

INCREASING QUESTIONNAIRE RESPONSES FROM INDUSTRY: PRACTICES SURROUNDING THE USE OF POSTAL QUESTIONNAIRES

Dave Root¹ and Nick Blismas²

¹*Construction Economics and Management, Centlivres Building, University of Cape Town, Private Bag, 7701, Rondebosch, South Africa*

²*Department of Civil and Building Engineering, University of Loughborough, Loughborough LE11 3TU, UK*

Postal surveys are used widely to gather data in construction management research at undergraduate and postgraduate level. This is in spite of generally poor response rates resulting in an attitude within the construction management community that rates of 20-25% are deemed acceptable. Due to the relatively scarce resources available to undergraduates and many postgraduates, large sample sizes become difficult to obtain casting serious doubts on the strength of the data collected contributing to concerns over the quality of the research that is being undertaken. This paper offers practical advice on how to maximize responses to postal surveys drawing on the experience of the authors over a number of construction management research projects. Whilst much literature exists in the area of questionnaire design, personal engagement and process simplification are identified as two key areas that researchers can focus on to increase response rates. Empirical evidence is presented from a number of projects to indicate the how response rates can be improved at limited cost in time and resources.

Keywords: practice, questionnaires, research methods, response rate, survey.

INTRODUCTION

There is an extensive range of research literature surrounding the use of the questionnaire (Babbie 1973, Dillman 1978). In part this is because of its established nature as a research/data collection method, and in part the complex nature of questionnaire design as a method, which is capable of being applied to a wide range of problems.

In the construction management field it has a well established track record owing to its grounding in the positivist methodological mindset of the research community (Seymour and Rooke 1995). However, the introduction of a wider range of research methodologies drawn from the more qualitative aspects of the social sciences has begun.

'Questionnaire' surveys as a data capture method consists of a number of sub-groups dependant on the nature of the questions and the method of application. These range from interviews (structured and semi-structured) involving face to face contact between the questioner and respondent through telephonic surveys, to postal and e-mail questionnaires.

In each of these the issue of response rates is crucial. The application of questionnaire methods under a positivist methodology inevitably requires some form of statistical analyses. Such analyses require a sufficient number of valid responses to provide

some degree of statistical validity either within the data set in its own right (where a total population is being investigated such as an organization or specific group of practitioners or as a representation of a wider population. Yet the experience of the authors is that work produced at undergraduate and post-graduate level and even postdoctoral level often relies on worryingly low response rates and consequently statistically unviable samples. The problem even manifests itself at the level of funded research, where there is a tendency for research projects to be aligned with particular groups of stakeholders necessitated by the need for matched industrial contributions by funders. Further alignment with limited groups may also be a result of research being conducted within a niche area such as lean construction or pre-assembly and standardization (ref) comprising of relatively few active companies. In this context, where there is not a large population that is being surveyed, maximizing responses has a greater level of importance than may normally be expected. A typical example lies in the relatively small data set that a developing country may be able to provide where researchers have to rely on a small population e.g. contractors (Smallwood 2002) which begs the question as to whether this is an appropriate method in these instances.

A PREFERRED RESEARCH METHOD?

Within construction management education and research the questionnaire remains highly popular at the level of undergraduate final year projects and taught masters dissertations. Arguably, this could be down to three main factors:

Precedence

Those who are trying to meet objective standards to pass qualifications are likely to look at the methods that have succeeded in the past. This means that students will naturally tend towards conservative choices in their methodology and methods avoiding more qualitative research methods particularly at the level of taught masters and undergraduate students.

Supervisor

Students and aspiring researchers are greatly influenced by their supervisors, and the mindset of the construction management community in adopting a broadly positivist position (Seymour and Rooke 1995). Unless supervisors are experienced in the qualitative research methods and feel comfortable in encouraging their use, the default will be to return to the tried and trusted methods. The confidence supervisors derive from such methods often rests both in their own abilities to supervise and the students' ability to get by without excessive supervision.

Research Expenses

At the level of undergraduate and taught masters, the financing of research overheads, such as time, travel, postage and printing costs, act as natural constraints on the methods used. Too many masters and undergraduate projects have the limitations of the research defined as lack of time and financial resources. Where postal questionnaires are used, the size of the sample assessed significantly impacts on cost. Even in the funded research arena, investigation of subsidiary issues where there is pressure on resources to deliver on the principle aim of the research contract, limits the choice of method. The issue of such expenses is compounded for researchers working within developing countries where research resource is already scarce. Weller (1998) argues that participation and response rates for the for the three different approaches of face-to-face interview, telephone surveys, and postal surveys

Table 1: General suggestion for improving the response rate for postal questionnaires (after Hague 1993)

Interest Factor	Ensure there is an intrinsic interest in the subject for the respondent
Incentive	A cover letter/e-mail should give details of the research and to convince the respondent that their reply matters. Also that findings will be published.
Layout	Should be orderly and logical. Start on simple questions before moving onto those that require thought.
Convenience	Use pre-coded answers/tick boxes where possible.

parallel their costs; that inevitably the less expensive rates of the mail method will yield lower rates of participation.

