Management and Production Engineering Review
Volume 2 • Number 1 • March 2011 • pp. 40–46

THE ISSUES CONNECTED WITH CARRYING OUT RESEARCH ON PROJECT MANAGEMENT USING A WEB-BASED SURVEY APPROACH

Seweryn Spałek, Dariusz Zdonek

Silesian University of Technology, Faculty of Organisation and Management, Poland

Corresponding author:
Seweryn Spałek
Silesian University of Technology
Faculty of Organisation and Management
Roosevelta 26-28, 41-800 Zabrze, Poland
phone: +48 32 2777305
e-mail: spalek@polsl.pl

Received: 20 January 2011
Accepted: 21 February 2011

Abstract
This paper addresses the issues of gathering necessary data in the field of Project Management while carrying out the research. The potential problems are highlighted based on the surveys done by the authors. The first part of the article presents the conclusions from the Project Management survey carried out on the topic of Critical Success Factors in Project Management. An offshoot of this study led to the second one, where motivating and demotivating factors were explored pertaining to expert involvement. Therefore, the second part shows the interviews conducted with individuals organising Web-based questionnaire research to identify organisational issues and a questionnaire collating the information from the experts on the benefits which could make web-based studies more attractive for respondents in the future. The exploratory research methods are presented and analysed. The benefits for the future practical implementation of key findings are discussed.

Keywords
project management, project, management, questionnaire, internet, experts study, web-based research.

Introduction

Project Management is becoming more and more popular worldwide. Although the vast majority of knowledge has been gathered in this field so far, there is a lot of information that still needs to be collected. A very good source of information is experts and professionals who work in organisations and have knowledge of Project Management. The issue is how to convince them to share this knowledge with the researcher and what are the most important issues while targeting that group of participants in the survey. As in each study, the statistical significance of data is a major concern of researchers. Furthermore, the dearth of gathered data is a real problem while conducting a survey. Therefore, by addressing the issue of motivating experts, we could resolve the problem of data scarcity. In addition, when the experts are positively motivated, their answers tend to be more accurate as they are ready to put more effort into giving reliable information.

It seems to be that the Internet will have a growing role in collecting data from the experts and professionals; especially in the field of Project Management where we can observe an increasing number of surveys done world-wide using the Internet as communication medium [1–4]. However, there are some major challenges in collecting the desired number of filled-in questionnaires and a limited response level to questionnaires could lead to significant problems when carrying out the research [5]. The expansion of the Internet has raised the popularity of Web-based research with the result that internet interviews, fo-

cus groups, experiments and *particularly* questionnaires have been carried out.

The advantages of this approach are:

- responsiveness,
- lower costs than traditional ones of research,
- reduced logistical issues,
- the possibility of multimedia usage.

The popularity of the Internet as a research tool resulted in an increasing of number of publications in this area [6–8]. Some objections refer to the limited number of respondents using the Internet and doubts how representative the samples would be. To avoid a selection bias, it is proposed to carry out the research with a group of experts. Such types of research are favoured in solving framework and prognostic problems but there are also some organisational and psychological problems associated with expert-based studies.

The reason for this paper is to define the potential problems and, after that, to identify logical solutions to them. The question that has to be asked is: 'What are the issues related to Internet questionnaires involving the participation of experts?'.

To find the answer to this question, the following exploratory research methods were used:

Conclusions from the research on Critical Success Factors in Project Management leading to the carrying out of issue identification for further exploration.

Interviews conducted with individuals organising Web-based questionnaire research to identify organisational issues.

Questionnaire collating the information from the experts on the benefits which could make Web-based studies more attractive for respondents in the future.

The most important advantage of conducting the web-based survey is the large potential in reaching many experts in a specific field. It is even more crucial when the experts are geographically dispersed. In such a case, a valid e-mail database would be a basis for any further actions.

The other positive aspect is connected with data analysis. In web-based surveys, the date is already in e-form and, therefore, the statistical part could be done faster. The presentation of the data is also easier.

However, the abovementioned advantages need to be qualified somewhat when talking about the presentation of web questionnaires. If a questionnaire needs to be secured and the answers stored on a suitable database, it increases the costs as well. Moreover, some experts could be reluctant to use the Internet in any surveys but the number of such experts seems to be reducing every year due to the popularisation of modern technologies world-wide.

