

## **A Study of Major Steps in Constructing Quantitative Survey: A Guide for Researchers**

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**Abstract:** The present research study is an attempt to describe the various steps undertaken in constructing survey for researches. Although, the word survey used as an umbrella in research context covers all the main instruments of research investigation such as questionnaire, interview and class observation but here it focuses mainly on the questionnaire rather than on the entire survey administration process. The experts and methodologists on survey construction insist that questionnaire formation requires unique talent in order to earn valid data. The present study thus talks about the formation of items that work well. It discusses the necessary procedure to construct a survey that could help generate sufficient and valid data in short frame of time. In the later section of this study, the major types of questionnaire items are explained at length. Finally, it provides comprehensive information about detection of structural problems, questionnaire format, translation and proper planning for postal survey including piloting of questionnaire. In addition, it concludes that knowledge of questionnaire construction has tremendous role in research to reduce survey errors.

**Key words:** Quantitative, researchers, questionnaire, survey, structure, piloting

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### **INTRODUCTION**

Actually, in survey research a well-developed questionnaire is the best tool for researcher to collect sufficient data from respondents for better and reliable results that illustrates an adequate contribution of questionnaire survey in general (Brown, 2001). To record the responses of the participants, questionnaire is more focused, less time consuming and structured source (Dornyei and Csizer, 2006) According to Dornyei and Csizer survey studies could be beneficial in different ways such as Dornyei and Taguchi (2010):

- Learner's intentions and behaviors are exposed, how they plan to answer to certain learning situations
- The process of learning certain aspects of language in general and their opinions and attitudes in specific
- Informant's feelings, anxiety and behavior towards specific area of research
- Respondents amount of information about particular problems in learning of any subject

- Different bio-data and background information of participants (for example, mother tongue, age, sex, previous institution and private questions

Apart from the earlier five points, questionnaire construction has tendency to highlight a bigger picture of language related problems and allow researcher to make decisions about large population. This study will facilitate researcher about construction of questionnaire and its advantages in principled and informed manners. That could help the researcher to earn valid and dependable results

### **MATERIALS AND METHODOS**

**Major steps to design questionnaire Introduction:** The key point of quantitative investigation is tool that is designed to collect data. The most reliable and valid method to collect a large amount of information in less cost and in short time is standard questionnaire (Dornyei and Csizer, 2006) Further as argued the five key questionnaire design steps are discussed in general (Brislin, 1970).

**Step 1: The exercise of multiple items in construct and content:** In order to prepare the questionnaire items, it is necessary to specify the content in very simple and vivid manner. The unclear specification of content can produce serious threats to the reliability and validity of the tool and can pose many problems in obtaining desired results for both researcher and respondent. In this regard, researcher must be careful while constructing the questionnaire particularly in two.

**The appropriate content:** Writing down few questions seem relevant cannot be assumed to cover all aspects of the research area. In this procedure as Davidson (1996) said, “one may not be able to analyze what one does not measure”. It is not even possible that the more sophisticated information analysis techniques could be able to compensate for leaving out some more necessary questions from the data collection by chance. The possibility of something irreversible happening is greater when questionnaire content is not theory driven. There are three major recommendations to ensure correct content sampling such as state the problem statement carefully and identify its existence ignore all the irrelevant questions that are not related to the variables and the hypothesis and focus main issue.

**Preparation of multi items scale:** This technique is very popular for scientific questionnaire construction. The backbone of this issue is that when it comes to the process of assessing mental and abstract variables like attitudes, motivation and beliefs. They are not directly observable through direct means then actual wording and phrasing of questions assume an unexpected importance. The minor difference in how the question is framed and formulated can generate readily different degree of agreement and disagreement or a totally different choice of responses (Davidson, 1996). For more detailed investigation, it is better to have more items even 10-20 on each scale focusing and addressing the main issues with slight difference in wording to strengthen the information for validity and reliability. If there are many scales then best option is to go with not <4 items on each sub domain scale that is the standard ratio, less than that would be risky.

