The Use of Online Surveys to Measure Satisfaction in Job Training and Workforce Development

Steve Schmidt
Harley-Davidson Motor Company

Elaine Strachota
Milwaukee Area Technical College

Simone Conceição
University of Wisconsin-Milwaukee

This paper examines two empirical studies that used online surveys to collect data to measure satisfaction in job training and workforce development. A description of each study, findings related to response rate, the processes used in online survey development and implementation, as well as recommendations for the future use of online surveys are presented.

Keywords: Online Survey Development, Job Training, Workforce Development

Problem Statement

The gathering of feedback is an important part of educational program development and workforce development in general. It is critical that human resource development practitioners are able to gauge the success of their efforts from the viewpoints of a wide variety of stakeholders. One of the best ways to gather employee and consumer feedback for research, evaluation, and continuous improvement is through the use of surveys. Telephone surveys or hard-copy surveys, mailed or manually distributed to potential survey respondents, have traditionally been ways researchers have gathered survey data. In the age of the Internet, however, online surveys can be an efficient way to gather data as well (Strachota, Schmidt, & Conceicao, 2005). Despite the myriad of opportunities offered by the Internet, survey researchers have not been leaders in the use of Internet-based surveys. In fact, Dillman and Bowker (2001) note that "…the use of web surveys seems to have caught the survey methodology community somewhat by surprise. Leadership for the development of web survey procedures has come in large part from computer programmers, many of whom have little or no training in survey methodology" (p. 1). They further posit that "rather than being at the forefront of this latest innovation in the conduct of social surveys, survey methodologists are playing catch-up as they learn to master these new survey development tools" (p. 1). The purpose of this paper is to describe an efficient process for conducting online survey research. The process is described using two empirical case studies.

Using the Internet as a data-gathering tool adds extra layers of complexity to the process of survey development. Gunn (2002) suggests that "unlike other types of surveys, web page design skills and computer programming expertise play a significant role in the design of web-based surveys" (p. 1). These challenges have been made somewhat easier by the development of websites specifically geared to help researchers develop and distribute online surveys. Websites such as SuveyShare.com, SurveyMonkey.com, and Zoomerang.com allow researchers to set up online surveys in a matter of minutes. Many of these sites offer distribution, tabulation, and reporting features as well. However, researchers must be aware that there are additional considerations associated with the use of online surveys that must be addressed as part of survey development and distribution processes (Strachota et al., 2005). This paper examines two empirical studies that used online surveys to collect data to measure satisfaction in job training and workforce development. A description of each study and findings related to response rate, the processes used in online survey development and implementation, as well as recommendations for the future use of online surveys are presented.

Theoretical Framework

The theoretical framework of this paper is based on the work of Wallen and Fraenkel (2001), Rea and Parker (1997),

Dillman, Tortora, and Bowker (1998), Dillman and Bowker (2001), and their contributions to survey development. Wallen and Fraenkel's process includes the definition of the problem, identification of the target population, determination of mode of data collection, preparation of the instrument, collection of data, and analysis. Also important to their process is the identification of large categories of issues (or constructs), which can be used to suggest more specific issues within each category, which can then be used for question development. Rae and Parker's (1997) stages of the survey research process were also used in theoretical framework development. Works by Dillman et al. (1998) and Dillman and Bowker (2001) form the theoretical bases for the online components of this work. These researchers have worked extensively in online survey development and distribution.

Research Questions

This study addresses the following research questions:

- How can online surveys most efficiently be used to gather data for evaluation and research within the field of human resource development?
- What are the pros and cons associated with the use of online surveys related to human resource development evaluation and research?

Efficiency is an outcome of effective learning organizations. According to the American Heritage Dictionary (2001) efficiency is defined as "producing an effect with a minimum of waste and effort; exhibiting a high ratio of output to input" (p. 274). This paper will illustrate how online surveys offer the researcher time and cost efficiency, as well as methodological accuracy in the data collection process. According to Pande, Neuman, and Cavanagh (2000), "more efficient processes use less money, time and materials" (p. 203). Further, researchers must also be aware of the pros and cons of online survey development and distribution as they relate to the field of human resource development.

