Using Social Media and Targeted Snowball Sampling to Survey a Hard-to-reach Population: A Case Study

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Abstract

Response rates to the academic surveys used in quantitative research are decreasing and have been for several decades among both individuals and organizations. Given this trend, providing doctoral students an opportunity to complete their dissertations in a timely and cost effective manner may necessitate identifying more innovative and relevant ways to collect data while maintaining appropriate research standards and rigor. The case of a research study is presented which describes the data collection process used to survey a hard-to-reach population. It details the use of social media, in this case LinkedIn, to facilitate the distribution of the web-based survey. A roadmap to illustrate how this data collection process unfolded is presented, as well as several "lessons learned" during this journey. An explanation of the considerations that impacted the sampling design is provided. The goal of this case study is to provide researchers, including doctoral students, with realistic expectations and an awareness of the benefits and risks associated with the use of this method of data collection.

Keywords: sampling hard-to-reach populations, snowball sampling, sampling from social media, response rate, LinkedIn

Introduction

Response rates to the academic surveys used in quantitative research are decreasing and have been for several decades among both individuals and organizations (Baruch, 1999; Baruch & Holtom, 2008; de Leeuw, 2005). Johnson & Owens (2003) attribute this decline to: privacy issues, confidentiality issues, exploitation of personal information, and general cynicism. The results of a survey among non-respondents found the following reasons for not participating included too busy 28%, not relevant 14%, address unavailable to return the questionnaire 12% [a mail survey was used in this study], and company policy prohibits participation 22% (Baruch & Holtom, 2008).

Given this trend, to provide doctoral students an opportunity to complete their dissertations in a timely and cost effective manner, it may be necessary to find ways to obtain funding for doctoral students. Alternatively, they may be allowed to use paid professional research firms such as Qualtrics or Survey Monkey for data collection. However, this is

an expensive option for students and how much they learn about data collection techniques is debatable. Perhaps, we need to find more innovative and relevant ways to collect data while maintaining appropriate research standards and rigor. These may include the use of social media to collect data as well as mining the existing data available on social media and other big data sources.

Doctoral students often have limited funds and are faced with a limited timeframe due to completion deadlines to obtain their degree. De Leeuw (2005) suggests that these are frequently limitations in research and suggests, "When designing a survey the goal is to optimize data collection procedures and reduce total survey error within the available time and budget. In other words, it is a question of finding the best affordable method" (p. 235).

These constraints played an important role in this case study given that data was collected by a US citizen in the US and in Russia. Data collection from the targeted population in Russia was hampered by several constraints such as language, travel costs, travel restrictions and others. Due to the economic conditions in the industry in which he was employed, the researcher became unemployed and under significant pressure to complete his degree as soon as possible and obtain an academic position. Incurring travel costs for data collection in multiple countries was not a reasonable option. Therefore, the student and his dissertation committee considered, and employed, a method which was designed to balance reasonable time and cost constraints with an appropriate level of rigor for a dissertation.

The resulting study is presented which describes the data collection process used to survey a hard-to-reach population using social media. In this case LinkedIn was used to assess the study's feasibility, to target respondents, and to facilitate the distribution of the web-based survey. A roadmap to illustrate how this process unfolded is presented, as well as several of the "lessons learned" during this journey. The goal of this case study is to provide realistic expectations and awareness of the data collection issues encountered that pose both benefits and risks with the use of the method described in this case study. Explanations of the data collection techniques used, and the adjustments required to these techniques for successful data collection, are presented to allow the reader to anticipate and plan for the difficulties that may occur when conducting this type of quantitative data collection. Continuous improvement, refinement, and adaptation of the data collection method described may be required in different circumstances. Data collection is, of course, predicated on the assumption that an appropriate dissertation topic has been chosen (Luse, Mennecke, & Townsend, 2012).

To make this paper easier for the reader to follow, <u>we have underlined the sections which describe the specifics of the case study undertaken</u>. The theoretical underpinning of this case study process and the concerns for the rigor of the process are discussed relative to the actions taken.

Background

Concern for Declining Response Rates

Since at least the 1990's it has been noted that survey response rates have been steadily decreasing. This has led to concerns about the quality (defined as reliability and validity) of the resulting responses. This quality impacts the use of the data in drawing valid and reliable inferences and conclusions (Baruch & Holtom, 2008; de Leeuw, 2005; Murphy, Hill, & Dean, 2013). The decline in response rates is most troubling from the standpoint that the resulting sample may not be representative of the population to be sampled, and thus any inferences drawn from the sample data may not generalize to the desired population. Baruch and Holtom (2008), as well as those they reviewed, suggest that representativeness is the main concern and suggest that it is possible to have a low response rate and still collect a sample that is representative of the population from

which it was drawn. While the preferred method for dealing with a low response rate is to avoid having one in the first place, due to time and cost constraints as well as the possibility of a hard-to-reach population, this is not always feasible for doctoral students. Based on declining response rates, it appears that most populations currently used for survey research can be increasingly classified as "hard-to-reach" populations when employing traditional sampling techniques.

However, this study also faced additional factors that suggest it is a hard-to-reach population such as its target population is multinational. While Russia was not included in her study**,** Harzing (1997) reported international mail surveys have a typical response rate of between 6% and 16% after multiple mailings, suggesting that international populations can be classified as hard-to-reach populations for many researchers. The greater the geographical and cultural distance between the researcher sending the survey and the recipient of the survey, the lower the response rate achieved (Harzing, 1997). Russia has large distances both geographically and culturally (The Hofstede Center, n.d.) from the US doctoral student. However, the response rates achieved using this sampling design resulted in response rates of 31% in the United States and 29% in Russia. While researchers would always prefer a response rate greater than the one they achieved, achieving these rates in a situation where many experts felt that responses would be almost unattainable suggests that this method of data collection deserves further study. A timeline that outlines the following discussion of subject recruitment and the data collection procedure can be found in Appendix A. Given these challenges in collecting data for quantitative research, we examined the extant literature concerning hard-to-reach populations as a guide to improve survey response rates.

