

Factors Affecting Return Rates to On-Line Surveys

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Abstract

This paper reports on the return rates achieved in a number of internal surveys performed at Bath Spa University over the last twelve years and discusses factors that may have influenced these rates. The surveys examined have used paper questionnaires, on-line web-based questionnaires and a mixture of the two, all produced with the help of the SNAP survey analysis software package.

Factors that are considered include the age, gender and IT (Information Technology) skill level of the respondent. The use of reminders and financial incentives is also examined. The time scale for respondents to reply to on-line surveys is analysed, in particular for the timing of reminders. The paper concludes by presenting a list of factors that appear to influence the return rate and a list of those factors that appear not to have an influence.

Keywords

Survey response rate; on-line; reminder interval; IT skills, interview mode comparisons

1. Introduction

Historical background

Research in the 1960's indicated that postal surveys could achieve return rates of between 75% and 96%, depending on the number of follow-up letters sent (Scott, 1961). Scott had use three separate follow-up letters.

Research performed by the author in 1986-7 produced an overall return rate of 51%. The respondents were all teachers in a selection of secondary schools. The return rate from individual schools varied from 29% to 80%, with an inverse relationship (correlation coefficient -0.58) between return rate and number of teachers in the school (Cooper, 1989).

The survey methodology used a local contact in each school to distribute the paper questionnaires and encourage completion. Return was via a "ballot box" located in the Staff Room (or equivalent) in each school. It is suggested that the larger schools with split sites and other internal divisions were more difficult to manage even with an on-site facilitator.

Research elsewhere has indicated an increased return rate through financial inducement. A 25c coin attached to one sample of postal questionnaires achieved a return rate of 83% compared with 63% of those not sent the 25 cents. It should be noted that the researchers also

employed a single reminder letter and up to two telephone reminders (Amour and Bedell, 1978).

The appearance of the questionnaire has also been cited as a factor affecting return rates: 85% for questionnaires “attractively” printed compared to 62% where they had been plain copied (Gillespie and Perry, 1975).

Current Research

The almost exponential growth of the use of the internet has seen the mechanism for delivering surveys at Bath Spa University move from paper to electronic. As with all surveys, achieving a high return rate is a common goal. The choice of a sample frame could also be a factor.

The Bath Spa University surveys differ in some respect in that the target audience is known and reachable through email. In general no sampling is needed.

So what factors affect their willingness to participate in surveys? The use of the SNAP survey analysis package throughout the whole research cycle has simplified longitudinal comparisons. Recent versions have enabled better targeting of the questionnaire to match the audience.

2. Return Rates from Captive Audiences

Induction Sessions 1996 – 2000

Induction sessions were held for new undergraduates to introduce them to the computing facilities. The sessions were scheduled as part of a comprehensive week-long programme and every student was allocated a specific session.

During the session a paper questionnaire was issued to be completed during the session. All questionnaires were collected by hand before the students left the room.

These questionnaires asked inter alia, students to self assess their own IT skills in a number of separate areas. Three typical areas were *use of a mouse*, *word processor* and *spreadsheet*. As technology developed the topics were broadened to include *email* and the *internet*.

To provide a reasonable degree of comparison, the possible skill levels were limited to three choices: “no ability”, “some ability but not confident” and “confident”.

The observed return rate was virtually 100% of those present. Subsequent analysis indicated this was only 70% of those expected to attend!

3. The Growth of IT Skills in the population

Induction Sessions 1997 – 2006

After five years the delivery mode was changed. The number of new students made individual sessions impractical but all students were being allocated University email addresses. So in the next two years the questionnaire was emailed in html format to lists of new students.

Tighter restrictions on the format of emails acceptable to the various filters and firewalls led to a change of delivery in 2003. The survey was now mounted on a “hidden” web page and invitations containing a hyperlink to the survey were emailed to the respective lists.

The chart in Figure 1 shows that, in 2006, over 90% of respondents rated themselves as “Confident” to use a mouse, keyboard, email and the internet/web. Word processing has ‘hovered’ around the 90% mark in recent years.

