ABSTRACT

The use of self-reply questionnaires as a data collection instrument is common in tourism research. However, while there is a long tradition of use of these instruments in social science research, there has been little discussion of the particular needs and challenges created by tourism situations. This paper blends both theory, practical and experience to suggest a range of issues and guidelines which researchers may find useful in preparing a self-reply questionnaire. A number of technical issues associated with surveys are also addressed. A number of principles and examples of good practice from the literature on survey methods and survey design together with the problems of using this positivist mode of data collection in tourism scenarios are developed.

Keywords: Questionnaire design, research, tourists.
INTRODUCTION
Understanding tourists, who they are and what their attitudes, beliefs and desires are, forms an important component within tourism studies. Yet there has been, with a few notable exceptions (e.g., Pearce and Butler 1983; Ryan and Faulkner 1999), little critical debate on the methodological issues associated with the approaches to research. The adoption of positivistic social science research frameworks and their application to the study of leisure and tourism has been almost universal, although there is growing interest in qualitative research, which does not use positivistic research methods. However, few researchers include a critique of the methods they use and the problems they encounter in published reports of their research. This point is reiterated by Small (1999: 25) who found that "an examination of the tourism literature reveals that debate about tourism research methodology and methods is not high on the agenda of tourism authors". There is a naive assumption that social science research methods can easily be translated to the study of tourism, a point questioned in a seminal study by Latham (1989) who quite correctly points out that problems arise in measuring tourists because of the very nature of the populations under study.

Tourists are by definition highly mobile individuals, thus it is difficult to ensure that any sampling procedures produce representative or probabilistic samples. Further, a mobile subject can be difficult to isolate for a period of time and, in addition, the interviewing of tourists often takes place in unfamiliar surroundings (Latham 1989). Recognition of the problems of eliciting information from tourists as a special population is a valid starting point for any analysis of tourism, tourists and their behaviour. Therefore, accurate and easy to use instruments that assist in gathering these data are essential tools for the researcher interested in studying tourists (Ryan 1998).

A wide variety of social science techniques are available (see Smith 1989; Veal 1992; Johns and Lee-Ross 1998), one of the most popular is the self-reply questionnaire which Veal (1992: 106) describes as one where "the respondent reads and fills out the questions themselves". Veal (1992) provides an important synthesis of the types of questionnaire surveys used in tourism research which include: the household or home-based survey; the street-based survey; the telephone survey; the postal or mail survey; the site or user-based survey and the captive group survey. Within each of these categories, self-completion questionnaires are a dominant data-gathering tool, which can be used. In fact, a recent special issue of Tourism Management on research methods (Ryan and Faulkner 1999) published 17 papers and of those, four explicitly addressed the design of a self-reply questionnaire. This is surprising because a self-reply questionnaire is probably due to its ease of administration and relatively low cost, a feature emphasised by Veal (1992). However, there are also limitations to this technique. There is widespread agreement that a poorly designed and administered questionnaire will produce inaccurate results (Smith 1990; Babbie 1995; Ryan 1995). It is therefore important to carefully consider design in developing an effective questionnaire.

There is a significant amount of literature which examines the problems associated with the use of a self-reply questionnaire as a social science research instrument (e.g., Payne 1951; Dillman 1978; Bradburn et al. 1979; Belsey 1981; Crespi and Morris 1984; Converse and Presser 1986; Oppenheim 1992; Plumb and Spyridakis 1992; Sherblom, Sullivan and Sherblom 1993; Solant and Dillman 1994; Alreck and Settle 1995; Ryan 1995; Babbie 1995; Frazer and Lawley 2000). This literature is consistent in arguing that both the structure and content of a questionnaire can have a significant influence on the data collected. In the design of a questionnaire it is important to consider these potential influences and to attempt to minimise the bias and inaccuracies that may be caused by a poorly planned data gathering instrument.

This paper reviews some of the issues raised in these discussions of self-reply questionnaires and establishes a set of guidelines that can be used to develop a questionnaire for the study of tourists. It does not seek to be a comprehensive review of the multitude of issues surrounding survey-based research on tourists (such as ethics, sampling regimes and data analysis). Rather this paper seeks to act as conduit for a greater self-criticism of the use of the self-reply questionnaire research tool by tourism researchers and practitioners, and a number of technical issues are examined. It is also hoped that this paper will serve as a guide for prospective researchers prompting them to ask the right questions before selecting a questionnaire method and a particular questionnaire design.

