution	ILO ..... and others
National Vehicle Regulations	National Databases
Import & Type Approvals	Country Databases
Developments in Trade	Trade Data / Exports / Imports
Market Segmentation	Economic Databases
Distribution Efficiency	Transportation Policy / Usage
Advertising Efficiency	Transport Investment / Taxes
Market Environment Forecasts	Political / Social / Environmental
Market Strategic Developments	International Developments
..... Et cetera.....	..... Et cetera.....
MARKET DATABASE	**ECONOMIC DATABASE**

The same database management methodology is used to produce all DataGroup company databases and their concomitant reports.

Database Structure

DataGroup databases are composed of individual company and product databases which are then aggregated to form report databases.

The actual report will be composed of a number of database levels which reflect the company and their individual products being investigated. DataGroup databases are held at a number of levels and thus editors can choose exactly how detailed the information they require need be.

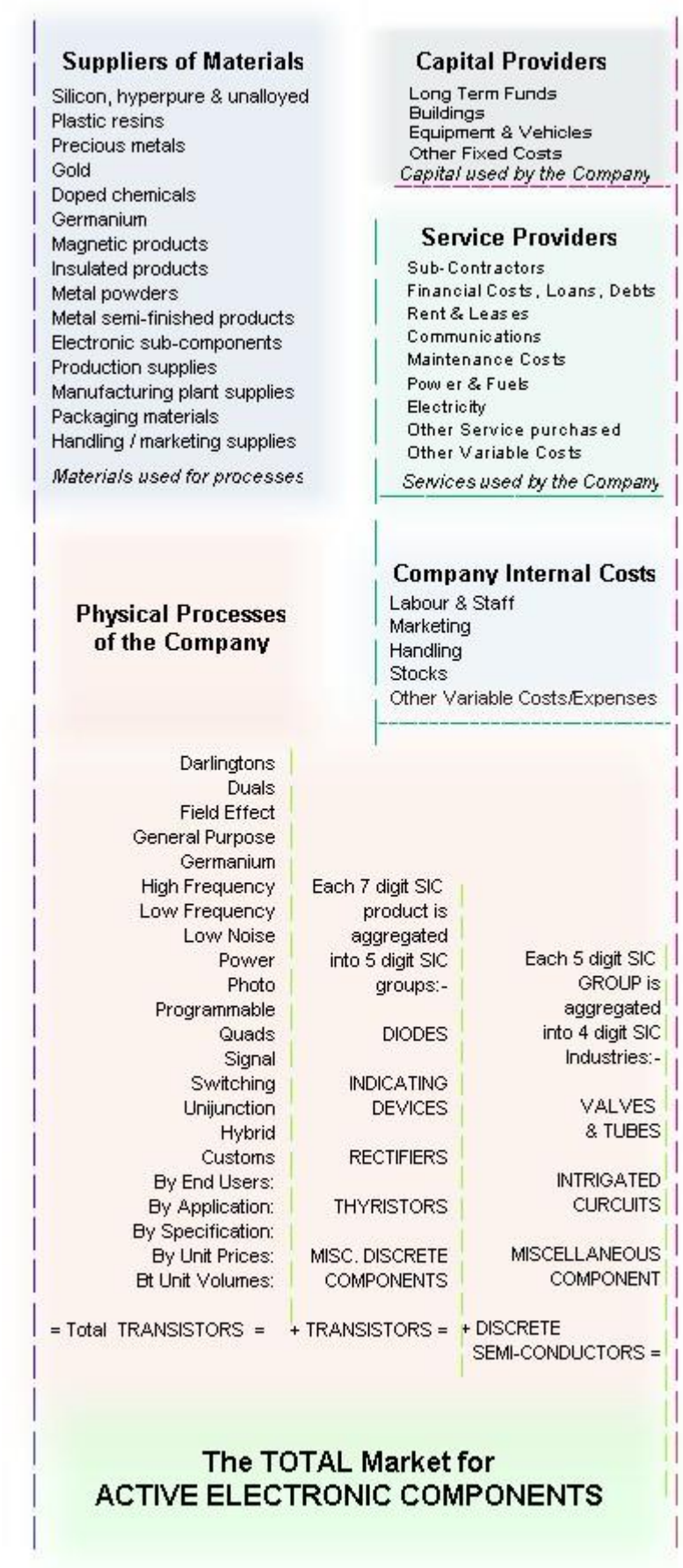
For Example, if one were to analyse a target company mainly producing *ACTIVE ELECTRONIC COMPONENTS* the corporate database structure would be as follows:-

1. Isolate those Suppliers which are providing the Capital, Input materials and Services which is used by the target company.

2. Analyse the Processes of the target company which take the Capital Resources, the Input materials and the Services provided, merge them with the internal activities of the target company and thereby Output the product.

3. Review all the competitors of the target company and determine how these competitors will impinge in market terms.

4. Investigate the Markets, actual and potential, for the target company.



Forecasting Models

The databases and subsequent reports are entirely composed by computer using the base data provided by the various surveys and from other sources. The computer's programs construct an instant of the report database which is then available online or output on DVD; and it is these originals which are supplied to the client who thus receives the most up-to-date information.

Forecast / Planning Models:

This database management methodology ensures that DataGroup reports are extremely accurate as they use the most discrete and detailed company operation, product and market sector as the foundation, and then, builds up the database step by step.

In order to accurately analyse and project the above areas, a battery of forecasting models is used.

These models are interactive and simultaneous and draw from a common database which is designed to be critical to the report concerned.

The success of a Forecast/Planning model, for periods in excess of two years, depends on the ability of that model to analyse and evaluate a series of interrelated levels of corporate, economic and commercial activity. Each level tends to be equally critical to the forecasting method and thus accuracy must be maintained at all levels. The Forecast/Planning Model used by DataGroup is compiled from a number of programs and seeks to interact the various levels of corporate / economic / commercial activity, not only through a series of forecasting routines, but also via a number of refining procedures: the distillate of which represents the Forecast.

The complexity of the market / product / company and the desired accuracy of the prediction dictates how many of the battery models are used. The more complicated the product, market or company the greater the need for accuracy and thus to ensure this more battery models are used.

The levels of economic / commercial activity are as follows:

- The Trade Cell (e.g. The EU or NAFTA or OECD countries)
- The National Cell (e.g. The United States)
- The Industry
- The Suppliers
- The Company
- The Product
- The Competitors
- The Consumer

Level	Model	OECD Econometric Model	PIMS type model	Business Environment model	Consumer Values	Product Life Cycles	BPI + QI	Advertising Efficiency model
Trade Cell				KSIM				
National Cell								
Industry				TIA				
Company								
Product				CIA				
Consumer								

The original modelling matrix, established in the 1970s, consisted of the following elements:-

I. OECD ECONOMETRIC MODEL:

The model program used is the standard OECD Econometric program which has been developed by the OECD Department of Economics and Statistics in Paris. The program, as used by DataGroup utilizes a number of databases, which when first established in the 1970s included the following:

1. The International Financial Statistics supplied by the I M F in Washington. These are: IMF.1/FMB, IMF.2/FGNSTAT, IMF.3/FNDACCT, IMF.5/FOOTMST, IMF.6/FBOPMST, IMF.7 - et cetera.
2. OECD databases on wages & prices developments, consumption, investment, trade, et cetera.
3. In addition the following databases are also available for specific applications: UNSO.1, UNSO.2/NAMAST, UNSO.3/ICPDATA, UNSO.4/WORLDENERGY, UNSO.5/STAPC, UNSO.6, UNSO.7/UNIDUST, ECE.11059A, ECA Series, ILO.1, FAO.1, GATT.1/TTDF - et cetera.
4. National governmental databases, including Customs' databases, Sales Tax / Value Added Tax databases, Internal Revenue Tax databases, Social Security databases, Judicial databases, et cetera.

II. PIMS TYPE MODEL:

PIMS uses an industry critical Multiple Regressional Analysis program which identifies those variables affecting industries, companies / products, their market share and profitability.

III. BUSINESS ENVIRONMENT FORECAST MODELS:

Three models are used to forecast business environment and these are specific to certain levels of economic / commercial activity:

1. Cross Impact Simulation (KSIM): This is a program for interactive variables and is used to forecast business environments in an international and national context and provides a representation of changes in a system of variables over time; especially trends, events and structural relationships. The program is widely used in the U S and users of the U S Army, U S Navy, NASA, National Science Foundation and many multinational companies.
2. Trends Impact Analysis (TIA): TIA is used for problems involving changes in trends at Industry and Company level and produces a representation of changes in trend/s and event/s. A further representation of probabilities is also produced. The program is widely used by U S multinational companies.
3. Cross Impact Analysis (CIA): This is a program designed for use in solving project level problems, including new product developments, and deals with a representation of cumulative probabilities of an event over time. The model investigates events, structural relationships and probabilities and is successfully used by many U S multinational companies.

IV. CONSUMER VALUES MODEL:

The uses of Consumer Values models have two purposes. Firstly because it extends and correlates market behaviour beyond such external forces as Disposable Income or Demographics and secondly, it enhances the predictability of market Behaviour by providing insight into why consumers act as they do. DataGroup have trend projections for 14 years for all Consumer Values; some 34 to 40 major cells. These values affect consumer spending on definable items and markets. In the case of Capital Equipment one additional value is used, namely, the monthly Business Confidence Monitor, this seeks to quantify purchasing trends amongst buyers.

V. PRODUCT LIFE CYCLE MODEL:

The Product Life Cycle Model uses the normal innovation / diffusion Gompertz Function with the added advantage of a matrix of industry critical correlation.

VI. BPI & QI MODELS:

It is essential to effectively measure the relative buying power of various market segments and geographic markets; this is done with a Buying Power Index and a Quality Index. BPI is also useful for determining how effectively a company uses its marketing effort. QI is used to analyze the ability of a market sector or geographic market to purchase unessential goods with a high discretionary index.

