The Adoption of Online Survey Tools and their Effect on Survey Errors in Media and Communication Studies

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Abstract

Media and communication research can occasionally suffer from the inability of researchers to access their study populations due to prohibitive costs or other factors that make it difficult to incentivize audiences to participate in studies. With the significant uptick in the adoption of digital tools to achieve tasks online, media and communication researchers are able to transfer their research methods to online environments, a reality which could have important implications in the practice of carrying out research. There is an increasing array of options available online for such methods as the survey and in-depth interview method, which allow for the administration of the researcher's methodology in an environment that has been described in literature as being convenient, verifiable and low on delivery cost. This study investigates the adoption of these tools in media and communication research in Nigeria as well as the impact of these digital tools on improving response rates and coverage errors in survey research. The study was carried out using the survey method to conduct a case study of final year and post graduate mass communication students in Ajayi Crowther University. The study found a significant rate of adoption of survey tools for media and communication studies.

Keywords: online survey, online data collection, survey errors, research methodology, online

questionnaire design

Introduction

Research like many other domains in human life is going online. A greater array of tools allows researchers to transpose traditional research methods and activities, formerly executed through an array of evolving technological means, into an online environment.

These tools run the gamut from discovery to publishing in the lifecycle of a research paper and enable researchers to execute tasks more efficiently and speedily in some contexts. Tools have proliferated in the area of research methods, allowing researchers to carry out field work on their chosen methodologies online. Wolski and Richardson (2017) indicate this shift in research circles to regarding tools as an important part of research activity able to support the larger scale and collaboration needs of modern-day researchers. According to Wolski and Richardson (2017), research tools are vehicles that enable researchers "organize, analyze, visualize, mobilize and store quantitative and qualitative data and creative outputs" (p. 33).

Media and communication studies benefit from both quantitative and qualitative methodologies as researchers seek to produce and expand knowledge of the systems and mediums inherent in the discipline. Qualitative and quantitative methodologies are selected for research on the basis of certain assumptions and research traditions held by the media and communication researcher. The stage of data collection is an important part of the research lifecycle, determined by the methodology chosen by the researcher.

The survey method is a well-known and popular method data collection for quantitative research methodologies, and it has not stepped out of the reach of the movement to online environments. As Dillman and Bowker (2001) point out in their study of the web questionnaires challenge to survey methodologists, there is an increasing use of web survey, which falls into the bracket of online survey tools being considered within the context of this paper. The authors indicate that these web surveys are replacing other types of survey collection methods formerly used by researchers for surveying. Concurrently, the researchers allude to it being a subject beginning to receive attention from specialists in survey research.

Statement of the Problem

The documented benefits and challenges in research about online survey tools continue to warrant further contribution as we ascertain just how valuable the tools are in gathering the data needed to answer questions in certain disciplines. Directly applicable in this paper is the question of online survey tool usage in media and communication studies. With the broad focus of media and communication research in addressing the evolving conditions of communication in society (Jensen, 2020), being able to mine data from populations to determine their sentiments or perceptions, preferences and behaviors allows researchers to provide descriptive and analytical frames to understand society and the interplay of the systems and mediums that are a part of media and communication.

Understanding the adoption of online survey tools for media and communication studies in Nigeria, and the efficacy of the tools in surmounting some known errors related to the survey method is essential to validate or revalidate the acceptance of these tools as a cost-effective, convenient, but still verifiable option for researchers.

Hypotheses

Ho1: There is no significant rate of adoption of survey tools for media and communication studies

Ho2: Online survey tools will have no significant influence on response rate error in media and communications research

Ho3: Online survey tools will have no significant influence on non-coverage error in media and communications research

Literature Review

The survey research method is one of the most popular quantitative research methods used in social science research. Hoonakker and Carayon (2009) assert that millions of survey questionnaires go out each year, attempting to derive data from respondents on a variety of topics. The researchers trace a line from the ARPANET – where researchers successfully connected several computers to one another, prior to the advent of the internet. In these earlier years, two mediums were chiefly used to conduct a survey – telephone interviews and mail delivered questionnaires.