SPECIFIC CHALLENGES IN SURVEYING TOURISTS
While any potential population has challenges in terms of eliciting accurate representative responses, tourists form a particularly challenging group. There are obvious difficulties due to differences in language, their highly mobile nature and the frequently high expectations that tourists have (see Ryan 1998; Page et al. 2001). There are also more subtle challenges that can result from cultural differences, diverse age groups, and the differing educational backgrounds and from the unfamiliar surroundings that tourists find themselves in.

It is, of course, important for any researcher to be aware of the specific challenges in surveying a particular population, and there is a wealth of literature that addresses these challenges and provides guidance for researchers. However, there is no specific careful consideration of the design of a self-reply questionnaire for surveying tourists. This is surprising because a self-reply questionnaire is completed without the guidance or overview of the researcher and is so commonly used in tourism research. Thus, an awareness of the specific challenges that exist in surveying tourists as well as a wider understanding of the importance of the design of the questionnaire is critical in determining the validity and reliability of the data generated.
Language

It is obvious that a respondent needs to understand the language in which the questionnaire is written if they are to be able to complete it. Consequently, it is important that the researcher has an adequate understanding of the language capabilities of the population being surveyed and that questionnaires are translated into those languages. Frazer and Lawley (2000) argue that a qualified translator (preferably accredited by the National Accreditation Authority for Translators and Interpreters) be used to translate the questionnaire and that a second independent translator be used to translate the responses back into the researcher’s language. It is always preferable to use a native speaker of the language that the questionnaire is being translated into.

It is also important to recognise that while respondents may speak more than one language, this does not mean that they are adequately skilled to answer a questionnaire in their second or third language. This is particularly true for English, for while English is now widely spoken around the world, competence in the language varies greatly. Thus, it is preferable to have questionnaires written in the native language of respondents whenever possible. If this is not possible, results obtained from respondents completing a questionnaire in other than their first language must be treated with caution.

Even when the respondents are all speakers of the same language it is important to recognise that usage of language varies greatly, sometimes even within individual countries and certainly between countries. There are numerous examples of words and phrases that have different meanings in different geographical locations. For example, a South African may state they will be travelling somewhere “just now”, this actually means that they will travel there sometime soon, but not immediately as it would be interpreted by many. The researcher must be aware of these differences and utilise language that is understood and interpreted in the same way by respondents with differing usage of the same language. The most effective way to ensure this is for the questionnaire to be pre-tested on representatives of the differing groups that will be sampled. Pre-testing is discussed in more detail below.

Culture

The dynamic of cultural interaction in tourism settings is important and also influences the validity and reliability of data obtained via self-reply questionnaires (Douglas and Craig 1983). Again the usage of language in the questionnaire is important, but also the interpretation and expression of experience that the researcher wishes to quantify is also culturally influenced. For example, respondents from some Asian cultures may be reluctant to criticise a host as they consider this dis-respectful (personal observation). As a consequence, responses may not truly reflect experiences. Some cultures may expect remuneration for completing a questionnaire or participating in research (Frazer and Lawley 2000), others are male dominated and, as a consequence, females may not be permitted to answer a questionnaire.

A further important issue arises when a person responds to a question with an answer that does not truly reflect their view but with an answer that the respondent perceives as the “correct” one or the response desired by the researcher. This phenomenon has been termed “social desirability” (Foddy 1993). These kinds of responses are particularly prevalent when questions are of a sensitive personal nature (for example, regarding sexual preferences) or when questions solicit responses that may be considered controversial (for example, regarding child prostitution) or when questions have a response that is widely considered desirable (for example, regarding nature conservation).

The important issue with regard to these influences is that the researcher is aware of them, considers their potential influence on results and attempts to reduce that influence in the design and administration of the questionnaire. In addition, it is prudent to explicitly acknowledge these potential influences in the interpretation and reporting of results.

Expectations

It is widely understood that expectations have a major influence on people’s perception of and satisfaction with recreation experiences (Ryan 1995). This is particularly true in tourism settings. Tourists’ expectations are shaped by many factors including marketing but also by the important role that holidays play in modern human societies. The great majority of travellers are participating in a holiday that has been planned for many months (sometimes years), that has required significant expenditure and which represents a significant “investment” of limited vacation time. As a consequence, considerable emphasis is placed upon these experiences, these few short days or weeks may have been the focus of hard work and sacrifice for a long period of time. The tourist experience assumes an importance in individual’s lives which goes far beyond the money, time and effort expended (Page et al. 2001). For many it is a major influence on their perception of their quality of life and for some it is ranked as “the experience of a lifetime”.