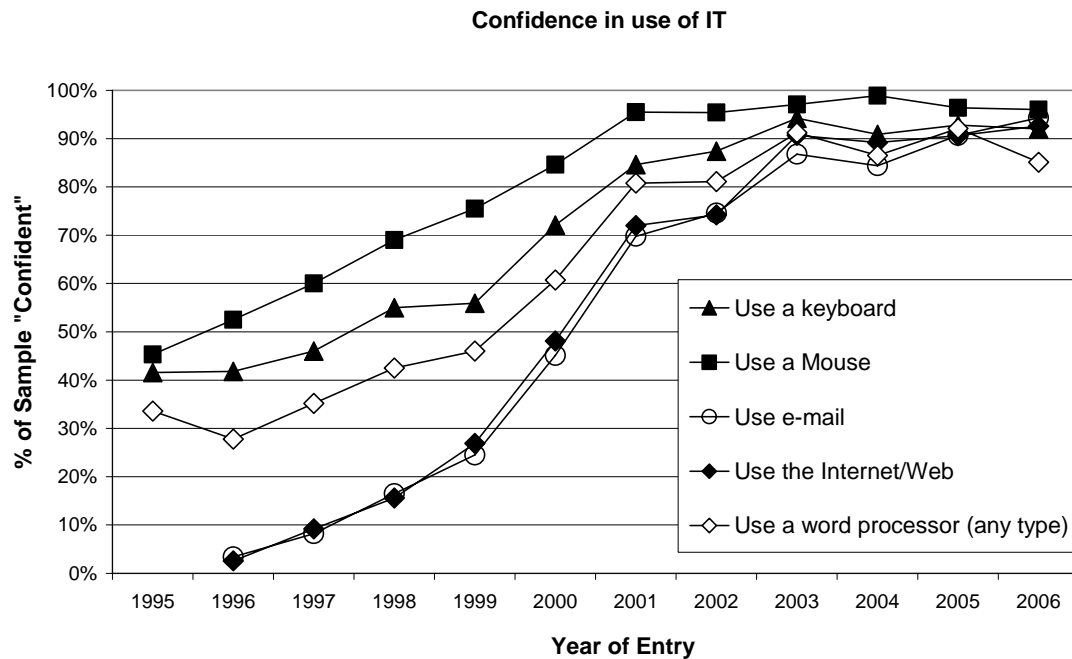


Figure 1: Confidence in use of IT

Age and Gender Profile of the Respondents

The nature of courses offered at Bath Spa University has always resulted in a greater proportion of female students. The respondents to the survey reported here consistently mirrored the overall distribution at 25% male: 75% female. The University actively encourages widening participation which results in a healthy proportion of older students. This is reflected in the age profile of respondents, where about 20% were aged 30 and over and a further 35% were in the 20-29 age range.

A recent statistical report released by the European Commission’s Eurostat Press Office (Eurostat, 2007) indicated that just 19% of women aged 16-74 and 35% of men in the same age group in the UK were considered to have “High” computer skills, based on six separate tasks including “use basic arithmetic formula (add, subtract, multiply, divide) in a spreadsheet”. By way of comparison, the “confident to use a spreadsheet” data for the current survey is 35% overall, but 53% of males and just 23% of females. When analysed by age group the greatest percentage of “confidents” was in the 20-29 age group (42%), with 35% of the “under 20” and 32% of the “30-39” groups choosing this option.

The conclusion is that whilst the Bath Spa University population does not mirror the population as a whole there is sufficient spread of age and IT skills to make tentative extrapolations from the results to be reported in the following paragraphs.

Variation with Return Rates as Technology Changed

The chart in Figure 2 shows the estimated return rates for the whole period of the research. The annotations indicate the method used to deliver the questionnaire. In general the closed Induction sessions achieved almost a 70% return – though as the sessions were classified as ‘compulsory’ one would have hoped for nearer 100%!

In 1998 the Induction sessions were run as ‘open house’ with the questionnaires available for students to complete as they moved around the open access computer rooms. This experiment was not successful and the formal sessions were reintroduced until increasing student numbers made them impractical.

