Researching possibilities in marketing

Richard Christy and Michael Wood

The authors

Richard Christy is a Senior Lecturer in the Department of Business and Management, and **Michael Wood** is Principal Lecturer in the Department of Accounting and Management Science, both at the University of Portsmouth Business School, Portsmouth, UK.

Keywords

Marketing research, Market research Sampling, Qualitative techniques

Abstract

Contrasts prospecting research with in-depth qualitative research and statistical survey research. Presents a simple model – in mathematical terms, and as a numerical table – to relate the size of a sample to its power in terms of exploring the diversity of possibilities in a market. One implication of this model is that effective prospecting samples tend to be larger than those that are often taken for qualitative research: smaller samples may be surprisingly likely to exclude important possibilities and underestimate the degree of diversity in a population. By implication, qualitative researchers will often benefit from an initial prospecting survey of the market in which they are conducting in-depth research.

Qualitative Market Research: An International Journal
Volume 2 · Number 3 · 1999 · pp. 189–196
 · ISSN 1352-2752

Introduction

Qualitative marketing research is often characterised as involving intensive research with small samples, with little emphasis on the possibility of generalising from sample findings to the population as a whole. Instead, the focus is typically on the depth of understanding attained within the confines of the project sample. This means that the statistical techniques available for estimating the sample size required, say, to estimate a population mean with stated levels of precision and confidence, are of no relevance for qualitative marketing research.

It is, however, potentially misleading to conceive survey research in marketing as being either "qualitative" (small samples, intensive data collection techniques) or "quantitative", if quantitative is implicitly taken to mean "attempting to make statistical inferences about populations". In fact, a great deal of everyday marketing research is concerned with understanding the diversity found within a market: a search for possibilities, rather than probabilities, which may involve relatively large samples and questionnaires, rather than depth interviews. This search for possibilities may well precede other types of research: either qualitative, in order to build up an understanding in depth of the possibilities of interest, or quantitative, in order to understand the distribution of possibilities that have been discovered. In either case, the initial search for possibilities will provide a firmer foundation for the subsequent research.

This paper concentrates on the implications of this for qualitative research and examines how appropriate sample sizes can be determined. Qualitative research is dependent on the sample studied, so it seems to us desirable that some rational basis should be found to underpin the researcher's judgement in cases where the market in question is not well understood. This paper proposes a means of estimating an appropriate sample size to enable a researcher to have a reasonable chance of covering the diversity in a population, thus providing a firmer basis for selecting the possibilities to be studied in depth. As an example, we use a very simple, but nonetheless typical, open-ended survey question, which asked respondents about their preferred features on a new electric-powered city car.

Qualitative Market Research: An International Journal
Volume 2 · Number 3 · 1999 · 189–196

Types of marketing research

Qualitative marketing research usually involves intensive research with small samples. Part of the reason for concentrating on small samples is a practical one, to do with the much greater expense per respondent of these techniques, but it is also true that generalising from sample findings to the whole population is much less important in qualitative than quantitative research. Instead, the focus is typically on the depth of understanding achieved within the confines of the sample. According to Quinn Patton (quoted in Sykes, 1990), qualitative data includes "detailed descriptions of situations, events, people, interactions and observed behaviours; direct quotations from people about their experience, attitudes, beliefs and thoughts. . .".

Unlike quantitative research, much reliance has to be placed on the researcher's interpretation of the data collected, rather than on the suitability or robustness of a particular technique of statistical analysis. The same point can be made about the selection of small samples in qualitative research, for which there is often no formal rationale. Although no claims are likely to be made about the extent to which the findings are representative of the population to which the respondents belong, this is likely to be a salient issue for the client, who will often prefer the sample to look at least subjectively plausible in this respect. Since qualitative research usually places great emphasis on individual observations, it seems important to be able to judge the extent to which the selected individuals represent important possibilities. It will generally be more interesting, for example, for a confectionery company to learn in depth about the motivations of chocolate consumers who are typical of the market to which they belong than those of eccentrics.

