

## Increasing postal questionnaire response rates: the effect of a monetary incentive on adult students in a business course

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### Abstract

Postal questionnaires are frequently used in educational research as a means of data collection. However response rates are often disappointingly low, introducing questions of sample bias and generalisability. In an effort to increase response rates from adult distance education students in a polytechnic business course, a monetary incentive was used with a postal questionnaire survey on attitudes to fees and course completion. While the response rate was an increase over that from some surveys of a similar student base without an incentive, it was not outstandingly so. A proportion of students opted not to receive the incentive. Questions can be raised as to the effect of the employment situation of the principally part-time students on their choice, and whether the response would have been different in a country outside New Zealand.

### Introduction

Postal questionnaires are a widely used method of data collection in educational research projects. However postal questionnaires suffer from several serious disadvantages. A major one is that often the percentage of those responding is low, which means the results are not generalisable to the whole population from which the sample was drawn. If different subsets of the sample show different response rates, sample bias may exist.

A number of review articles have been written to summarise the now quite extensive literature on improving questionnaire responses, but because many of these studies have taken place in market research or social science research fields other than education they are 1) of limited relevance to survey research in the education sector, and 2) often reported in journals such as *Public Opinion Quarterly* and other general social science journals and hence likely to escape notice by academics working in education. This paper describes an experiment attempting to increase the response rates from a postal questionnaire to adult distance education students so that greater certainty could be ascribed to the results.

### Background

Up to 1990, a high percentage of enrolled students at The Open

Polytechnic of New Zealand (TOPNZ), one of the major New Zealand distance education institutions, failed to complete courses in the major generalist sub-degree business programme, the National Certificate in Business Studies (NCB). Some students re-enrolled in the same course for several years without making much effort to persist. However course fees at that stage

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were very low, considerably lower than those at Massey University, the other large provider of business - albeit degree-level - courses in

distance mode.

In 1989, the New Zealand Government announced large increases in tertiary fees for university and polytechnic courses in 1990. For Massey University, the effect on extramural students (who are substantially part time and a majority of whom are women) was an increase of 205%.

In August 1989 the Extramural Students' Society at Massey conducted a survey among students on campus for vacation courses, the results of which indicated that at the 1990 cost, 40% of 1989 students would not re-enrol and 28% of re-enrolling students would study at least one paper fewer than they had originally planned. There was unfortunately no classification of responses into degree streams to isolate the business students, but a simple supply and demand relationship appeared to exist in relation to costs of study (Veltman, 1989). The 1990 provisional extramural roll of 14,000, reported in EXMSS News, June 1990, did show a drop of 17% from 1989.

TOPNZ was affected by the standardisation of tertiary fees to a much greater extent than were Massey or the other universities (which apart from Otago had very minor involvement, if any, in distance teaching). The 1990 fees represented a 900% increase over those for 1989. Students who were unemployed, sole parents and other beneficiaries were able to enrol for a much reduced fee.

There was considerable uncertainty within the polytechnic as to whether student numbers would be maintained at existing levels in future years because of this large increase in fees, and whether the fee structure would have an effect on numbers persevering to completion. Another factor influencing these outcomes was the increasingly difficult employment situation in New Zealand from 1989 onwards.

Outline of the Project

A project was designed around two major strands of enquiry: to investigate the motivation of NCB students to complete their courses, and to gain an appreciation of their attitude to course fees. The major research instrument was a questionnaire survey of a sample of students in one of the four large core courses of the NCB with continuing substantial rates of student drop-out before completion, and non-starters.

The results of the enquiry into these questions will be reported elsewhere. The innovative aspect of this research study in education is that a monetary incentive was offered to students in an attempt to raise response rates and reduce the bias often present when sample sectors show variable response. The research hypothesis associated with this section of the study may be stated in null form as:

A monetary incentive in the form of a promised cash payment will not substantially increase the response rate from a survey of New Zealand students in a business course offered by distance education.

The interest of the researcher in the use of monetary incentives was aroused by an article titled Stimulating Responses to Mailed Questionnaires: a Review, by Linsky (1975). The review collated findings on this topic from the research literature of sociology, psychology, business and education over the previous 35 years. The report was divided into 3 major sections: mechanical and perceptual factors, e.g. contacting the sample prior to sending out the

questionnaire; broad motivational factors, such as a personalised covering letter; and monetary rewards and other direct motivational factors, such as a "free gift" mailed out with the survey.