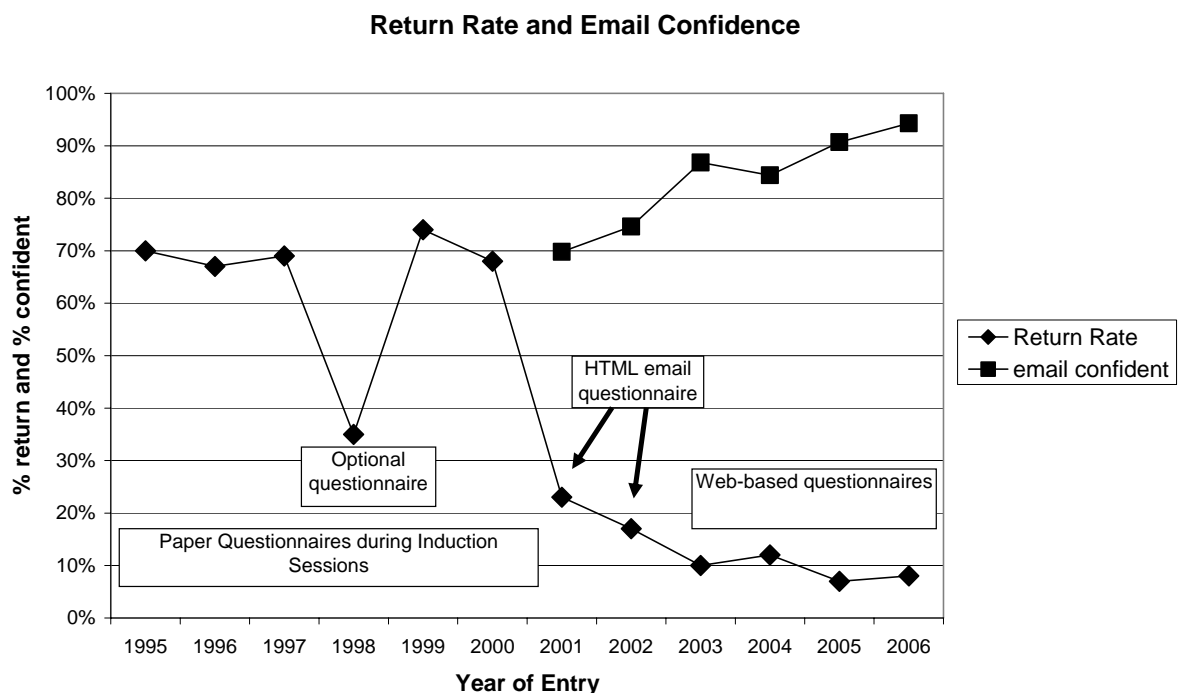


Figure 2: Overall return rate by year of survey with email confidence for comparison

Email Questionnaires – Novelty Value?

The use of an email questionnaire (2001, 2002) achieved a response comparable with the optional survey in 1998. However Figure 2 shows a steady downward trend suggesting that even the novelty of having a University email account (and perhaps for many an email account for the first time) could not encourage a better response. The chart also shows an increasing confidence to use email amongst the respondents. Subsequent web-based surveys have shown that achieving a double figure percentage return is becoming increasingly difficult.

4. Do IT skills affect the Response rate?

Comparison between on-line and paper response rates

A concern was that those with low IT skill levels were being excluded from the on-line surveys. A small scale project was undertaken in 2002 to check for the effect of IT skill on completion rates.

A number of first year modules were selected and paper questionnaires issued to all present in a series of seminars.

The paper questionnaires contained the same self-assessed questions on confidence in a total of ten separate areas of IT. From their responses a total 'skill score' was calculated ranging from zero ("no ability" in all ten) to twenty ("confident" in all ten).

A total of 112 responses were received, this being about 6% of the overall first year intake. Of the responses 9% had also done the on-line survey. When the Skill Scores were calculated the "had done the email survey" group averaged 12.6 whilst the "had not done" averaged 13.9, with no significant difference between these scores. There were also no significant differences between the scores achieved according to gender or age group.

5. Do Financial Inducements Work?

Bath Spa University undertook a wide-ranging satisfaction survey of all its students in Spring 2005. To encourage participation and completion three iPods (or cash equivalent) were offered through a random draw. The overall response rate was an estimated 13%, which compares favourably with the 7% achieved through the IT Skills survey held the same year.