In the absence of any independent and objective tests of the suitability of a sample, it is often necessary to place a high degree of trust in the researcher's judgement of which individuals should be researched in depth. Researchers in this situation are likely to be guided by custom and practice. Budgets, timescales, practicalities and the nature of the target market for the particular study will all play a part in the choice, but so will conventional norms relating to the number of individual respondents or groups to be included, such as the frequently-adopted "four-group" design[1]. Our argument is not that this is necessarily wrong, but rather that the suitability of these customary approaches will vary according to the characteristics of the market being studied. For a market in which there are large numbers of interesting possibilities, small sample sizes carry the risk of excluding some of them altogether.

At the other end of the continuum, quantitative research involves larger samples, since a prime aim of this research is to be able to make precise statements about some aspect of the population. Often, a main purpose of this type of research will be to derive statistical inferences about the population from the sample. It is therefore necessary to ensure that the sample is as representative as possible within the practical limits of the study, in order that the proportions of the various types of individual in the sample correspond broadly to those in the population. Simple random and stratified random sampling are examples of approaches that are designed to achieve representative samples in this sense. In these circumstances, the researcher will be able to use the sample to estimate a population value with a stated level of precision and confidence. There is no need for the client to have any faith in the researcher's experience and judgement in selecting the sample and interpreting the results: provided that the techniques have been implemented correctly, the results have a known reliability. The statement "we can be 95% confident that the mean number of visits to the cinema per year among UK adults lies between five and eight" would be an example of this: the calculation of confidence intervals depends – among other things – on the number in the sample.

However, a great deal of marketing research activity in both consumer and organisational markets does not fall satisfactorily into either the quantitative or (small-sample intensive) qualitative category. The type of research task alluded to is that which is concerned with understanding the diversity of a population: building up a list of the relevant possibilities that exist among the individuals in the population and the relationships between those possibilities. Often, this type of research will precede a more thorough analysis (qualitative or quantitative) of some or all of the possibilities found, but at other times, the list of possibilities will be an end in itself.

Such research typically starts from a position of limited familiarity with the market in question. Some aspect of that market will have attracted the attention of the researcher, but the

Qualitative Market Research: An International Journal
Volume 2 · Number 3 · 1999 · 189–196

aim of the research at that stage is to gather data in an open-ended way, rather than seeking to validate any formal hypothesis. This is not just because of the difficulty of formulating any such hypothesis on the basis of the available information at the start of the exercise, but also because the researcher will not wish at that stage to exclude information about potentially valuable possibilities in that market.

This type of research task is certainly exploratory in nature, but differs from the definitions of "exploratory research" given in many textbooks (see, for example, Crimp and Wright (1995), Malhotra (1996), Chisnall (1997)). In these definitions, most exploratory research (with the exception of buying into omnibus surveys) is seen as relying on small samples, more akin to those associated with qualitative research. The search for possibilities in a population seems to us to be related to, but distinct from this type of exploratory research: we therefore propose the separate term "prospecting research" for the former.

What sort of sample should a researcher aim to draw in prospecting research? This type of research will tend to need larger samples than typical qualitative research, for the simple reason that small samples may exclude potentially interesting possibilities.

In a segmentation study, for example, the aim in the early stages is to discover as full a list as possible of the types of specialised demand that exist in the population of interest. It is only at the later stages of screening and targeting that questions such as the size, attractiveness and accessibility of the segments need to be addressed. At these stages, qualitative research may well be vital in confirming the attractiveness of a particular segment to the firm, but the value of the segmentation exercise as a whole will also depend on the effectiveness of the initial search for possibilities.