These expectations place huge pressure on the experiences of tourists and this inevitably influences tourists’ responses to any research instrument. One common result is that responses tend to be heavily skewed. Ryan (1995: 168) notes that:

One problem that can occur frequently in attitudinal research relating to holidays is that because people enjoy themselves, scores on a Likert-type scale or semantic differential are not normally distributed. They tend to be skewed toward the top end.

Ryan’s comments reflect the tendency of respondents to rate their experiences extremely highly – this may be related to their expectations of enjoyment - “I expect to have a good time and therefore I do have a good time” phenomenon. However, the opposite can also occur where a negative experience
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with one aspect of the trip can result in an overall negative reaction from a respondent regarding the entire trip. The phenomenon is commonly termed the "halo effect".

Unfamiliar Surroundings

Tourists, by definition, are away from their home environment. This can be a source of enjoyment and viewed positively but it can also be the cause of uncertainty and discomfort. It is important, therefore, that questionnaires are conducted at a time and location where respondents feel secure and comfortable. This not only improves response rates but it also improves the quality of responses. One common use of unfamiliar surroundings is the airport departure lounge. It is common practice for large international visitor surveys and outbound surveys to be conducted in these environments for government or tourist organisations. Yet as Page (1999) observed, the airport is an unfamiliar environment and can cause travellers a degree of stress and nervousness prior to travelling, and consequently, this may affect the results or make it difficult to recruit participants on a random walk-by method.

The Importance of Pre-testing

There is universal support in the literature that a pre-test or pilot study is essential for any research instrument (Fowler 1992). This is even more important for a self-reply questionnaire because the respondent seldom has the opportunity to seek clarification or obtain assistance when answering questions. Thus, the interpretation of questions is undertaken solely by the respondent and, as a consequence, a researcher must be confident that the questions are eliciting responses that are both valid and reliable. Pre-testing provides the opportunity for the researcher to check for the range of problems presented above. More specifically, the pre-test should first test the procedures to be used (including the sampling strategy, handing/posting out of the questionnaire, collection and the time needed to complete). Second, response rates should be assessed. Third, the clarity, structure and ease of use of the questionnaire should be assessed (including potential language and cultural influences). Fourth, the responses should be checked to assess whether the questions are eliciting logical responses (are respondents interpreting the questions correctly). Finally, the aggregation of responses should be checked for ease of data processing and analysis (check for skewing). Ideally the researcher needs to have the opportunity to observe the questionnaire filling out and to talk to respondents to receive feedback on question clarity and problems. It is common that two or more pre-tests/pilot studies are needed to progressively refine the questionnaire.

GUIDELINES FOR DESIGNING A SELF-REPLY QUESTIONNAIRE FOR TOURISTS

There are, therefore, significant challenges in designing self-reply questionnaires for use in tourism scenarios. Awareness of and allowance for these difficulties is the first step in maximising the validity and reliability of these instruments. A second important step is to follow accepted guidelines from the wider social science literature when designing self-reply questionnaires. An overview of these guidelines together with a consideration of their application in tourism follows.

Content - What Should Be Included in a Self-Reply Questionnaire?

When considering what should be included within a questionnaire there is a temptation to include a large number of questions in order to gain a large quantity of information that may be of interest to the researcher/s. However, a "wish list of questions" approach achieves little. Large quantities of data may be generated, but much of it may be inappropriate or unable to be used to test research questions, particularly if there is repetition. Furthermore, a large number of questions produce a long questionnaire which results in respondents making less effort when answering questions. In addition, long questionnaires are often incompletely answered (Yammarino, Skinner and Childers 1991). The temptation to include a wide variety of apparently interesting questions should, therefore, be resisted (Berdie 1974, Munn and Drever 1990). Rather, questions should be specifically derived from the stated objectives of the research. As Voel (1992: 120) states:

- Why do I want to know this?
- Do I need to know this?
- Does it help me answer my research question/s?
- Can the information be used to test my research hypotheses?