Snowball Sampling

One method that is becoming increasingly popular to recruit subjects is snowball sampling. Snowball sampling is undertaken when a qualified participant shares an invitation with other subjects similar to them who fulfill the qualifications defined for the targeted population (Berg, 2006). Historically, snowball sampling has been used in qualitative research where a qualified subject is contacted by the researcher and a social relationship developed ("Snowball Sampling – II," 2006). Once the qualitative researcher has obtained responses of interest to the study from the subject, a referral to another qualified subject is sought (Coleman, 1958-1959). This technique is particularly useful in hard-to-reach populations (i.e., HIV patients) where a network of the qualified study subjects is assumed to exist and the researcher is hoping to be linked into this network through social interaction with the initial subject in the network (Atkinson & Flint, 2001; Faugier & Sargeant, 1997). These networks among hard-to-reach populations are not generally open to researchers who do not have social entrées into the hidden population. Surveys received from unknown researchers on sensitive topics will not be welcomed if no relationship, particularly a trusting one, exists. However, when sending quantitative surveys which can be forwarded to anyone, unlike the researcher interviewing subjects in qualitative research, the researcher has less ability to scrutinize the qualifications of the referred subject. Thus, additional rigor concerns may arise.

Targeted Sample for Survey Research

One documented approach to maintaining rigor when surveying hard-to-reach populations is the use of targeted sampling (Watters & Biernacki, 1989). "It [targeted sampling] draws from both survey and qualitative research methods…. through an interactive process of adjusting research targets, recruitment methods, and research questions and instruments, inquiry can be focused on the most appropriate subjects for study" (Watters & Biernacki, 1989, p. 427). Snowball sampling or chain of referral is one such targeted recruitment method. "The creative application of deliberate recruitment activity is one of the more obvious distinctions between targeted sam-

ples and the asystematic recruitment of research subjects in convenience samples on the one hand and the more rigid cluster and stratified samples on the other. Unlike convenience samples, research subjects are selected for specific attributes that preliminary research has defined as targets for study" (Watters & Biernacki, 1989, p. 425). Targeted sampling allows the researcher to maintain greater control over both who initially receives the invitation to participate in the survey, as well as attempts to maintain some control over the resulting sample through adjusting all the available tools (research targets, recruitment methods, research questions, and instruments) to make the sample more closely mirror the population under study. "Nearly all studies of hidden populations are carried out in circumstances that do not permit true random sampling. Under these conditions, and if properly conducted and tied to what is known or can be learned about population parameters, targeted sampling provides a more powerful sampling mechanism than convenience sampling and a more feasible approach than random sampling" (Watters & Biernacki, 1989, p. 427). To determine if the targeting method was successful involves obtaining values for variables from external data sources and comparing these known values of the targeted population to those obtained from the sample. Significant differences in the values may suggest an adjustment in the targeting is needed. Baruch (1999) also reports this comparison procedure as a common method to indicate the sample's representativeness of the population.

In this case study, demographic information was collected and used to compare the sample demographic statistics to those reported in the extant literature and industry reports of statistics, where available. This comparison indicated that the sample was representative of the population on several of these variables. For example, demographic variables such as age, gender, job tenure, and education level distributions were consistent with previous related studies and industry statistics. We felt that these were the variables that the literature suggests are relevant to the research model under study and thus are also potential control variables.

Targeted Sampling Using Social Media

Murphy et al. (2013) state that survey research is by definition "a social interaction between a researcher and a (potential) respondent – a 'conversation with a purpose'" (p. 1). Additionally, they suggest that since the methods employed by individuals today to carry on such conversations have changed, so should the tools used for survey research. The conversation should take place using the tools the targeted population is currently using to carry on the conversation. Murphy et al. (2013) define social media as it relates to survey research as "the collection of websites and web-based systems that allow for mass interaction, conversation and sharing among members of the network." (p. 3). Unlike Facebook and other more general social media, LinkedIn is a platform that connects professionals in various fields and, therefore, provides greater ability to target data collection to an appropriate social network.

PC Magazine identified LinkedIn as "the most important cross-industry professional network around" and made it an Editors' Choice site (Duffy, 2013). Importantly, there is a free version available to anyone with an email address that provides mobile access for those without computers. They suggest, "It's such an important place that we recommend everyone over the age of 20 have a LinkedIn account" (Duffy, 2013), thus increasing the ability to appropriately target study subjects.

LinkedIn's membership grew steadily reaching 300 million LinkedIn members with more than half of the membership residing outside the US. The company announced a strategic shift to achieve their vision of "creating economic opportunity for every one of the 3.3 billion people in the global workforce ("LinkedIn reaches 300 million," 2014). The company is expanding LinkedIn Groups and mobile access, suggesting potential access to a greater number of respondents and a reduction of the digital divide bias. Importantly for this study, on June 21, 2011 LinkedIn made its site available in the Russian language at http://ru.linkedin.com (Posner, 2011).

Although LinkedIn communities are not exhaustive populations of industry representatives, they might be considered suitable for initial targeting of subjects, an important step in snowball sampling technique (Goodman 2011; Handcock & Gile, 2011). Goodman (2011) argued that even in the case of populations which are not hard-to-reach, it is possible to collect a representative sample provided that the initial contact and requests for participation was made with appropriate individuals from the population of interest.