Another disadvantage could be the lack of direct personal contact between the researcher and the expert, resulting in low motivation to participate in the survey. This aspect can be reduced by knowing the motivating factors which are discussed in the paper,

The Web-based research and its methodological conclusions

There were two types of research analysed in this article to receive the final finding of the topic of the *issues connected with carrying out the research on Project Management using Web-based survey approach*:

- The methodological aspects and the issues which arose while doing the research on Critical Success Factors in Project Management using the Web-based questionnaire.
- The specific research on the experts' preferences while filling in Web-based questionnaires.

The methodological aspects and the issues which arose while doing the research on Critical Success Factors in Project Management using the Web-based questionnaire

The Web-based questionnaire was designed to carry out the study on Critical Success Factors in Project Management [9]. A research poll was conducted by the Project Managers (as experts) having at least five years experience and having completed at least three projects. The poll was based on the questionnaire placed on the website and covered the following areas:

- project integration,
- project scope,
- project communication,
- staff fluctuation,
- project schedule,
- project budget,
- project resources,
- reporting and monitoring the project,
- resistance to the project,
- project context.

The survey method

82 experts were invited to participate in the research as experts. The questionnaire was divided into three parts.

In the first part, Project Managers were asked to rank the factors on a scale of "−3" to "+3" the influence of a given factor on the project being a success or failure (Exhibit 1), where "−3" means a strong influence on the project as a failure and "+3" means a strong influence on the project as a success. The fac-

tors presented to the project managers were grouped into 10 already mentioned areas and the total number of factors was 61.

The second part was to collect information about the knowledge and experience of the Project Managers and how they acquired it.

The third part was to collect information about the project realised by Project Managers in terms of type, budget and time.

The total number of questions was 205

The main challenge while conducting the aforementioned survey was the response rate. Although the overall response rate was pretty high and reached 79%, the situation differed when considering various target groups. The rate varied much when the target group of experts knew the researcher than the other one which did not know the researcher personally. The difference was really significant as the response rate among experts who knew the researcher personally reached 95%, while the other group of experts was 61% (Fig. 1).

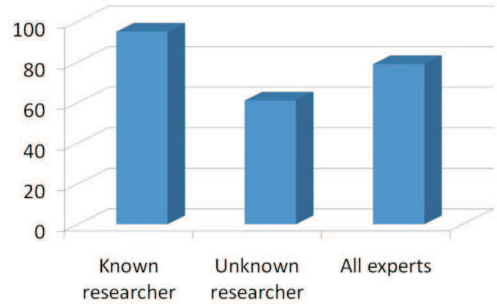

Fig. 1. The differences in response rate based on the "known vs. unknown researcher" criterion.

This situation raised the question of why the difference was so large. Some remarks were given by the experts participating in the study directly after filling in the Web-based questionnaire and they were (Fig. 2):

- Complaints about the length of the survey (completing it took up 30–45 minutes).
- Complaints about some questions not being clearly stated, i.e. clarity issues.
- Complaints about the ambiguity of some answers.
- The readability of the questionnaire on the screen.

When carrying out the stated PM survey, some organisational challenges appeared in relation to the motivation of the respondents to taking part in the survey and increasing the level of response. There was also some unclear information regarding the influence of the layout of the survey, on the quality of answers given by the experts and professionals.

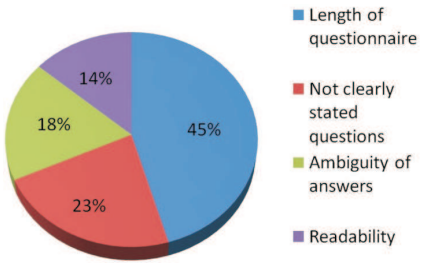

Fig. 2. The main remarks from experts about the challenges while filling in the questionnaire.

As a conclusion from the Web-based *Critical Success Factors in Project Management* research, the main following organisational issues for further detailed research were identified.

- Layout issues.
- Motivation issues.

They were prerequisites for the new research area which could deeply examine this problem in the other survey and is described as follows.

The specific research on experts' preferences while filling in Web-based questionnaires

For research purposes, the authors prepared a web-based questionnaire. It was composed of the metric and four separated theme parts. It had the function of randomly generating a user ID number that enabled, for each participant, the option of accessing the survey results when they were concluded and to compare their answers with the aggregated answers of all survey participants.

In the first part of the questionnaire, the participants were questioned about general issues, like; '*Do experts carefully read the invitation letter?*' '*Are experts willing to participate in the survey if asked by an anonymous researcher and without any gratuity?*' There were 7 descriptive answers of choice with associated values to them: strongly yes (1,00), yes (0,66), rather yes (0,33) difficult to say (0,00) rather no (−0,33), no (−0,66) strongly no (−1,00).