**Step 2: Main type of survey items:** The questionnaire that is constructed in the best way always provide straight forward options to select one from many suitable options that best describes informant’s feelings and beliefs, (e.g. by putting check in a box or marking and circling the most suitable option). Questionnaires which are made up

of closed ended items are considered as professional, which do not provide space for informants to create free writing (Dornyei and Csizer, 2006). For example Likert scale semantic differential scale and Numerical rating. Among all these, the Likert scale item is preferred for closed ended items (Brislin, 1970) which consist of five to six options starting from 1= strongly disagree to 5 strongly agree for example. Studying English at university level is very useful for getting good job:

- Strongly disagree \_\_\_\_\_
- Disagree \_\_\_\_\_
- Neutral \_\_\_\_\_
- Agree \_\_\_\_\_
- Strongly agree \_\_\_\_\_

The second most frequently used technique of eliciting informant’s responses is common method of semantic differential scale, in which researcher facilities informants to select their responses by making a continuum by tick or putting an X between adjective placed at both ends of item. For example:

**Our English teacher is very:**

Good \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; X \_\_\_\_\_; \_\_\_\_\_; Bad

**Our English syllabus is very:**

Boring \_\_\_\_\_; P \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; \_\_\_\_\_; Interesting

The respondent indicates on the scale by marking one of the given notions which rates the feelings and opinions of subject (Davidson, 1996) the pioneer of this technique, recommends that differential items scales work well in three ways:

- Activity (for example, slow-quick, passive-active, start-stop)
- Potency (for example, tall-short, big-small, heavy-light)
- Evaluative (for example, useful-useless, right-wrong, valuable-valueless)

The last one is numerical rating which is well known for its rating of marks 5 = not at all 4 = not really 3 = very much 2 = quite a lot 1 = so-so:

I like my English course	5	4	3	2	1
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**Step 3: writing items that function well:** Since, the past five decades, the survey researchers gathered huge amount of information based on theories and experience. They suggest which kind of questionnaire items are more attractive and influential. In addition they discuss in detail their advantages and disadvantages. Generally, it is recommended that when a researcher sits to write items for his research work, he should let his imagination work freely (Vellis, 2011). In addition, he can get help from two main sources apart from his verbal creativity the qualitative explorative data collected from his informants dairy, handouts essays and day to day assignment, brain storming and group discussion minutes. Besides that are structured, unstructured and semi-structured interviews these two tools can serve as great sources for designer to design good number of items (Gillham, 2008). Well reputed and established items bank. The questionnaire items borrowed have successful history and have great advantage as they have been undertaken by many previous studies. They have very positive and authentic track record. There is no harm to adopt the existing questionnaire but the basic requirement for this is that the source must be acknowledged and existing instrument must be piloted before using it to investigate the particular population for main study. Interestingly, there are many ways to define the priorities in writing the key tactics for generating items that function well.

**Kiss rule:** Keep it short and simple (kiss) should be followed while writing the questionnaire items; write within the range of twenty words.

**Avoid substandard language, ambiguity, loaded words and sentences:** While producing the items anything which might make the sense unclear and becomes cause of ambiguity or emotionally loaded must be avoided because all these things suggest inability to use good English. For example.

**How many students do have in your class?** To extract the exact meaning of this question is very difficult due to its ambiguity: actually, what does this mean either male or female student?

**Avoid negative formation of items:** Questions that consist of negative construction like (no, do not, does not) are always deceptive though they are correct but answering them may be problematic. For example: No student who has not passed the university admission written test should be admitted in the university. How strongly do you feel that no other teacher should enroll on in service

award bearing course who has not completed at least two years fulltime teaching? Please, indicate your degree of agreement ranging from strongly disagree to strongly agree. The items construction in this way tends to lose interest of subjects because people do not have much time to contemplate on each item.