Given these issues, the attraction of a 'fire and forget' data collection method such as the postal questionnaire, which lies in the methodological mainstream, can limit the research commitment in time and money becomes obvious.

QUESTIONNAIRE DESIGN AND METHODOLOGY

Literature on questionnaire surveys is extensive, however it tends to approach the issue of response maximization mainly through aspects of questionnaire design. For example, the structure, layout and arrangement of questions are considered as prime factors in ensuring the respondent is engaged with the process and that their interest is retained. For example; closed questions are said by Hague to have three main benefits to the researcher: (ibid: 54)

1. They save time in filling out the questionnaire because completing the questions only needs ticking/circling the answers.
2. They help the respondent because the reply options have already been thought out.
3. Easier data analysis as there is no requirement to code the multiplicity of open-ended responses.

The benefits to respondents are assumed, in that they are seeking ease or speed of completion and this is assumed to assist response rates. This makes sense, but the criticality of speed, or ease of response may well differ between a pensioner in his/her own homes, and a harassed teacher snatching a ten-minute break between lessons

Where the mechanics of the process are discussed (what Sheskin 1985 describes as 'logistics') in such areas as the provision of covering and follow-up letters to postal questionnaires, it is done in very general and generic terms (Belson 1982, Hague 1993).

In the market research context, Hague (1993) has identified a number of simple common sense tricks to improve response rates of postal questionnaires, see Table 1.

Minimal attention is paid to the context within which data collection takes place, although this is identified as a factor in some isolated instances particularly in the education and health sectors, where guidelines by government departments (DfEE 1999) identify practical advice which whilst bordering on the common sense (for example contacting child minders in the evening through telephonic surveys) provides a resource of shared experience and best practice.

However, whereas telephone questionnaires or interview surveys have established protocols and clearly identified literatures that have been developed to cover the administration of surveys, training of interviewers, quality control etc. (Lavrakas 1987), the situation with postal questionnaires is much less developed, despite having a longer tradition.

This is understandable due to the highly varied circumstances of questionnaire practice, meaning that generically applicable practice is difficult to identify. Different disciplines have produced guides in relation to their own areas of concern e.g. Hague (1993) writes with the market research audience in mind, but there is little or no commentary regarding research experiences in specific industry sectors such as manufacturing or construction which has to deal with very different types of problems. Unlike market researchers who have an established tradition and body of knowledge, construction management research generally has little or no interaction with mass consumers or the general public.

IMPORTANCE OF THE INDUSTRY CONTEXT

An understanding and awareness of the industry in which questionnaires take place should have a significant influence on the quality and quantity of response. Construction professionals within a pressured and dynamic work environment are unlikely to respond in the same way as members of the public receiving questionnaires in their own homes or others who may work in more stable work environments (e.g. office workers in large organizations). Similarly, entrepreneurs and the self employed whether professional or skilled craftsmen unlikely to have free time to answer questionnaires. Understanding the intended respondents' environment should influence the approach taken for postal, and e-mail, questionnaires.

Thus, whilst Dillman (1978) suggests that a typical response rate for a well-conducted mail survey of the general public is between 60 and 75 percent, the rate for more specialized group may differ from this. Dillman too, recognizes this in suggesting that for more specific homogenized groups e.g. members of a firm, or a particular occupation) mail surveys should be as good as other techniques because of the relevance of the topic under investigation to the group. On this argument, surveys within the construction management discipline should be achieving high response rates in the order of 85% attributed to telephonic surveys (ibid).

EXPERIENCES WITH QUESTIONNAIRE PRACTICE

One of the author's own experiences was in the application of Hofstede Value Survey Module to construction professionals in the UK (Root 2002). The VSM (Hofstede 1984) is a well-established research tool, which has been widely replicated and is one of the most popular measures of cultural values (Sondergaard 1994). The VSM seeks to identify 4 main dimensions along which dominant value systems can be ordered in relational to occupational and work related attitudes. The 4 dimensions are 'revealed' through theoretical reasoning and extensive multivariate statistical analysis and the results and questionnaire were published with an explicit invitation to replicate the original study (Hofstede 1984) that was based on a survey of the IBM workforce during the 1970s.