A particularly useful means of constructing a questionnaire is to design questions that can be used to test specific hypotheses, which have been established as part of the overall research proposal. Dixon and Leach (1978: 20) argue that, "questionnaires and interview schedules should be pruned carefully to ensure that every part will contribute to testing hypotheses." It is important to be critical when analysing what questions should be contained in a questionnaire. To this end, the following "self test" may be useful to prune unnecessary questions from a draft questionnaire.

The concepts and variables involved, and the relationships being investigated, should be clear and should guide the questionnaire design process.

A overview of these guidelines together with a consideration of their application in tourism follows.
likely to find personal questions objectionable (Foddy 1993). In addition, respondents, once they have completed several easier questions, are less likely to object to the personal questions, or has difficulty with those that are more complex, at least the first part of the questionnaire will be completed. In addition, tourists are on holiday and are therefore motivated by enjoyment and relaxation. They usually have their attention focussed on the attraction that they are visiting and it can be difficult to recruit them into "working" on a questionnaire. Due to these circumstances, the questionnaire should seek to be as short and unimposing as possible in order to reduce refusal rates and encourage complete and well thought out responses. Some writers advocate that the questionnaire should be attractive to look at, brief, easy to understand and reasonably quick to complete. Others argue that the questionnaire should be as short and unimposing as possible in order to reduce refusal rates and encourage complete and well thought out responses. For example, Dixon and Leach (1978: 27) state that:

- the respondents are capable of expressing this information, or these opinions, attitudes or beliefs.
- respondents have the information requested;
- respondents are likely to have opinions, attitudes or beliefs about the issue the question asks and;
- the respondents are capable of expressing this information, or these opinions, attitudes or beliefs.

These kinds of considerations are extremely important, especially when the sample is likely to include respondents from differing cultural backgrounds, as is often the case with tourists (Flay, Bull and Tamahori, 1976).

**Layout – How Should the Questionnaire Be Presented?**

The overall layout of a self-reply questionnaire has been shown to have an important influence on response type and response levels (Dillman 1983; Sánchez 1992). The appearance, length and complexity of the questionnaire are critical to improving its usability. Munn and Drever (1990) argue that a questionnaire should be attractive to look at, brief, easy to understand and reasonably quick to complete. Yammarino et al. (1991) are more specific in terms of questionnaire length and state that it should not be more than four pages.

Tourists are "non-captive", that is, they are usually free to arrive and leave as they please and are seldom in a fixed location for a long period of time. In addition, tourists are on holiday and are therefore motivated by enjoyment and relaxation. They usually have their attention focussed on the attraction that they are visiting and it can be difficult to recruit them into "working" on a questionnaire. Due to these circumstances, the questionnaire should seek to be as short and unimposing as possible in order to reduce refusal rates and encourage complete and well thought out responses. The order in which questions are asked also influence responses (Crespi and Morris 1984; Sherblom et al. 1993). A generally agreed pattern is that the order of questions should descend from easier, general questions to more specific complex ones and that personal questions such as those soliciting information on income, political beliefs or sexual preference should be left until last. For example, Dixon and Leach (1978: 27) state that:

- initial questions should be straightforward and relaxing, they should be clearly related to the stated aims of the research. More complex questions or sensitive issues should be left until later, but since fatigue or boredom will set in, they should not be postponed too long.

By exposing the respondent to easier, less personal questions first, the questionnaire is more likely to be fully completed. At worst, if a respondent objects to the personal questions, or has difficulty with those that are more complex, at least the first part of the questionnaire will be completed. In addition, respondents, once they have completed several easier questions, are less likely to find personal questions objectionable (Foddy 1993).
produce less valid responses than open-ended questions. Foddy (1993: 152) provides a particularly good review of techniques that can be used to increase the validity of closed questions, emphasising that:

The central issue is not which format produces the most valid responses but whether or not the respondents know what kinds of answers they should give. And this is an issue that applies equally to both open and closed questions.

Foddy’s arguments for increasing the validity of closed questions, particularly those that attempt to measure attitudes, feelings and beliefs, can be summarised as follows:

- Provide a minimum of six response categories in rating scales (p. 170).
- Include appropriate “filter” categories to allow respondents to “opt out” if they have no opinion, they don’t know, or their position is neutral (p. 107, 160).
- Keep questions at a similar level of generality. This allows for better comparison between questions that ask a respondent to record their level of agreement/disagreement with statements (p. 170).
- It is important that a respondent is made aware of the purpose of the questionnaire and, if practical, the purpose of each question (p. 75).
- It is important that the respondent be prepared so that they understand the perspective that the researcher wishes the respondent to adopt (p. 160-161).
- In a series of rating scales (such as “Likert” type scales) it is wise to begin with the most extreme or contentious statements and work toward those that are less extreme (p. 168-169).

