

Survey Response Rates by Requestor's Characteristics

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Abstract

Response rates are crucial for the effectiveness of survey-based behavioral science and the validity of research conclusions. This study investigates the impact of the characteristics of individuals requesting participation on response rates in online surveys within the agricultural sector. Using social exchange theory and Coleman's social capital theory as guiding frameworks, we examined whether the personal characteristics of the requestor influence response rates. Data were collected from a sample of 1,452 agricultural development personnel using four different request formats varying by the gender and position of the requestor. Following Dillman's tailored design method, participants received a pre-email, a request email with a link to the survey, and four waves of follow-up emails. Response rates were analyzed based on the four treatment groups, the gender of the requestor, and the position of the requestor. The findings indicate no significant differences in response rates based on the requestor's gender or position. Analysis of variance (ANOVA) and independent t-tests revealed that neither the highest level of education, years of teaching experience, nor the wave of response significantly affected by the requestor's characteristics. These results suggest that the established trust and social capital within the agricultural community do not significantly influence survey participation. The study highlights the need for researchers to address declining response rates in survey research. It recommends building and maintaining community trust by providing clear, concise, and accessible research findings. Researchers should also consider more targeted sampling methods to reduce survey fatigue and improve response rates. The implications of these findings extend to the broader field of social science research, emphasizing that the gender and position of the requestor do not increase response rates or reduce selection bias. Future research should explore alternative methods to enhance survey participation and address the challenges of non-response bias in agricultural education research.

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Introduction

Understanding study participants' personal characteristics and how they affect their likelihood of participating in research studies could positively impact agricultural development research (Lindner & Lindner, 2024). Using mixed mode and internet-only questionnaire distribution has quickly provided researchers access to a varied diasporic population at a reasonable cost (Dillman et al., 2014). Error, specifically non-response error, has been a problem that has plagued researchers for several decades, including mail (Heberlein & Baumgartner, 1978) internet only (Fan & Yan, 2010) and mixed-mode survey techniques (Dillman et al., 2014). Stedman et al. (2019) suggested that with the increase in non-response rates and declining sample survey responses (Baruch, 1999; Baruch & Holtom, 2008; Eggleston, 2020), survey results should be under high levels of scrutiny. Previous studies have highlighted the importance of addressing non-response error in survey research (Groves et al., 2006; Groves & Peytcheva, 2008) specifically within agricultural education (Fraze et al, 2003; McKibben et al., 2022; Roberts & Dyer, 2005). Scholars in Agricultural and Extension Education have outlined the standard methods for accounting for non-response error (Lindner et al., 2001; Lindner, 2002), suggesting that non-response error and non-response bias are primarily ignored (Dooley & Linder, 2003). Rather than dismiss non-response, a more appropriate alternative to address error would be to ensure it does not exist in the first place (Groves, 2006; Groves et al., 2006; Hansen et al., 1951).

Don Dillman developed a process used by many researchers in agricultural development to obtain responses from sample surveys (Dillman, 1978; 1983; 1991; Dillman et al., 2014). Dillman's method of eliciting quality responses is based on social exchange theory (Blau, 1964; Dillman, 1978; 1983; 1991; Homans, 1961; Thibaut & Kelly, 1986) and has proven to elicit higher response rates over other commonly held theories (Greenberg & Dillman, 2021). Despite survey respondents perceiving no personal benefit, social exchange appeared to motivate their participation based on societal norms where costs outweigh benefits to the community. This theory has historically driven survey research design methods. With response rates at their lowest in decades, can we leverage social exchange theory for the representation and guidance our communities deserve?