Research Design

This paper uses case studies to describe a process (Merriam, 1998). Case studies were used in part because of the dearth of information on online survey development and distribution. A review of literature shows evidence of online surveys used for research studies, but no detailed descriptions of how online surveys can be used most efficiently. Our goal in writing this paper is to contribute to the body of knowledge on online survey development, which will help practitioners and researchers in the field of human resource development.

Online Survey Development and Implementation

The development of an online survey instrument begins with the design of the survey itself. While this process may not have changed with the advent of the web-based survey, factors in addition to those associated with traditional survey development should be considered when a survey is put online. Schmidt (2004) and Strachota (2003) followed the recommendations of Dillman, Tortora, and Bowker (1998) when developing their online surveys. Dillman et al. (1998) recommend that "questions must be presented in a way that they can be understood and answered accurately by all recipients. And, the likelihood of responding should not be affected by peoples' lack of computer skills" (p. 3). To address these issues, Dillman et al. (1998) advise online survey developers to consider the following:

- Survey design should be respondent-friendly, and take into account the inability of some respondents to receive and respond to web questionnaires with advanced programming features.
- Survey design should consider both the logic of how computers operate and the logic of how people expect questionnaires to operate.
- As many survey populations do not have access to the Internet, a survey design that allows for survey use in other modes of data collection (i.e., paper questionnaires, interviews, or telephone surveys) is important. It is also important to remember, from a reliability standpoint, that those other modes of data collection be administered using as many of the same guidelines as the online survey as possible (i.e., the timeframes in which the surveys are administered and the location at which surveys will be completed should be similar for both online and non-online respondents).

Researchers must also consider issues associated with the distribution of web-based surveys to potential respondents. According to Timmerman (2002), "with web-based surveys, participants are usually notified by e-mail to participate in the survey. The e-mail generally includes a link to the URL (Uniform Resource Locator) web address of the survey" (p. 3).

Two Empirical Cases Employing Online Survey Research

Both case studies described below featured the use of online surveys to collect data to measure either satisfaction in job training or in workforce development. Below is a description of the survey development and distribution processes used in each study.

Job Training

In the job training and job satisfaction study, measurements for job training satisfaction and overall job satisfaction were separated so each topic could be examined individually. Because it is a well-studied topic, it was decided to use an existing survey instrument to examine job satisfaction. The instrument chosen was one designed by Paul Spector (1997) which is the 36-item, nine-factor Job Satisfaction Survey (JSS). The constructs Spector (1997) used to examine overall job satisfaction included satisfaction with pay, promotion, supervision, fringe benefits, contingent rewards, operating procedures, coworkers, nature of work, and communication. There are four questions for each subscale. The job training facets of this survey measure employee satisfaction with on-the-job training. The three subscales (or constructs) measure organizational support for training, employee feelings about training, and employee satisfaction with training. Specific questions for each of these constructs were developed by Schmidt (2004) based on learning organization assessments found in "The Learning Edge" (Wick & Leon, 1993). Four questions were developed for each subscale. Additionally, the Job Training and Job Satisfaction Survey contains five questions regarding training methodology, training content, and time spent in training. In addition to separate subscale use, the entire measure may be used as an overall measure of training satisfaction. The job training constructs, which included the definitions and questions for each construct, were examined for validity at this point in the instrument development process by subject-matter experts in the field of adult education, and by a panel of measurement experts.

In order to ensure construct validity, a pilot study (n=118) was conducted, and the internal consistency of the two scales (job training and job satisfaction) was assessed. Cronbach's alpha was found to be .83 for the job training scale and .89 for the job satisfaction scale. Based on data collected in the pilot, inappropriate questions were deleted, three of Spector's original subscales were combined into one, and one construct from Spector's original survey was deleted. The remainder of Spector's original subscales engendered a relatively clean factor structure with limited overlap between the scales.