Typically, the sampling issue in a search for possibilities revolves around the question of how likely it is that a sample of a given size will include all of the relevant diversity (or "variety") in a population. Obviously, larger samples will generally increase that likelihood, but what is needed is a rational method for thinking about appropriate levels of expenditure on this type of research. Just as different circumstances may make greater degrees of precision more or less important in statistical analysis, it seems reasonable to suppose that firms in different circumstances will be more or less prepared to accept risks that some possibilities of potential interest will not be revealed by a sample.

The conventional approaches to sample selection for qualitative research do not allow any statement to be made about how effectively the sample is likely to have covered the diversity of the market in question. This means that it is difficult for researchers and clients to address the question rationally, despite its obvious relevance to such considerations as validity and value for money.

Prospecting research: a model

By making assumptions about the population being investigated, it is possible to adopt a systematic approach to sampling for possibilities. In a forthcoming paper, we have set out an approach based on the relationships between six variables. For present purposes, the four variables of interest are:

- the sample size n;
- the diversity v, representing the number of possibilities in the population;
- the prevalence p, which measures how widely the individual possibilities occur in the population (as the proportion of the population exhibiting the possibility);
- the level of confidence (probability) c of the sample of n exhibiting all v possibilities.

It is easy to show using probability theory that:

$$c = (1 - (1 - p)^n)^v$$

This makes some important assumptions:

- the sample is drawn randomly;
- all of the possibilities are of equal prevalence;
- the possibilities are distributed randomly and independently in the population (no clustering).

This model allows tables to be drawn up showing the relationship between these variables. According to Table I, for example, a sample size of 70 will be large enough for us to be 95 percent confident that it will pick up all possibilities if there are 81 such possibilities, each with a prevalence of 10 percent. However, the reader should bear in mind that each of the assumptions on which the model depends is unlikely to be met exactly in practice. Most obviously, some possibilities are almost certain to be more prevalent than others. The *italicised* 10 percent prevalence column gives the diversity that can be explored

Qualitative Market Research: An International Journal
Volume 2 · Number 3 · 1999 · 189–196

Table I Maximum population diversity that can be explored

	80% confidence				95% confidence				99% confidence			
	Prevalence of possibilities				Prevalence of possibilities				Prevalence of possibilities			
Sample size	20	10	5	1	20	*10*	5	1	20	10	5	1
7	0	0	0	0	0	*0*	0	0	0	0	0	0
8	1	0	0	0	0	*0*	0	0	0	0	0	0
9	1	0	0	0	0	*0*	0	0	0	0	0	0
10	1	0	0	0	0	*0*	0	0	0	0	0	0
15	6	0	0	0	1	*0*	0	0	0	0	0	0
20	19	1	0	0	4	*0*	0	0	0	0	0	0
25	58	2	0	0	13	*0*	0	0	2	0	0	0
30	180	5	0	0	41	*1*	0	0	8	0	0	0
40	1,678	14	1	0	385	*3*	0	0	75	0	0	0
50	>9,999	43	2	0	3,593	*9*	0	0	704	1	0	0
60	>9,999	124	4	0	>9,999	*28*	1	0	6,558	5	0	0
70	>9,999	356	7	0	>9,999	*81*	1	0	>9,999	16	0	0
80	>9,999	1,021	13	0	>9,999	*237*	3	0	>9,999	45	0	0
90	>9,999	2,929	22	0	>9,999	*673*	5	0	>9,999	131	1	0
100	>9,999	8,400	37	0	>9,999	*1,931*	8	0	>9,999	378	1	0
110	>9,999	>9,999	62	0	>9,999	*5,538*	14	0	>9,999	1,085	2	0
120	>9,999	>9,999	105	0	>9,999	*>9,999*	24	0	>9,999	3,112	4	0
130	>9,999	>9,999	175	0	>9,999	*>9,999*	40	0	>9,999	8,925	7	0
140	>9,999	>9,999	293	0	>9,999	*>9,999*	67	0	>9,999	>9,999	13	0
150	>9,999	>9,999	489	0	>9,999	*>9,999*	112	0	>9,999	>9,999	22	0
160	>9,999	>9,999	817	0	>9,999	*>9,999*	188	0	>9,999	>9,999	36	0
170	>9,999	>9,999	1,366	1	>9,999	*>9,999*	314	0	>9,999	>9,999	61	0
180	>9,999	>9,999	2,281	1	>9,999	*>9,999*	524	0	>9,999	>9,999	102	0
190	>9,999	>9,999	3,811	1	>9,999	*>9,999*	876	0	>9,999	>9,999	171	0
200	>9,999	>9,999	6,365	1	>9,999	*>9,999*	1,463	0	>9,999	>9,999	286	0
300	>9,999	>9,999	>9,999	4	>9,999	*>9,999*	>9,999	1	>9,999	>9,999	>9,999	0
400	>9,999	>9,999	>9,999	12	>9,999	*>9,999*	>9,999	2	>9,999	>9,999	>9,999	0
500	>9,999	>9,999	>9,999	33	>9,999	*>9,999*	>9,999	7	>9,999	>9,999	>9,999	1
1,000	>9,999	>9,999	>9,999	5,168	>9,999	*>9,999*	>9,999	1,188	>9,999	>9,999	>9,999	232