Most of the techniques in the first two sections were already known and practised as appropriate by this researcher. The possibility of enhancing returns through an incentive, however, offered the opportunity for testing the effectiveness of such a technique with a population different from those already reported on in the published studies. Follow up efforts to increase responses, such as blanket repeat mailings to a completely anonymous sample or to non-respondents, are costly and labour intensive. The likelihood of a larger initial response with an incentive appeared useful in offsetting the cost involved in follow up measures.

### Previous Findings

A brief overview only of some of the more relevant literature on incentives will be presented here, to provide background on response rates in a variety of settings.

A variety of review studies have been published on methods of increasing postal survey response rates including Miller, who writes in the Handbook of research design and social measurement (1991), quoting a variety of response rates from a variety of populations. College and high school graduates produce response rates varying from 25% to 65%, but this analysis is not directly comparable to students at TOPNZ.

Armstrong's work (1975) provides further evidence that prepaid monetary incentives have a strongly positive effect on mail survey response rates. He quotes one non academic survey in which half a random sample received a prepayment resulting in a 70% response rate and the other half, with no mention of payment, produced a 22% response.

Armstrong also found that the higher the incentive the higher the rate of response, for these eighteen studies all of which involved prepaid rewards. Promising a reward when the questionnaire is returned appears to have some effect on response as its size increases, but is not as effective as a reward included with the initial mailout.

Heberlein and Baumgartner in a 1978 investigation of 98 mail questionnaire studies sent to a variety of populations found that on average a 48% response rate resulted from a single mail out with no follow ups. The range varied from a low of below 20% to a high of more than 82%. These authors also note

surveys published in market research journals showed only a 40% response, while studies published in scientific journals had a 65% response. Public health surveys showed an 81% response while university-based surveys showed 62% returns (p.431)

They saw the variations as being explained by repeat mailings and follow ups (sometimes as many as three) and by the higher salience of the more effective surveys. One factor of importance they see as being the initial response rate to any survey, given that repeat mailings appear sure to increase the overall response.

The results of several Australian student surveys show responses lower than 50%, again from populations taught face to face and excluding some age groups into which TOPNZ students fall. Cullen and his colleagues attracted a response of 37% with one follow up in a survey of PhD students and their supervisors at ANU in 1994. A similar sized

response of 36% resulted with no follow ups from a Macquarie University course review survey of graduate students in the School of Economic and Financial studies, also in 1994.

The distance education literature does not provide evidence of a large number of questionnaire studies from which to ascertain normal distance student response rates. Bartels and Rathore mention a high response

rate of 77% for a study of Fernuniversitat graduates, but their population was former students who had persisted to complete a study programme (1989). An earlier Australian study of 868 distance language students from a number of institutions provided a 41% response rate with no follow up. The authors considered this sample to be "sufficiently large to provide a valid result" (Williams and Sharma, 1988).

Few surveys of the TOPNZ student population enrolled in business courses had been undertaken. One, restricted to those enrolled for the New Zealand Institute of Management programme in 1983 achieved 63% after one reminder (Ostman, Wagner and Barrowclough.(1988).

Without much indication of the response rate that might be expected from a New Zealand distance population, the incentive in the current study was offered, aimed at ensuring the response rate was sufficiently large for confidence that a majority of all sectors of the student population had communicated their views.

### Sampling

The National Certificate in Business Studies (i.e. the programme) is structured around a compulsory core of courses (or units) and a number of electives to make up the required total of 12 for the qualification.

Enrolments in the four core courses in 1990 were between 500 and 900 students. One of these core courses was selected for sampling: course code NCB 120 Economic Environment.

The reason for selecting this subject was that it was the only one of the large-enrolment core courses that had not been wholly or partly rewritten from the year before, and was not being tutored (i.e. marked and supported) by different academic staff from that previous year. Selecting a course that had fundamental changes such as these would have detracted from the objectivity of comparisons of completing students in each year, because such changes might have affected student retention rates - one of the major strands of research enquiry.

Business students at TOPNZ are spread widely across age groups, unlike students at many other New Zealand polytechnics who tend to cluster in the school-leaver/early twenties area. To counteract possible bias from simple random sampling the 602 enrolments were separated into male/female and four age groups: < 20, 20-29, 30-39 and 40+. Table 1 shows these divisions.