Theoretical Framework

Greenberg and Dillman (2021) noted that in social exchange theory, people are more apt to comply with a task if they believe and trust that the rewards of compliance will outweigh the costs of acting. Furthermore, we can leverage social exchange to increase the likelihood of participant response rates by increasing the benefits of participation while decreasing the costs of responding and establishing trust. To establish trust, Dillman et al. (2014) suggested that survey researchers address six caveats: ensuring potential respondents can assess the survey's authenticity and ask questions easily, establishing a relationship with a legitimate authority (e.g., government or university), providing a token of appreciation (incentive-based) in advance, assuring confidentiality, communicating professionally, and building upon relationships and

friendships. In response to these caveats, requests for study participation typically follow established guidelines. Potential participants are given contact information for the researcher to establish trust and ask questions. Appreciation or token incentives are offered before the instrument is distributed. Confidentiality and data security are discussed in letters of participation. The instrument is branded with university or organizational logos to convey legitimacy and signal shared loyalty. All communications are conducted professionally and emphasize belonging to a shared community, such as agriculture, through images and language. Despite these efforts, response rates and the potential for non-response errors continue to increase (Koen et al., 2018; Zahl-Thanem et al., 2021). Dillman et al. (2014) further explained that tactics to increase response rates have negligible effects on overcoming non-response errors if they encourage responses from one specific sample group over another.

The theoretical framework for this research integrates social exchange theory (Blau, 1964; Homans, 1961; Thibaut & Kelly, 1986) through Dillman's tailored design method (2014) and is grounded in Coleman's social capital theory (1988; 1990). Dillman (1991; Dillman et al., 2014) recommended using social exchange theory to design data collection experiences that encourage truthful responses to survey instruments. He emphasized that online survey research should focus on a social contract, where participants exchange their time and information for perceived benefits. In this study, we utilized Coleman's social capital theory (1988), which builds on the work of Loury (1977; 1987) and Bourdieu (1986).

According to social capital theory, social structures develop over time based on a network of constructed trust. This trust is imparted through a sense of reciprocal obligation and perceived benefits rather than earned through individual actions (Coleman, 1988). Trust often flows from positions of lower rank to positions of higher rank and services in the reverse. Trust can be utilized and leveraged like currency, exchanged for services, creating an aleatory contract between community members. This exchange of trust for services depends on the pressure exerted by the social structure itself (Coleman, 1990) and becomes influential only after the event's structure has occurred. We approached this research with the understanding that all members of society exist within these authentic and assumed social networks.

In an agricultural cooperative, for example, an agricultural development advisor or specialist (a person in a higher position) imparts trust to local farmers (people in a lower position) by providing expert advice, resources, and training on sustainable farming practices. This trust is part of the specialist's obligation to support the community's agricultural development. In return, the farmers implement the recommended practices, share their crop data, and participate in cooperative activities.

Over time, this trust becomes a form of social currency. For instance, when the specialist needs farmers to adopt a new, experimental technique, the previously established trust encourages farmers to comply, even if the immediate benefits are not clear. Conversely, the farmers can leverage this trust to request additional resources or support from the agronomist, knowing that their cooperative relationship and past compliance will make the specialist more likely to

fulfill their requests. This reciprocal exchange of trust and services strengthens the network and ensures mutual benefits within the agricultural community.

Our research design aimed to determine if this social capital can be responsibly leveraged to obtain more robust data.

Purpose

This study aimed to determine if the characteristics of the individual requesting participation affect the number or type of respondents engaging with an online instrument. We wanted to establish if we could change the characteristics of the requester and elicit more responses when working with a population given to help a specific member of their community (i.e. agricultural specialists helping farmers or teachers helping students), thus lessening non-response bias. It was additionally questioned if the gender of the requestor could affect the response rates.

Three objectives guided this investigation: (a) Describe the response rates of the sample population based on who requested the subject's participation; (b) Determine if the gender of the person who sends the letter to participate in the research influences response rates based on demographic indicators; (c) Determine whether the person who sends the letter is a faculty or student who influences response rates based on demographic indicators.

Methods

To address the objectives of this study, data were collected as part of a more extensive US-based study of agricultural educators investigating agriculturists' experiences and motivations (McKibben et al., 2022).

The sample was taken from the National Association of Agricultural Educators (NAAE) membership list ($N = 6,645$), the largest organization representing agricultural educators in the United States. The study's findings are limited to this selective population and should not be generalized beyond its scope and limits. An accepted limitation of this study is the implicit frame error that exists when organizational lists are used for sampling (Tomaskovic-Devey et al., 1994).