Additionally, a number of other programs may have to be used, including:

i. Market Saturation Index;

ii. Inventory costs;

iii. Recorder points (Trade);

iv. MNR:MC ratios

VII. ADVERTISING EFFICIENCY MODELS:

These models evaluate the effect of revenue / advertising relationships over time and are designed to investigate those functions of advertising efficiency which affect revenue and to provide predictions on the actions of those factors over time.

The main functions of the model are:

i. The Sales Decay Constant, which measures advertising effect over time.

ii. The Market Saturation Level, which investigates the effectiveness of the media mix and the asymptotic values of the media expenditure.

iii. The Sales Response Constant, which gives the ratio between revenue and advertising.

iv. The above models provide the Coefficient of Advertising Efficiency at a given revenue / advertising expenditure function.

Since the 1970s the number and scope of the multinational econometric databases used has expanded enormously.

Modelling

Since 1974 DataGroup have been at the forefront of fiscal, macro-economic, micro-economic, market, product, industry, human, social, cultural, organizational, and behavioural modelling through the use of a battery of modelling techniques which combining the breadth and depth of the expertise in economic research, industry research, operations research, artificial intelligence, and social science modelling. These models improve the performance of the databases by enhancing the capacity to understand, anticipate, shape, and respond to the actions of economies, markets, industries, consumers, competitors and the many other players in the commercial environment.

- Models of Evidence and Hypotheses address the critical concern of business planners by assessing the situation and intentions of the decision makers and consumers in real-world market situations. Further it allows for the precise targeting of market sectors by cutting through incomplete, noisy, erroneous, and conflicting data through the use of structured elements and constructs, analysis of competing hypotheses, abductive reasoning, evidence and information theory, reliability analysis, evidence testing, probabilistic reasoning, "what-if" scenarios, alternative tactical scenarios, and so forth.
- Complex Adaptive Systems Models analyse diverse and multiple interconnected elements which are adaptive in that they have the capacity to change and learn from experience. For examples, stock markets, urbanisation, demographics, social interactions, financial markets,

manufacturing industries, marketing systems, and any social group-based endeavour in a cultural and social system such as politics, economic systems and human populations. The techniques include agent-based models, system dynamics, and Bayesian networks, that can analyse the dynamics of complex human and social systems, anticipate events and forecast behaviours, and project the likely scenarios and second- and third-order effects of actions and variables available. They help plan for contingencies, and allow planners to design tactics and strategies to influence and shape planning in order to achieve business objectives. Such models can help in the development of dynamic systems to address demography, markets, marketing, and other business variables.

- Risk and Reliability Models: Risk involving mismanagement, economic crises, accidents and natural disasters emphasise the need to re-enforce management controls and organizational factors to improve a company's ability to anticipate and respond to catastrophic events. Leveraging techniques such as probabilistic risk assessment, failure mode and effects assessment, common cause failure analysis, organizational risk assessment, and demographic and social impact models, reliability testing and assessment models, and so forth, can assist in both reducing the impact of such unforeseen events and mitigating the effects on the business operation. It is not of course only accidents and acts of natural which pose a threat, equally dangerous are the actions of competitors which may develop into a significant risk to one's business model. By modelling a range of relevant techniques including discrete event simulation, Petri nets, hidden Markov models, and partially-observable Markov decision processes, one can produce competitive threat scenarios which give real insight into the risk associated with competitive situations and the reliability of one's business model.
- Process, Workflow, and Activity Models: Optimizing operational activities, workflows and processes is an on-going process for all organization in their quest to achieve efficiency and profitability; and their ability to prosper in the future.

Statistical Analysis

A very wide range of statistical methods and analyses are used to produce and verify databases, and these include not only proprietary statistical software packages, but also specifically developed statistical methodology which is unique to DataGroup database methodologies.

The use of state-of-the-art data inference engines to produce extensive and detailed databases which allow hypothesis statistical testing of alternative scenarios and theories concerning the industry, financial and market conditions produce compelling datasets.

Statistical Design:

Statistical methodology is often specifically developed for bespoke applications by expert statisticians, many of whom are Fellows of the American Statistical Association, Members of the International Statistical Institute, or are on the faculty of major universities and business schools.

Statistical Sample Design:

Sample design is always customised for industry and market conditions to ensure optimally efficient sampling, weighting, and estimation procedures. Sample design in constantly refined to enhance effectiveness of the processes, including:

- Access to specific populations
- Area probability sampling
- Automated variance estimation
- Data imputation
- National surveys data validation
- Production of large area or small-area estimates
- Weighting

Because DataGroup use many statistical packages, and because clients are using a wide range of statistical analysis, the databases DataGroup output are compatible, or reading convertible, for use with over 300 statistical packages, including:-

acslX, ADaMSoft, ADMB, AMPL, Analyse-it, Analytica, Angoss, APMonitor, ASReml, Automlab, Baudline, Bayesian Filtering Library, BMDP, BV4.1, CalEst, Ch, Chronux, COMSOL Script, CSPro, DADiSP, DAP, Data Applied, Dataplot, Demetra+, EJS, ELKI, Epi Info, Euler Mathematical Toolbox, EViews, FAME, FEniCS Project, Fityk, FlexPro, GAUSS, Genedata Analyst, GenStat, GeoDA, GLIM, GNU Data Language, GraphPad InStat, GraphPad Prism, gretl, Hermes, IBM SPSS Modeler, IBM SPSS Statistics, IDAMS/WinIDAMS, IDL, IGOR Pro, IMSL Numerical Libraries, Izenda, JAGS, JHepWork, JMP, JMulTi, Julia, KPP, LabPlot, LISREL, Macsyma, Madagascar, MadArtSoft, Madeline, Maple, Mathcad, Mathemagix,, Mathematica, MATLAB, MCSim, MedCalc, Minitab, MINUIT, MLwiN, Mondrian, NCAR Command Language, NCSS, NMath Stats, numberGo Publisher, NumXL, Octave, O-Matrix, OpenBUGS, OpenEpi, OpenMx, OptimJ, Orange, Origin, OriginPro, PARI/GP, Partek, PAW, Perl Data Language, Ploticus, Primer-E Primer, PSPP, PV-WAVE, Q research software, QtiPlot, Quantum, R, R Commander, R Rattle GUI, RapidMiner, RATS, Revolution Analytics, ROOT, Sage, SALOME, Salstat, SAS, scikit-learn, Scilab, SciPy, SHAZAM, Shogun, SigmaStat, SigmaXL, Simfit, Simul, SOCR, SOFA Statistics, SPC XL, Speakeasy, S-PLUS, SPSS, Stata, Statgraphics, STATISTICA, Statistical Lab, Stat-JR, Stats Helper, StatXact, SUDAAN, Systat, The Unscrambler, Trilinos, Unistat, VisSim, Waffles, Weka, WinBUGS, Winpepi, X-12-ARIMA, XLfit, Xlisp-stat, XploRe, Yorick.

The above open source statistical packages are available to users and will be found in Toolkit 3.

In addition DataGroup databases are compatible with proprietary corporate planning packages, including:-

Project Management Software: 24SevenOffice, Assembla, AtTask, Basecamp, Central Desktop, Cerebro, Clarizen, codeBeamer, Collabtive, Concerto, Contactizer, CredAbility.info, dotProject, Easy Projects .NET, eGroupWare, FastTrack Schedule, Feng Office Community Edition, FogBugz, GanttProject, Gemini, Genius Inside, Glasscubes, Huddle, Hyperoffice, InLoox, JIRA, Journyx, Kayako, KForge, KPlato, Launchpad, LiquidPlanner, LisaProject, MacProject, MantisBT, MatchWare MindView 3 Business, Merlin, MicroPlanner X-Pert, Microsoft Office Project Server, Microsoft Project, Mingle, O3spaces, OmniPlan, Open Workbench, OpenProj, Oracle Project Portfolio Management, Planisware 5, Planner Suite, Pmplus+, Primavera Project Planner, Project KickStart, Project.net, Project-Open, Projectplace, ProjectSpaces, Projektron BCS, PSNext, QdPM, QuickBase, Redmine, Rachota, SAP RPM, Smartsheet, TaskJuggler, Teamcenter, Teamwork, Tenrox, Trac, TrackerSuite.Net, Ubidesk, VPMi, WorkLenz, WorkPLAN Enterprise, workspace.com, WebSPOC, Wrike, Zoho Projects.

ERP Packages: Adempiere, BlueErp, Compiere, Dolibarr, Fedena, GNU Enterprise, JFire, Kuali Foundation, LedgerSMB, OFBiz, Openbravo, OpenERP, Opentaps, Postbooks, SQL-Ledger, Tryton, WebERP, 1C:Enterprise, 24SevenOffice Start / Premium / Professional, abas ERP, Accpac, Agresso Business World, AMS Advantage, BatchMaster ERP, Bowen & Groves, CGram Enterprise, Clear Enterprise, Comarch Altum, Compass ERP, Compiere, Comprehensive Patient Administrator, COA Solutions Ltd - Smart Business Suite, Consona Corporation – Intuitive / Made2manage / AXIS / Cimnet / Encompix / DTR, Epicor Enterprise, Global Shop Solutions One-System ERP Solutions, HansaWorld, ERP Adage (Adage), ERP LN (Baan), ERP LX (BPCS) ,ERP SL (SyteLine), ERP Swan (Swan), ERP SX.Enterprise (SX.Enterprise), ERP VE (Visual Enterprise), ERP XA (MAPICS), IFS Applications, JD Edwards EnterpriseOne & JD Edwards World, JustFoodERP.com, kVASy4, Kingdee, Lawson M3 / Movex, Lawson S3, Log-net, Maximo (MRO), Microsoft Dynamics AX, Microsoft Dynamics GP, Microsoft Dynamics NAV, Microsoft Dynamics SL, Momentum, MyWorkPLAN, NetSuite, Openda QX, OpenMFG, Oracle e-Business Suite, Paradigm, PeopleSoft, Plex Online, QAD Enterprise Applications, Ramco Enterprise Series 4.x, Ramco e.Applications, Ramco On Demand ERP, MAS 90, MAS 200, MAS 500, Technology One, SAGE ACCPPAC, SAGE Pro ERP, SAGE ERP X3, SAP Business Suite, SAP Business ByDesign, SAP Business One, SAP Business All-in-One, TaskHub, SYSPRO, SYS-APPS, mySAP, Visibility.net, WorkPLAN Enterprise.