Case Study Process Description and Justification

Study Description

The dissertation topic that is the subject of this case study investigates turnover intentions and its antecedents such as the service orientation of hotel employees in the United States and Russia. Front-line employees are identified in previous hotel industry studies as possessing a high turnover rate (Hinkin, Holtom, & Liu, 2012). Thus, to target the appropriate population to answer the research question (Luse et al., 2012) the proper target population was defined as front-line employees of Western-based hotel operators. It was assumed that the management of Western-branded hotels would be more open to participation in a bi-national academic research project and be willing to provide assistance with data collection. Also, the use of Western Branded hotels allowed the organizational factors to be similar in the US and Russia. Eight Western hotel brands operating in Russia (Best Western International, Carlson Hotels Worldwide, Choice Hotels International, Hilton Worldwide, Hyatt Hotel Corporation, Marriott International, Starwood Hotels & Resorts, Wyndham Hotel Group) were identified as having hotels in both study locations.

Initial Recruitment Strategy

The initial strategy to achieve the targeted sample began with contacting properties which were located near the student's home, to discuss project feasibility and recruitment of targeted respondents. Manager's responses indicated that they required approval from their superiors to participate and further suggested contacting the human resource (HR) departments in the corporate offices. Responses from these HR representatives indicated they could not participate for various reasons including an excessive number of similar solicitations already received, the desire to avoid accusations of favoritism to some researchers, advice from the legal department against becoming involved in a survey project, and conflict with existing internal employee surveys. Many of these branded locations were franchisees and required individual inquires. The phone or email messages sent to franchisee operators were not returned. Similarly, a LinkedIn group discussion board posting made to US hotel operators and managers did not result in any interest to participate among the group members. Thus, the recruitment strategy needed to be adjusted to reach the targeted population.

A US hotel manager had mentioned cooperating on a limited number of academic projects with the International Council of Hotel, Restaurant and Institutional Education (ICHRIE), a leading organization in the hospitality industry supporting hospitality education and hospitality research projects. Potentially, ICHRIE's assistance in the survey distribution appeared to provide several advantages. Hospitality educators might be more inclined to help and may have students or graduates that would be potential subjects for the survey. Also, hotel operators that are members of ICHRIE may be more likely to have an interest in, and take part in, a hospitality research project. Thus, the data recruitment strategy was targeted to include contacting individual franchisees through support from the professional organization ICHRIE. To build social capital with ICHRIE the researcher agreed to fill a vacant board member position. The ICHRIE Director of Research distributed a message from the researcher to the membership with a link to the research survey. However, the response rate from the targeted ICHRIE membership was low (<0.1%) and no usa-

ble surveys were completed. Clearly, a recruitment strategy adjustment to reach the target population was necessary.

The same recruitment strategy used for contacting hotels in the US was attempted in Russia to determine whether it would succeed in a different context. Contact information for Western branded hotels operating in European Russia was obtained from the hotels' websites. A recruitment e-mail and FAX from the researcher, and the native Russian dissertation committee member, was sent in both English and Russian to each hotel. The involvement of the native Russian committee member was considered an important adaptation to ensure cultural sensitivity was observed.

Comments concerning data collection in Russia were received while attending an international business conference where the researcher's proposal was met with skepticism concerning the feasibility of collecting data in Russia. Concerns that Russians may be averse to participating in a US research project or with an unknown researcher were raised again suggesting this was a hard-to-reach population. This potentially could result in limited ability to collect data in Russia. Further, they suggested respondents might hesitate to complete the survey or be untruthful in their responses if it was presented to them by hotel management. They may feel that management could attain their responses. This perception may thwart the snowball/chain of referral recruitment strategy.

As was done in the US, General Managers of seventeen Russian hotels were contacted and only two expressed interest in the project and requested additional information. Ultimately both General Managers were unable to participate in the survey; however, one offered to provide expert advice concerning the Russian hotel industry. The disappointing response from direct contact with the hotels is consistent with Baruch & Holtom (2008) who found that using organizational responses results in a lower response rate. Thus, the lack of cooperation from the Russian and US hotel managers together with the feedback that management should not be involved in the survey distribution, particularly in Russia, the recruitment strategy was once again adapted to overcome these barriers. It was retargeted to the individual level rather than an organizational level to recruit participants. Although managers were ultimately used to distribute the survey link, the manager was not using their organizational authority, rather he/she was simply acting as a direct conduit to the researcher by forwarding the researcher's link to an external research website explaining the study. The survey link on the researcher's website stated that the survey responses were completely anonymous and de-identified. Building personal relationships with each potential respondent to ensure participation and accurate and honest responses was paramount. Thus, the use of social media to build the required relationships was explored.

Plan B – Social Media to Target Individuals

The Russian advisor suggested that social media usage was becoming very popular with many Russian people from a broad age range for personal and professional reasons. It also provides a way to build relationships with potential respondents in Russia. He explained that his hotel's parent company had created a LinkedIn group for use by managers and employees with about 16,000 members worldwide. A search on LinkedIn for this group, as well as groups for other targeted hotel chains, identified eight Western branded hotel related groups with members in either the United States and/or Russia. For the researcher to contact members of these groups, membership to the group was required. Group membership was requested by the researcher and all eight groups accepted his request within five days. Once granted, a group message introducing the researcher and thanking them for granting membership was posted on the group's discussion board with the goal to first establish a conversation/relationship with members. In every group, some members responded suggesting that a relationship was forming between as least some members of the network and the researcher.

Building a credible network and nurturing trusting relationships from a distance with both hotel managers who would be asked to simply forward the survey link to their front-line employees and self-identified front-line employees who would complete the survey directly on the research website was important but time consuming. This time factor was weighted against the costs of both attempting to collect data personally and the cost of not obtaining sufficient dissertation data. Trust building is important in data collection (de Leeuw, 2005) and particularly in the Russian context.