Four representative random samples ($n = 1,452$) from the general population were obtained using a random number generator and Cochran's (1977) method to ensure coverage. Over-sampling was conducted based on a 50% response rate derived from a review of peer-reviewed agricultural leadership, education, and communications journals. Since this study was part of a larger research project, the population was sampled four times to ensure the viability of the broader research.

Data were collected via the online survey system Qualtrics. Follow-up reminders were made during the five weeks of data collection, adhering to Dillman's Tailored Design suggestions

(Dillman et al., 2014). Those contacts included a pre-notice, including a link to the survey, and four reminder emails with a one-week interval between points of contact. Each request was initiated from the system, and each treatment was distributed simultaneously via the system. Four different requests to participate were provided to participants. The content of the letters was consistent with treatment fidelity. The variation was in the opening line of the request and the salutation at the end. Example: Hi! My name is Sara, and I am a student.... One request presented as a female faculty member (FF), one presented as a male faculty member (MF), one presented as a female student (FS), and one presented as a male student (MS). The gender was indicated using gender-specific names, such as Jessica (FF), Jason (MF), Sara (FS), and Scott (MS), all of which are commonly held as being names of either female or male in the United States (Bauer & Coyne, 1997). Position as either a student or faculty member was explicitly written in the first line of each request for participation by stating: "My name is X, and I am a student" or "My name is X, and I am a faculty member."

Findings

The first objective was to describe the response rates of the sample population based on who requested the subject's participation. The four requests all had similar respondent characteristics across all measured variables and waves of requests. There were no significant differences in the reported grouping characteristics of respondents across any of the measured characteristics in the sample. Female respondents: FF (51.85%), FM (51.85%), SF (51.85%), SM (51.85%).

Respondents with a bachelor's degree make up 49.03% of the sample, with the following breakdown: FF (43.38%), FM (46.76%), SF (50.34%), and SM (55.10%). Respondents with a master's degree constitute 49.91% of the sample, with the following distribution: FF (55.88%), FM (51.80%), SF (48.28%), and SM (44.22%). Respondents with less than one year of teaching experience account for 4.23% of the sample, distributed as follows: FF (2.21%), FM (5.71%), SF (5.52%), and SM (3.40%). Respondents with one to five years of teaching experience represent 26.76% of the sample, with the following breakdown: FF (21.32%), FM (28.57%), SF (26.90%), and SM (29.93%). Respondents with six to ten years of teaching experience make up 18.49% of the sample, distributed as follows: FF (22.06%), FM (17.14%), SF (15.17%), and SM (19.73%). Respondents with eleven to fifteen years of teaching experience account for 14.61% of the sample, with the following distribution: FF (13.97%), FM (11.43%), SF (17.24%), and SM (15.56%). Respondents with sixteen to twenty years of teaching experience represent 12.54% of the sample, with the following breakdown: FF (18.06%), FM (11.56%), SF (13.90%), and SM (9.62%). Respondents with twenty-one to twenty-five years of teaching experience make up 6.51% of the sample, distributed as follows: FF (6.62%), FM (7.86%), SF (6.90%), and SM (4.76%). Respondents with more than twenty-five years of teaching experience account for 15.85% of the sample, with the following distribution: FF (13.24%), FM (17.14%), SF (16.55%), and SM (16.33%). Respondents who participated in the first wave make up 46.46% of the sample, with the following breakdown: FF (48.23%), FM (44.76%), SF (40.79%), and SM (51.90%). Respondents who participated in the second wave constitute 22.56% of the sample,

with the following distribution: FF (22.70%), FM (21.68%), SF (28.29%), and SM (17.72%). Respondents who participated in the third wave represent 15.49% of the sample, with the following breakdown: FF (16.31%), FM (15.38%), SF (16.45%), and SM (13.92%). Respondents who participated in the fourth wave make up 15.49% of the sample, with the following distribution: FF (12.77%), FM (18.18%), SF (14.47%), and SM (16.46%). See Table 1.