Enterprise Feedback Management Systems: SynGro, Perseus (Vovici), Clicktools, DatStat, Inquisite, SPSS, FIRM (Confirmit), NetReflector, Allegiance, Enetrix, Satmetrix, RightNow Technologies, Mindshare Technologies, Data Illusion, KeySurvey (WorldAPP), Kinetic Data, CustomerSat (MarketTools), Medallia, Interview SA, Surveynomics, Invoke Solutions, Qualtrics, Fizzback, Grimmersoft, QuestManager, QuestBack, Globalpark, DataCycles, Dub Studios, eLustro, Kinesis Survey Technologies, Knowledge Wave, myK (myKnowledge), mySurveyLab.com, QuickSearch, Ransys, ResponseTek Networks Corp., TalkFreely, XTCO, Zarca Interactive.

Data Mining and Database Interrogation for Intelligence Gathering

The use of data mining procedures and the integration of DataGroup databases and software with the client's in-house data will yield considerable End User/Customer, Distribution, Corporate, Market, Product, Financial and Industry intelligence. The interface between the client's database and the national and international intelligence databases produces very powerful real world data and tools for planning purposes.

Data Mining Procedures:

- Classification: This arranges the data into user groups, whereby one may get insight from common algorithms for decision trees, associative networks, Bayesian classification, neural networks, and other similar processes.
- Clustering: Algorithms which group associated intelligence into networks.
- Regression: Functions which models the data to increase data reliability.
- Association Rule Learning: Hierarchical searches for relationships between variables, whereby one can measure recurring relationships, frequency, and variable weight.
- Structured Data Analysis: Structure is applied to data sets whereby one can gain insight into comparative situations, predictive situations, variable modification and manipulation, et al.

Data Mining Projects:

Data Mining Projects are established on a bespoke basis after the results of a consultative study have been produced. All the options available for structured data analysis are considered, including DataGroup substantial modelling and analytics assets allows for the analyses of large quantities of structured and unstructured data to find patterns and trends through the use of advanced statistical and artificial intelligence based algorithms.

For example, one can use data mining for:

- Classification of companies or private individuals
- Credit risk gradation
- Cross-selling opportunities
- Customer & Decision Maker classification and preferences
- Customer Target segmentation
- Event identification; for example, applicant misinformation and fraud.

Information Reporting, Processing & Handling Systems

Effective information systems are integral to the quality, timeliness, and responsiveness of research activities, and then the transfer of that information to DataGroup clients. These capabilities begin with systems analysts, programmers, and information technologists whose expertise enhances the advanced hardware and software embodied in DataGroup information technology.

- Advanced development languages
- Database systems
- Intelligent Survey Systems (ISS), Interactive voice response (IVR) applications and computer-assisted interviewing (CAI) systems
- Statistical data and analysis systems
- Survey processing systems
- Turnkey systems for clients to enable clients to conduct their own in-house research.
- Web-based technologies and platforms

Corporate Data

Corporate Data Minimum Configuration

Company and corporate data is researched according to standard formats. This form the minimum configuration of corporate data collected for each target company.

Data Objectives for each Target Company

The data objectives have to be set by the client and were possible these will be achieved by the research. For example:-

1. Financials: historical sales, forecasted sales, gross profit margin.
    a. By industry sector and application sector as defined by the client.

       For example, for the sales made by a Target Company those products sold to specific categories of customers, how much of their revenue is generated from providing various products, or application to specific categories of customers, et cetera.
2. A list of products produced by the Target Company or sourced from other suppliers.
3. Type of distribution channel, e.g. direct sales to End Users, OEM sales, via specifiers, via importers or distributor, partnering with third party providers, et cetera.
4. Partners by type (e.g. specifiers, product distributor, customer service partner) per country
5. Pricing by product sector defined by the client.
6. Discount structure
7. Production capacity by product/equipment defined
8. Availability of products (% of product in stock versus product to be ordered)
9. Sales by the type of Support for all categories specified by the client.
10. The average Modernization and Upgrades period by Product Sector defined by the client.
11. Customer Perceptions
12. The size (in terms of number) of management team per country, number of field sales persons per country, number of customer service staff per country.
13. Countries covered by the competitors, production sites (city), customer service sites (city), headcount, documentation.
14. Technology and innovation: innovative technology or application developments.
15. Et cetera…

Base data for each Target Company

Key Personnel:

1. Chairman
2. Chief Executive
3. Directors:
4. Executives:

Corporate Summary:

5. Company Description
6. Company History
7. Legal Entity & Ownership
8. Company Facilities
9. Company Key Assets
10. Mainline product / service
11. Product / services provided
12. Parent Company
13. Bankers
14. Year established
15. Current employees
16. Issued capital
17. Shareholders
18. Last published turnover
19. Subsidiaries
20. Associated companies
21. Companies represented
22. Agencies
23. Physical processing locations
24. Capital investment
25. Advertising expenditure
26. Advertising media
27. Advertising posture
28. Sales promotion activity
29. Method of selling
30. Distribution
31. Distribution network
32. Use of distribution channels

Corporate Observations:

33. Premises
34. Product Brands

35. Product Sales Channels
36. Products Carried & Services Offered
37. Consumer Features & Benefits
38. Current Market Analysis
39. Competition
40. Competitive Advantage
41. Target Markets
42. Target Customers
43. Current Strategy & Implementation
44. Current Management
45. Current Financial Plan
46. Investment Fund Sources & Use of Funds
47. Future Target Customers
48. Future Process Trends
49. Future Market Analysis
50. Projected Market Size
51. Planned Products & Services
52. Development Plans

Swot Analysis:

53. Strengths
54. Weaknesses
55. Opportunities
56. Threats

Future Strategy Planning & Implementation:

57. Philosophy
58. Product Development
59. Internet Strategy
60. Marketing Strategy
61. Sales Strategy
62. Strategic Alliances
63. Operations

Goals:

64. Renovating premises, stocking, staff hiring and marketing.
65. Market Penetration
66. Penetrate and raise awareness in the targeted markets.
67. Achieving a higher profit margin.
68. Building the customer base.
69. Generate repeat and referral sales.

70. Expansion potential.
71. Reputation as a quality Supplier.

Exit Strategies

Management:

72. Organisational Structure
73. Leadership
74. Staff Members

Financial Plans:

75. Finance Requirements
76. Use of Funds
77. Cash Flow
78. Balance Sheet Topics
79. Financial Assumptions

Specific Additional corporate data on Target Companies

There are a large number of additional subjects researched for companies. These subjects depend on the individual circumstances of each target company.

These above items are a qualitative analysis of the Target Company. This data is derived from the Surveys of Industry sources, Distribution Channels and Buyers of the products supplied by the target company. This data is not quantified, but is presented as the qualified and subjective opinions of those responding to the surveys.

Financial Data for each Target Company

The financial data is provided in sections:-
1. the most salient Process Management figures and margins, and 2. a full Balance Sheet and Management Accounts simulation.

Management Accounts

Management figures for each Target Company:

1. Product Revenue
2. Product Profitability as a % of Sales
3. Total Process Space
4. Average Site Process Space
5. Average Site Revenues
6. Average Site Establishment Cost
7. Fixed Assets: Premises
8. Fixed Assets: Equipment
9. Fixed Assets: Miscellaneous Items
10. Fixed Assets
11. Capital Expenditure on Premises
12. Capital Expenditure on Plant
13. Capital Expenditure on Equipment
14. Cap. Expend. on Data Processing
15. Capital Expenditure on Misc. Items
16. Total Capital Expenditure
17. Retirements: Premises
18. Retirements: Plant & Equipment
19. Retirements: Miscellaneous Items
20. Total Retirements
21. Total Fixed Assets
22. Finished Product Stocks
23. Work in Progress as Stocks
24. Materials as Stocks
25. Total Stocks / Inventory
26. Debtors
27. Miscellaneous Current Assets
28. Total Current Assets
29. Total Assets
30. Creditors
31. Short Term Loans
32. Miscellaneous Current Liabilities
33. Total Current Liabilities
34. Net Assets / Capital Employed
35. Long Term Loans
36. Miscellaneous Long Term Liabilities
37. Shareholders' Funds
38. Process Workers
39. Total Employees

Specific Additional Financial data required on Target Companies

There are a large number of additional subjects researched for companies. These subjects depend on the individual circumstances of each target company.