The survey was available both on-line and through paper questionnaires available in both main Campus Libraries. 13% of the total responses (85 out of 658) were from paper questionnaires. However these represented just 3% of the returns from the main campus but 68% of those from the Art & Design site (both sites showing an overall return of 13%). It was known that Library staff at the latter site had a closer working relationship with their students and that they had promoted the survey at every opportunity. This appeared to compensate for the previously observed reluctance of students at this campus to complete on-line surveys. Work reported earlier in this paper had also suggested that personal promotion had a greater effect in a smaller institution - the Art & Design site comprised just 14% of the total student numbers.

It is concluded that the financial inducement did result in an increased return rate but that the total increase of about 6% was due in the greater part to the prospect of winning an iPod but to a lesser part in the provision of an alternative paper format which was personally promoted.

6. How long does it take? Are reminders necessary?

Tracking Returns over Time

In addition to the ease of importing the returns, another valuable feature of both the email and web-based surveys was that the returns were date and time-stamped. This enabled the return rate to be analysed against time.

Figure 3 shows the cumulative return rate expressed as a percentage of the final total for the three most recent IT Skills surveys (shown as "Cumulative 2003" to "Cumulative 2006"). It can be seen that all the surveys follow a similar pattern with 50% of the total returns being received within the first week (in electronic surveys of students weekends are just as productive as weekdays!).

The chart also shows steps in each trace where a reminder had been sent. The effect of reminders is discussed in the next section.

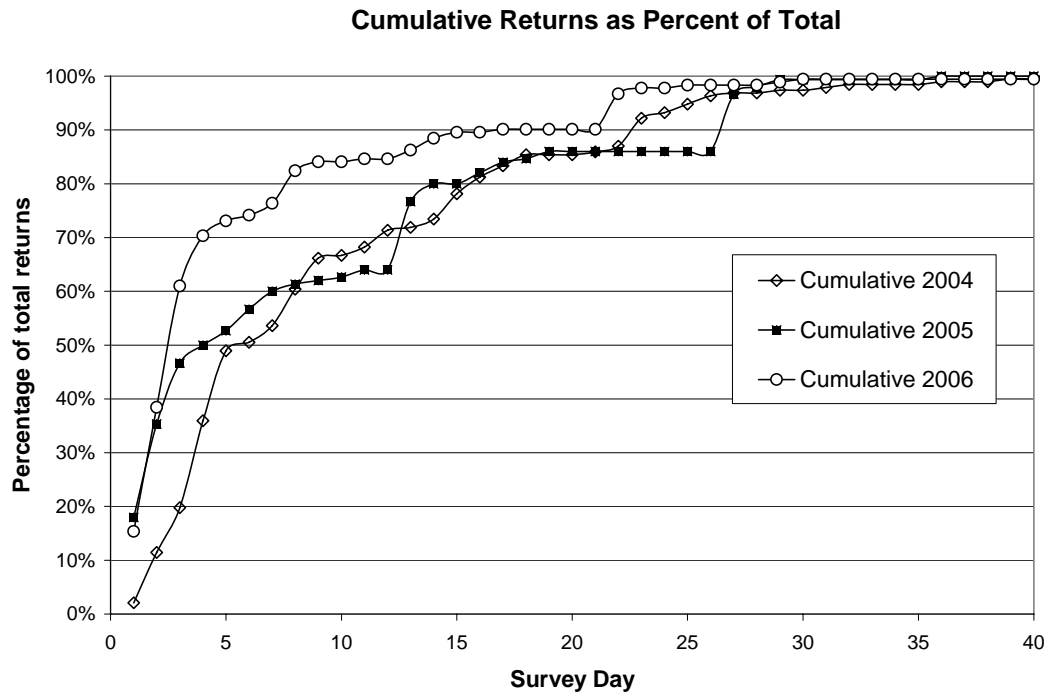


Figure 3: Returns as a function of time

With mail surveys reminder times were measured in weeks – with on-line surveys it has become days. This data suggests that more than three-quarters of the returns will be in within two weeks, so reminders should start to be sent from about this time.

Reminders – How Many and How Often?

Research has confirmed that giving reminders do result in an increase in the total completion rate. But when should reminders be given? How many reminders should be used? How does the “new technology” influence the answers to these questions?

Reminders have been used in all the electronic surveys reported in this paper. There has been no set pattern of issuing these – it has been more an exercise in opportunism.