In the actual study, a convenience sample of 552 customer and technical service employees in nine major organizations in the United States and Canada were given the Job Training and Job Satisfaction Survey. Organizations chosen for this study employ customer service and technical service representatives who provide service and support to either end (retail) customers or wholesale customers who both purchase and/or service the products or services provided by these organizations. In order to address the internal validity threat of location, all potential survey respondents were asked to complete the survey in the same type of environment (the workplace). In examining potential survey respondents, however, it was determined that not all had access to the Internet at work. For those who did, the Job Training and Job Satisfaction Survey was posted on an Internet survey website. Potential respondents with Internet access were e-mailed the survey link and asked to complete the survey online. Those without access were given paper copies of the survey to complete.

A total of 301 customer/technical service employees completed the Job Training and Job Satisfaction survey, for an overall response rate of 55%. Broken down by methodology, Schmidt (2004) invited 263 employees to complete hard-copy surveys; 117 employees did so, for a response rate of 67%. Two-hundred-eighty-nine e-mail invitations were sent to potential online respondents, and 124 invitees completed the survey online, for a response rate of 43% (Schmidt, 2004).

Workforce Development

Strachota (2003) designed an original 4-point Likert survey instrument that was based on the typology of online interaction. Of interest in her research was identifying which interactions were most critical to online satisfaction. Constructs were developed based on the literature and identification of the four types of online interactions. Constructs for this instrument included: learner-content interaction, learner-instructor interaction, learner-learner interaction, learner-technology interaction, and general satisfaction. The construct of learner-technology interaction was measured using selected items from the Cassidy and Eachus (2000) survey. In order to establish content validity subject matter experts in the field of adult education and distance education as well as a panel of measurement experts examined these constructs, which included the definitions and questions for each construct.

In order to ensure construct validity, a pilot study was conducted (N = 249). Through factor analysis the final instrument was reduced to twenty-seven items as six items had low factor loading that overlapped across all constructs, identifying that they were not good measures of that specific construct. The final instrument included seven items that were a measure of learner-content interaction, six items that were a measure of learner-instructor

interaction, eight items that were a measure of learner-learner interaction and six items that were a measure of general satisfaction. Removal of the six items resulted in moderate to high factor loading with the appropriate items loading within the specified construct. Therefore, questions within each construct were considered to have good internal validity. Reliability testing of the pilot study indicated a Cronbach's alpha of .90 for the constructs of both learner-content interaction and general satisfaction. The constructs of learner-instructor interaction and learner-learner interaction resulted in a Cronbach's alpha of .89. Items specific to learner-technology were not pilot tested as they had been piloted tested by Cassidy and Eachus (2000) and showed a Cronbach's alpha of .97 for the single construct of computer self-efficacy, which was equated as being synonymous with learner-technology for the purposes of this study.

A convenience sample of 1,593 online students at a technical college in the Midwest area of the United States were given the Strachota Online Satisfaction Survey to assess the impact of different types of interaction relative to student satisfaction. Students were enrolled in various online courses as part of the program requirements for an associate degree in preparation for employment. The Strachota Online Satisfaction Survey was accessed through a web link in the college's learning management system (LMS) that hosts all online courses. All survey participants had access to the Internet and all data were collected via an electronic format. A total of 849 students completed the Strachota Online Satisfaction survey for an overall response rate of 53.3%.

Conclusion

The two empirical cases illustrate the efficiencies that can be gained by using detailed processes of online survey development and distribution. Both the Schmidt (2004) and the Strachota (2003) online survey response rate exceeded the averages found by Sheehan (2001) who examined 31 online survey response rates from 1986-2000 and found the average response rate for those surveys to be 36.83%. Schmidt (2004) and Strachota (2003) employed a procedure for sending e-mail invitations to potential survey respondents. This procedure is regularly used by the Social and Economic Sciences Research Center, a research organization at Washington State University. The process consists of four contacts via e-mail. Sent first was a pre-message, requesting potential respondents to watch for the survey link, followed by a message that contained the link, along with survey instructions, followed by an e-mail thank-you note or a reminder, which also included the link, and a final reminder, also with a link to the survey (Schaefer & Dillman, 1998). Schmidt (2004) conducted this procedure over a two-week time period whereas Strachota (2003) conducted this procedure over a 4-week period of time.