According to Bhattacherjee (2012), the survey method of research involves the extraction of data from audiences with the use of standardized questionnaires. It burrows into their thoughts, behaviors, patterns and preferences using structured and systematic actions. A sociologist, Paul Lazarsfeld, was said to have pioneered the method in the 1930s as he studied the effects that radio had on forming political opinions in the United States. Over time, the survey method has grown to become one of the most used methods in quantitative research methodology.

The survey method has some advantages, highlighted by Bhattacherjee (2012) to include;

- Its status as an excellent measure of a wide variety of unobservable data
- Its handiness in collecting data about a population that is too large to observe directly
- Its preference by some respondents due to convenience factor and its unobtrusive nature

Bhattacherjee (2012) also highlights some disadvantages of the survey method, which the researcher ties to the presence of a large number of biases including recall bias, non-response bias, sampling bias, and social desirability bias.

Buchanan and Hvizdak (2007) relate online survey tools with the type of services that became commonplace with web 2.0. These tools and services, according to the authors, made it possible for users to interact, edit and contribute. In essence it became easier to derive feedback and allow for two-way communication between producers and consumers and, directly in this case, researchers and study populations. Online survey tools are therefore characterized as being "an easy and cost-effective way of conducting many types of survey or questionnaire research projects, as long as the methodological choice is based on sound decisions—not solely convenience and ease."

A number of studies have concurred with the Buchanan and Hvizdak (2007) characterization of the online survey method as cost-effective. Describing online survey methods as allowing for a democratization of research, Marquis (2010) states that the tools have reduced the need for expansive budgets to conduct robust surveys. Bakla et al., (2012) present online survey tools as providing the opportunity for faster and cheaper data collection.

Cost-effectiveness therefore remains a key singled out advantage of online survey tools in existing literature. Further advantages can however also be found including the possibility of engaging audiences better with audio and visual input; the flexibility afforded researchers in reshaping the survey during administration in response to new insights derived from responses; the speed of data collection and assemblage compared to other methods; elimination of data input errors (Bakla et al., 2012; Marquis, 2010; Dillman & Bowker, 2001).

Survey Errors

Literature is replete with studies that focus on survey errors, which can make results gotten from surveys unverifiable or unacceptable (Akomolafe et al., 2015; Bethlehem & Bart, 2011). Adoption of online survey tools is also subject to some consideration of their ability to improve some of the bias or errors built into survey methods. Dillman and Bowker (2001) list four types of survey errors that are relevant to consider: coverage error, sampling error, measurement error and non-response error.

Coverage error occurs when all the units that have been defined in a study population do not have a known nonzero probability of making it into the sample that the researcher determines to represent the population (Dillman & Bowker, 2001). One determinant of the occurrence of coverage error is the presence or absence of a significant portion of the study population on the medium being used to administer the survey. Hu (2010) reflects this concern about internet survey methods, stating that not all households in the United States have access to the internet, leading to the possibility of coverage error. The internet penetration for Nigeria fares even worse. An online tool utilized for social media marketing, which routinely publishes reports on social media usage data, states that there were 85.49 million internet users in Nigeria in January 2020, and that there were 27 million social media users in Nigeria in January 2020 (Kemp, 2020). In addition to the considerations of internet penetration, Smyth et al., (2009) state that an efficient sampling algorithm for internet survey participants has not yet been discovered.

Nonresponse error is another critical error that occurs in the survey method. According to Dillman and Bowker (2001), it is a recognition of the possibility of skewed results when there is no response from a portion of the sample who may have provided different answers than those provided by the respondents. Bosnjak et al., (2005) studied the issue of non-response in postal mail surveys and brought out three lines of consideration including psychological processes that influence non participation, design factors that influence non participation and respondent factors. Shropshire et al., (2009) considered the problem of bias due to interest in their study. The authors showed that non response is sometimes dependent on the interest held by the participants in the subject being studied.

Methodology

Research Design

To research the efficacy of the adoption of online survey tools for media and communication research, this study employs a descriptive research design, utilizing the survey method to carry out a case study on the mass communication department of a private university in Nigeria.

Ajayi Crowther University, Oyo, Oyo State was chosen due to the location of the school in a less urban location, which allows for a deeper consideration of coverage issues compared to more urban locations with a higher degree of internet penetration or usage. The study looks to gather observable data on the adoption of online survey tools by media and communication researchers, justifying the use of a descriptive research design and the survey methods as the attitudes, opinions and characteristics of a diverse group of respondents can be collected.

