Reminder Effect and Data Usability on Web Questionnaire Survey for University Students

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Abstract

Most universities around the world must be accredited in order to assure and enhance the quality of education. Japanese universities also are under accreditation by the government as well. They must undergo certified evaluation and accreditation periodically, which is conducted by organizations certified by the Japanese Minister of Education. Accreditation committees evaluate every university based on the Standards for Evaluation and Accreditation by reviewing the self-assessment reports. That is why it is important for universities to pursuit their advantages and to create high quality self-assessment report. To present some advantages in the report, the university staffs have to obtain the evidences demonstrating some effects or outcomes. Our university has the "Researcher Database System" in which all faculties can store their activities. But the system is not enough to prepare those assessments because there is no function to collect students' comprehensive opinions for the education system of our university. So in order to conduct a student survey we adopted a web questionnaire system Limesurvey®. The number of questions is about 80. Most questions were five-alternative or two-alternative and some are in descriptive style. The system is equipped with the "individual reminder function". We succeeded to increase the number of answers this function in cooperation with faculties. Actually the response rate had become 36.5% finally, while general web questionnaire can obtain only 10%.

1. Introduction

To create high quality self-assessment report, the university staffs obtain the evidences to demonstrate some effects or outcomes. We have the system to gather teachers' outcomes, but we have no systems to gather students' data. So, we introduced a web questionnaire system to obtain students' information. Using this system, we could know how long the students studied in a day, whether they used the syllabus, or other activities. Basically the students had to answer some questions, but they weren't imposed any penalties even if they didn't answer any questions. Moreover, we didn't give any rewards to the students who answered completely. Our questionnaire contains some questions. The number of questions is about 80. Most questions are five-alternative or two-alternative. In a few question, answerers can write freely.

Generally, there are few answers obtained from such a method with no rewards. In an experimental study about a survey response rate [1], the rate of those who weren't given any rewards was 17.8%. On the other hand, the rate of those who were given some rewards was 36.7%. In other words, the survey response rate depends on whether there are some rewards or not.

Our survey response rate was finally 36.5% without rewards or penalties. We reminded the students several times to answer a questionnaire. At the same time, the teachers of these students worked to remind them to answer. If we held the questionnaire by paper, it would be difficult to remind them to answer. But we used a web system, so it was very easy to do it. We confirmed that the completed answers increased after we reminded the students to answer. In this paper, we show the process to get some completed answers using reminders.

In our university, the questionnaire surveys had conducted to know the life of the students in 2007 [2] and 2011 [3]. The former was conducted by paper and the latter was conducted by web. Moreover the answerers of the former questionnaire were selected by random sampling. The response rates were 45.0% (2,299/5,107) and 19.6% (3,195/16,342) respectively. The response rate of web questionnaire was smaller than the one of paper questionnaire. But the number of answers was opposite. As the web questionnaire can let a lot of students answer, then the number of answers also increases. So we thought that the web questionnaire was very important tool. In addition, for the survey this time, we utilized the same web survey system, LimeSurvey [7], as the case of student survey in 2007 [2], using e-mail reminding function. It is interesting to see that 36.5% response rate in 2013 are significantly different from 19.6% response rate in 2007, where p-value is 2.2×10^{-16}.

We have already described this questionnaire survey simply [4] [5]. We showed only a fact obtained from conducting this survey in these papers. In this paper, we additionally show the backgrounds and the related works of our research. Then we show a reliability of the effect of reminders.

In the following parts, first we show the comparison between paper and web questionnaires in Section 2. Then, we show how to remind the answerer comparing paper questionnaire and web questionnaire in Section 3. In Section 4, we show the data usability of the result obtained from our questionnaire survey. Finally, we conclude in Section 5.

2. Paper questionnaire vs. web questionnaire

In this section, we compare paper questionnaires with web questionnaires. The paper questionnaire has some problems. We show some examples to show these problems. To solve them, we introduce a web questionnaire system.

2.1 Paper questionnaires

We show an example of the paper questionnaire. In Hiroshima University, questionnaire surveys were conducted using mark sheet for the students to evaluate their lessons from 2004 to 2008 [6]. The questionnaire survey is held in each semester. The response rate was 72.7% (62,440/85,927) on average. While there were many responses, many expenses were needed to conduct the paper questionnaire. The cost was about 35 thousand dollar.

2.2 Web questionnaire

A paper questionnaire needs a lot of expense and labor as mentioned in previous section. So, in this section, to solve the problems occurred in paper questionnaire, we introduce a web questionnaire. After we show LimeSurvey [7] that is one of web questionnaire systems, we explain some works related to web questionnaire.

LimeSurvey is an open source Web questionnaire system. This system has many sophisticated functions and we can use it free of charge. So we can reduce an initial cost to start a questionnaire survey. In our case, since we have own virtual environment, we also need no expenses to prepare hardware. The version of this system we used is "1.92+ Build 120919". The system has 6 functions mainly: System Management, Questionnaire Management, Design Template, Create Question, E-mail, Total and Analysis. Especially, E-mail function is very effective. We can send some kinds of e-mail to the answerers automatically to inform them of something important after just clicking a button. We can remind them by using e-mail function.