In the second part of the questionnaire, the respondents were asked about the factors which motivate experts to fill in the questionnaire. The list of factors was determined based on the study of literature and the remarks given by the participants in the other surveys provided during the interviews. There were 7 descriptive answers of choice with associated values to them: highly motivating (1,00), motivating (0,66), rather motivating (0,33) difficult to say (0,00) rather not motivating (−0,33), not motivating (−0,66) highly demotivating (−1,00).

In the third part of the questionnaire, the participants were asked about the factors which dissuade

experts from filling in the questionnaire. The list of factors was also determined based on the study of literature and the remarks given by the participants in the other surveys provided during the interviews. There were 7 descriptive answers of choice with associated values to them: highly demotivating (1,00), demotivating (0,66), rather demotivating (0,33) difficult to say (0,00) fairly demotivating (−0,33), demotivating (−0,66) highly demotivating (−1,00).

Additionally, there was some opportunity which enabled them to enter their own motivating or demotivating factors, then rank them accordingly.

In the fourth part, the technical aspects related to ergonomics in the questionnaire were studied. Questions regarding font size, the progress bar, the opportunity to log in and continue filling in the questionnaire in different time spans and the possibility of entering the remarks by the participant were asked. There were 7 descriptive answers of choice with associated values to them: highly important (1,00) important (0,66), rather important (0,33) difficult to say (0,00) rather not important (−0,33), not important (−0,66) highly unimportant (−1,00).

In the fifth and final part, questions about the experts' selection criteria were asked (age, education, self assessment, number of years of experience). The results of this part are not the subject of this article, therefore they were duly omitted.

For each part of the questionnaire, the participant could enter their general remarks.

The invitation to participate in the survey was sent to a selected group of individuals who had carried out at least one survey involving experts' participation during the previous three years.

The survey was carried out in April 2007. Based on the results from metrics and the elimination of partially-completed questionnaires, the 19 questionnaires were deemed to be valuable and thus put into the statistical analysis. Among the group of experts, 8 had a Ph.D. and 11 had an M.Sc. All participants were aged between 25 and 40 and had carried out at least one web-based survey in the previous three years, requiring the participation of the experts. Therefore, the total estimated number of experts' questionnaires the participants could have knowledge about was over 1000. The participants had also filled in at least one web-based questionnaire, acting as an expert in their field.

The survey on the problems concerning web-based questionnaires was divided into two main areas:

1. Issues regarding the layout of the questionnaire.
2. The motivational issues of the experts.

Hence, these parts are described further on.

The layout of the questionnaire

The process of designing the layout of the questionnaire which involves the experts' participation should be based on the following directives [10–12]:

- Attention to the visual effect of the questionnaire.
- Information about how many answers are still outstanding during the filling in of the questionnaire (e.g. the status bar).
- Minimizing the time needed to fill in the questionnaire by reducing the total number of questions.
- Using a scale with an odd number of answers.
- The possibility of creating '*mental schemes'* by including a comparable number of questions of similar length in other parts of the questionnaire.
- Limit the area of the survey to one topic, according to the rule, one topic – one research area.
- Minimising the complexity level of the questions according to the rule: one issue – one question.
- Eliminating persons who are not motivated enough by metrical questions at the beginning.

Based on the analysis of the organisational issues regarding the survey carried out by the authors in the year 2006 [13], the above-stated guidelines could be complemented by the following:

- The topic of the survey should be congruent with the area of interests and speciality of the expert.
- The questionnaire should include fields allowing an expert the full freedom of expression about the set of questions. This approach could provide the researcher with valuable remarks about the organisational aspect of the survey. In the study [13], a significant number of experts, in addition to answering the closed questions, answered many open questions as well. That could be interpreted by experts that they are better listened to.
- One should avoid repeating the same or similar questions in the survey. However, there are opinions that putting the same or similar questions could verify the thoroughness of the participant in forming their opinion on a specific topic. However, in the lists of remarks gathered by the authors, the issue of repeating the same or similar questions was perceived very negatively by experts.
- The questionnaires should include the ranks for descriptive words like: highly important, important, fairly important, less important etc. Otherwise, there is a risk that a descriptive scale will be taken very subjectively by the experts. Adding the scale of ranks to the descriptive words eliminates that inconvenience and allows for the easier aggregation of data analyses.
- Application of the option *compare my answers* to the *aggregated results* created an added value for the experts participating in the survey.