Participants

The study population included media and communication, final year and post graduate students of Ajayi Crowther University, with a total number of 105 students in the population. Sample size of 51 students was derived using a sample size calculator with a Confidence Level of 95% and Margin of Error of 10%. The study made use of the purposive sampling method, allowing the researcher to select sampling units directly from the class,

by sharing to the two class groups, final year and post graduate students, that made up the study population.

Instrument

The instrument for data collection was a self-constructed questionnaire consisting of quantitative survey questions to measure the adoption and perception of online survey tools among the respondents. The first set of questions were constructed to provide information on the background and demography of respondents. The second cluster of questions were a mix of dichotomous and frequency questions to ascertain the level of usage of online survey tools among the respondents and the final set of questions were a five-point likert scale to identify opinions and attitudes of respondents towards the usage of online survey tools.

Procedure

The questionnaire was uploaded on the google survey tool platform and the link to respond was shared directly to identified respondents using the WhatsApp chat platform. The total number of respondents recorded in the study was 50 respondents due to some nonresponses to the research instrument.

Data from the study was analyzed by utilizing the statistical software SPSS vesion 20.0. Descriptive statistics using frequency counts and tables was initially done to explore patterns and associations. Inferential statistical anlysis was also conducted. A chi-square analysis was done through the employed software tool to test the stated hypotheses for this study.

Results

This study examined the adoption of online research tools and their effect on survey errors. This section presents the data analysis under the following sub-headings:

- a. Demographic Data Presentation
- b. Testing of Hypothesis

c. Discussion of Findings

Demographic Data Presentation

Table 1: Distribution of Respondents by Age

Age Range	Frequency	Percentage
18 - 25 years	28	56.0
26 - 35 years	20	40.0
36 - 50 years	2	4.0
TOTAL	50	100.00

Table 1 presents the distribution of respondents by age. (n=28; 56.0%) were between 18-25 years, (n=20; 40.0%) were between 26-35 years while (n=2; 4.0%) were between 36-50 years.



Figure 1: Pie chart representation of respondents by age

Table 2: Distribution of Respondents By Level of Education

Level of Education	Frequency	Percentage
Bachelors	36	72.0
Masters	14	28.0
TOTAL	50	100.00

Table 2 presents the distribution of respondents by level of education. (n=35; 26.5%) had bachelor's degree while (n=14; 26.5%) had master's degree.



Figure 2: Pie chart representation of respondents by level of education

Table 3: Response to Questior	"When was your	first research	work undertaken?"
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When was your first research	Frequency	Percentage
work undertaken?		
2001-2010	3	6.0
2011-2021	34	68.0
I haven't published (yet)	13	26.0
TOTAL	50	100.00

Table 3 presents the response of participants on the question "When was your first research work undertaken?". Majority of the respondents (n=34; 44.6%) published their first research work between 2011 and 2021 while a few (n=3; 12.0%) published their first research work between 2001 and 2010.



Figure 3: Pie chart representation of Response to Question "When was your first research work undertaken?"

Table 4: Response to Question "Have you used any online survey tools in your research?"

Have you used any online survey	Frequency	Percentage
tools in your research?		
Yes	29	58.0
No	21	42.0
TOTAL	50	100.00

Table 4 presents the response of participants on the question "Have you used any online survey tools in your research?" Majority of the respondents (n=29; 58.0%) answered yes while (n=21; 42.0%) answered no.



Figure 4: Pie chart representation of Response to Question "Have you used any online survey tools in your research?"

Table 5: Response to Question "Do you prefer online surveys to traditional methods of administering surveys (face-to-face, post or phone calls)?"

Do you prefer online surveys to traditional	Frequency	Percentage
methods of administering surveys		
Yes	42	84.0
No	8	16.0
TOTAL	50	100.00

Table 5 presents the response of participants on the question "Do you prefer online surveys to traditional methods of administering surveys (face-to-face, post or phone calls)?" Majority of the respondents (n=42; 84.0%) answered yes while (n=8; 16.0%) answered no.



Figure 5: Pie chart representation of Response to Question "Do you prefer online surveys to traditional methods of administering surveys (face-to-face, post or phone calls)?"

Table 6: Response to Question "What online survey tools do you use most frequently?"