Despite the fact that the student researcher could not control to whom the network connections sent the referrals, the researchers built into the survey design questions to confirm the respondents were members of the targeted population. For example, a question concerning who employed the respondents was included as a target check. The researchers examined responses to this question to ensure the hotel listed matched the targeted groups. Other attributes of the target population such as job description were also verified to ensure that respondents were front line hotel employees.

Network Building, Development, and Targeting Adjustment

The researcher created a LinkedIn profile with the goal that individuals viewing the profile felt they learned something personal about the researcher. The profile included the fact that the researcher was a doctoral student conducting academic research to earn his doctoral degree, and his educational and professional background. The profile included a picture of the researcher on a trip to Russia taken several years ago to show his interest in Russia and to facilitate relationship building. It generated favorable comments from Russian network participants. The profile clearly indicated that the researcher was using LinkedIn for research purposes and this research profile was exclusively used to recruit network members in both subject countries.

In addition to the individual contacts solicited in the LinkedIn groups, individual members of the targeted population were identified on LinkedIn by searching using the keyword "hotel" and specifying country as "Russian Federation". Over 4,200 search results were obtained, including large numbers of targeted employees. One hundred requests were sent to managers to join the researcher's LinkedIn network with 45 acceptances. To limit accepted requests to persons in the target population, the LinkedIn default invitation was replaced with an invitation to join the doctoral student's "research network".

Based on the positive response to this approach, the researcher continued to send personalized requests via LinkedIn to both Russian hotel employees and managers to join his research network. Once they responded a personalized note was sent thanking them for joining. These documents can be found in Appendix B. To further build and maintain relationships, personalized emails were sent to network contacts on special occasions.

Early results from Russian subjects indicated that the individual requests were far more successful than prior group mailings. It was decided that US hotel managers and employees would be recruited using a process corresponding to the one used for the Russian network. This maintained a consistency of sample recruitment and data collection across both subject countries.

Data Collection and Invitation Adaptations

Invitations to participate in the survey were developed for managers and employees (see Appendix C). The management invitations included the study purpose, the anonymous and voluntary nature of the survey, both the English and Russian language survey links and a request that they forward the e-mail to their subordinates or other contacts that were members of the targeted population of front line hotel employees. Employee invitations contained the same information, however, the employee was asked to complete the survey prior to forwarding it.

Data collection in the Russian LinkedIn network had the subject line "<NAME>, will you please give me your opinion?" This approach was suggested by a Russian contact who explained that Russians welcomed the opportunity to be heard. From Table 1 it can be seen that only eight surveys were started and five completed out of 61 invitations sent yielding 5% response rate.

The poor response rate was again discussed with Russian contacts and it was suggested that the request should stress a call for their professional opinion, rather than for their personal opinion. From February 12th to the 14th, twenty-nine additional invitations to participate were sent to Russian network contacts with a slightly altered subject line asking for their "expert" opinion (see Appendix D). As a result, response rates improved considerably (48% response rate). At this time data collection in the US also began with a nine percent response rate.

It was noted that participants seemed most likely to respond on the day the invitation was sent. Culturally sensitive reminder e-mails, which avoided any perception of aggressiveness or hard deadlines, were sent to Russian invitees. The researcher was informed that Russians do not appreciate pushiness and deadlines, preferring to be asked respectfully for their participation. The reminder subject line was modified to: "A gentle reminder and a plea for help". The reminder acknowledged the subject's busy schedule, noted the e-mail previously sent, reassured the subject of anonymity and requested if they were managers they forward the link to hotel employees. If they were employees, they were asked to complete the survey and to forward it to fellow hotel employees.

Simultaneously, US membership in the LinkedIn research network rapidly expanded and as a result 222 invitations to participate were sent to US members with 36 surveys completed (16% response rate). Although there was some improvement in the Russian response rate, further improvement was needed. Thus, the subject line was modified to reflect an appeal for sympathy (as the doctoral student's deadline for meeting graduation requirements was rapidly approaching). The subject line "<NAME> please help me graduate this April" was used (see Appendix E). Eighty-three invitations were sent to Russian members with only 6 surveys began and 4 completed (5% response rate).

Russian contacts advised that Russians highly respect the pursuit of education, thus, the subject line was subsequently changed to "<NAME>, will you please help with an education project?" Russian response rates improved dramatically. From February 25th to the end of the data collection period on March 15th, 2014, 210 Russian invitations were sent and 88 surveys were returned completed (42% response rate). US response rates during this period remained strong: Two hundred four invitations were sent and 110 usable surveys were returned (54% response rate).