Table 1

Respondent characteristics by who requested their participation.

	Faculty Requestor				Student Requestor				Total		
	Female		Male		Female		Male				
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	
Gender											
	Female	70	51.5	67	47.9	74	51.0	84	57.1	295	51.9
	Male	65	47.8	73	52.1	71	49.0	63	42.9	272	47.9
										567	
Highest Education											
	Associates	0	0.0	2	1.44	1	0.7	1	0.6	4	0.7
	Bachelors	59	43.4	65	46.4	73	50.3	81	55.1	278	48.9
	Masters	76	55.9	72	51.4	70	48.3	65	44.2	283	49.8
	Doctorate	1	0.7	0	0.0	1	0.7	0	0.0	2	0.4
										567	
Years of Teaching											
	< 1	3	2.2	8	5.7	8	5.5	5	3.4	24	4.2
	1-5	29	21.3	40	28.6	39	26.9	44	29.9	152	26.8
	6-10	30	22.1	24	17.1	22	15.2	29	19.7	105	18.5
	11-15	19	14.0	16	11.4	25	17.2	23	15.6	83	14.6
	16-20	28	20.6	17	12.1	17	11.7	15	10.2	77	13.3
	21-25	9	6.6	11	7.9	10	6.9	7	4.8	37	6.5
	> 25	18	13.2	24	17.1	24	16.6	24	16.3	90	15.8
										568	
Response Wave											
	1	68	48.5	64	45.7	62	42.8	77	52.4	269	47.4
	2	32	23.5	31	22.1	39	26.9	27	18.4	129	22.7
	3	20	14.7	21	15.0	24	16.6	20	13.6	85	15.0
	4	18	13.2	24	17.1	20	13.8	23	15.6	85	15.0
										568	

Note. Percentages may not equal 100% based on rounding errors. Non-binary and other response categories were included in the questionnaire and were omitted for clarity due to no responses. Discrepancies may exist based on empty cells and incomplete data.

Objective number two was to determine if the gender of the person who sends the letter to participate in the research influences response rates based on demographic indicators. Objective two was analyzed by one-way analysis of variance (ANOVA) using the requestor as a fixed factor with the highest level of education, years of teaching, and a wave of response as dependent variables. Tested at the ($\alpha = 0.05$) level, no statistically significant effects were determined to exist and all effect sizes were measured to be small: Level of Education ($F(3, 564) = 1.68, p = .17, \omega = 0.06$); Years of Teaching ($F(3, 564) = .37, p = 0.77, \omega = 0.06$); Gender ($F(3, 565) = .87, p = 0.46, \omega = 0.03$); Wave of Response ($F(3, 565) = 0.39, p = 0.76, \omega = 0.06$).

Objective Three was to determine whether the person who sends the letter is a faculty or student who influences response rates based on demographic indicators. A similar analysis was conducted by calculating an independent t-test based on binary coding the requestor as either a faculty member or student; Level of Education ($t(565) = 1.76, p = 0.08, d^2 = 0.15$); Years of Teaching ($t(566) = 0.68, p = 0.49, d^2 = 0.06$); Gender ($t(565) = 1.02, p = 0.31, d^2 = 0.09$); Wave of response ($t(566) = 0.14, p = 0.89, d^2 = 0.01$). Coding was also conducted where the requestor was binary coded, presenting as either female or male; Level of Education, ($t(565) = 1.41, p = 0.16, d^2 = 0.12$); Years of Teaching ($t(566) = 0.80, p = 0.43, d^2 = 0.01$); Gender ($t(565) = 0.28, p = 0.78, d^2 = 0.02$); Wave of response ($t(566) = 0.08, p = 0.94, d^2 = 0.01$).

There were no statistically significant differences regardless of how the dependent variables were coded, and all effect sizes were deemed trivial (Cohen, 1992; Field, 2013). We acknowledge that repeated analyses increase the probability of committing a Type I error. If there had been any significant findings, an improved statistical model would need to be developed.