Balance Sheet and Management Ratios

Balance Sheet and Management Accounts for each Target Company:

1. Return on Capital
2. Return on Assets
3. Return on Shareholders' Funds
4. Pre-tax Profit Margins
5. Operating Profit Margin
6. Trading Profit Margin
7. Return on Investment
8. Assets Utilisation (Sales to Total Assets)
9. Sales as a ratio of Fixed Assets
10. Stock Turnover (Sales as a ratio of Stocks)
11. Credit Period
12. Creditors' Ratio (given as Creditors divided by Sales times 365 days)
13. Default Debtors / Ratio of Total Debtors
14. Un-Recoverable Debts given as a Ratio of Total Debts
15. Working Capital / Sales
16. Materials & Energy Costs as a % of Sales
17. Added Value
18. Investment as a Ratio of Added Value
19. Value of Plant & Equipment % of Sales
20. Vertical Integration (Value Added % Sales)
21. Research & Development Investment as a % of Sales
22. Capital Expenditure Investment % of Sales
23. Marketing Costs as a % of Sales
24. Current Ratio (Current Assets/Current Liabilities)
25. Quick Ratio
26. Borrowing Ratio (or Total Debt as a ratio of Net Worth)
27. Equity Ratio (Shareholders Funds as a ratio of Total Liabilities)
28. Income Gearing
29. Total Debt as a ratio of Working Capital
30. Debt Gearing Ratio (Long Term Loans as a ratio of Net Worth)
31. Average Remuneration (all employees)
32. Profit per Employee
33. Sales per Employee
34. Remunerations / Sales
35. Fixed Assets per Employee
36. Capital Employed per Employee
37. Total Assets per Employee
38. Value of Average Investment per Employee
39. Value Added per Employee
40. Materials Costs as a % of Sales
41. Wage Costs as a % of Sales
42. Payroll and Wages as a Ratio to Materials
43. Variable Costs as a % of Sales
44. Fixed Costs as a % of Sales
45. Fixed Costs as a Ratio of Variable Costs
46. Distribution Costs as a % of Sales
47. Warehousing Costs as a % of Sales
48. Physical Costs as a % of Sales
49. Fixed as a Ratio of Variable Distribution Costs
50. Fixed as a Ratio of Variable Warehousing Costs
51. Fixed as a Ratio of Variable Physical Costs
52. Fixed as a Ratio of Variable Total Distribution & Handling Costs
53. Product Returns Costs % of Sales
54. Product Installation Costs as a % of Sales
55. Product Breakdown Costs as a % of Sales
56. Product Systems Costs as a % of Sales
57. Product Service & Associated Costs as a % of Sales
58. Customer Complaint & Associated Costs as a % of Sales
59. Stock Work in Progress & Materials as a Ratio of Finished Products
60. Stock Materials as a Ratio of Work in Progress

61. Un-recoverable Debts Ratio of Total Debt
62. Un-recoverable Debts Ratio Within Terms
63. Total Sales Costs as a % of Sales
64. Total Distribution Costs as a % of Sales
65. Total Advertising Costs as a % of Sales
66. Total After-Sales Costs as a % of Sales
67. Total Customer Compensation Costs
68. Total Variable Marketing Costs % of Sales
69. Total Fixed Marketing Costs % of Sales
70. Total Fixed Marketing Costs : Ratio of Total Variable Marketing Costs
71. Variable Sales Personnel Costs: Marketing
72. Variable Distribution Ratio Marketing Costs
73. Variable Advertising Costs : Marketing
74. Variable After-Sales Costs as a Ratio of Marketing Costs
75. Sales Personnel Variable Costs : Sales
76. Sales Personnel Variable Costs : Debtors
77. Sales Personnel Variable Costs
78. Exports as a % of Sales
79. $ Hourly Pay Rate
80. $ Hourly Wage Rate
81. Capital Employed
82. Return on Capital
83. Return on Assets
84. Return on Shareholders' Funds
85. Pre-tax Profit Margins
86. Operating Profit Margin
87. Trading Profit Margin
88. Return on Investment
89. Assets Utilisation (Sales : Total Assets)
90. Sales as a ratio of Fixed Assets
91. Stock Turnover (Sales as a ratio of Stocks)
92. Credit Period
93. Creditors' Ratio
94. Default Debtors Ratio of Total Debtors
95. Un-Recoverable Debts Ratio of Total Debts
96. Working Capital / Sales
97. Materials & Energy Costs as a % of Sales
98. Added Value
99. Investment as a Ratio of Added Value
100. Value of Plant & Equipment as a % of Sales
101. Vertical Integration Ratio
102. Research & Development Investment as a % of Sales
103. Capital Expenditure Investment % Sales
104. Marketing Costs as a % of Sales
105. Current Ratio
106. Quick Ratio
107. Borrowing Ratio
108. Equity Ratio
109. Income Gearing
110. Total Debt as a ratio of Working Capital
111. Debt Gearing Ratio
112. Average Remuneration (all employees)
113. Profit per Employee
114. Sales per Employee
115. Remunerations / Sales
116. Fixed Assets per Employee
117. Capital Employed per Employee
118. Total Assets per Employee
119. Value of Average Investment / Employee
120. Value Added per Employee

NB: These above tables use standard Accounting terms, as used by accountants and financial managers. The Balance Sheet formats are used by accountants when they produce management accounts for companies and when they audit company financial results. The Balance Sheets are not the same as the Cashflow projections. Balance sheets are done on an Annual basis and Cashflow projections are done on a Monthly basis. These documents are usually produced as interactive/dynamic Excel sheets, thus if one set of data is changed (for example Payroll Costs) then this automatically changes the other data in the Balance Sheet or Cashflow projection.

Background to the Derived Financial calculations

There is a radical difference between the published financial data of companies and the Derived Financial calculations shown in these reports.

Whereas a company's published financial data may rely on the auditor's opinion that it is a fair representation of that company's financial situation, it may not reflect the actual financial circumstances of that company.

This is especially critical when evaluating Net Assets or Shareholders Funds. Essentially the Shareholders Funds are what assets would be realisable if the company was liquidated. These are the Liquidated Net Assets of the enterprise.

The software used to produce these calculations search for the realisable assets of the company. Those realisable assets tend to be found as Stock and Inventory (at the current product level valuation), and other Tangible Assets like the actual or current market value of owned Property.

Intangible Assets like intellectual property rights, or goodwill, are only valuable where market conditions are buoyant and optimistic, and allow for the on-going exploitation of such assets.

Certain items, like leased property holdings, are assets during buoyant market conditions in market specific locations; however in depressed market conditions or depressed market locations, these items are a liability because the company are tied to unprofitable locations and are constrained by the terms of the property leases, and other costs.

In many jurisdictions there will be liabilities due to national and local taxes and duties, outstanding social security contributions, and redundancy liabilities. Where a company is trading in difficult market conditions these items should be considered as liabilities chargeable against Shareholder Funds.

The Derived Financial calculations pay particular attention to the off balance sheet activities of the company, and the legal context to those activities. In addition assets which have been mortgaged or pledged or against which there is a charge cannot be regarded as assets; and a calculation must be made in relation to the actual market value of the assets set off against the amount of the charge. In many instances this produces a negative figure, and this is listed as a net liability and deducted from the Net Assets figure.

Consumer Survey Principles

Consumer Surveys Introduction

This section is part of a document intended for, and used for the training of, DataGroup and Data Institute staff researchers to enable understanding of the projects and tasks they are undertaking.

During polls of consumers we undertake to obtain evidence derived from surveys of consumers that are either part of a routine Omnibus or Ad Hoc surveys commissioned by clients for the specific purpose of helping to understand aspects of Consumer Behaviours, Intentions or Mind-sets.

These surveys are usually commissioned in-house by project teams, or by the management of companies, consultancies or other market research agencies.

Amongst other things, consumer survey evidence may be used for market definition or for the assessment of competitors in the marketplace. This type of evidence uses statistically robust consumer survey research that can help users in reaching informed decisions.

Such a description must necessarily only be an overview, for a more substantial description readers should request the supplemental descriptions of practice and methodology.

General Principles

1. Effective consumer survey research should respect general principles of:

- ✓ transparency of objectives
- ✓ representativeness of sample
- ✓ soundness of methodology
- ✓ unbiased disclosure of results

Transparency of objectives

2. Sound statistical research requires that the specific hypotheses to be tested or the measures to be estimated should be set down before any data is collected. This prior statement of objectives is normally formalised in the Research Proposal we submit to Omnibus managers or End User Clients.

It allows an objective assessment to be made of whether the consumer survey data collected provides evidence for each hypothesis or not, and to what degree.

3. Consumer survey research that follows a transparent prior design process is more likely to be convincing than that which derives from asking a variety of questions about an issue and then searching retrospectively through the resulting data for statistically significant patterns; albeit such patterns may still be informative.

4. Reporting consumer survey research transparently includes providing a full description of the objectives and the methods used. A report database will contain sufficient detail to demonstrate that good consumer survey research practice was followed at each stage. Where questions arise about the conduct of the research that cannot be answered from the documentation, direct access to relevant research staff will be regarded as offering the greatest transparency.

Sample Representativeness

5. Consumer survey research involves defining a population of interest and then consulting a sample from this population. This is done so that measures relating to the whole population may be estimated and the sampling uncertainty in the estimates may be quantified. The sample consulted should be representative of the population, either by incidence or value as appropriate for the hypotheses being tested.

6. Consumer survey evidence may have value in any business decisions. It is likely to be particularly useful where the competitive situation relates to a large population, and where the views of only a few members of that population may not be representative of the population at large.

7. If the behaviours and attitudes of interest in the population are expected to vary systematically with certain characteristics, then the sample selected should have broadly the same composition by these characteristics as does the population. This may be ensured by setting interview quotas, or demonstrated by comparing incidences between sample and population and showing that they match within expected sampling error.

8. Reliable consumer survey evidence should therefore:

- ✓ set out clearly the population of interest
- ✓ draw upon existing research evidence to demonstrate the characteristics of consumers with regard to which a sample should be representative
- ✓ document how the sample matches the population with regard to these characteristics.

9. If little prior information is available about the consumer characteristics that may affect the behaviours and attitudes of interest, particular care will need to be taken in the survey design to ensure that a sample selection mechanism is used that does not lead to the unplanned excessive participation of one type of consumer over another.

Certainty of methodology

10. There is a well-developed body of good practice in market research, and this provides the basis for assessing the validity and reliability of consumer survey research evidence. Usually surveys to provide evidence in certain competitive situations is usually ad-hoc in nature and not part of a regular omnibus, it is important that it demonstrates conformity to established good practice. In particular, good consumer survey design should:

- ✓ present questions in context
- ✓ avoid ambiguity or confusion
- ✓ not influence consumers to give particular answers
- ✓ provide appropriate response options for representing the views expressed.