In Ritsumeikan University, a paper questionnaire had been conducted until 2007 [8]. The staffs of this university knew that a web questionnaire was very efficient in terms of labor and expense. So they decided to conduct a web questionnaire survey using LimeSurvey in 2009. However, the authors didn't use this function because of a danger to individual information. Instead of this function, they sent e-mails to answerers manually. Also they sent postcards to remind them to answer the questionnaire. As a result, the response rate became 27.9% (326/1,168). They thought that the questionnaire played well. Actually, sending postcards was very effective.

Yamamori et al developed a web questionnaire system that the administrator could recognize who didn't answer the questionnaire [9]. This solution becomes to be standard afterward. LimeSurvey, we used, also provided these functions. LimeSurvey has enough functions to increase response rate, to keep anonymousness, to send reminders, and so on. Especially, reminder function is very useful. In next section, we mentioned the effect of reminders in detail.

Conditions	Without rewards	With rewards
Without reminders	21.3%(17/80)	37.5%(30/80)
With reminders	28.8%(23/80)	57.5%(46/80)

Table 1. The relation between the reminders and the rewards

	Subtotal	Cumulative Total
1st period	371(13.6%)	371(13.6%)
2nd period	396(14.5%)	767(28.1%)
3rd period	140(5.1%)	907(33.2%)
4th period	92(3.3%)	997(36.5%)

Table 2. The number of the answers in each period

3. How to remind

When we would like to gather more answers, reminding the answerers is very effective method. In this section, we compare a paper questionnaire and a web questionnaire from a point of reminding. Then we explain that reminders on web questionnaires are easier than those on paper questionnaires.

3.1 Reminder in paper questionnaire

It is difficult to remind the answerers to answer some questions in a questionnaire using papers. Especially, if the answerers cope with this questionnaire optionally, it is more difficult. Moreover the answerers tend not to answer any questions without rewards. Hagihara et al researched the methods of questionnaires [1]. They carried out the paper questionnaires in three conditions: Handing over, Posting, and Mailing. In their any methods, the cost they should pay was not free until the answerers can answer the questionnaire. They reminded the answerers to answer the questionnaire. Then, they also needed an expense to send some mails to remind.

Furthermore, they compared a questionnaire rewarding the answerers with a questionnaire not rewarding them. Naturally, the rate of those who were given some rewards was higher than those who were not given any rewards. The relation between the reminders and the rewards is shown as Table 1.

3.2 Reminder in web questionnaire

We adopted a web questionnaire system, whose name was LimeSurvey, to obtain students' information. In the web questionnaire system, the user as an administrator of this system can remind the answerers to answer the questions of the questionnaire. To remind them, the user just clicks the button for reminding. After this action, e-mails to remind are sent to the answerers. The answerers receive the e-mail and can confirm that they must to answer the questionnaire. In our questionnaire, before we reminded at first, the response rate was 13.6%. We reminded the answerers three times. After reminding, finally the rate became 36.5%.

Our questionnaire survey was intended to hold from October 11 to November 21, 2013. The number of students intended to answer the questionnaire was 2,730. We didn't reward the students for answering. Also we didn't impose any penalties on students. We reminded the answerers three times to answer the questionnaire at November 5, 14, and 20, 2013. We divided the period to answer the questionnaire into 4 periods.

- 1st period: From October 11 to November 4, 2013
- 2nd period: From November 5 to November 13, 2013
- 3rd period: From November 14 to November 19, 2013
- 4th period: From November 20 on

Table 2 shows the number of the answers obtained in each period. In the 2nd period, the subtotal was 396 (14.5%). Until the end of 2nd period, the cumulative total was 767 (28.1%). This result showed that the reminder was very effective to increase the number of answers.

4. Data usability

In this section, we mention the usability of the data as a result obtained from our web questionnaire survey. In a university, there are many data about students, for example, the gender, faculty, department, hometown, grade, and so on. If we were able to unite the result of the questionnaire and these data, what new we can get? In this section, we mention the examples of data usability.

We know the ids of students who were targets for our questionnaire. We consider that the grade of students can be united with the results of the questionnaire. Probably, the students, who didn't cooperate in our questionnaire, should have got bad grades. Our questionnaire has a question asking the students the degree of satisfaction with our university. We think that the degree will be high for the students who got good grades. Thus we can get some knowledge from the combination of the questionnaire results and the students' grades.

5. Conclusion

We had conducted a questionnaire survey to obtain the data from students. Using web questionnaire system, we could easily remind the students about answering our questions. Thanks to this reminding function, we increased response rate up to 36.5%. Moreover, we found that there was a possibility that we would obtain new information by uniting the results of questionnaire and other data. In future work, we will actually operate various data. Then we will obtain some useful data for the students, staffs, and teachers in our or all universities.

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