Note: >9,999 means 10,000 or more

if all possibilities have a prevalence level of 10 percent. It should be regarded as a lower bound if we are only interested in possibilities whose prevalence is 10 percent or more. This issue will be clarified in the next section.

An example

To explore the use of this model, we carried out a survey using a simple, but typical open-ended question. The survey was carried out among colleagues at the Business School via electronic mail and involved a single question about the preferred features on a hypothetical electric-powered car for use in cities (see Appendix). The data generated suggested that respondents were easily able to think about and answer the question; as is often the case in real-life open-ended questions, responses varied significantly in length and in the number of features specified. This survey is introduced for illustrative purposes only: clearly, there are technical difficulties in defining a "survey population" from which this is a sample; also, it is likely that the chosen method of data collection, while highly convenient, will have incurred risks of bias of various sorts. However, these limitations are not important for present purposes.

This survey might be useful for manufacturers considering how to design the electric car in order to make it competitively attractive. Their research would initially be seeking to discover possibilities for product differentiation (i.e. against competitive offerings). At a later stage, the choice of which possibilities to pursue would need to take into account a number of additional factors: the likely scale of the opportunity, the extent to which the company could build a defensible competitive advantage and the probable profitability of the venture. This more thorough evaluation would

Qualitative Market Research: An International Journal
Volume 2 · Number 3 · 1999 · 189–196

call on substantial further research (qualitative and quantitative) into selected possibilities. In the first instance, however, the company would have every reason to cast its net widely, particularly since it is by discovering the non-obvious features that competitive advantage is more likely to be gained.

To make use of Table I in assessing how widely to cast the net, the company would first need to:

- determine the threshold level of prevalence of interest to the study; and
- make a broad assumption about the actual diversity in the population – i.e. the number of possibilities – for car features that would be revealed by a census of the whole market.

In this case, the first decision is relatively easy to make rationally. For example, with its knowledge of the total size of the market, the company could decide that possibilities presently occurring in the population with a prevalence of less than 10 percent are of no commercial interest, since any such segment would be unattractively small. The actual threshold set by the company would need to make prudent allowance for the possibility of growth of a particular segment during the intended product life of the vehicle.

By contrast, the decision about the actual extent of diversity in the population sounds problematic, since this is by definition unknown. However, Table I shows that common sense can be brought to bear. If the threshold level of prevalence is set at 10 percent and the firm wishes to be 95 percent confident in its estimate, then it will focus on the appropriate (*italicised*) column in Table I. From its experience in the sector, the firm might well be able to guess that the diversity of possibilities above the threshold is unlikely to be more than the 81 that would be covered by a sample size of 70, but that it might be more than the nine that would be covered by a sample size of 50. This suggests a sample size between 50 and 70, with 70 being sufficient for the upper estimate of diversity.