11. The soundness of the survey design should have been tested by piloting the consumer survey and monitoring the fieldwork. Documenting feedback from these processes, and noting any changes made in the consumer survey research design to respond to this feedback, will build confidence in the soundness of the results.

12. Where analysis of consumer survey research is presented, this should conform to social research good practice. A survey report should set out the full range of responses to each question that has a pre-defined response scale and should report the exact wording used in the question and associated response scale.

Unbiased Disclosure of results

13. Where market researchers have conducted a consumer survey research on behalf of clients or their advisors, a comprehensive report of the research, including the terms of reference and a clear response to them by the responsible researchers or specialist staff, is most likely to carry evidential weight.

14. One would also expect that completely anonymous individual responses to the survey would be made available on request for further analysis and replication of key results, in so far as this is allowed within the constraints of national standards, for example in the United Kingdom, the Market Research Society Code of Conduct, the Data Protection Act, and other relevant legislation.

Summary

15. In order to be given the greatest evidential weight, consumer survey results should:

- ✓ test clearly stated hypotheses
- ✓ be representative of the relevant consumer population
- ✓ deploy sound social research methods
- ✓ be reported in full, with supporting data available to allow key results to be replicated and tested.

16. The remainder of this document offers illustrations and examples, to assist researchers in conducting consumer survey research that meets the good practice principles.

Illustrations and Instances

1. In this section, illustrations of consumer survey methods that have played a part in recent research projects are given. The issues discussed have been relevant to the design and presentation of survey evidence presented to clients in recent years. The intension is to review the contents of this section to reflect progress in the field.

2. A number of examples of consumer survey elements are presented below. Their purpose is either to demonstrate good practice with real examples, or to exemplify potential problems using anonymised extracts. The examples should not be viewed as model templates for future consumer surveys. Approved templates are found in the available Data Libraries and Recordset descriptions.

Research objectives and hypotheses for testing

3. The aims of consumer survey research may depend upon whether evidence is required to analyse a market condition or a competitive assessment of the market. A clear statement of the aims and objectives given to the researchers conducting the survey will be the starting point for assessing the degree to which the project has been able to bring independent, professional skill to its design and execution.

4. An example of the objectives given to researchers in a competitive survey:-

Good practice in a statement of survey research aims and objectives

The objectives of the research are to:

a) establish bases for estimates of the composition of passenger flows by journey purpose; means of reaching pick-up point; key demographics; and ticket details

b) identify the factors in choosing mode of travel and provider that are most important to passengers

c) establish the extent to which passengers are aware of other travel options

d) rank passengers' other travel options in order of attractiveness

e) test passengers' stated intentions in response to changes in ticket prices and service characteristics

f) gather demographic information for the analysis of survey responses by different passenger groups.

---

5. Recording, in advance of collecting data, the methodology to be adopted, any specific hypotheses to be tested and the measures to be estimated will allow an objective assessment of the statistical significance of the consumer survey results.

Population description and sampling

6. The briefing given to the researchers should include a clear description of the population of interest for the consumer survey. This should include a note of the demographics (for example, age, socio-economic group) and other consumer segmentations (for example, time since purchase of product, amount spent on service last year) that are expected most to affect the behaviours and attitudes being measured.

7. Where possible, the researchers should have access to population counts, broken down by the key demographic and other segmentation measures identified. The researchers should use these for setting interview quotas or monitoring incidence rates in the consumer survey sample, to ensure that these are comparable with those in the population within expected sampling error. An example of a description of a population of interest and its characteristics is shown below.

Good practice in the description of a population of interest

> The population of interest for the attitude research is UK resident consumers who purchased Payment Protection Insurance (PPI) within the twelve months prior to the research and who state at screening that they considered more than one PPI product or packaged loan with PPI before making the associated loan application.
>
> For Personal Loan PPI in the UK in 2006/2007, the Financial Resources Survey indicated that there were about 420,000 PPI customers. A telephone survey conducted in October and November 2007 indicated that about 30 per cent of these customers considered PPI options in advance of applying for a loan.
>
> Response quotas need to be set to be nationally representative by personal disposable income band.

---

8. If there are likely to be material differences in the behaviours or attitudes of customers at different times of the day, on different days of the week, or at different times of the year, this also should be reflected in the description of the population.

9. One possible objective of consumer survey research in retail markets is to investigate whether local geographic markets exist and, if so, their extent. When little time is available, consumer survey research may be limited to only one or two areas and these should be chosen to be as typical of the areas affected by the objectives as possible. If time allows, the sample should cover a range of retail settings affected by the objectives. For example, the sample might include town centre, out of town retail and tourist destination outlets, or retail sites with and without customer parking facilities. In general, robust consumer survey results from a carefully designed sample of locations are likely to carry more evidential weight than those from superficial surveys in a larger number of areas.

10. Careful consideration should be given to avoiding sampling bias or non-response bias that leads to an unplanned excessive participation in the survey of a type of consumer with one view on the questions, in preference to another type of consumer with a systematically different view. Minimising such bias will involve revealing at the start of the interview enough about the purposes of the survey and its sponsorship to recruit respondents and encourage them to give their honest views.

11. An example of a telephone survey introduction that follows this good practice is shown below, together with a contrasting example of a covering letter to a paper survey that might have introduced a selection bias.

Good practice in the invitation to take part in a telephone survey

> My name is …… and I'm calling from ....., an independent market research company. We are currently conducting a short survey for a client about live music events. All your answers will be treated in strict confidence according to the Market Research Society Code of Conduct.
>
> Could you spare a few minutes to answer some questions?

Potential problems in the cover letter invitation with a paper self-completion survey

> The EU Commission is conducting an inquiry into whether the merger of Supplier X and Supplier Y may be expected to result in a substantial lessening of competition in the supply of services to their users.
>
> The EU Competition authority is currently taking evidence from interested parties.

> The above cover letter sent out with a paper self-completion questionnaire to all users of the suppliers' services. It highlights the use of the consumer survey to investigate a lessening of competition and refers to consumers as 'interested parties', both of which may tend to encourage tactical responses. It also uses the phrase 'substantial lessening of competition' a technical term with a particular meaning that may not be understood by the typical consumer.

12. It is likely that some screening will be necessary at the start of a consumer survey interview. This screening should exclude consumers who have a vested interest in the subject because of their employment or personal connections, and include only those respondents who are genuinely able to answer the survey in a way that is representative of the population of interest.

13. Thought should be given as to whether the appropriate sample to provide views on an issue is all potential consumers of a product, the customers of all of the firms believed to be in the market, or only the customers of one or both of the merging parties. Screening should be documented explicitly, and the numbers of people 'screened out' at each stage recorded and reported. An example of a clear screening process is shown below.

Good practice in the explicit screening of respondents for a telephone survey

> Q1a Do you work in any of these industries?
> Advertising – Q1b
> Financial Services – *THANK AND CLOSE*
> Journalism – *THANK AND CLOSE*
> Marketing or Market Research – Q1b
> None of these – Q1b
> Refused – *THANK AND CLOSE*
>
> Q1b Payment Protection Insurance, also known as PPI, may cover payments on your credit card in case you have an accident, become sick, become unemployed or die. From records provided to us by the Ombudsman, we understand that you took out PPI for a credit card from XYZ Bank in November last year. Can I just check that you did in fact take out this insurance?
>
> Yes - *go to* Q2
> No, didn't take out insurance – *THANK AND CLOSE*
> Don't know / Can't remember – *THANK AND CLOSE*
> Refused – *THANK AND CLOSE*

Characteristics of researchers and contractors

14. The ability of researchers to deliver high quality results will depend upon both the quality standards and systems that have been built into our survey methodology and the professional skills of the individuals responsible for conducting the consumer survey research.

15. Consumer survey research reports should identify the company divisions conducting the survey and all of the organisations to which significant parts of the work were sub-contracted. Information to allow the user of the report to verify the credentials of these organisations should be included - usually appropriate web-site addresses will suffice.

16. Researchers should double check that they have the appropriate systems and resources, and that they know the standards for the consumer survey research being undertaken.

Research resources and documentation

17. Sufficient project management information should be included in consumer survey research reports to demonstrate that the company (and its sub-contractors) conducting the research had access to the appropriate resources and was allowed sufficient time for the objectives to be met.

18. A detailed understanding of how consumer views were gathered is important to the assessment of how much evidential weight to give to a piece of consumer survey research. The survey process should be transparent, including information about:

- ✓ any letters or e-mails used to recruit respondents
- ✓ any incentives offered to consumers to complete the survey
- ✓ the script or text used to introduce the survey
- ✓ survey routing, screening and quota checking instructions
- ✓ any interviewer notes.

19. If separate briefing documents were given to field teams or interview supervisors, these should be provided as well.

Designing consumer survey introductions

20. Care should be taken to ensure that an appropriate context is established for the questions being put to consumers. Survey introductions that describe the purpose of the research and outline the subject areas to be covered should be full enough to ensure that a typical consumer will understand what is being asked of them and why.

21. An example of a telephone survey introduction that follows this good practice is shown below, together with a contrasting example of an insufficient Computer Assisted Personal Interview (CAPI) introduction in below.

Good practice in the content of the introduction to a telephone survey

> My name is [interviewer] from ... We are carrying out a survey of people in Bay Area on behalf of the Transit Authority as part of an official investigation into the buses and trains used by people like you.
>
> We would like to ask you some questions about your everyday journeys.
>
> *ADD REASSURANCES AS NECESSARY*
>
> It will take about ten minutes or so. This is a genuine market research survey and no attempt will be made to sell you anything, either during or after the interview.

A potential problem in the content of the introduction to a Computer Assisted Personal Interview

> *INTERVIEWER: PLEASE SHOW SCREEN UNTIL OTHERWISE INSTRUCTED*
>
> We are interested in looking at how people get [general product] serviced, in particular [product type A] or [product type B].