The effect of the reminders is illustrated in the typical chart shown in Figure 4. Here the actual cumulative returns for the 2005 Entry survey are plotted as separate points against the survey day (day one being the day the invitations were sent out).

The effect of each reminder is calculated by taking the difference between the total returns on the days before and after the day the reminder was issued. These differences are subtracted from the cumulative total for all subsequent days to give the “adjustments” data which is plotted as a dashed line.

This adjusted data has then had a logarithmic best fit curve applied, indicated as a solid line. This showed a reasonable match to the adjustments line, supporting the hypothesis that the reminders caused an increase in the total number of responses rather than merely ‘bringing forward’ responses that would have been in received at a later date.

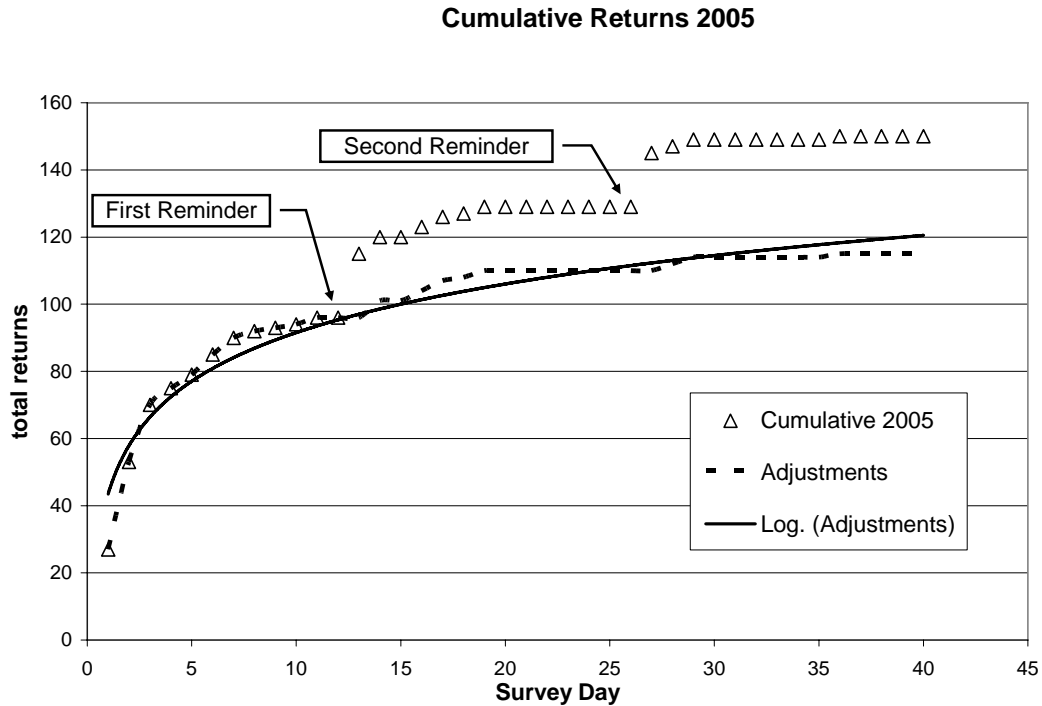


Figure 4: Effect of Reminders

The same process has been applied to all the surveys considered here. Though not all show such a good fit to a logarithmic plot they all show a similar pattern. It is proposed that the method of determining the increase as a result of a reminder though not mathematically rigorous can be taken as a general indicator

The following tables summarise the pattern of reminders used in a number of surveys all targeted at Bath Spa University students. The “Reminder Day” is a count from the day the survey was launched.

The “Percent Increase” was calculated from the difference between the cumulative return on the day before the reminder and the return on the day after the reminder was issued by email. This was divided by the total number of invitations sent to arrive at an overall percentage increase.

The first table shows those where just a single reminder was given.

Survey Year	Number of Reminder	Reward Offered?	Reminder Day	Percent Increase
2001	First	No	43	0.8%
2002	First	No	55	0.4%
2003	First	No	25	0.4%
2006	First	No	22	0.5%

The second table shows those surveys where a second reminder was given. This table includes the 2005 satisfaction survey (StuSat05) where financial rewards were offered.