The value of this estimate is that it allows a rational consideration of how much to spend on this research task. The company researcher can make the clear statement that a sample of 50 will allow us – at a 95 percent level of confidence – to cover a diversity of (i.e. capture at least one example of each of the) nine possibilities with a prevalence of more than 10 percent in this market. By taking a sample of 70 instead of 50, the researcher can reckon to cover a diversity of 81 possibilities at the same level of confidence. Without this model, the researcher is only able to make imprecise statements based on the obvious fact that a larger sample will improve the probability of capturing all of the important diversity.

How does this relate to the actual data collected? The Appendix shows that the sample of 60 respondents yielded a total of 181 suggestions, including duplicates. As is usually true in this type of research, however, many of these suggestions were either identical or plainly referring to the same idea. The suggestions could readily be coded into a total of 39 categories, of which 21 were mentioned more than once and 18 were mentioned only once.

The usual cautions about the process of coding should be borne in mind:

- Much depends on the level of generality reflected in the coding frame. For example, it was our decision to separate the concepts of "passenger space" and "luggage space" in the coding frame, which could in another analysis be grouped into the single category "space". Further aggregation into a smaller number of groups could easily be achieved by raising the level of generality of many of the categories and merging them.
- In some cases, assumptions had to be made about exactly what the respondent meant – the suggestion of "10,000 mile service intervals" was coded as "ease of maintenance", which is likely to be reasonable, but contains some risk of bias. Difficulties of this type are inherent in self-completion surveys containing open questions, since there is usually no way of checking.
- Some coding categories contain a wide variation: the category "reasonable speed" contains a range of values for what respondents regard as "reasonable".
- Some categories are likely to overlap to some degree: the idea of "low running costs" is potentially connected to the idea "ease of maintenance", although it is not known whether this potential link was actually in the minds of any of the respondents.

Noting these cautions, we can say that the sample of 60 found evidence of some 39 possibilities. In what way is the information in

Qualitative Market Research: An International Journal
Volume 2 · Number 3 · 1999 · 189–196

Table I helpful in this example? According to Table I, the sample size of 60 would provide a 95 percent level of confidence of covering all possibilities with a prevalence of greater than 10 percent in the population, on the assumption that this variety (the number of possibilities) is no greater than 28. Eighteen of the 39 possibilities found in the sample were mentioned only once: it is likely that most of these correspond to the possibilities in the hypothetical population whose prevalence is less than 10 percent. If we take the sample of 60 to be reasonably representative, then we would expect the number of possibilities mentioned six or more times to be an estimate of the possibilities in the population with a prevalence of 10 percent. In the sample, 12 possibilities were mentioned six or more times. The researcher might tentatively conclude from these results that the diversity in the population is unlikely to exceed the 28 shown in Table I and that contacting a further ten respondents to bring n up to 70 would not be justified, since there is no reason to suspect that there are anywhere near 81 possibilities with a prevalence of 10 percent or more in the population.

One reason for caution in this case would concern the research instrument, which is designed to collect unprompted suggestions. It may well be that some of the lower-scoring responses would have attracted more support if they had been offered as suggestions to respondents, meaning that the "actual" diversity would be higher than the 12 possibilities suggested above. It is difficult to be more precise than this: offering suggestions for the endorsement of respondents would entail the separate risk of putting ideas in their heads, raising the question of how a "possibility" should be defined for the purposes of the research. A prudent response to this problem might be also to consider possibilities with a lower level of prevalence (say, 5 percent or 1 percent in this case).

It should also be re-emphasised that the number of possibilities in a population depends in part on the level of generality reflected in the coding frame. The value of the diversity v is to this extent subjectively determined (as is also true of the objectives of the survey and the definition of the survey population, of course). However, if the researcher is interested in a high level of detail from the survey, this will in effect increase the level of diversity that he or she is prepared to recognise in the sample (for example, whether or not to see the suggestion "must have a top speed of 60mph" as different from the suggestion "must have a top speed of 70mph"), causing a higher prior estimate of the likely level of v.