The research conducted showed the relevance of the problem connected with choosing the applications to create the questionnaire on the internet. There are a lot of scripts that could be used to create web-based questionnaires [14]. However, their usage is limited to users possessing technical knowledge about installing and configuring a specific server.

There are also websites which allow for the creation of surveys on a free-of-charge basis but they offer limited options. There are paid services as well which also have some limitations to some standard templates [15].

That is why some researchers choose another form of conducting a survey using the Internet as a communication medium. They send e-mails with attachments in MS WORD format or they decide to charge programmers to create a web-based questionnaire. Some researchers decide to create a questionnaire using web applications like: Adobe Dreamweaver, Core Editor, Microsoft FrontPage, etc. However, in more complex questionnaires consisting of more parts, technical issues could arise and their resolution very often requires advanced programming knowledge in the Internet domain.

Motivation of the experts to participate in the survey

The biggest challenge while carrying out the research with experts' participation is how to reach them and motivate them to fill in the questionnaire. Based on the authors' survey, the factors influencing the motivation of the experts to fill in the questionnaire were identified. One of the factors is the layout of the cover letter which invites them to participate in the survey. The invitation should include (besides confidentiality issues) statements about: the goal of the research, information on the research organiser(s) and proposal to access the aggregated results of the survey.

The survey results show that 90% of the respondents read the text of the invitation and 52% read the text carefully or very carefully. When the research goal and the researcher's name (personal or institutional) are stated, it is easier to convince experts to participate in the survey and fill in the questionnaire with care.

All participants stated that an invitation from a prestigious organisation motivates experts very highly or just highly and 84% take part in the survey when the invitation comes from a known person. Information about access to the results is also a very important factor motivating the experts to participate in the survey 79% of the respondents said it was important. The option of allowing the comparison of online experts' answers with aggregated answers was important for 64% of respondents.

The relevance of the topic to the expert's speciality is very motivating for 57% of respondents and motivating for 38%.

Also significant, but less than the aforementioned factors, was financial gratuities for participation in the survey.

It is remarkable that there is a tendency that immaterial factors motivate experts more than material ones (Fig. 3).

Fig. 3. Factors either highly motivating or motivating experts to participate in the survey.

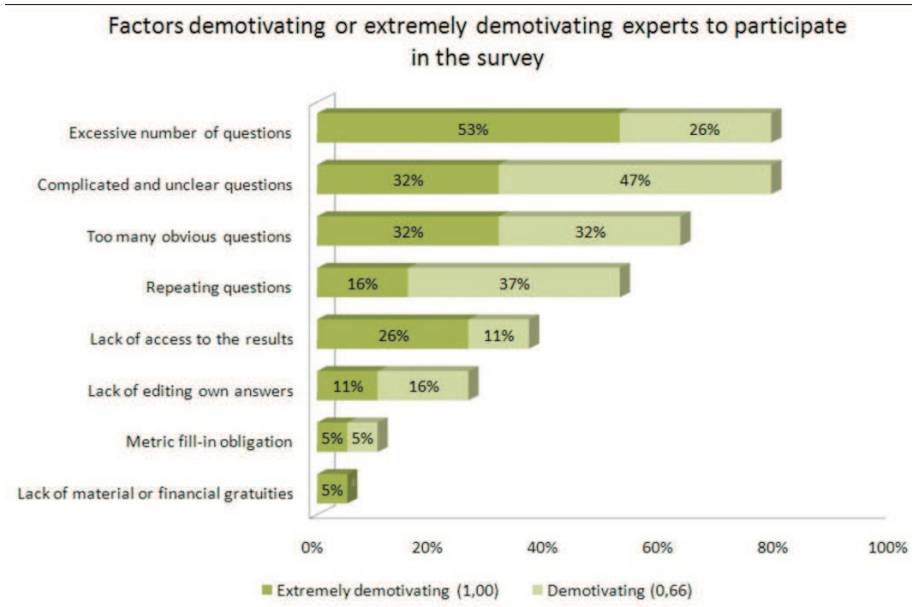

Fig. 4. Demotivating or highly demotivating factors of the experts to participate in the survey.

Besides the motivating factors, there is the crucial issue of factors which demotivate experts from filling in the questionnaire. The most demotivating factors are: excessive number of questions (79%) and complicated or unclear questions (79%). Important factors are also a lack of access to the survey results (37%) and a lack of possibility to edit their own responses.