A stratified random sample was then drawn, basing the total sample on the size needed from a given finite population to achieve a 95% level of confidence that reliable inferences could be made (Krejcie and Morgan, 1970, quoted in Isaac and Michael,1990). Oversampling to the extent of approximately 100 was done to counteract

Table 1. NCB 120 Economic Environment enrolments (1990) by sex and age

	< 20	20-29	30-39	40+	Total
Female	73	154	6628	321	
Male	54	133	6925	281	
Total	127	287	13553	602	

non-responses, one common cause of which is students shifting around the country and failing to advise the polytechnic for some time, whether or not they are continuing with their study programmes. The recommended proportion of 234 was thus enlarged to 330.

Eleven questionnaires (8 males and 3 females) were returned marked "Gone No Address" and these were replaced from within the cell groups. After the initial responses were received (171 i.e. 52%) the response proportions for each cell group were reviewed, and a supplementary sample was added in certain areas to build the response rate. One reminder letter was also sent out to non-respondents. Total students approached eventually numbered 387, with an overall response rate of 59%. Table 2 shows the eventual percentage response rates per cell for the totals sampled in each of those cells.

Response rates of more than 50% in each cell were aimed for, to increase reliability, and these have been achieved in most cases. The table shows us that males in the 20-29 age group were substantially poorer at responding than those in other groups, and that students over 40 (admittedly a small number) were more likely to respond than any other group. Female response rates were in all age groups higher than male rates.

Table 2. Final response percentages by cell

	< 20	20-29	30-39	40+
Female	58	58	6788	
Male	49	39	6064	

Total(for age) 54 48 6477

### Incentive payment

Linsky(1975) found from his review that inclusion of a cash sum with a questionnaire

invariably increased returns over the level of response for no-reward control groups in ten experimental studies (p 96)

Linsky also suggests that the motivating power of the reward may not be in its actual money value but as a symbol of value. He quotes Watruba's (1966) study of urban households, admittedly a different population from students of distance education, as appearing to support this view. Watruba and Hancock(1940) found that a substantially higher response rate eventuated when a cash payment was enclosed with the questionnaire than when a cash reward was promised upon its return.

They both used a quarter [US25c] but the twenty-four year difference in money value needs to be appreciated.

In conducting the experiment with the Open Polytechnic survey it was however necessary to use a promised reward rather than inclusion of cash because of the financial regulations operating at the institution. Actual cash was not permitted to be mailed out and all payments needed to be by cheque. It was decided to proceed with the scheme on that basis, because of the novelty of such a reward in New Zealand mail surveys and the utility of a successful outcome.

### Focus Group Attitudes to Incentives

Prior to finalising the questionnaire a focus group of students currently enrolled in NCB 120 Economic Environment was organised as a way of clarifying the proposed issues and questions through direct feedback (see Isaac and Michael (1990)). A group of 7 students with a non teaching facilitator uninvolved in the research worked through a draft of the questions and also tested student attitudes to monetary incentives. The discussion was recorded and transcribed for analysis.

From this analysis the sections about monetary incentives have been extracted and these are discussed below. The student group (all who could attend at a specific date) represented half of those enrolled in the subject in the Greater Wellington area, and all were employed, with a preponderance in the banking industry, which may not have been representative of the student enrolment overall.

Overall, the group felt the suggestion of payment was inappropriate.

First student: Why are they paying it?

Facilitator: Because they're trying to motivate people

First student: Yes, but New Zealanders don't expect a ten dollar [payment]....

Second student: As long as you don't have to pay the return postage, like you've got a return paid envelope

Facilitator: Right, you feel that you would get a better response if you don't get ten dollars?

Second student: I'd sort of think, why are they paying me, what are they going to do with this?

Lots of talking.

Third student: I certainly wouldn't put the ten dollars in with your form. You'll have people just taking it and banking it, and still not really bothering. And they'll be annoyed you're spending taxpayers' money.

Fourth student: Personally I'd do it if there's a reply paid envelope, for nothing.

Fifth student: I don't think you need to pay them. I think people will either fill in questionnaires or they won't. They're either that type or they're not, and I don't think the money [should be offered] if you have the envelope with no postage to send it back. I think the ten dollars won't make any difference.