**Avoid double meaning or barreled questions:** This type of question create problems in giving the answers because researcher wants to produce two questions and expecting one answer from participants. For example:

**Do your parents encourage you to learn English?** The reply would be yes or no but the father may encourage the child and mother may not be interested in encouraging her child to learn English.

**How many students there are in school?** This question is really seems problematic as it is very vague. It could mean number of students present in the school, total number in the roll, on roll but absent, present but out of the school on a field trip; number at a precise moment or week as there could be a difference in attendance between a Monday and a Friday or between the first term of an academic and the last term of academic year and the last term of academic year for secondary school students as some would have left school to go into employment and others would be at home revising for major examination or could have completed them.

**Step 4: Format of survey questionnaire:** The appearance and layout of survey questionnaire is of foremost importance. The vitality of the questionnaire depends on its look, easiness, and balance of pages and words rather than its ambiguity, complexity, unclear and boring format. If a researcher is successful to produce attractive and professional design for respondent's half a battle is won to motivate respondents to produce valid and reliable data. Thus, what for writing a good questionnaire matter most is discussed.

**Length:** There is no any hard and fast rule for format of questionnaire in terms of length but standard length of questionnaire is recommended by language specialist is not >3 to 4 pages, more than that would be considered as imposition upon respondents and will take more than half an hour.

**Space economy:** Most people fill the pages without separating sections on different pages because researcher believes that respondents are willing to complete two pages rather than four. Being trift of space is good but not

on the cost of clarity and conciseness. The effective way of acquiring this trade is first to reduce margins on pages, second by using space economy and standard font. Third by utilizing complete and whole width of the every page, For instance writing the answer options just immediate after each item rather than below it.

**Mixing up the factors and items:** A good researcher tries to create a maximum possibility of mixing up the items and factors in questionnaire to maintain the interest of respondents and to avoid from marking the similar answers; this technique helps to create sense of variety and novelty in survey questionnaire

**Personal questions:** It is recommended that items that touch on respondents personal background (peeping into their private affairs) be left till the end.

**Step 5: Translating the questionnaire:** It is believed that the quality and validity of data generated is improved if the questionnaire is translated in informants own language. However, the problem of translating the questionnaire from one language to another language with same content meaning and delicacy is really a great challenge. The accurate translation of questionnaire is only possible when researcher has mastery over both the languages or to recruit help form outside in shape of independent translator. This is the only way to produce the translated version in equivalent to the original questionnaire. After the initial translation is done a researcher has only two options to ensure reliability and validity of the questionnaire to back translate the questionnaire by independent reviewer or to hire bilingual expert to translate the translated version into the source language (Hatch and Lazaraton, 1991).

**Postal survey:** This method of data collection through questionnaire by using the postal service is popular in case of big or small investigation conducted by research workers, potential individuals, private or public organizations and even by government agencies. This method of data collection is widely acknowledged and used by research in any kind of social or business enquiries (Cohen *et al.*, 2000). In this method the questionnaire is sent to the population concerned with a request to answer the questions and return to the researcher at earliest and sometimes time framework is also mentioned in the note box. Using postal is little sensitive in sense that it requires more care and concentration in writing items and typing them in a definite manner and in order on a form or set of forms, the questionnaire is mailed to respondents who are

anticipated to answer the questions in the space meant for the purpose in questionnaire after reading items carefully. It is mandatory to mention here that in this type of data collection follows the same process in which respondents have to answer the question in their own without any internal or external influence. Due to this quality this method of data collection by mailing the questionnaire is extensively employed by in most surveys.

**There are many merits claimed by this method:** The postal questionnaire is less expensive; having low cost though world is so large and widely spread geographically:

- It is free from bias
- Well thought out answers could be received as respondents have adequate time to ponder over the options
- Respondents who are not easily approachable could be conveniently reached through postal questionnaire
- The large number of educated and co-operative informants can be contacted easily in order to generate more dependable and reliable results

Finally, the respondent's co-operation is heavily influenced and effected by the physical appearance of the questionnaire particularly in mail survey. An attractive looking survey, in addition to quality of study, choice of colour, shape and size of envelope is the plus point to obtained co-operation.