---

22. Introductions should be delivered clearly in understandable blocks of plain language and should avoid leading the respondent to any prior view on the survey material. In particular, the introduction to a survey should avoid creating strategic bias, where the consumer seeks consciously to influence policy through their responses to the questions.

23. In telephone and field surveys, opportunities should exist for the consumer to ask the interviewer questions of clarification before substantive survey questions are posed. A balance should be struck between the demands of achieving a high survey response rate, ensuring that consumers understand what the subject area is, and checking that respondents are willing and able to give informed responses. This is demonstrated in the example shown below.

Good practice in structuring the introduction to a telephone survey

My name is [interviewer] and I'm calling from ..., an independent market research company.

We are currently conducting a short survey for the local authority about live music events in Hyde Park. All your answers will be treated in strict confidence according to the Market Research Society Code of Conduct.

Could you spare a few minutes to answer some questions?

INTERVIEWER: ADD REASSURANCES AS NECESSARY

- The interview will take no longer than 15 minutes.
- Everything you say is confidential and any responses will not be attributed to you.
- There will be no attempt to sell you anything, either during or as a result of this survey.
- This research is being used as part of the local authority's efforts to understand public opinion, and your views are important to help with this matter.
- This is a genuine market research survey being conducted on behalf of the Local Authority.

Is it OK for me to continue?

Designing and ordering consumer survey questions

24. Care should be taken to present consumer survey questions in a logical order, to assist the respondent to understand them and to ensure that answers to later questions are not biased by the presentation of information in earlier questions. Questions should be introduced in such a way that gives clearly the context in which they are to be answered and reminds consumers of this as necessary. Linking phrases such as

'Now, still thinking about the most recent purchase you made ...' will be useful in this regard.

25. In general, screening questions (para. 12 above) should appear as early in the sequence as possible, to minimise the number of questions asked of consumers who turn out not to be qualified to answer the main survey. The substantive questions should usually be ordered to match as closely as possible the sequence of the purchase decision being investigated. Within this, it is usually easier for the respondent if matters of fact are probed first, followed by matters of behaviour, then preference, then attitude. Demographic information is usually collected at the end of a consumer survey.

26. Any confusion or ambiguity in the phrasing of a consumer survey question is likely to reduce the evidential weight that can be put on responses to it. Technical terms should be avoided, as should artificially restrictive language. For example, asking *'Are you aware of any other stores where you can buy ...?*' may exclude artificially online shopping as an alternative source of supply.

27. A question that is presented in a way that leads consumers to one response in preference to another (irrespective of their actual view) is biased, and unlikely to be of evidential value. Efforts should be made during survey testing and piloting to ensure that each question is as clear, unambiguous and neutral as possible. Some potential sources of bias that should be considered when drafting consumer survey questions include:

- hypothetical bias, where a consumer may indicate a willingness in principle to spend money or change behaviour, which does not reflect their likely real response to the situation described
- inertia bias, where a consumer over-states their likely reaction to a change in the market, by not taking into account switching costs, inconvenience, uncertainty of information and natural laziness
- framing and anchoring effects in the way questions are presented.

These include acquiescence bias, where the consumer tends to agree with any statement implied in the question.

For example, '*Did you clean your teeth today?*' contains an acquiescence bias to the response Yes.

A more neutral presentation would be '*Did you clean your teeth today, or did you not do so?*'.

3.28 Consumer survey design techniques have been proposed that may reduce these biases. They include reading out an introduction that alerts the consumer to the existence of these effects and exhorts them to consider carefully realistic answers (a 'cheap talk' script), and asking consumers after each question how confident they are that they would behave as their answer indicated and then allowing for this level of confidence in the survey analysis.

29. An example of a neutral telephone survey question is shown below, together with a contrasting example of one that is potentially biased.

Good practice in the presentation of a neutral telephone survey question

Q*x*. After your offer was accepted, what type of survey of the property was conducted, if any?

READ OUT:

a) None
b) Mortgage valuation survey for my lender
c) Homebuyer Survey
d) Full Buildings Survey / Structural Survey
e) Don't remember

A potential problem in the presentation of a telephone survey question

Q*x*. Do you know how much [name of bank] charges you when you set up a standing order?

a) Yes
b) No
c) Not sure
d) Refused

---

30. Data collection and analysis will often be facilitated by using categorical response scales. These should be tested to ensure that their presentation does not introduce any systematic bias into the responses and that they include the most frequent survey responses. It will rarely be appropriate to use scales that force consumers to choose from an unrealistically limited set of choices. Bipolar attitude scales (for an example, see below) should usually include a labelled, neutral mid-point and allow respondents to state that they do not know the answer to the question without terminating the interview.

Good practice in the use of a survey attitude scale

I am going to read out a number of statements and I would like you to tell me how much you agree with each using the following scale:

a) Agree a lot
b) Agree a little
c) Neither agree nor disagree
d) Disagree a little
e) Disagree a lot
f) Don’t know – *DO NOT READ OUT*

---

31. As far as possible, response options should be mutually exclusive and exhaustive. Response scales to be read out by an interviewer should contain a number of options that can reasonably be understood and remembered by a typical consumer (usually no more than six simple choices). A response scale to be used to code an unprompted response from a consumer should be presented to the interviewer in a logical order, grouped into similar themes. Response scales should not extend over more than one page or screen. An example of a potentially confusing telephone interview response scale is shown below.

A potentially confusing response scale

> You mentioned that your main local newspaper was the [name of paper].
>
> I would like you to imagine that this paper was discontinued completely and permanently. All other local newspaper publications and media are still available. Which of the following would you be most likely to do?
>
> *[Read out and randomise order for all except last three]*
>
> - not reallocate the budget to any other publication or media type
> - spend budget in another local newspaper
> - spend budget on online site
> - spend budget on other online including paid-for search, banners, display & own website
> - spend budget on direct mail
> - spend budget on online self-published magazine
> - spend budget on national newspapers
> - spend budget on other media, for example sponsorship, self-published magazine, local TV or local outdoor [Please name media]
> - reallocate budget amongst other media types, not incl. local newspaper
> - reallocate budget amongst other media types, incl. local newspaper
> - *[Do not read out loud]* don‘t know
> - *[Do not read out loud]* refused
> - other [please name media type and company]

---

32. An example of a question scale that seems unlikely to have captured all of the likely survey responses is shown below.

Potential problems in the use of a survey attitude scale

> Would it be easy or difficult for you permanently to switch to a different coach company for this journey?
>
> *READ OUT, SINGLE CODE:*
>
> a) Very easy
> b) Fairly easy
> c) Neither easy nor difficult
> d) Fairly difficult
> e) Very difficult
> f) Impossible
> g) *[Do not read out]* Refused

Asking hypothetical questions

33. In many circumstances, consumer surveys carried out to provide evidence in market situations require hypothetical questions to be asked (for example, *'what would you do if the price of this service rose by ten pounds?*'), particularly where an anticipated problem has been identified. There are particular difficulties associated with the use of hypothetical questions during a consumer survey, over and above those discussed above. Potential extra sources of bias and measurement error include:

- the context in which the hypothetical situation is presented, including whether and when the purpose of the research is revealed to consumers
- question framing affecting the way in which consumers consider the hypothetical situation
- the use of response scales that do not allow consumers to capture the true likelihood of their responding to the situation in different ways.

34. When using hypothetical questions, care should be taken to minimise the effects of these sources of bias and error in the consumer survey design.

The responses to such questions should always be assessed in the context of other evidence about the respondent and a general understanding of consumer behaviour. In some surveys it may be possible to include questions to assess the internal consistency of responses to hypothetical situations, for example, questions about previous purchase behaviours.

Hypothetical questions about price increases

35. Consumers are more likely to understand questions about price increases if these are framed in terms of absolute amounts based on an actual price recently paid for a product or service. The aim of the survey question is to present as realistically as is feasible the choice a consumer would encounter following a price increase; and it would be rare for an increase to be presented to the consumer in the form of a percentage.

36. Whilst it is particularly important to design hypothetical questions for the specific market and interview situation in which they are being used, below are given examples of questions that have been used successfully in the past.

Good practice in describing a price increase A

> Qx. Here are some typical current prices for the various ways of processing a 25-exposure APS film. If these prices were to apply everywhere in the country, which service would you normally choose?
>
> Qy. If the prices of the next day, three day and six day services were to increase by 76 pence, but the prices of the same day and mail order services remained the same, which would you choose?

Good practice in describing a price increase B

> [Bus company A] and [Bus company B] are, of course, still running between [Town A] and [Town B]. I would now like to ask you whether it would have affected your most recent journey choice if the ticket price or timetable had been different. Firstly, would you have travelled by train instead of the coach service you travelled on, if the price of your coach ticket had been £3.00 instead of £2.00?

---

37. One example of a question that was regarded as unreliable in the way that it framed a hypothetical price increase is shown below.

A potential problem in the framing of a hypothetical price increase question in a face-to-face survey

> Suppose that the price of the retailer's own brand product that you regularly buy increased permanently by 10%, so that a unit that previously cost one pound now costs one pound and ten pence. If the price of the branded equivalent product remained the same as before, what would you do?

---

38. There are difficulties in asking simple consumer survey questions to investigate the effect of hypothetical non-price changes such as reductions in quality. Different research techniques or sources of evidence may be more appropriate.

Hypothetical questions about diversion options

39. In markets, the diversion of sales or volumes between the competitors can be a key piece of information that informs the analysis. Questions regarding diversion may follow questions regarding price changes, or they may be relevant in their own right.

40. Questions asking about diversion options for a product or service should be designed and tested to ensure that they provide response scales that cover all possible options, sometimes by including and analysing an *Other (please specify) option*. If the aim of the consumer survey is to estimate the proportions of sales revenue that would divert to various options in a hypothetical situation, it will be important to ask consumers about the most recent, or the typical, values of the purchases they have made, as in the example shown below.