Figure 1 presents the dynamics of the collection process and indicates the number of survey requests sent to network members and the responses received (surveys completed). Table 1 summarizes the response rates obtained with each adaptation.
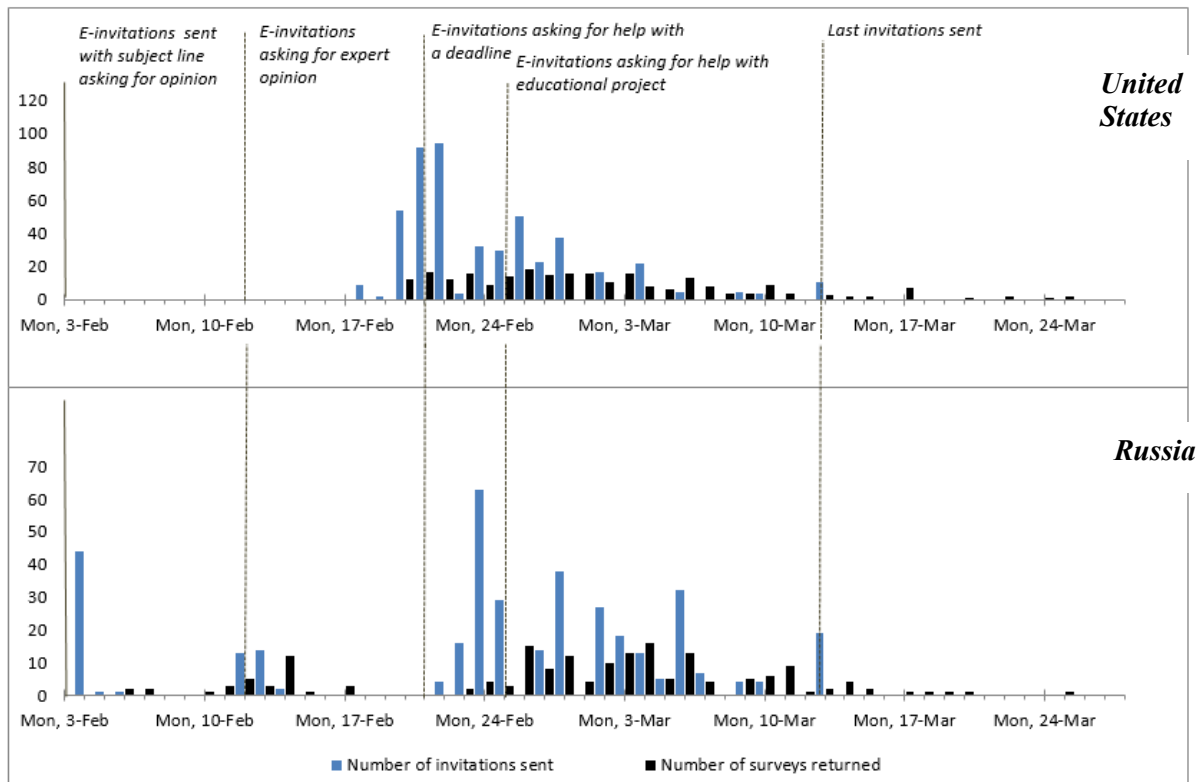
Figure 1. Invitations sent and responses received

Table 1. Distribution of response rated

	Total		E-invitations "<NAME>, can you please give me your opinion?"		E-invitations "<NAME>, can you please give me your expert opinion?"		E-invitations "<NAME>, please help me graduate in April"		E-invitations "<NAME>, will you please help with an education project"	
	US	Russia	US	Russia	US	Russia	US	Russia	US	Russia
Number of invitations sent	491	383		61	65	29	222	83	204	210
Numbers of responses received	229	166		8	10	24	49	5	170	129
Response rate for responses received	47%	43%		13%	15%	83%	22%	6%	83%	61%
Number of completed usable surveys	152	111		5	6	14	36	4	110	88
Response rate for usable surveys	31%	29%		8%	9%	48%	16%	5%	54%	42%

Representativeness of the Targeted Population

We examined the representativeness of the sample to the targeted population as well as examined responses to demographic questions designed to assure target population membership. A total of 111 properly targeted responses from Russian network and 152 properly targeted responses from US network were collected prior to graduation deadlines. As presented in Table 2 below, both

samples consisted mainly of full-time, front-line employees of Western-branded hotel opera-tors. A comparison of sample demographic characteristics with those reported previously in the literature was conducted to assess the representativeness of the targeted sample of the targeted population. As seen in Table 2, the Russian sample has considerably greater proportion of women ($\chi^2 = 8.696$, df = 1, $p = .0032$). Similar results were reported by Swerdlow & Cummings (2000) who conducted a paper-based survey of Russian and US hotel employees and found 73% and 55% of females in their Russian and US samples respectively. Additionally the author's personal interviews and visits to hotel properties further support for this finding. There were a significant-ly larger number of respondents with undergraduate and graduate degrees in the Russian sample compared with the US sample ($\chi^2 = 6.702$, df = 1, $p = .0096$), a result also supported by Swerdlow and Cummings' similar findings. The proportion of employees with a university de-gree was high in the US sample as well (68%) and this fact is consistent with Lin, Wong, & Ho (2013) who surveyed 587 frontline employees of leisure industries in the US and reported 68.5% respondents with professional or college degrees.

Table 2. Demographic characteristics of US (n = 152) and Russia (n = 111) samples

	Frequency (%) US	Frequency (%) Russia		Frequency (%) US	Frequency (%) Russia
Gender			**Years in hotel industry**		
Male	77 (*51*)	36 (*32*)	less than 3 years	28 (*18*)	54 (*49*)
Female	75 (*49*)	75 (*68*)	4 to 6 years	35 (*23*)	28 (*25*)
			7 to 10 years	33 (*22*)	16 (*14*)
Age			more than 10 years	56 (*37*)	13 (*12*)
Mean	34.24	29.41			
Range	20 - 65	21 - 55	**Occupation**		
			Bell hop	-	1 (*.01*)
Education			Concierge	30 (*20*)	9 (*8*)
High school or less	5 (*3*)	7 (*6*)	Front desk clerk	77 (*51*)	65 (*59*)
Some college/tech degree	44 (*29*)	13 (*12*)	Housekeeping	10 (*7*)	4 (*4*)
Undergraduate or higher	103 (*68*)	91 (*82*)	Maintenance	2 (*.01*)	1 (*.01*)
			Pool attendant	1 (*.01*)	-
Full/ Part Time Status			Restaurant	27 (*18*)	29 (*26*)
Full time	145 (*95*)	110 (*99.9*)	Room service	5 (*3*)	2 (*2*)
Part time	7 (*5*)	1 (*.01*)			

The average age of respondents was 34.2 and 29.4 years in the US and Russian samples respec-tively suggesting a dominance of young employees with short tenure. About half of the Russian respondents (49%) have worked in the hospitality industry 3 years or less compared to 18% in the US sample. Similar composition of the hotel workforce was reported by Swerdlow and Cum-mings (2000), Lin et al. (2013), and Sverdlin (1998). In particular, about 27% of the US respond-ents in Lin et al.'s (2013) study had worked in the industry less than 2 years and 48.9% of re-spondents were under the age of 30. Sverdlin (1998) studied work compensation systems and motivation in a Russian hotel. Out of the 202 employees surveyed, about 30% had worked three years or less in the industry, 51% were under the age of 34; and 52% had college or university degree. The method of targeted recruitment appears to have resulted in a sample that we believe appropriately represents the targeted population.