Though it is believed that postal questionnaire has some advantages and disadvantages but in educational inquiries, the postal questionnaire has impressive track record to maximize the respondent's responses (Hatch and Lazaraton, 1991). Hoinville and Jowell successes to identify a very comprehensive and most successful number of factors in earning a good response ratio to a postal questionnaire as shown in to Fig. 1.

**How to detect and deal with structural pitfalls of survey:**

Quite often questionnaire is considered as heart of survey operation (Cohen *et al.*, 2000). Hence, it must be very carefully and intelligently constructed. If it is not properly set up, the survey is bound to fail in order to get desired results. Thus, in order to master this technique, the researchers require to study the main aspects of questionnaire structural issues and proper ways to battle with those issues, for instance, general form of questionnaire and question sequence and question formulation. Researcher should note the following with regards to the two main aspects of questionnaire structure.

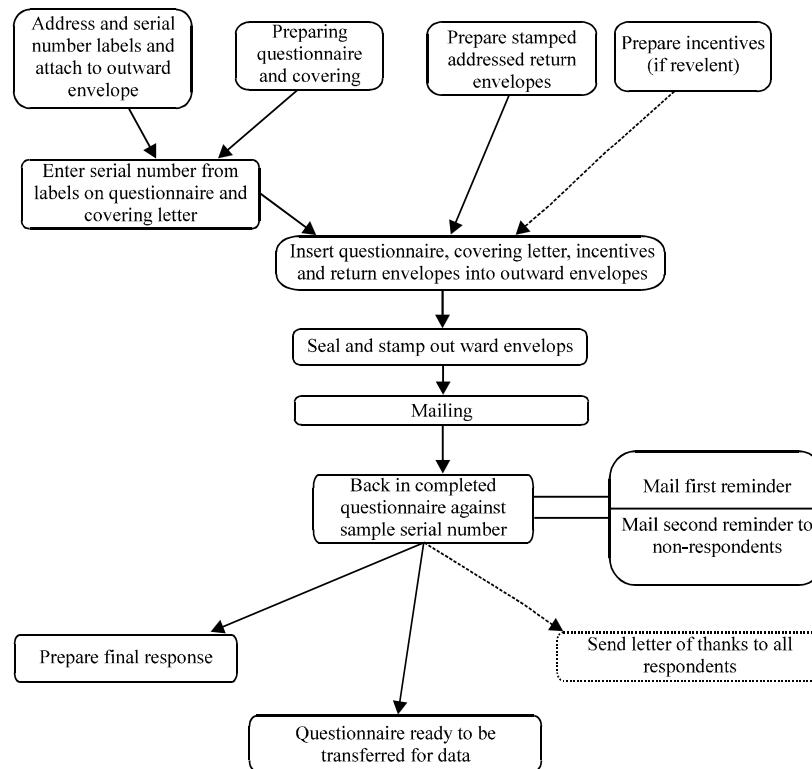


Fig. 1: Postal survey questionnaire flow chart

**General form of questionnaire:** The general form could be either structured or unstructured questionnaire. Structured questionnaire are those in which questions are definite, concrete and pre-determined. The questions to the respondents are presented in same order and in exact wording. The questions may be closed-end with options for examples 'yes or no' or open-ended, (i.e., inviting free responses from informants). The structured questionnaire may also have fixed alternative questions in which responses of the respondents are only limited to the stated alternatives. This is highly structured questionnaire in which responses of the respondents are limited to the specified limit and free comments are held to the minimum.

**Questions sequence:** It is necessary for researcher to pay due attention and concentration to the sequence of questions in questionnaire in order to make questionnaire effective and to ensure the possible responses. The proper sequence of questions in questionnaire tends to minimize and reduces the possibilities of questions being misunderstood. Thus, it is worthy mention that question should be clear and smoothly moving; the relationship of the previous question in questionnaire should be apparent to the next question in questionnaire in order to

create harmony and sequence. To earn this technique, it is highly recommended to begin with the shortest and easiest questions and ending with the longest and most difficult.