It is remarkable that a lack of financial gratuities is not perceived as a demotivating factor (Fig. 4).

Summary

The research shows that there are aspects of a well-organized Web–based questionnaire and the second is a human nature factor which motivates the experts to participate in the survey. One ought to remember that Project Management specialists are people who are busy and who value their time very much. It means that the layout of the questionnaire is crucial as the time needed to fill in the survey should be reduced to a minimum. It means that it should be designed in a clear way so as not to lose any precious time while filling it in. It is remarkable that prestige and knowledge-sharing motivate the experts more than direct benefits (money, gifts). As professionals operating within Project Management, they prefer to gain immaterial added value than its material equivalent.

The knowledge and experience of experts is an invaluable source of information. One should use them while making decisions but, moreover, be able to acquire information in a way which encourages experts to share their knowledge for the common good.

Therefore, before starting the web-based survey, it is crucial to acquire the knowledge of the organisational and human nature factors influencing the motivation of the experts to submit answers in the survey.

The results of the research could be beneficial for organisations and individuals. They could be utilised in the process of acquiring knowledge from experts using web-based questionnaires. The information gathered could be crucial for their business activities or personal development.

The research definitively addressed the issue of concerns beyond the sphere of financial benefits that motivated experts to participate in the web-based survey. The most important non-financial factors motivating experts are:

- an invitation from a prestigious organisation,
- invitation coming from a known person,
- information about access to the results,
- the option of allowing the comparison of online experts' answers with aggregated answers.

Applying the results of the research in practice will increase the probability of obtaining more valuable data while doing web-based research.

References

[1] Aubry M., Hobbs B., Thuillier D., *A new framework for understanding organisational project management through the PMO. International Journal of Project Management*, 25, 4, 38–43, 2007.

[2] Hobbs B., *The Multi Project PMO: A Global Analysis of the Current State of Practice*, A white Paper Prepared for Project Management Institute, 44, 2007.

[3] Hobbs B., *The Reality on Project Management Offices*, Report on the Survey for Project Management Institute, 11, 2006.

[4] Thiery M., Deguire M., *Recent development in Project-based organizations. International Journal of Project Management*, 25, 7, 649–658, 2008.

[5] Birnbaum M., *Introduction to Behavioural Research on the Internet*, Prentice Hall, 267, 2000.

[6] Benjamin R., *Project Success as a function of Project Management Methodology: an emergent systems approach*, An MBA research project at University of Hull, 31, 2006.

[7] Fricker R., Schonlau M., *Advantages and Disadvantages of internet Research Surveys: Evidence from Literature*, Field methods, 14, 4, 347–367, 2002.

[8] Hewson C., Yule P., Laurent D., Vogel C., *Internet Research Methods: a Practical Guide for Social and Behavioural Sciences*, Sage Publications Ltd., 156, 2002.

[9] Spalek S., *Krytyczne czynniki sukcesu w zarządzaniu projektami* [*Critical Success Factors in Project Management*], Politechnika Śląska [Silesian University of Technology], Monograph, Gliwice, 130, 2004.

[10] Batorski D., Olcoń-Kubicka M., *Prowadzenie badań przez Internet - podstawowe zagadnienia metodologiczne [Conducting research on the Internet – basic methodological issues]*, Studia Socjologiczne [Sociological Studies], 3, (182), 99–132, 2006.

[11] Couper M., Traugott M., Lamias M., *Web Survey Design and Administration*, Public Opinion Quarterly, 65, 2, 230–253, 2001.

[12] Simsek Z., Veiga J., *A Primer on Internet Organizational Surveys,* Organizational Research Methods, 4, 3, 218–235, 2001.

[13] Czaplicka-Kolarz K., *Scenariusze rozwoju technologicznego kompleksu paliwowo-energetycznego dla zapewnienia bezpieczeństwa energetycznego kraju [Scenarios of technological development complex fuel and energy to ensure national energy security]*, [online] [accessed 8 June 2010], Available from Internet: <http://www.foresightenergetyczny.pl/cscore/files/-Dokumentacje/cz2.pdf>, 2007.

[14] LimeSurvey, *The Survey software - free and open source*, [online] [accessed 8 June 2010]. Available from Internet: <http://www.limesurvey.org>, 2010.

[15] Web-questionnaires, *Mojeankiety, Webankieta. Free Online Surveys* [online] [accessed 10 June 2010], Available from Int.: <http:// moje-ankiety.pl, http://webankieta.pl, http://freeonlinesurveys.com>, 2010.