Good practice in asking a diversion ratio question

> Q.6 And approximately how much did your grocery shopping cost at this store today?
>
> *WRITE IN AMOUNT IN £s.*
> *ROUND TO NEAREST £ (IF LESS THAN £1 ROUND TO £1)*
>
> Q.10a SHOW CARD B
>
> If this [Retailer Name] store had not been available, which, if any, of these types of store would you have used instead? *SINGLE CODE ONLY*
>
> a) a large, out-of-town supermarket
> b) a same size supermarket
> c) a smaller convenience store
> d) a corner shop
> e) petrol station forecourt shop
> f) several different shops for different groceries e.g. butcher, baker
> g) used other (write in & ring)
> h) would not have done my grocery shopping
> i) don't know

---

41. An example of a diversion question that was not regarded as providing realistic diversion options is shown below.

A potential problem in the use of a survey diversion option scale

> If the price for the purchased products at this store had been 10 per cent higher than you actually paid, what would have been your most likely response?
>
> a) gone ahead with purchases at this store
> b) spent the same amount of money at this store and purchased fewer / smaller quantities of products
> c) spent less at this store as I would buy less items
> d) Purchased nothing at this store

---

42. Depending upon the issues being researched, it may be appropriate to ask all customers about their diversion options in response to an outlet closing, or to ask only marginal customers in response to a specified price increase, or to do both. Where time or resources are limited, asking all respondents will minimise the sampling uncertainty associated with a diversion ratio estimate and is regarded as providing reliable information about closeness of competition, particularly in the first phase of an inquiry. The introduction to each diversion option question, the wording of the questions and their ordering should all make clear to the consumer the context in which the questions are being asked.

Diversion ratios derived from the two approaches are unlikely to differ when products (or services) are horizontally differentiated, that is where consumers' preferences over the products vary but no product is intrinsically better or worse. However, there may be differences when products are vertically differentiated, that is where consumers share roughly the same preferences over the different products.

Conducting fieldwork

43. The choice of a data collection method will be constrained by the time and resources available. In recent years, face-to-face and telephone interviews have usually been considered to be more reliable than paper or online self-completion questionnaires, due to the involvement of a trained intermediary who can engage the attention of the survey respondent and clarify or probe responses in a controlled way.

44. However, we are increasingly using online methods where these fit well with the channels of purchase or use of the products or services of the merging parties. Online methods may also offer speed and flexibility in conducting consumer survey research.

45. The need for computer-assisted technology to handle complex routing, the requirement for presentation of visual material and the personal sensitivity of the questions will all affect the choice of an appropriate fieldwork method.

46. Whilst conjoint experiments and discrete choice methods have been included within consumer survey research in competitive studies, this has not yet been done on enough occasions to yield generic examples of good practice to include in this edition of this document. This does not imply that evidence derived using these research methods would not be given evidential weight, as noted above.

47. The soundness of any consumer survey research design should be tested initially by conducting, monitoring and evaluating pilot interviews with consumers drawn from the population of interest. Survey design features to monitor and assess possible sources of bias are likely to be needed less under circumstances where there has been an opportunity for careful survey piloting.

48. The extent of the pilot will depend on the complexity of the consumer survey design and the sensitivity or difficulty of the subject matter. This piloting could range from monitoring a first fieldwork shift and making final amendments to question wording, through to a formal recruitment, interview and debrief of pilot respondents followed by a full design review. In either case, the conduct and outcome of the pilot, and its consequences for the consumer survey research design, should be reported.

49. There are established professional standards for the conduct of interviews, including those published by the Interviewer Quality Control Scheme (IQCS). The use of fieldwork contractors who adhere to such standards will foster confidence in the quality of the data gathered.

50. The use of computer-assisted interviewing technology allows validation checks to be applied to responses during the interview and the consumer given the opportunity promptly to correct or confirm apparently implausible answers. The survey script and interviewer briefing notes should also give clear instructions on where probing or checking of responses is to be carried out, and how.

51. Regular monitoring of fieldwork by a qualified supervisor from the fieldwork contractor, and occasional monitoring by appropriate staff from the researchers and commissioning organisation, are also important elements of good practice.

Respondent privacy and data protection

52. It is standard practice to set out as part of an interview the protections guaranteed to respondents in respect of the anonymity and confidentiality of their responses. The Market Research Society Code of Conduct also imposes a duty on researchers to protect the anonymity of survey respondents in the absence of explicit permission from a respondent to the contrary. The disclosure of datasets, tabulations of results and reports of a consumer survey research project should always respect these provisions.

53. One example of a suitable statement about privacy for use at the start of a telephone survey script is shown below.

Good practice in reassuring a telephone survey respondent about the privacy of their replies

> This research is being conducted on behalf of [organisation] and in accordance with the Market Research Society Code of Conduct, which guarantees your anonymity. It will not be possible to identify your individual response in any published results from the survey.

54. Consumer survey responses almost always constitute 'personal data' under the relevant Data Protection legislation at the point of collection, whether or not they are shared. Where necessary research organisers will consult their legal advisors about their obligations under the legislation in each specific situation, and the general guidance in this document is without prejudice to such legal advice.

For example, research being conducted in the United Kingdom will be in accordance with the Market Research Society Code of Conduct, which guarantees respondent anonymity. In general, it will not be possible to identify individual respondents in any published results from the survey.

55. In general, all parties (researchers and clients) will wish to establish that the provision of consumer survey responses as part of a particular project would be regarded as 'necessary processing' under the national Data Protection Legislation of the relevant countries.

The sharing of data will be facilitated if parties minimise the amount of 'personal data' included in a data set that is intended to be provided to the client by:

- ✓ excluding rigorously any information that could, either on its own, or in combination with other data sets that might be available to the client, identify individuals
- ✓ avoiding the collection of any 'sensitive personal data' under Data Protection legislation (such as ethnicity or physical health) unless this is absolutely essential to the testing of an important hypothesis or theory of harm
- ✓ excluding individual responses to demographic questions, unless this is essential to the testing of an important hypothesis or theory of harm.

56. When seeking consent to interview consumers, researchers should give potential respondents the greatest amount of information in a survey introduction that would not be expected to introduce a material bias to the responses. The following points should be covered:

- ✓ the identity of the Data Protection legislation 'data controller' (for example, the name of the market research organisation conducting the research)
- ✓ the sponsor on whose behalf the consumer survey is being conducted (for example, a generic description of the advisor to the merging parties)
- ✓ why, in broad terms, the potential respondent is being invited to take part in the survey
- ✓ what will be done with the responses, including the intention to provide anonymised responses to the client if this is envisaged.

57. The likely biasing effects of mentioning disclosure will depend upon the issues being investigated and the questions to be asked. Consumer surveys asking simple attitude questions about a controversial issue that has been widely publicised may be most vulnerable to being biased.

58. If there is little risk of bias, the respondent should be informed that their anonymised responses will be provided to the clients, as appropriate. Where the risk of bias is greater, a more general description such as 'to relevant public authorities for the purpose of researching consumer behaviour at this store' may suffice.

Data processing, analysis and reporting

59. The purpose of quantitative consumer survey research is to estimate measures relating to the population of interest, not merely to report the views of a sample of consumers. There are well established practices in social research for the analysis and reporting of survey response data to produce these estimates. These are described fully in general social and market research texts, and so not discussed at length here.

60. Estimates based on consumer survey data should always show upon how many individual responses they are based and describe any selection, cleaning, weighting or other adjustments that have been applied to the original response data. Where available, the survey response rate should also be reported.

61. The sampling uncertainty associated with estimates from a consumer survey may be reported in a number of different ways. Whilst annotating results tabulations to highlight comparisons between sub-groups that pass a standard significance threshold is standard practice in commercial market research, confidence intervals around central estimates provide more information and are to be preferred.

62. A confidence interval is especially relevant when an estimate derived from consumer survey research is critical to assessing a theory of harm or is to be used as a basis for subsequent calculations. It is not necessary to report confidence intervals for all other estimates, if the background technical information described above is made available.

63. Parties should not forget to consider both the statistical and the economic significance of survey based estimates.

Conclusion

The situations in which consumer survey research may be deployed to investigate aspects of an issue vary. The project managers will always assess the evidential value of consumer survey research in the light of the particular circumstances of a case. In doing so, we will always be guided by the principles of good research practice, and good common sense.

Research & Survey Methodology Analysis

Some clients may wish to understand the statistical and methodological basis of the specific research conducted and this can be provided as part of the After-Sales Service.