In general, rarely one comes across of a questionnaire which relies completely on one form of questions alone because various forms complement each other. As such questions of different forms are included in single questionnaire. For example, multiple options questions constitute the basis and foundation of structured questionnaire. Open-ended questions are generally inserted to provide more in-depth and complete picture of the informant's feelings and attitudes. In sum, the blend of both closed-ended and open ended questions could ensure the exceptional outcomes. The essential of questionnaire could be the simple language, length, clarity, the size of questionnaire and logically processed questions. Jargons or technical terms and vague expressions capable of different interpretation must be avoided.

## RESULTS AND DISCUSSION

**Guidelines for constructing questionnaire to reduce survey error:** In order to assist data collection and data

analysis, the researcher must pay attention to certain fundamental discussed below that effects the development of questionnaire. The researcher must be completely aware and well informed about the problem he is to study for it provides the starting point for developing the questionnaire. He should be very much clear about the various aspects of his research problem to be dealt with in the due course of his research project:

- Appropriate form of questions depend on the nature of data to be sought, the sampled respondents and kind of analysis intended
- Questionnaire previously used may be consulted to draft the questionnaire
- The researcher may re-examine the questionnaire and if necessary, may redraft and revise the first draft. It is recommended that technical defects should be closely inspected and minutely scrutinized and removed at the early stage before collecting the data
- Questionnaire must contain simple but quite straight forward direction for the respondents so that they may not face any problem in answering the questions

**Piloting questionnaire:** It is necessary to pilot questionnaire to test the instrument. The questionnaire may be edited upon obtaining the initial results of the pilot study. It is the study of pilot test that unfolds that wording of the questionnaire is of paramount importance and that pretest crucial to its success (Cohen *et al.*, 2000). A pilot study of questionnaire has many functions, principally to increases the validity, reliability and practicability of the questionnaire (Kothari, 2004):

- It serves as a pre-test of questionnaire to monitor clarity of items, layout and instructions
- It seeks the validity of the questionnaire items and purpose of research in particular
- It seeks feedback on layout of questionnaire including attractiveness of the questionnaire and appropriateness of the specific questions and stems of questions
- Piloting the designed questionnaire kills or eliminates the ambiguities and difficulties in wording
- It seeks feedback on layout, sectionalizing, numbering and itemization of the designed questionnaire
- It seeks responses on the type of questions and format, (i.e., scale, rating, multiple choice open-ended and close end)
- Piloting study is also useful in checking and providing feedback on the time taken by respondent to complete the questionnaire

- It helps the researcher to check whether instrument is too short or too long, too difficult or too easy, too engaging, too threatening and too intrusive or too offensive
- It also helps the researcher to identify the redundant questions which consistently receives the same answers like complete yes or complete no (Youngman, 1984)

In short according to Oppenheim (1992) everything of the questionnaire must be piloted including type, face, even the quality of study as recommended.

### CONCLUSION

The message of this research article is to take sufficient care in managing the proper steps related to survey designing. Writing out items that work well may have greater chances to secure the cooperation of our respondents in every stage of the project. It is recommended that negative statements, unclear language and many pages questionnaire may pose serious problem for participants. On the contrary, affirmative statements and standard use of language may provide highly potential results. It is learnt through this study that translation of questionnaire is of great importance; if the questionnaire is not in the mother tongue of the respondent then it is recommended to hire professional translator in order to avoid the language barrier. The current study also talk about the structural issues of the questionnaire construction including structured and unstructured questions and how to deal with such structural pitfalls in addition, the current study briefly describes the benefits of piloting the designed questionnaire. Finally, it is suggested that if the recommended points are kept in mind while designing the questionnaire, the validity and reliability of the questionnaire may be served exceptionally.

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