What online survey tools do you	Frequency	Percentage
use most frequently?		
Google Forms	30	60.0
Survey Monkey	11	22.0
Type Form	3	6.0
Microsoft Forms	3	6.0
Others	2	4.0
None	1	2.0
TOTAL	50	100.00

Table 6 presents the response of participants on the question "What online survey tools do you use most frequently?" Majority of the respondents (n=30; 60.0%) use Google forms while a few (n=1; 2.0%) do not use online survey tools.



Figure 6: Pie chart representation of Response to Question "What online survey tools do you use most frequently?"

Table 7: Response to Question "Do you offer incentives for filling online surveys?"

Do you offer incentives for filling	Frequency	Percentage	
online surveys?			
Yes	37	74.0	
No	13	26.0	
TOTAL	50	100.00	

Table 7 presents the response of participants on the question "Do you offer incentives for filling online surveys?" Majority of the respondents (n=37; 74.0%) answered yes while (n=13; 26.0%) answered no.



Figure 7: Pie chart representation of Response to Question "Do you offer incentives for filling online surveys?

Table 8: Response to Question "What are your most common means of distributingonline surveys?"

What are your most common means of distributing online surveys?	Frequency	Percentage
Email	4	8.0
Social Media Sites	15	30.0
WhatsApp Messages/ Groups	28	56.0
Mailing Lists	2	4.0
None	1	2.0
TOTAL	50	100.00

Table 8 presents the response of participants on the question "What are your most common means of distributing online surveys?" Majority of the respondents (n=28; 56.0%) use WhatsApp Messages/Groups, (n=15; 30.0%) use social media sites, (n=4; 8.0%) use Emails while (n=2; 4.0%) use mailing lists.



Figure 8: Pie chart representation of Response to Question "What are your most common means of distributing online surveys?"

Table 9: Response to Question "What is the top limitation in the use of onlinesurveys for media and communication studies?"

Top limitation in the use of online	Frequency	Percentage
surveys for media and communication		
studies		
Internet Penetration	10	20.0
Literacy Levels	10	20.0
Sampling Bias	8	16.0
Low Response Rate	22	44.0
TOTAL	50	100.00

Table 9 presents the response of participants on the question "What is the top limitation in the use of online surveys for media and communication studies?" Majority of the respondents (n=22; 44.0%) noted low response rate as a limitation in the use of online

surveys for media and communication studies while (n=2; 4.0%) noted sampling bias as a limitation in the use of online surveys for media and communication studies.



Figure 9: Pie chart representation of Response to Question "What is the top limitation in the use of online surveys for media and communication studies?

Figure 10: Response to Question "Online surveys have a lower cost of execution compared to traditional methods of administering surveys"



Majority of the respondents (n=22, 44.0%) strongly agreed and (n=16, 32.0%) agreed with the statement which says "Online surveys have a lower cost of execution compared to traditional methods of administering surveys"

Figure 11: Response to Question "Online surveys provide greater ease in data gathering compared to traditional methods of administering surveys"



Majority of the respondents (n=21, 42.0%) strongly agreed and (n=21, 42.0%) agreed with the statement which says "Online surveys provide greater ease in data gathering compared to traditional methods of administering surveys"





Majority of the respondents (n=18, 36.0%) agreed while (n=14, 28.0%) were undecided about the statement which says "Online surveys allow for an increase in response rate compared to traditional methods of administering surveys"

Figure 13: Response to Question "Online surveys allow researchers access hard-toreach populations compared to traditional methods of administering surveys"



The respondents (n=11, 22.0%) either agreed, disagreed or were undecided about the statement which says "Online surveys allow researchers access hard-to-reach populations compared to traditional methods of administering surveys"

Figure 14: Response to Question "Online surveys reduce incidences of survey fraud compared to traditional methods of administering surveys"



Majority of the respondents (n=17, 34.0%) where undecided while (n=11, 22.0%) strongly agreed with the statement which says "Online surveys allow for an increase in response rate compared to traditional methods of administering surveys"

Testing of Hypothesis

The inferential statistics of Chi-square (X²) was used to test all stated hypothesis at a 0.05 alpha level.

Research Hypothesis 1: There is no significant rate of adoption of survey tools for media and communication studies.