The nature of multivariate analysis requires large samples for its validity. Whilst it is taught in theory using examples of relatively small samples such as a school class echoing Spearman's classic study of intelligence (Everitt and Dunn 1991:244) the

ability of the inferences to stand up for scrutiny are bolstered by large sample populations. On this occasion (Root 2001), this required significant groups from specific professional disciplines to allow inter and intra group analysis. To that end response rate was a critical factor in the manageability of the research process.

The VSM questionnaire modified for the construction industry consists of 35 questions, adapted to suit the circumstances of the sample. In addition there were a further 18 questions related to standard forms and conditions of contract appended to the VSM. Together this resulted in a substantial questionnaire running to eight pages of A4 printed both sides, stapled together that included open answer questions as well as the more traditional Likert scale responses. This represented a major commitment from respondents for them to complete it.

As an established research tool, the VSM did not require piloting in the same way as a newly developed tool. However the questionnaire's length and the inclusion of the supplementary questions required that a trial be carried out even if only as a test on grammar and for timing typical completion. Utilizing students from a construction management MSc course, the questionnaire was initially trialed in two small groups of 17 full time students and 12 distance-learning students. The use of the full time students was especially of benefit because of the high level of overseas students, which enabled difficulties and confusion in language and grammar to be swiftly identified and overcome.

Following these two small-scale trials, a larger trial of 156 questionnaires was carried out with samples drawn from the quantity surveying (76) and architectural professions. (80). This provided an opportunity to trial the postal arrangements for the return of the questionnaires as well as run a further check on the questionnaire itself. In total 66 valid responses representing a 42% response rate were returned together from this trial with a further 10 returned incomplete and 2 void responses. This represented a success rate in returns of 50%. It was from this trial that many of the amendments to the original VSM arose.

In the full survey, utilizing the same delivery methods, a total 1645 questionnaires were issued generating a valid sample of 796 representing a response rate of 48.4% very close to that of the second trial. The unusually high level of valid responses validates the extensive efforts made in fine-tuning the survey process and this is the area of emphasis for this paper.

In contrast, the supplementary questions to the VSM, had already been tested in a preliminary survey (Root and Hancock 1996) which had focused on earlier work into 'decision points' and the activity of decision making derived from case study investigations by Walker and Hughes (1987).

This trial consisted of 50 questionnaires being issued with only 16 responses (32%) significantly lower than that achieved by the main survey and its trial despite being significantly shorter in length, more clearly identifiable as being relevant to the industry in comparison to the VSM which concerns itself with generic work related issues (e.g. relationships with superiors, rather than construction specific questions). It had however, been submitted to a similar random sample to the VSM surveys; drawing a sample from UK based active (e.g. not retired) members of professional associations (RICS, CIOB etc.). The significant difference was in the mechanics of delivery, namely the use of detailed covering letter and a Freepost arrangement including self addressed envelopes that raised the authors' concerns surrounding the mechanics of postal questionnaire surveys.

The attempt to maximize response rates was therefore fourfold:

1. Designing the layout and structure of the questionnaire incorporating where possible the convenience of closed questions (the area covered in most detail by the literature on questionnaire design).
2. The production of a comprehensive covering letter identifying the subject to engage the intrinsic interest of the respondent, whilst at the same time communicating a high level of professionalism. To this end details were given as to the purpose and backing of the research from funding bodies to convince the respondent that the questionnaire was not a small scale activity e.g. a small scale student project described by Sheskin (1985) as the 'death knell' for surveys, and that the findings would be published.
3. The targeting of individuals rather than companies ensured that the covering letter was personally addressed, giving the impression that they been selected and therefore their views valued. Letters sent with the questionnaire were individually signed rather than printed giving the impression that an individual, rather than a disembodied 'contact', was behind the survey.
4. Creation of a professional formal mechanism, using addressed Freepost envelopes thereby minimizing the excuses for not responding.

Despite the size of the questionnaire, which took up to 40 minutes for some respondents, response was high. Significant commitment in professional time, and the lack of a follow-up letter, proposed in the literature as a strategy for increasing response rate (Dillman 1978), did not deter individuals, either in the trial or main survey, from responding. Clearly the steps followed in this survey were highly successful despite qualities in the questionnaire that would indicate otherwise. The problem lies in ascertaining which practices were of the greatest benefit in maximizing responses.

A further survey gave an opportunity to test this as a minor experiment using a questionnaire distributed as part of the IMPREST research project (Blismas *et al.* 2003). IMPREST (Interactive Method for Measuring PRE-assembly and Standardization benefit in construction), was developed by the 'Offsite@lboro' research team in Loughborough's Civil and Building Engineering Department. It was the culmination of 3 years' research funded by the EPSRC (Engineering and Physical Sciences Research Council) and DTI (Department of Trade and Industry).