An additional issue that is relevant to the use of rating scales, which is not discussed by Foddy, pertains to the order in which response options are presented. Dixon and Leach (1978: 37) state:

If the statements are printed on a questionnaire, these at the beginning may be preferred, particularly if they are the positive “agree” part of the spectrum. It is usual therefore to place the negative categories at the top.

This tendency may be especially relevant given the “positive” nature of the majority of tourist activities. It is important to be conscious of structural issues, which may reinforce the likely positive skew of responses.

A further issue relevant to order of presentation is discussed by Munn and Drever (1990) who advise that if a combination of open and closed questions on the same or similar topics is used, the open-ended questions should appear first. This ordering helps to negate the possible influence of the response option given in the closed question on the answers given to the open question.

Semantics - How Should Questions Be Worded?

Although there is an ongoing debate on the decisions over closed and open question types, the way a question is ‘worded’ is important. A number of authors suggest general guidelines with regard to question wording (e.g. Brislin, Lonner and Thorndike, 1973; Berdie 1974; Dixon and Leach 1978; Munn and Drever 1990; Veal 1992). These guidelines can be summarised as follows:

- Use simple language that is easily understood (avoid jargon, technical terms or complex words). It is extremely important that the terms that are used are understood to mean the same thing by all respondents. In addition, it is important to keep the sentence structure short and simple. For example, the following questions ask for the same information but Question 1) What did you enjoy doing most here? is more easily understood than Question 2) What aspect of your tourism experience did you enjoy the most at this site?
- Ask only one question in each individual question, that is, avoid a question which has qualifiers or asks about two or more concepts/ideas. For example, the following question actually asks two questions, and is confusing for both the respondent and the researcher who wishes to interpret results. Which aspect of the information provided did you find most enjoyable and educational?
- Avoid questions which suggest a response (“leading questions”). For example, the question: Do you think that tourists learn to be more environmentally aware as a result of visiting environmental areas? suggests to the respondent that there is a connection between visiting environmental areas and environmental awareness.
- Avoid negatives and double negatives (questions should be positively worded). For example, when asking a respondent to agree/disagree with the following statement: Tourists do not understand that not polluting the environment is an important issue. The statement is confusing because of the way the statement is worded. The statement is far clearer if phrased in simple, positive terms such as: Tourists understand that pollution of the environment is an important issue.

What is important is the combination of many of these key issues in questionnaire design, when a self-reply mode is used and you are unable to explain the issues to the respondents face to face, or are unable to clarify queries or points of detail. For this reason it is possible to design a series of guidelines, which may be helpful for researchers when developing a self-reply questionnaire. There are invaluable when trying to design a questionnaire that will generate a reasonable response rate (typically in excess of 40% - see Page et al. 1999 for a discussion of response rates in tourism surveys). One should also stress that the questionnaire needs to be visually pleasing so that the respondent will be willing to engage in the survey, a feature that many self-reply surveys fail to take into account.

The design of self-reply questionnaires and their use in tourism research (see Page 2000 on the role of the interview in tourism research) will often be used as part of a wider research process of developing a research instrument to collect a predetermined range of information. Whilst researchers will readily
admit that experience in instrument design is based, in some instances, on trial and error. Peer review and critical evaluation from colleagues and experienced researchers should not be ignored as a valuable source of advice. To enhance the development of a self-reply questionnaire, not only a set of guidelines are helpful in stimulating debate on the questionnaire's role in the tourism research process, but also helps to focus the researcher's attention on the purpose and focus of the research. More specifically, a series of guidelines need to address the following issues:

- Derive questions from specific research objectives and design them to enable you to test specific research hypotheses.
- Carefully consider whether the population that you are sampling has the ability to answer the questions that you have chosen.
- Use an attractive layout, an easy to read, large font and keep the questionnaire to around four pages or less.
- Select a time and location that is the least likely to disturb the tourists you are sampling. Use a polite, courteous approach when requesting participation in the study.
- Order the questions from general to more personal and from easy to more complex.
- Use short simple sentences that ask for specific and easily understood responses. Use positive wording and avoid “double” questions.
- Use a combination of both open and closed questions. If they are on similar topics, place the open-ended questions before the closed ended questions.
- When using closed questions give a minimum of six response options. Always include a don't know/not sure category.
- Place negative (disagree) response options first.
- Conduct several pre-tests/pilot studies to check for problems and refine the questionnaire.