Our conclusion from this example is that the model that underlies Table I does provide a useful and practical means of thinking rationally about sample sizes needed to search for possibilities.

Summary and conclusions

A great deal of marketing research is concerned at one stage or another with the search for possibilities. This type of research task may involve far larger sample sizes than are normally associated with the more intensive data collection techniques of qualitative research, but it is different in nature from quantitative research that is designed to conduct statistical analysis of some feature of the population. For this reason, guidance on sample sizes that aims to allow specific levels of precision to be achieved in estimating population values is likely to be inappropriate if the aim is to search for possibilities. In this case, the general observation that a larger sample will probably capture more variation does not allow the researcher to make specific plans concerning research expenditure to achieve a given objective.

Since the qualitative/quantitative distinction in marketing research appears in many cases to be too broad to offer reliable guidance on sampling design, we suggest that it is more useful from this point of view to see marketing research objectives as falling into one of three categories:

- prospecting research, which aims to discover possibilities in the population;
- depth research, which aims to understand in detail and generally involves the use of intensive research techniques and smaller samples;
- statistical research, whose aim is to conduct a statistical analysis of some aspect of the survey population.

The category of prospecting research seems to fall between the textbook concepts of "exploratory" and "descriptive" research. This type of research is more than a tentative, small-scale enquiry, but does not seek the detail required for descriptive research: prospecting research may be used, for example, to establish the understanding of variation in

Qualitative Market Research: An International Journal
Volume 2 · Number 3 · 1999 · 189–196

the market which is the basis for descriptive research.

For statistical research objectives, the familiar guidance on estimating sample sizes is entirely appropriate. At the other end of the scale, the quality of smaller samples characteristically involved in depth research must rely greatly on the experience and integrity of the individual researcher. For the intermediate category of prospecting research, this paper has introduced a means of thinking rationally about sample sizes to achieve the desired coverage. Table II summarises these distinctions.

The model discussed in this paper allows more specific statements to be made in planning for prospecting research. As has been seen, the approach is workable, requiring assumptions about the population that are not difficult to make at an adequate level of precision. Referring back to Table I, two further observations can be made:

- The useful operational range of n, the sample size, seems to be reassuringly narrow for most practical purposes. The example discussed in this paper looked at the coverage of a sample of 60, but it is worth noting that a sample size of 90 in similar circumstances would allow a diversity of almost 700 to be covered. If in doubt, it may be worth sampling 90, but certainly not 200, for which the corresponding diversity is about 73 million. If, however, possibilities with a prevalence of only 1 percent are of interest to the researcher, then Table I shows that substantially larger samples need to be taken to ensure coverage.
- At the other end of the scale, it is notable that a sample of as many as 25 is inadequate even for a situation with one possibility occurring in 10 percent of the population, although a sample of 30 would suffice. This finding seems to us to be both counter-intuitive and of some importance for qualitative research[2]. The small samples in many types of qualitative research result from the judgement of the researcher in selecting respondents. If that judgement is based on a good understanding of the diversity in the population – as would be the case when the in-depth investigation is being conducted after a broader prospecting study – then the researcher will be able to select individuals who represent important possibilities in that population. If, however, the researcher's understanding of the population is sketchy or in some important way mistaken, then there is a definite risk that the small sample will exclude important (i.e. prevalent) possibilities. In that case, there must be a risk for firms that large sums of money could be spent in building up an understanding in depth of cases that fail to illustrate important aspects of the situation. The way to reduce this risk is to conduct a prospecting study before the in-depth research, in order that the qualitative research can be based on a clearer view of the diversity in the population.