Table 10: Chi-Square (X²) Analysis on the Rate of Adoption of Survey Tools for Media and Communication Studies

Variable	Mean	SD	Ν	Df	Calc X ²	Crit X ²	Remark
Rate of Adoption of Survey	3.24	0.22	50	10	93.71	18.31	Significant
Tools for Media &							
Communication Studies							

P<0.05

Table 10 shows that the calculated X²value (93.71) was greater than the critical X² value (18.31) at 0.05 significant level; hence the stated null hypothesis is rejected. This implies that there is a significant rate of adoption of survey tools for media and communication studies.

Research Hypothesis 2: Online survey tools will have no significant influence on response rate error in media and communications research.

Table 11: Chi-Square (X²) Analysis on the Online Survey Tools Influence on ResponseRate Error in Media and Communications Research

Variable	Mea	SD	Ν	Df	Calc X ²	Crit X ²	Remark

	n						
Online Survey Tools Influence	2.94	0.40	50	10	63.49	18.31	Significant
on Response Rate Error in							
Media & Communications							
Research							

P<0.05

Table 11 shows that the calculated X^2 value (63.49) was greater than the critical X^2 value (18.31) at 0.05 significant level; hence the stated null hypothesis is rejected. This implies that online survey tools have a significant influence on response rate error in media and communications research.

Research Hypothesis 3: Online survey tools will have no significant influence on non-coverage error in media and communications research.

Table 12: Chi-Square (X²) Analysis on the Online Survey Tools Influence on Non-Coverage Error in Media and Communications Research

Variable	Mea	SD	Ν	Df	Calc X ²	Crit X ²	Remark
	n						
Online Survey Tools Influence	3.17	0.29	50	10	88.25	18.31	Significant
on Non-Coverage Error in							
Media & Communications							
Research							

P<0.05

Table 12 shows that the calculated X^2 value (88.25) was greater than the critical X^2 value (18.31) at 0.05 significant level; hence the stated null hypothesis is rejected. This implies that online survey tools have a significant influence on non-coverage error in media and communications research.

Discussion of Findings

The aim of this study is to examine the adoption of online research tools and their effect on survey errors. The results show an increasing adoption and understanding of online survey tools for research in media and communication. Most respondents indicated that they had employed online survey tools in their past research and preferred them over traditional survey tools. This aligns with Wolski and Richardson (2017) who indicated a shift in the attitude to tools, indicating their increasing acceptance for research activity in light of how well they fit the regiuirements of modern researchers. Google forms was also ovewhemingly selected as the online survey tool most used by respondents. This could be tied to the features of the tool that are available without payment and calls to mind key research on how cost is a significant factor in the move towards online survey tools (Buchanan & Hvizdak, 2009; Marguis, 2010). Incentives were offered by the bulk of respondents as a means of improving response rates, highlighting possible recognition by respondents on the need to improve response rates through a variety of means. This is correlated with the study by Holtom et al., (2022) which showed a positive relationship between incentives, both monetary and otherwise, and improved response rates. Respondents to the study utilized a variety of channels to distribute online surveys including email, social media sites and WhatsApp messages or groups. WhatsApp was the most used distribution channel. This shows a move from the more commonly used emails that featured quite prominently in earlier literature for a variety of study types. Moraes et al., (2021) showed higher response rates on Instagram against email in their study of recruitment strategies for online survey research.

Three research hypotheses were drafted and the results from the first hypothesis indicated that there is a significant rate of adoption of survey tools for media and communication studies among the media and communication researchers in Ajayi Crowther University. This finding is in line with that of Remillard et al., (2014) who observed that online survey tools were being increasingly adopted by researchers including in the authors specific segment of older adults. The author indicates in the study that while online survey tools are

a feasible method, limited internet penetration can work against the use of the tools. The results of this study show that while internet penetration was selected as a limitation by some of the respondents of the study, low response rates were indicated as the top limitation by a greater percentage of respondents.

The second hypothesis findings revealed that online survey tools have a significant influence on response rate error in media and communications research. This finding contradicts literature on the subject. Bethlehem and Bart (2011), for instance, observed that there is a declining rate in response rates for online surveys, which has led to the demand for extra efforts by researchers to ensure survey quality. Couper et al., (2007) also found in their study of respondents who were 50 years and older that non-response (unwillingness to participate given access) was a challenge in deploying internet surveys.