The project sought to develop a 'toolkit' to facilitate the evaluation of benefit arising from use of Standardization and Pre-assembly within construction. The toolkit identifies the factors that need to be considered for an assessment, the data required to assess the effect of these factors, and where the required data resides within the supply chain. Working closely with eleven industrial partners, this project utilized a variety of data collection and research methods including interviews and workshops with industry stakeholders and practitioners.

In addition to these methods, a questionnaire survey was used within the broader research to gather data from a wider sample than was provided by the interviewees and workshop delegates. This questionnaire consisted of a 4-sided A5 with 5 tick-box questions, 37 Likert-scale questions and one optional free-form text box. As arguably should be the case with all questionnaires it was piloted with 15 industry practitioners as part of the workshops previously mentioned to arrive at the final structure and format.

A total of 289 questionnaires were mailed (postal) in December 2002 to a sample list drawn from a variety of sources:

1. The project mailing list (gathered from the IMMPREST Newsletter and e-mail database)
2. A mailing list drawn from the membership of the Lean Construction Network (<http://www.leancon-net.com>)
3. Delegate list from 'The Way Forward for Off-Site Construction' (M4I), Motorcycle Museum, Birmingham, 5-7 November 2002

This resulted in 73 replies (of which 68 were usable) representing a response rate of 25%, a disappointingly low participation rate compared to the norm expected from a postal questionnaire (Dillman 1978). It is even more disappointing when set against the nature of the sample approached. The targeted sample included those who were either already involved in the IMMPREST research, and so had an explicit interest in that project. Others were active in other initiatives such as M4I and the Lean Construction Network, and so were drawn from that strata of the industry who had an interest in standardization and pre-assembly alongside other innovative working practices and industry initiatives, all reflecting conditions that the literature would lead to expect a response rate above the norm. Viewed within the context, the results could be said to be extremely poor compared to the random practitioners responding to the VSM.

However, as has already been described, there was already a question over the applicability of survey practice within the construction sector and in response to these concerns, the questionnaire was used as an opportunity to test out practices surrounding response rates. The question of providing postage was one that was discussed at length on the basis that practitioners within a commercial environment would not typically open their own mail, and would be unaffected by the presence of a freepost/stamped addressed envelope whilst this would be an issue to individuals (who it might be inferred had to put their own hands in their pockets).

To this end the 289 contacts were arranged in alphabetical order by surname, with each alternate name starting from the first being provided with a stamped self addressed envelope (SSAE), while the rest were only given an unstamped self addressed envelope (SAE). The alternate method was used to mitigate any biases that may arise from any other selection methods, bearing mind that three different databases were used which might have introduced a skewed responses. Each questionnaire was clearly numbered so that its SSAE status could be tracked.

Interestingly, and contrary to the argument, 45 'stamped' questionnaires and only 23 'non-stamped' respondents replied. This difference of 100% over the unstamped response rate seemed to indicate that it was a significant factor even though some stamped questionnaires were not returned in the original envelopes. As was the case with the VSM questionnaire, pre-paid envelopes would still receive company franks.

This would suggest that much of the issue surrounding the pre-paid envelope issue was symbolic. It was not so much the cost of the stamp, or an envelope if that had too been omitted, but an indicator of good faith and consideration by the surveying party towards the respondent stating in effect 'we wish to minimize any inconvenience and cost to you as much as possible'.

CONCLUSION

Evidence presented above suggests that the onus rests on the researcher to send the appropriate signals to potential respondents that thought has been given to their circumstances, for example that they need to empathize and understand the circumstance of when questionnaires are to be completed. A number of options then start to emerge, should respondents be targeted at home (this may well be necessary if you are asking questions where an individual is being approached rather than an agent of an organization).

In conclusion, the lessons, for maximizing questionnaire responses, drawn from the 2 cases can be grouped under the themes 'personal engagement' and 'process simplification'. Personal engagement highlights the need to engage respondents' interest through personalization of questionnaires. Steps such as named letters, individually signed are helpful. The key strategy to maximizing responses is therefore to minimize the perceived burden on individual interviewees. Postal questionnaires, and e-mail questionnaires as an emerging method, are different to telephone surveys or interview questionnaires, in that they provide no scope for dialogue and the use of social skills between the surveyor and the surveyed. Whereas the social skills or craft of the researcher (Turner 1988) can be used to improve response rates through entry into a dialogue in the latter, with the former, the questionnaire has to stand and fall on it's own merits as a research mechanism which can not adapt to circumstance.

The second lesson, process simplification, emphasizes the need for each step of the questionnaire process is analysed and understood, so that the respondent's circumstances are fully addressed. More specifically, the need is for the respondent's process of reply to be simplified as far as possible using simple steps such as the provision of SSAE.

The authors believe that researchers should provide more detail and insights of their research processes - what has worked and what has not - to allow the development of a body of knowledge and shared experiences that will specifically address the needs of the construction management research community.

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