Although conducting online surveys is far more efficient and cost effective than mail or telephone survey distribution, knowledge and application of online survey software as well as demonstrating the necessary technology skills is required for this methodology. The efficiency and cost effectiveness of conducting online survey research, however, far outweigh the time and efforts required to research and learn a specific software program application.

Distributing a survey through a link via e-mail or a Learning Management System is far more time efficient than printing and mailing individual surveys or using the telephone for conducting 1:1 survey responses. Regardless of the survey method used, however, all data that are collected must be entered into a statistical program for analysis. Survey data gathered online offers the researcher an advantage in that it can be automatically downloaded to a statistical program for analysis. This method allows for tremendous time saving when compared to manual data entry, which must be done for hard-copy surveys. Furthermore, the possibility for data entry errors is minimized when compared to the manual entry of data. These are two examples that illustrate the high level of efficiency (or high ratio of output to input) associated with online survey distribution and data management.

The cost of survey software is also far less costly than traditional methods of using telephone or mail distribution (Strachota et al., 2005). Using online surveys is a prime example of what Pande, Neuman, and Cavanagh (2000) referred to as an efficient process, or one that uses "less money, time, and materials" (p. 203).

Recommendations for the Use of Online Surveys

The process of using online surveys for collecting data to measure satisfaction in job training and workforce development in the two empirical studies described above allowed the researchers to identify some advantages, limitations, and suggestions for the future use of online surveys. It is important to consider the pros and cons associated with the use of online surveys, as well as the tips for survey development and distribution, before undertaking a project of this nature.

Advantages of Online Surveys

There are advantages to using online surveys to gather data. When compared with traditional mail or telephone surveys, Schonlau, Fricker, and Eliott (2001) note that "sampling error issues with Internet surveys are generally the

same as those with conventional surveys" (p. 29). Schonlau et al. (2001) state that Internet surveys may be preferable to mail or telephone surveys when the survey contains questions of a particularly sensitive nature. The use of Internet-based surveys may allow the program developer to delve deeper into evaluation-related topics, and may result in more honest feedback than would traditional survey methodologies.

Advantages of online survey distribution include increased time efficiency, decreased data entry error, increased item response rate, and decreased cost. Due to available technology, administration of online surveys has resulted in increased time efficiency in both distribution and receiving of survey results. The majority of colleges, universities, and businesses today that deliver distance learning courses and programs have invested in a LMS. The LMS is designed to allow for the posting of an announcement with a direct web link to an online survey instrument. The LMS offers efficiency for students who are enrolled in a course because they can access the survey instrument and complete it at a convenient time. The LMS also contains a database of e-mail addresses for all students. When the LMS is not available the process becomes far more time-consuming as e-mail addresses must be obtained before a mass mailing can be conducted. Both of these methods, however, still remain far more time efficient than telephone or mail surveys.

Decreased data entry error is an important factor when conducting survey research. Traditional telephone and mail surveys require manual data entry. Electronic survey distribution does not require manual entry as data are collected through a given software program and then downloaded into a statistical program such as SPSS for detailed analysis. This feature saves time, is more accurate, and is especially useful when collecting data with a large sample size.

Increased item response rate can also be controlled through electronic surveys, as most of the software programs can be set so that all items must be completed before submission. Traditional mail surveys often are returned with data being absent in given fields. Further, qualitative item response rates can be increased due to legibility of electronic responses versus occasional illegible mail responses. Schaefer and Dillman (1998) found that electronic surveys resulted in a quicker return rate, a slightly lower item non-response rate, and more complete answers to open-ended questions.