Statistical Appraisal of Datasets

- **Sampling**
  - External Validity
  - Sampling Terminology
  - Statistical Terms in Sampling
  - Probability Sampling
  - Nonprobability Sampling
- **Measurement**
  - Construct Validity
    - Measurement of Validity Types
    - Construct Validity
    - Convergent & Discriminant Validity
    - Threats to Construct Validity
    - Nomological Networks
    - Multitrait-Multimethod Matrix
    - Pattern Matching Construct Validity
  - Reliability
    - True Score
    - Measurement Error
    - Reliability
    - Type of Reliability Analysis
    - Validity
  - Levels of Measurement
  - Survey Research
    - Survey Type
    - Selecting the Survey Method
    - Construction of the Survey
      - Questions
      - Question Content
      - Response Format
      - Question Wording
      - Question Placement
    - Interviews
    - Appraisal of Survey Method
  - Scaling
    - General Issues in Scaling
    - Thurstone Scaling
    - Likert Scaling
    - Guttman Scaling
  - Qualitative Measures
    - Qualitative Discussion
    - Qualitative Data
    - Qualitative Approach
    - Qualitative Method
    - Qualitative Validity
  - Unobtrusive Measures
- **Design**
  - Internal Validity
    - Establishing Cause & Effect
    - Single Group Threats
      - Regression to the Mean
    - Multiple Group Threats
    - Social Interaction Threats
  - Design Development
  - Design Type
  - Experimental Designs
    - Two-Group Experimental Design
      - Probabilistic Equivalence
      - Random Selection & Assignment
    - Classifying Experimental Designs
    - Factorial Design
      - Factorial Design Variations
    - Randomized Block Design
    - Covariance Design
    - Hybrid Experimental Design
  - Quasi-Experimental Designs
    - Nonequivalent Groups Design
    - Regression-Discontinuity Design
    - Other Quasi-Experimental Design
  - Relationships of Pre-Post Designs
  - Formulation of the Designs
  - Modification & Experimentation
- **Analysis**
  - Conclusion Validity
    - Threats to Validity
    - Validity Improvements
    - Statistical Control
  - Data Preparation
  - Descriptive Statistics
    - Correlation
  - Inferential Statistics
    - T-Test
    - Indicator Variables
    - General Linear Model
    - Post-test-Only Analysis
    - Factorial Design Analysis
    - Randomized Block Analysis
    - Analysis of Covariance
    - Nonequivalent Group Analysis
    - Regression-Discontinuity Analysis
    - Regression Displacement Analysis

Assets

Toolkits

DataGroup provide clients with a range of Toolkits which provide additional data, manuals, reference works, enterprise planning & statistical software, integrated development environments, information servers, and so forth. These toolkits are provided online or on DVD and include the following:-

To assist users there is a Toolkit to be found on 5 DVDs and/or Hard Disk Drive. This Toolkit is divided into various sections:-

Toolkit 1

1. Data Manuals
2. Document Templates
3. Help files
4. Manuals Templates
5. Microsoft Utilities
6. OpenOffice
7. Business Plan Images
8. Reference files
9. US Census Data Tools
   Because most DataGroup and Data Institute database are directly compatible with U.S. Government databases (especially the Department of Commerce, US census, NIST, Treasury, et al) it is sometimes useful for users to use US Government data handling tools to manage not only US Government data, but also the data provided by DataGroup and Data Institute. Alternatively, if you are already using this US Government software you can simply access the DataGroup and Data Institute databases with the same software.

   In generate DataGroup and Data Institute databases use the same database parameters, structures and field names as those found in US Government databases, and thus uses can correlate and query databases without undue difficulty.

10. Utilities & Tools

Toolkit 2

1. Database Utilities
2. Enterprise Resource Planning packages
3. Integrated Development Environment
   If you intend to implement DataGroup and Data Institute databases online (internet or intranet) then an Integrated Development Environment is often the easiest route to data dissemination and data manipulation.

Toolkit 3

There are about 40 Statistical packages provided in this Toolkit. These are Open-Source packages which are generally free to use.

Toolkit 4

Microsoft Server 2003 utilities and resources. These are for clients implementing databases on Microsoft Server 2003 systems.

Toolkit 5

Microsoft Server 2008 & 2012 utilities and resources. These are for clients implementing databases on Microsoft Server 2008 systems. Microsoft Server 2012 migration utilities are also provided in this Toolkit.

Systems Development

Automated Systems Development

Automated systems allow DataGroup clients to extract, correlate and analyse market and corporate intelligence in a cost effective way and incorporate that data into their own in-house software systems.

System Engineering & Requirements Analysis

DataGroup frequently supply clients with complete systems which include servers, operating systems and specific business planning or enterprise planning software.

In addition to Requirements Analysis & Technology Assessment, DataGroup offer corresponding support in understanding and developing a client's system requirements, and mapping those requirements both to existing system components (hardware and software, commercial and open source) and to components that must be specifically developed for the client's applications.

DataGroup often works in conjunction with clients to elicit, organize, and analyse system requirements, including requirements that flow down from larger systems-of-systems; and survey, investigate and analyse existing technologies and components that can satisfy those requirements.

Software Design & Development

DataGroup provide software development at all phases of software design and implementation process, including: requirements definition, design (for example, UML, mockups, test-rigs), and documentation; configuration management, bug tracking, integrated development environments (IDEs), continuous integration and testing, and spiral development techniques; agile software development; independent validation and verification of existing software; implementation (Basic, VBA, C/C++/C#, Fortran, MS or SQL databases, Java, Perl, Python, Ruby on Rails; Windows, OS X, Linux, Unix, and many more); and software program management.

DataGroup develop desktop and web software applications for diverse applications, including scenario creation and simulation, decision support, and social network analysis.

Information Technology System Integration

Integrating commercial and corporate planning systems into an effective, efficient architecture is an important capability. DataGroup have the experience of end-to-end system architecture design, configuration and implementation, with a specialization in agile business research and planning applications.

Resource Webs

Knowledge Management & Transfer

Sophisticated techniques of knowledge management and transfer allow the provision of timely and accurate information to specifically targeted audiences like company management and staff, company distribution channels or selected customer groups. DataGroup information dissemination services include inquiry response, information development and propagation, outreach & education, campaign implementation, web services, application development, data storage, and information fulfilment.

Resource Webs and Dedicated Web Sites

Clients can order a Resource Web or Branded Dedicated Web Sites at no extra cost when purchasing a database product. The client will get a Web Site plus a Username and Password usually within 48 hours. Web Sites are not intended just to host a single database, but are meant as Resource Webs which the client's management and staff can use for business information and corporate & market intelligence purposes. DataGroup will produce a Resource Web solution for your business needs.

Essential Business Information for your company, your colleagues and your profits.

DataGroup Resource Web products are designed to give clients market and corporate intelligence, new information capabilities and opportunities to increase your bottom line profitability by improving your business systems and knowledge through the use of a specialist, content rich, web site.

Resource Webs:-

- DataGroup provide not only the web site design and free unlimited storage and bandwidth web site hosting, but importantly, DataGroup provide most or all of the content in the site.
- DataGroup are able to supply clients with a regular weekly or monthly increase in site content based on the client's objectives and specifications.
- DataGroup are able to provide regular up-dating of information and other assets on the site.

Bespoke information web sites can be effectively used:-

- To provide senior management, professional advisors, and interested parties with information, utilities and business tools; and at the same time enhance the company's productivity.
- To provide line staff with essential information which will help them to be more productive and thereby improve company profitability.
- To provide distribution channels, sub-contractors, or supplier base with essential information which will help them and thereby help the company.
- To greatly increase SEO and traffic to existing e-commerce or marketing sites.

Resource webs are always content rich and provide the users' clients, distribution channels and staff with a wealth of essential and useful information together with tools and utilities which will assist them in realizing their business goals. These sites are always *under-construction* as they are extended and upgraded on a regular basis.

Some of the web sites DataGroup produce for clients are intended for the use of their staff, or for particular professional or special groups. These sites are therefore accessible with a password.

Web & Application Development

DataGroup design, research, develops, and maintains high visibility web sites for many clients. DataGroup have extensive experience in creating and testing sites to ensure that their architecture is intuitive and visitors find them user-friendly, accessible, and easy to navigate.

Research Webs

Research Webs Sites

DataGroup Research web sites are designed to give users the ability to test and evaluate new product positioning or strategies, new sales or marketing tactics, new market or product segmentation, new distribution channels or new customer bases. All these activities will help the bottom line profitability by improving one's ability to evaluate and refine the company's commercial offerings.

Essential Business Research for your products, your markets and your profits

Research Webs give users new capabilities and venues to experiment with Product and Market Segmentation, Marketing Opportunities, and Market Testing and Customers Analysis. All these techniques enable you to quantity potential sales revenues and profitability through the systematic testing of various scenarios for ones products.

Research Webs:

- DataGroup provide not only the web site design and free unlimited storage and bandwidth web site hosting, but more importantly, DataGroup provide the evolving marketing and promotional aspects of the site.
- DataGroup are able to provide on-going or scheduled modification of the site to research other hypotheses or scenarios, product or market segments, or commercial or consumer propositions.
- DataGroup are able to provide on-going or scheduled user surveys of the site visitors and their perceptions of the various characteristic of the items being researched.

Research web sites can be effectively used:

- To research products, marketing, distribution channels, sales tactics and customer bases.
- To test and develop target markets and new product or market segmentations.
- To avoid making costly and time wasting mistakes by offering the wrong product or proposition.
- To greatly increase SEO and traffic to existing e-commerce or marketing sites.

Database Compatibility

The increased use of Database Management Systems, Business Planning and Control Systems, Enterprise Resource Planning, Management Information Systems, and other tools amongst management professionals has produced a critical need for the harmonisation of data across various software applications and systems platforms.

For this reason all the databases and reports provided by us use harmonised database and data sets; thereby users can obtain any database from any of the publishers, for any of their brands, with the assurance that these databases are fully compatible and can be used in conjunction with one another and the various platforms, operating systems and software.

The DataGroup Stiftung has, since 2007, undertaken the harmonisation and convergence of the database specifications and definitions of the various database providers. This is to allow users a uniform and standardised reference to use with their planning and forecasting; and to allow cross-database functionality.

The data sets, modules and standards shown are now fully harmonised and standardised to allow data and software interflow and cross-platform usage of the databases. Users may obtain older data dictionaries and standards, and/or data sets and data dictionaries for their own national standards. The standard product and market definitions have been harmonised and are provided (in the standard database products supplied), often as the NAICS classifications. Users wishing to remain with the previous SIC classifications may obtain these databases under that classification system. Users requiring other (U.N., European, Japanese, et cetera) classification definitions and norms may obtain those as necessary. Accounting standards are also harmonised according to the U.S. regulatory norms; however other norms are available. Data dictionary and data definition bridges and converters are available to allow users to update or standardise their databases. The DataGroup Stiftung has undertaken to maintain support for the older data dictionary standards and definitions until 2018; however users are urged to update at their earliest convenience.

Database Flowchart & Configuration

The flowchart provides the minimum configuration for the databases provided by the DataGroup / Data Institute publishers and brands. All the data, time and record sets of these databases are fully compatible.

http://www.datagroup.org/BASE_FOLDERS/CHAPTER_HTM/Ch_dg_dataflow.htm