Findings

Lessons Learned

The researcher's profile on social media should reflect that he/she is an academic researcher. Many people indicated they participated since the researcher's profile made it clear that he was not someone from their company collecting data. This was an equal concern in both countries.

If you are using LinkedIn to collect data from populations, verify that there is an adequate number of potential respondents available in the targeted population. For example, several smaller cities in Russia had no hotel industry presence on LinkedIn. Assess study feasibility by investigating subject availability using LinkedIn's advanced search capability using the fields "industry & location". This will provide insight into the potential of using this process to gather data. It will also guide you in identifying and refining the existence of a population for your study.

When you are sending network invitations develop a personalized message rather than sending the default LinkedIn invitation. Once connected personalize your response with their first name to establish a closer, less formal relationship. No one in our sample overtly stated an objection to being addressed on a first name basis.

Discussion board traffic is dense. LinkedIn members generally scan the subject lines and delete messages without reading them. If you send individual responses to network members, they receive a personalized email rather than an email announcing a "New LINKEDIN DISCUSSION POST". In our experience, posting the link to your survey on a group discussion board will not result in many responses and may identify respondents outside your targeted population.

To reduce survey dropout rates, the surveys were developed with a completion bar to indicate the portion of the survey completed. Survey drop rates indicated that as participants perceived progress towards completion, they were more likely to continue and complete the survey. However, upon reaching the last page of the survey where the demographic questions were located, dropout rates increased as shown in Table 3.

Table 3. Drop-out points

	Page 1 (accepting survey terms)		Page 2 (survey instruments)		Page 3 (survey instruments)		Page 4 (demographic questions)		Total completed surveys
		%		%		%		%	
United States (229 respondents)	46	20.09%	18	7.86%	3	1.31%	10	4.37%	152
Russia (166 respondents)	37	22.29%	12	7.23%	1	0.60%	5	3.01%	111

Perhaps respondents were sensitive to personal demographic questions. Carefully word demographics questions to minimize potential sensitivity issues and thus increase the rate of survey completion. Remember, these demographic variables are instrumental in ensuring your respondents are part of your targeted population and your resulting sample is representative.

Interestingly, the doctoral student continued to receive messages from network members inquiring as to whether he has been successful in completing his dissertation. Apparently, these mem-

bers were motivated by helping the student succeed and have taken an interest in his success and the possibly they had contributed to it.

Since the researcher cannot control external factors, try to avoid short data collection timelines. Expect long timelines and hope you do not need them. During the data collection period, external, uncontrollable factors included issues regarding Internal Review Board approval of translated surveys, the Sochi Olympic Games in Russia, and the Crimean Peninsula Crisis in Ukraine. The official translations and back translations (Brislin, 1970; Watkins, 2010) are time consuming. In addition to translating, translations must be scrutinized by someone who understands the target population and culture so the translated measures will correctly identify the intended constructs in the targeted population. Sometime the questions need to be altered to make them culturally appropriate to ensure the equivalency of the construct measurement.

While time was allocated for translation, the Institutional Review Board (IRB) approval exceeded timeline expectations causing the data collection to occur during the Olympics. The IRB reviews all proposals to conduct research to be sure it is *"adhering to basic ethical principles underlying the acceptable conduct of research involving human subjects"* (Institutional Review Board of Nova Southeastern University, 2015). To meet graduation deadlines data collection was necessary during the Olympics, which created an abnormally busy time for front-line hotel workers around Sochi, including some of whom had come from hotels in Moscow to provide service during this rush period. This may have contributed to lower response rates from hotel workers than anticipated.

Additionally, the Crimean Peninsula Crisis in Ukraine began immediately after the Olympics had concluded, producing another unforeseeable event that involved the forced resignation by Kiev protestors of the Pro-Russian Prime Minister of Ukraine. These events raised tensions among Russian hotel workers and resulted in a three-day period during which no Russian responses were received. These events, all of which the researcher could not control or foresee, had unanticipated impacts on data collection in Russia.

The questions designed to validate the respondent's membership in the targeted population are very important and can provide unexpected but interesting results. While the number of respondents from Russia used for the dissertation was 111 (see Table 3) the student received an additional 41 completed surveys from Russia. The survey's targeting question concerning citizenship allowed us to determine that these respondents were actually immigrants working in Russian hotels, which represents another hard-to-reach population. The Russian advisor reported that if we had directly asked immigrants to participate, they would not have done so. This provided the student with another interesting data set. The importance of well thought out targeting questions cannot be underestimated when using this technique. Don't expect all completed surveys will be from your targeted population and thus, be useable for the original purpose.

LinkedIn Caveat for Research Network Development

LinkedIn's original purpose was to connect people that are already acquainted or are referred by a friend. If three LinkedIn members complain that they have received invitations from the same person they do not know, the person sending the invitations may be placed on probation. The result of being reported is that you are limited to inviting only those for whom you have an email address. Persons connecting to subjects through LinkedIn should be aware of this possibility, personalize their network invitations and be clear about their purpose to minimize the possibility people will be offended and report the activity.