Results from the third hypothesis revealed that online survey tools have a significant influence on non-coverage error in media and communications research. This finding also contradicts that of Couper et al., (2007) who observed that non-coverage error is an even greater concern than non-response for internet surveys. This study's results are more in tune with Ali et al., (2020) who found great utility in social media platforms to get a large and diverse sample of survey respondents. With a greater percentage of internet penetration, even in the Nigerian context, a new turn may become further evident in research as varied population profiles can be increasingly targeted online through a variety of tools and platforms.

Conclusion

Reliability and validity of research work in media and communication are impacted by a variety of factors. Survey errors which can come about in the process of collecting data, and include coverage errors, sampling error, non-response error and measurement error, can present a significant challenge for validity and reliability of the final published work of a media and communication researcher. With the new reality of an online world and the ubiquitousness of web 2.0 tools and platforms, online survey tools have proliferated, with more researchers adopting these tools to carry out quantitave and qualitative research.

The findings of the study show that there is high rate of adoption of online survey tools among media and communication researchers in Ajayi Crowther University. The results also show that online survey tools are considered valuable in helping to surmount nonresponse and coverage errors, which can impact on media and communication studies, among researchers in Ajayi Crowther University. Most literature captures a negative correlation between online survey tools and non-response and coverage errors. Coverage errors, especially, are seen to occur with the deployment of online survey tools due to uneven internet penetration rates, literature levels and other factors, which lead to some segments of the population being exempted from participation in internet surveys. This study shows changing patterns in that norm as more segments of the population move online and can be reached through a variety of distribution channels online.

Response rate errors were highlighted in the study as the biggest worry for respondents in deploying online survey tools. However, scholars like Dillman (2009). have shown this to be a long-standing problem that was also faced with traditional survey tools, with changing modes of collecting survey responses suggested as a path to surmounting declining response rates.

The following recommendations are made for media and communication researchers on the back of the results of this study:

- Coupling incentive structures into online survey tools, whether monetary, access related or otherwise can improve participant engagement and response rate in the course of carrying out research.
- Familiarization with various online distribution channels alongside online survey tools and platforms is necessary to improve outcomes both in coverage and response rates.

Limitations and Further Study

This study is limited in its generalizability due to the sample of media and communication researchers being drawn from one university and one department. The study population of the research was also likewise very limited, with only a few final sample respondents

contributing to the findings. Future research can attempt further exploration of the impact of online survey tools on the identified survey errors alongside others like measurement error or sampling error to fully determine if the time factor, societal contexts or the knowledge of media and communication researchers in Nigeria explain contradictory results with older literature on the subject.

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APPENDICES

The Adoption of Online Survey Tools and Their Effect on Survey Errors in Media and Communication Studies

This survey is part of a research endeavor to identify the impact that online survey tools have had on the efficiency of media and communication research studies.

Please answer the short survey that follows on the adoption and perception of online survey tools among media and communication researchers.

Thank you for your cooperation.

1. What is your most recent level of education?

Bachelors'

Masters

PhD

2. When was your first research work undertaken?

1991 - 2000

2001 - 2010

2011 - 2021

I haven't published (yet)

3. What is your age range?

18 - 25

26 - 35

36 - 50

4. Have you used any online survey tools in your research?

Yes

No

5. Do you prefer online surveys to traditional methods of administering surveys (face-to-face, post or phone calls)?

Yes

No

6. What online survey tools do you use most frequently?

Google Forms

Survey Monkey

Type Form

Microsoft Forms

Other:

7. Do you offer incentives for filling online surveys

Yes

No

8. What are your most common means of distributing online surveys Email

Social Media Sites WhatsApp Messages/ Groups Mailing Lists Other: 9. What is the top limitation in the use of online surveys for media and communication studies

Internet Penetration Literacy Levels Sampling Bias Low Response Rate Other:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Online surveys have a lower cost of					
execution compared to traditional					
methods of administering surveys					
Online surveys provide greater ease					
in data gathering compared to					
traditional methods of administering					
surveys					
Online surveys allow for an increase					
in response rate compared to					
traditional methods of administering					
surveys					
Online surveys allow researchers					
access hard-to-reach populations					
compared to traditional methods of					
administering surveys					
Online surveys reduce incidences of					
survey fraud compared to traditional					
methods of administering surveys					