Conclusions, Implications, & Discussion

This study, examining survey participation among agriculturalists through the lens of social exchange theory, found no evidence that existing social capital or trust, as embodied in pre-existing relationships, influences response rates. Respondents were not more likely to participate if the survey request came from someone they were predisposed to help. They were not more likely to respond to someone of a higher or lower position, and none were more likely to respond to someone of a specific gender. These findings suggest that the reciprocal obligations, perceived benefits, and established trust posited by social exchange theory did not significantly impact survey participation in this context. While other social factors, potentially offering different forms of exchange or reward, may influence response rates within this community, this research found no impact from the specific social obligations tested.

With falling response rates, many people are attempting to make minor adjustments to their research methods or instrumentation to ensure appropriate levels of response. As social scientists, we must address the tolling of the bell, a final imperative call to our longevity and value as researchers; the design, distribution, and analysis of our questionnaires and attempts to conduct our scholarship is the livelihood of our professional.

We attempted to discover if we could influence a higher response rate based on the characteristics of the researcher requesting participation. If we can get closer to a 100% response rate reliably, we could ask fewer people to respond, knowing they all will. Survey fatigue is caused by receiving too many requests to participate. Since we need a baseline response rate, we over-sample. If we could influence more of a specific demographic to respond, we could influence or mitigate the outcomes of social pressure. The unknown influence of the requisitioner on the respondent fueled this investigation.

If we as faculty are not negatively influencing our respondents by asking for their participation, we must explore other options for our non-responses. To return to Coleman (1990), there is a chance that we have all spent our credit slips, causing our community to stop conducting these favors for us no matter who asks. That is to say that, according to the social capital theory, if A does something for B and trusts B to reciprocate in the future, this establishes an expectation in A and an obligation in B. This obligation can be seen as a credit slip held by A to be redeemed, such as in development work. Advisors or specialists provide information or equipment to producers and farmers. The advisor does this with the trust that the producer will reciprocate. That trust the advisor has in the farmer to reciprocate places an obligation on the farmer to provide some benefit to the advisor. That obligation can be considered a tangible credit slip or an I Owe You.

Two explanations for the current lack of reciprocation, in the form of responses, can be suggested. As a group of research faculty, we are not as part of the community network as we may believe. Students and faculty are simultaneously tertiary members and former members of that social network. Researchers are no longer part of the social exchange in which the respondents participate. Though the researchers in this field were almost all community members at one point, they are no longer seen as core members. Another explanation is that the trust has been broken, and there is not enough trust in the community. The participants do not see enough reciprocal benefits from the researchers or the research to compensate for the use of energy. We have overdrawn our trust balance and are now paying the fee.

Recommendations

When designing research studies, we do not need to worry about who the request is coming from; they will not respond better anyway, as the trust imbalance is too far gone to affect it in this way. The real work must be done to correct the trust imbalance rather than manipulate respondents. Researchers need to be more diligent about being succinct in their samples. Researchers should not try to impress the field with a large national survey but rather be clearer about who and what their population is. Researchers need to do the hard work of finding contacts for the exact sample we are looking for rather than relying on the expediency of a listserv, an email database, or a targeted social media group. Advisors and Chairs must be more diligent in advising graduate students about proper sampling methods and achieving

quality results rather than larger data sets. These actions will stop the overburden on the system and help to diminish fatigue.

However, we must also replenish trust and build back that obligation and mutual benefit. To do this, researchers must return the results as digestible and understandable information back to our population. Conclusions and recommendations must address our research population and be packaged to fit their ability to consume those recommendations, such as best practice recommendations or suggestions. Leaving it in a journal behind paywalls and in a language only those with doctorates speak does not help them and will ultimately further alienate us from them. Once, the work of agricultural researchers went into handouts and pamphlets written and distributed to farmers and producers. White papers based on current research written at the level of the producer and practitioner were once a measure used to determine impact. That white paper might now need to be in other forms, such as podcasts, snippet videos, or social media posts. We must remember our obligation and responsibility to our community and repay the debt of their time by returning the results. This will do much to replenish the trust we have lost.

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