Conclusions

To increase doctoral completion rates the required dissertation must be completed in a timely, efficient and cost effective manner while still maintaining appropriate rigor (Byers et al., 2014). Students should be able to choose a topic that interests them so they remain motivated to finish, even if the topic choice requires gathering data from hard-to-reach populations. This was the situation in this case study. The student in this case study had a strong interest in studying a Russian business. He has studied the Russian language for several years and made many Russian friends in his area of residence in Texas, USA. Cost and time constraints, which are major issues for most doctoral students, represent major factors which impact dissertation completion.

The research literature suggests that methods of gathering data have been changing over time as the way we communicate has changed and response rates have declined. Today data collection can potentially be global with the use of these new communication capabilities and thus improve generalizability. However, new communication capabilities such as the use of social media poses rigor issues since there are currently no widely established standards for the use of these methods. This introduces some level of risk, particularly for publishing in high-level journals, which are required by some schools. Thus, careful planning of the study and attention to study design are very important to minimizing this risk.

The declining response rates currently being observed using traditional methods of surveying the population also introduce risk by challenging the validity and reliability of the study. Traditional survey methods also require careful design and documentation to demonstrate the representativeness of the targeted population. This often requires additional costs and time. Among the advantages of the newer methods of communication are that they may be able to improve response rates by reaching the targeted population more effectively, providing respondents with greater privacy for sensitive questions, providing easier access to the survey, lowering data collection costs and reaching traditionally hard-to-reach populations. However there may be disadvantages to the newer methods such as difficulty in obtaining and documenting the target population, difficulty in following-up with non-respondents due to confidentiality, and providing less control over who responds when a snowball technique is used.

This case study documents the process used to survey a hard-to-reach population, at a reasonable cost and in a reasonable length of time for this particular doctoral student. In this case the cost associated with data collection was reduced since no targeted contact lists were purchased; no specific monetary contact costs were incurred and the only cost was to post the survey on Survey Monkey for a period of time. However, it was very consumptive of non-monetary direct costs related to the researcher's personal time. At least five hours each day were devoted to building and maintaining the network. Developing the network by issuing invitations to join via LinkedIn and building relationships prior to inviting the subjects to participate in the study required a significant time and effort commitment. Since the researcher was unemployed, it was an appropriate personal tradeoff for the doctoral student's situation at the time. Thus, it is important to note that this method is not without costs and commitments, which must be identified and weighed relative to the student's personal and professional situation.

Since this data collection process represents a tradeoff, planning and diligence are necessary. The earlier in the doctoral program the networking process begins, the better the position of the student at dissertation time. It can be argued that conducting research by examining discussion boards, particularly professional ones, to identify possible research needs/topics and networking should be a part of the doctoral student's academic knowledge and professional development. In this case, LinkedIn was the appropriate social media tool for this international business student. Given the diversity of people on the LinkedIn network, there are individuals and groups in many fields of research.

This case study presents a targeted snowball approach through social media to target hard-to-reach populations at a reasonable cost and in a reasonable time frame. While this methodology may not be appropriate in all situations or for all students, it provides an example of the approach taken by this student when faced with numerous obstacles. The traditional approaches of surveying a company or a professional organization or contacting a random sample did not reach the targeted population in sufficient numbers. This case study shares a method to minimize out-of-pocket cost and time constraints and allow the student to complete his dissertation while maintaining appropriate rigor.

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Appendix A
Timeline for Data Collection

Date	United States	Russia
12/15/2011		Began search for American branded hotels in Russia.
3/12/2012		Began recruiting Russian hotels to request participation in the survey.
5/7/2012	Began recruiting executives at national headquarters of US hotel brands that were operating in Russia for participation in survey.	
6/1/2012	Created English research website to make project details available to persons considering taking part in the survey.	
8/1/2012		Added Russian versions of English pages to research website.
10/14/2012	Began recruiting US franchisees of US hotel brands operating in Russia to participate in the survey.	

Date	United States	Russia
7/16/2013	Began searching for hotel themed LinkedIn groups and requesting member-ship.	Began searching for Russian hotel or hospitality themed LinkedIn groups and requesting member-ship.
8/1/2013	Began posting recruitment message to discussion boards of US LinkedIn hotel groups, which I was a member.	
8/8/2013		Began posting recruitment messages to discussion boards of Russian LinkedIn groups, which I was a member.
10/24/2013 through 10/27/2013		International business conference.
11/6/2013		No responses from Russian LinkedIn group discussion board postings. Began personally recruiting Russian hotel managers and employees to join the research network.
11/14/2013	Only one response from US LinkedIn hotel group discussion board postings. ICHRIE agrees to distribute survey to US membership upon IRB* approval of project.	
12/10/2013		To build relationships, all Russian contacts are sent personalized Christmas/New Year's messages.
12/22/2013	IRB* approval granted to send survey to US hotel managers and employees. Survey distributed to US ICHRIE membership.	
2/3/2014		IRB* approval granted to send survey to Russian hotel managers and employees. Began sending surveys to Russian LinkedIn contacts. Subject line asks for contacts opinions.
2/6/2014	No ICHRIE responses. Began recruiting US hotel managers and employees to join the research network.	
2/10/2014		Subject line changed to a request for expert opinion.
2/17/2014	Began sending survey to US LinkedIn contacts. Subject line asks for expert opinion.	
2/21/2014	Subject line change. Asking for help with a deadline included.	
2/25/2014	Subject line change. After advice from a Russian contact, deadline removed and subject line changed in US and Russia. Now asking for help with an education project.	
3/13/2014	Last invitations are sent to the US and Russia.	
3/24/2014	Survey closed.	

*IRB refers to the Institutional Review Board, which reviews studies of human subjects for their protection.