Table II Types of research

Type of research	Aim	Sample	Output (words or numbers)
Depth	Exploratory or conclusive	Usually small, purposive	Qualitative
Prospecting	Exploratory	Usually large, random, stratified or opportunity	Qualitative
Statistical	Exploratory or conclusive	Usually large, random or stratified	Quantiative

As discussed, the collection of data from the open question raised a number of operational issues, most notably in the familiar area of designing a suitable coding frame. There are two types of problem to be resolved here: the question of "distinctness" (the criteria for deciding that a particular response is, in fact, a new possibility of interest) and the question of relatedness (the basis for deciding whether a new and distinct response is a sub-set of, or in some other way related to an already-discovered possibility). These issues are pertinent to any coding exercise and always require experience and judgement on the part of the researcher.

The model presented here depends on assumptions about the prevalence of possibilities in the population and about the possibilities being independently and randomly distributed. We are currently working on another approach that avoids the necessity to make any a priori assumption about the population. This alternative approach estimates the likelihood at a given stage of the research of new possibilities being picked up if

Qualitative Market Research: An International Journal
Volume 2 · Number 3 · 1999 · 189–196

a further sample is taken, based on the experience of detecting new possibilities in the research up to that point. The model is based on the technique of resampling and will be the subject of a future paper.

Notes

1 We are grateful to the reviewer of an earlier draft of this paper for pointing this out.

2 The probability of each individual in the sample failing to exhibit the one possibility is 0.9, so the possibility of all 25 failing to exhibit it is 0.9^{25}, or 0.07. This in turn means that the probability of finding the one possibility is 93 percent, which is less than the conventional 95 percent, so the sample of 25 is inadequate from this perspective. One in 20 samples will, on average fail to find the one possibility in these circumstances. The corresponding confidence level for a sample of size is 47 percent: samples of six or less are more likely to miss the one possibility than find it.

References

Chisnall, P. (1997), *Marketing Research*, 5th ed., McGraw-Hill, London.

Crimp, M. and Wright, L.T. (1995), *The Marketing Research Process*, 4th ed., Prentice-Hall, Hemel Hempstead.

Malhotra, N.K. (1996), *Marketing Research: An Applied Orientation*, 2nd ed., Prentice-Hall International, Englewood Cliffs, NJ.

Sykes, W. (1990), "Validity and reliability in qualitative market research: a review of the literature", *Journal of Market Research Society*, Vol. 32 No. 3, pp. 289-328.

Appendix: Survey question and responses

The data were gathered by sending the following question by e-mail to all staff at Portsmouth Business School:

> New battery technology will soon allow the production of a small, cheap electric-powered city car, with a range of 200 miles on one charge.
>
> What features or capabilities would you most like to see on a car like this?

Sixty replies were received. These yielded a total of 181 suggestions (including duplicates), which in some cases were listed and in others provided as continuous text.

The 181 suggestions were coded without difficulty into some 39 categories, of which 21 were mentioned more than once and 18 mentioned only once. The most frequently-mentioned feature was suggested by 24 of the 60 respondents.

These categories are shown in Table AI. Clearly, further grouping of responses could take place if required.

Table AI Features suggested

Mentioned six or more times	Mentioned two, three, four or five times	Mentioned only once
Ease of recharging	Demisting, screen-cleaning	Rust-free body
Reliability	Good handling, road holding	High range
Reasonable speed	Power steering	Central locking
Luggage capacity	Electric windows	Proximity (to other vehicles) alarm
Comfort	Radio, CD player	Breakdown/distress signalling
Affordable price	Quietness	Rainproof
Same features as petrol-engined equivalent	Ease of maintenance	Lack of power-consuming "goodies"
	Battery charge indicator	Features able to use variable amounts of electric power
Easy to manoeuvre, park	Low depreciation	Good trade-in allowance
Passenger capacity		Automatic transmission
Safety features		Gear change indicator
Reasonable acceleration		"Greenness"
Running costs		Protection from electromagnetic field of motor
		Sunroof
		Designed to place users above car exhaust height
		Speed limiter for towns
		Signals and sensors to allow priority for electric cars in cities
		Lower road tax