Another advantage of electronic survey distribution is decreased cost compared to telephone and mail distribution. A major concern of survey research is the potential for high non-response error. In order to minimize non-response error, multiple contacts are made to have participants complete a given survey. Schaefer and Dillman (1998) support the use of multiple contacts as a method for survey dissemination as it increases the response rate. Informing participants that a survey will be forthcoming through an announcement, presenting the actual survey link, a thank-you or reminder e-mail with the survey link, as well as a final e-mail reminder with the survey link can all be entered in an LMS and/or e-mailed at no cost. Contacting participants multiple times through mail or telephone distribution, however, is far more costly and time consuming. Electronic survey distribution, therefore, is a far more effective method for data collection and evaluation of educational and training programs.

Limitations of Online Surveys

The online survey must be designed so that it has user-friendly navigation. Certain computer skills such as selecting radio buttons, use of drop-down menus, and scrolling are commonly required skills. Correctly reading the directions and paying attention to detail is also important. Dillman and Bowker (2001) identify the need to provide specific directions for each required computer action as well as any other necessary instruction to avoid frustration and termination of the survey before completion.

A potential limitation of e-mail survey research includes the difficulty in sorting out responders versus non-responders, especially with a large sample size. Occasional annoyance may be perceived by receiving multiple e-mails requesting a response. E-mail, like mail delivery, may be perceived as junk mail and deleted without responding. In order to achieve higher compliance among potential responders, it is suggested that some incentive be established as part of the process.

It is important to recognize that conducting online surveys versus telephone or mail surveys is a good fit for those who use a computer as a common mode of communication as well as for those who enroll in online learning for career and job advancement. While conducting online surveys is far more efficient and cost effective it is important to recognize the audience being surveyed. Although we live in a technological age, we are still faced with the issue of computer access. While access has increased such that 204.3 million Americans have Internet access in their home, 25% of Americans still do not have Internet access (Kim, 2004). Timmerman (2002) suggests that "before assuming web-based surveys are the most advantageous method for surveying a target population, it should be determined if those advantages exist within that population (p. 5).

Online Survey Distribution Recommendations

One area that is critical in the process of data collection is survey distribution. Online survey distribution typically involves the use of an e-mail message sent to potential respondents, which includes a link to the survey's Uniform

Resource Locator (URL). Following are some recommendations for effective and efficient survey distribution using e-mail:

- E-mail address and list management is important. Be sure everything in all potential respondents' e-mail addresses is spelled correctly. This will reduce the number of undeliverable messages to be corrected and resent.
- Develop a method to track whether or not all potential respondents received the e-mailed survey invitation. Send test messages to a variety of people with different e-mail addresses (i.e., business or organizational addresses and personal addresses) before sending to potential respondents.
- Creative and informative information in the e-mail subject line will prevent potential respondents from thinking that your e-mail message is spam or junk mail, and simply delete it.
- E-mail filters used by many businesses and individuals may prevent e-mail messages from getting to potential respondents. Online survey websites such as those mentioned earlier have the advantage of allowing the researcher to send e-mail survey invitations to many people at once. However, e-mail filters may recognize the return address (which is often the survey website) as spam. This may cause the survey invitation to be diverted from potential respondents.
- Ideally, survey respondents will access a web-based survey by clicking on a URL link in the body of the e-mail. Be sure all links work before sending them to potential respondents. Testing e-mail messages can be effective in insuring a link works.
- Have a backup to the URL link. Instruct survey respondents that if the link does not work, they can copy the link and paste it into the web address line. Also, provide instructions for accessing the survey by providing the website address to the online survey tool, along with instructions for respondents who go directly to the website.
- E-mail messages and survey links should be thoroughly tested before any survey invitations are sent to potential respondents. Send test messages to as many different types of e-mail addresses as possible. Along with those test messages, send links to test surveys on the survey website. This, again, will insure that as many respondents as possible receive the message, access the online survey using the link provided, and complete the survey (Schmidt, Strachota, & Conceição, 2005).

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