Above all, questionnaires that do not exceed four pages in length on A4 paper, which have a strong visual appeal to the respondent and are simple to fill in, are vital in combining the guidelines and then aiding their implementation. Implementation is a complex process because response rates vary and many factors beyond the control of the researcher (e.g. weather conditions, the postal service and respondent time to complete the survey) are not easily predicted when undertaking a survey.

CONCLUSION

The self-reply questionnaire, if designed and administered correctly, is an effective tool for obtaining detailed information about tourists. The brief review presented above provides an overview of some of the unique challenges presented by tourism scenarios, as it also offers a set of guidelines which can be used by those who wish to develop such a research instrument and confirm that Oppenheim's (1966: vii) comments on questionnaire design remain relevant over 30 years after they were first published:

The world is full of well meaning people who believe that anyone who can write plain English and has a modicum of common sense can produce a good questionnaire highlights the need for these skills but does not replace the need to follow specific principles and guidelines to devise a meaningful and useful research tool, particularly in view of the absence of a researcher when a self-completion questionnaire is filled in.

As a result, research in tourism is highly dependent upon deriving information from tourists as a specific population type, often to assess a wide range of issues, though commonly associated with attitudes to tourism, behavioural issues related to their activities and consumer-related preferences. There is also growing interest in more wide ranging issues from the wider domain of tourism research and the interface of social science with tourism, reflected in new research methodologies being introduced from the social science perspective. For the improved management of tourism in destinations and to achieve improved business performance, the tourism industry and researchers require high quality research data that reflects the concerns and issues affecting tourism. For the management decision-making process, good quality research data that is reliable, robust and fit for purpose is constantly sought. It is against this context that the applied development of research instruments such as the self-completion questionnaire assumes such an important role in research. Whilst it is only one element of the wider range of research instruments available to tourism researchers, it is widely used and, ensuring its design is both robust and able to derive the information required, remains a constant challenge for the researcher.

Although tourism is a difficult phenomenon to measure, gauge and monitor, due to the highly mobile and experiential nature of the tourist, designing and implementing competently executed self-completion questionnaire surveys remains one of the widely used techniques cited by many researchers in the tourism literature. The appeal of the self-reply questionnaire, with its highly cost-effective approach to reach a geographically dispersed population and ability to yield large sample sizes for statistically oriented positivistic research in tourism, in part explains its popularity. Even so, with the growing interest in non-positivistic research methods (see Botterill 2000 for an interesting discussion of this theme), it is likely to remain one element of a growing portfolio of research instruments now being employed across the fields of tourism and hospitality, to examine the reality of tourism phenomenon.

NOTES

1. Validity is a key element in the measurement of variables and phenomenon, particular if the intended measurement does not reflect the values it intended to measure. As Kent (1999) notes, this can be broken down into validity and reliability. Validity is present where an instrument such as a questionnaire measures what it intended to do. As it is problematic to know whether valid-
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Validity is present, a number of sources are used to infer validity, namely pragmatic validity (also known as criterion validity). The second approach is content validity and the third is construct validity, associated with the reliability of the instrument. There are numerous measures which can be used to assess validity, but this paper provides a useful discussion of this point. In derived can be applied or replace. One measure of internal consistency in terms of reliability is Cronbach's alpha where a Likert scale or semantic differential is used.

2 The term skewed refers to the extent to which, in a statistical sample, the sample departs from a normal distribution. In a normal distribution, scores are derived from the average (the mean, mode and median) and occur as it is expected. In this distribution, the measures of skew are derived from the mean and standard deviation and the median is standard deviation. The range of values which exist for skew are from -3 to -1. As a result, measures of skew are derived from mean and standard deviation and the median is standard deviation. The range of values which exist for skew are from -3 to +3. As a result, measures of skew are derived from mean and standard deviation and the median is standard deviation. The range of values which exist for skew are from -3 to +3.

REFERENCES


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