Appendix B
Invitation to join the researcher's network

LinkedIn research network
Discussion board subject line: "HOTEL MANAGEMENT AND OWNERS – I am doing a doctoral project and need your help".
I need to administer a confidential, voluntary survey to hotel employees. The only action I need of you is to forward an email to your employees that will direct them to the survey website. You will have the opportunity to view the survey questionnaire prior to forwarding the email to your employees, if desired. I appreciate your help. I cannot move forward with my dissertation until I have confirmation of hotels willing to participate.

Request to join LinkedIn research network
"I'd like to add you to my research network on LinkedIn.
- Gary"

Thank you for joining LinkedIn research network
Subject line: Greetings!
Hello <NAME>,
I hope you are well. Thank you for accepting my connect invitation. You work for an interesting company. I am on LinkedIn for both research and career purposes. I hope we can help each other.
Thanks again for joining my network.
Gary

Appendix C
Invitation to participate in survey

First e-invitation (Sent to Russian network participants)
Subject line: **<NAME>, can you please give me your opinion?**
Good morning, <NAME>,
I hope you are well and that you are staying warm this winter. As you know, I am doing research on the hotel industry and I desperately need help with one final project to earn my doctoral degree. Could you please help me with my final project entitled "The Hotel Employee Work / Life Study"? The study is designed to collect on-line survey responses from hotel employees, and is available in both Russian and English.

In letter to employees:
All I am asking is that you ask your friends or non-management employees working in the hotel industry to complete the survey. I also encourage you to take the survey, too. The survey should only take 10-15 minutes to complete.

In letter to managers:
All I am asking is that you ask your non-management friends or non-management employees working in the hotel industry to complete the survey. I can forward you a copy of the survey for you to review prior to asking others to complete it. The survey should only take 10-15 minutes to complete.

The goal of the Hotel Employee Work/Life Study is simply to measure the effects of hotel employees' job and life satisfaction on job quality. No questions are asked regarding hotel operations. Furthermore, participant responses are completely anonymous and voluntary, and will be kept strictly confidential with no identifiable information being collected. My study design and survey have been approved by The Institutional Review Board of Nova Southeastern University to assure protection from harm to participants.

When you ask your friends or employees working in the hotel industry to help me out by completing the survey, please provide them with the appropriate link below:
To take the survey in English, please visit: https://www.surveymonkey.com/.....
To take the survey in Russian, please visit: https://ru.surveymonkey.com/s/.....
Thank you very much for your help. Your help is very important toward the completion of my doctorate. Please let me know if there is anything you need.
Your friend, Gary

Appendix D
First revision of invitation to participate in survey

Second e-invitation (sent to both Russian and US network participants)

Subject line: **<NAME>, will you please give me your expert opinion?**

Good afternoon <NAME>,

Thank you for joining my research network. I am earning my doctorate with a hospitality concentration and need 200 survey responses for my dissertation by <DATE>. Without these responses, I cannot graduate.

In letter to employees:

Would you please help me by taking a short, anonymous, online survey? So far, I haven't received many survey responses by people in your position, so it would be important to receive your input. It would also be very helpful if you could forward this request to friends or non-management co-workers that work in hotels and ask them to take the survey.

In letter to managers:

It would be very helpful if you could forward this request to non-management friends or non-management co-workers that work in hotels and ask them to take the survey.

If you have any suggestions after completing the survey, I would appreciate your feedback.

When you ask your friends or employees working in the hotel industry to help me out by completing the survey, please provide them with the appropriate link below:

To take the survey in English, please visit: https://www.surveymonkey.com/....

To take the survey in Russian, please visit: https://ru.surveymonkey.com/... **<for Russian participants>**

When you take the survey, please continue to the end and select the "Done" button. An incomplete survey cannot be used for the analysis, so I ask that you please complete the entire survey.

I would like to thank you in advance for completing the survey. Since it is anonymous, I will not be able to send you a personal thank you. Please know that I am very grateful for your help!

Gary

Appendix E
Second revision of invitation to take survey

Third and fourth e-invitation (Sent to both Russian and US network participants)

Subject line in third e-invitation: **<NAME>, please help me graduate in April**

Subject line in fourth e-invitation: **<NAME>, will you please help with education project**

Good morning <NAME>,

I know your job keeps you very busy, but I hope you will take 10 to 15 minutes to help me graduate. I am earning my doctorate with a hospitality concentration and need 200 survey responses for my dissertation. Without these responses, I cannot graduate. Would you please help me by taking a short, anonymous, online hospitality survey?

To take the survey, you may either click on the appropriate survey link below or copy and paste it into your browser's address bar.

To take the survey in English, please visit: https://www.surveymonkey.com/...

To take the survey in Russian, please visit: https://ru.surveymonkey.com/... <for Russian participants>

When you take the survey, please continue to the end and select the "Done" button. An incomplete survey cannot be used for the analysis, so I ask that you please complete the entire survey.

I would like to thank you in advance for completing the survey. Since it is anonymous, I will not be able to send you a personal thank you. The anonymous nature of the survey also prevents me from knowing if you completed the survey earlier in the week. If you have, thank you very much for your help. Please know that I am very grateful for the help of my <Russian> friends!

Gary

Biographies

Gary A. Dusek earned his Doctor of Business Administration degree from Nova Southeastern University with a concentration in International Business in 2014. His Masters of Business Administration in Management and undergraduate degree in Finance were earned from Texas State University. Dr. Dusek's research interests include the study of Eastern European transitioning economies, employee turnover, service orientation theory and data collection through social media. Dr. Dusek currently serves on the editorial review board of the Journal of Organizational Culture, Communication and Conflict and as the Director of Membership and Development for the International Council of Hotel, Restaurant and Intuitional Education's West Federation.

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