Sixth student: I don't think you need to pay the ten dollars. I mean you're sending it out to students. If they're interested enough to even start a course, they've got some sort of commitment to study and helping others study. Generally, they wouldn't even bother going through the whole enrolment and filling out that application form [without having that commitment]. So I think just a reply paid envelope.

Student reactions to the proposed incentive payment may be interpreted as showing a variety of assumptions. Suspicion of the polytechnic's motives (Stud. 2) and of other students in general (Stud.3) is expressed. Student 5 sees the offer of payment to be ineffectual - the assumption here is that extrinsic reward is unlikely to influence people's behaviour. Student 6 on the other hand is not suspicious of

others' motives and attributes good behaviour to them ("...a commitment to helping others study"). The third student's remark about taxpayers is possibly a reaction to the higher fees being charged and the need for these to be justified. The token courtesy of a reply paid envelope is mentioned by four students(2,4,5,6) on the assumption that no-one should suffer expense by answering. This is balanced by the expectation from Students 1,2,4,5 and 6 that alternately, no-one should benefit by answering.

Despite these reactions from an admittedly small and possibly unrepresentative group, it was decided to proceed with the offer of the incentive as described above.

## Results

A letter explaining the scheme was sent with the questionnaire, stressing the token value of the \$10 payment offered. Erdos(1951) recommended this approach. To maintain anonymity, students electing to receive the payment were asked to enter their name and address on a different coloured sheet separate from the main question booklet and the two items were processed separately upon return. Although this offer was unusual in the New Zealand setting, 46(21%) of the students elected not to receive the proffered \$10.

During computer analysis of the responses, a cross tabulation of those who accepted payment was run against those who completed all, some or none of their courses in 1990. However this showed little variation in the proportion within each category of 70-79% who accepted payment and 21-30% who rejected payment.

Thus there does not appear to be any strong correlation between completing or dropping out of a course and accepting payment for the questionnaire. This could be interpreted guardedly as confirming the existence of a constant proportion of the student population who feel willing to answer questionnaires with no extrinsic benefit to themselves.

Although these students were all enrolled in a first level course, the sample almost certainly included some who were well on the way to completing their qualification. This means that they had built a relationship with the institution over the course of their studies, and this relationship could have been a factor predisposing them to respond, allowing for the opinion of Student 5 (focus group) who saw people divided into two groups, one of which would be unlikely to respond in any circumstance.

Completion statistics for 1990 showed that 47% of enrolled students completed the course (i.e. 53% did not start, failed to do sufficient coursework or failed the mid year test). However a breakdown of the

responses gave a figure of 57% who had completed the course and 43% who had not completed. (It should be noted that current polytechnic procedures to encourage students to start work early and to counsel those showing signs of dropping out have increased the completion rate to a much greater proportion.)

Those who did not complete the course were therefore under-represented in the responses which therefore show some bias. In these cases, the student-institution relationship may have broken down because they found the course too difficult and gave up the idea of pursuing a business qualification; because they had decided to continue study at a polytechnic offering face to face teaching or because they had left the country or their personal circumstances had changed requiring them to give up or delay further study. These students may have suffered "guilty" or "antagonistic" feelings about the institution, despite the best efforts of staff to provide them with support, and hence decided not to respond.

### Conclusions

The offer of a monetary incentive to this population did not produce notably improved response rates. While the response was better than that for a number of survey populations, and well above 50% in a number of age/sex stratifications, variation still occurred, notably in males below 30 years. Populations in other countries may have more readily accepted the incentive offer if this is a more common local situation.

The response can be classified into 3 groups: 1) those who responded and accepted the incentive; 2) those who responded and refused the incentive, and 3) those who failed to respond. The existence of group 2 shows that there is a section of the New Zealand population for whom incentives of the order of \$10 are not an issue. Eighty-nine percent of the sample were employed either full or part time, so the money value of the comparatively small incentive as a unit of purchasing power was almost certainly not an issue for them. The size of group 3 may well have been larger without the incentive however there seems no certainty that response rates can be improved by offers of this nature.

There seems no reason therefore to reject the null hypothesis that a promised cash incentive will not substantially increase response rates from this population of New Zealand students in a business course offered by distance education.

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