Survey Year	Number of Reminder	Reward Offered?	Reminder Day	Percent Increase
2004	First	No	12	0.4%
2004	Second	No	22	0.6%
2005	First	No	13	2.5%
2005	Second	No	27	2.5%
StuSat05	First	Yes	9	1.0%
StuSat05	Second	Yes	21	1.0%

The percentage increases caused by the reminders, as determined by the method described above, have been plotted against the day in the survey that the reminder was issued (Figure 4). The chart differentiates between first and second reminder but there is no discernable pattern (correlation coefficient = -0.2). The average increase from all reminders was 1.0%.

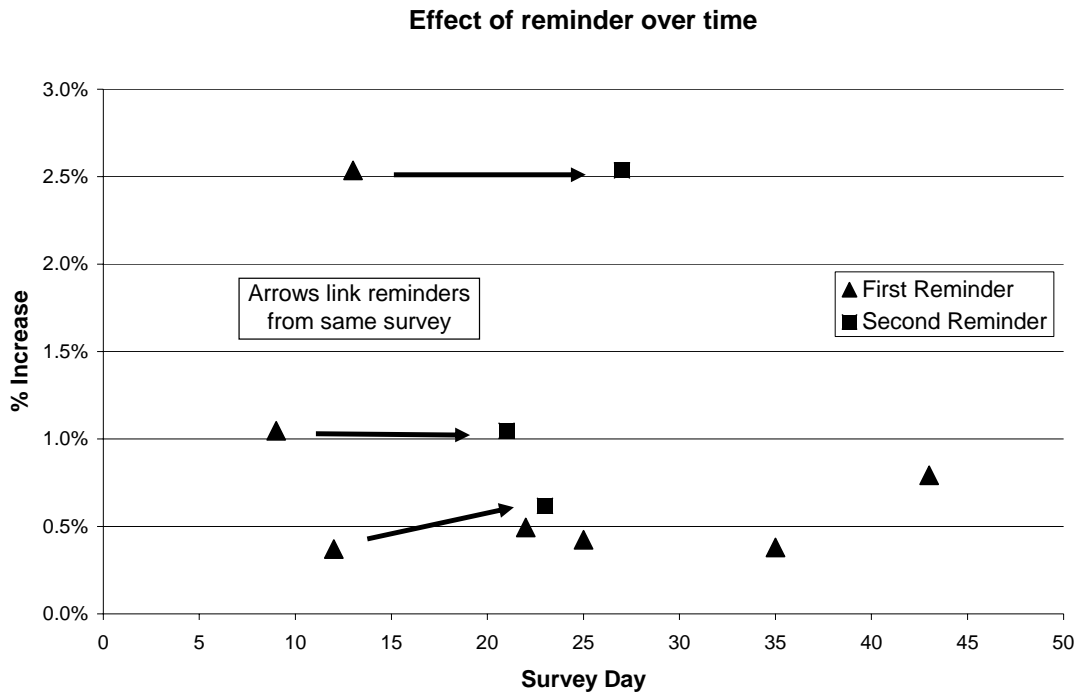


Figure 5: Increase in response rate due to reminders

The chart also shows, as an arrow, a link between the data for first and second reminders for a given survey. In two of the surveys both reminders achieved the same increase, whilst in the third survey the second reminder was slightly more successful.

From this limited data it is suggested that neither the time a reminder is given nor whether it is the first or second reminder has any influence on the increased response rate achieved by the reminder.

7. Summary and Conclusions

This paper has considered a number of factors affecting return rates to surveys delivered to students at Bath Spa University. It covered the progression from paper questionnaires, though html questionnaires delivered by email, to the current method of web-based surveys with email invitations.

The results show an increasing difficulty to obtain double-figure percentage returns without the use of financial inducements. Reminders with on-line surveys appear to have a consistent effect and are independent of time into the survey. There is also evidence that a second can bring about a similar percentage increase to the first.

Factors that appear to influence return rates

- Use of a Reminder
- Use of a Second Reminder
- Financial Inducements
- Personal Promotion (in smaller survey centres)

Factors that do not appear to influence return rates

- Level of IT Skills (but all Bath Spa University students are expected to use email)
- Gender of Respondent
- Age of Respondent (for Bath Spa University students)

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About the Author

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