Assignment 2A: Test Critique #2

Faculty Technology Adoption Survey

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Introduction

Several studies dealing with the reluctance of higher education faculty to adopt learning technologies have been done over the past several years (Walsh, 1993, Suter, 2002, Revell, 1999, O’Quinn, 2002, Montgomery, 1999, among others). One theoretical basis for technology adoption deals with Roger’s (1995) diffusion of innovation theory. This theory states that technology adoption will be broken down into groups based on how quickly such technologies are adopted. These groups can be broken down into early adopters, late adopters, early majority, late majority, and laggards. One such study, (Waugh, 2002) examined the effect that personal attributes had on the adoption of technology by faculty, based on this categorical structure.

Survey Instrument

The survey instrument used in this study was entitled the Faculty Technology Adoption Survey. The instrument is broken down into two sections, with the first section capturing personal attributes of the sample population, and the second section capturing the experiences of the sample population when using learning technologies. The survey was created by the researcher after unsuccessful attempts at finding an existing instrument that was suitable for capturing and comparing personal attributes with technology usage. The first section, dealing with personal attributes, has a total of seven items that are a combination of fill-in-the-blank and check boxes. The second section, dealing with learning technology experience, has a total of 43 items and uses a five-point Likert-type scale ranging from 0 (No experience) to 4 (Extensive experience). The total possible cumulative score for the second section was 172 points, with a higher score indicating a higher rate of innovativeness in technology adoption. Higher innovation scores conform to the adoption theory of Rogers (1993) that states that adopters start
off slowly when adopting a technology, followed by a rapid rate of adoption, which then levels off, and finally begins a decline.

Validity

Instrument validity was addressed in the areas of face validity, content validity, criterion validity, construct validity, and external validity. Internal validity was deemed unnecessary due to the type of study. Face validity was checked using a combination of experts, pilot study, and a dissertation committee. Modifications were done based on the input from each group. Content validity was checked by an instructional design coordinator and a computer center director. Again, modifications were done to the instrument based on these results. Criterion validity was checked based on the cumulative innovativeness scores from the study which led to an approximated normal distribution. Construct validity was based on methods used in previous studies and involved summing the scores of Section 2 and translating the results into categories based on the adopter categories. Clear distinctions could be found between early and late adopters. External validity was improved by creating a random sample of the test subjects.

Reliability

Reliability for this instrument was done using a test-retest approach. Twenty faculty were given the test. Approximately three weeks later, ten of the original 20 faculty retook the test to compare consistency of responses. A paired-sample t-test was done to determine statistical significance, with the level of significance associated with the null hypothesis < 0.05. This rejected the null hypothesis, indicating that there was no significant difference between the mean scores of the first and second surveys. A Pearson correlation coefficient was also done, with a .94 correlation, significant at the p <0.01 level. This indicates that there is a strong positive correlation between the first and second surveys. Internal consistency was tested with
the Cronbach alpha. The standardized item alpha was 0.90, making this an acceptable reliability coefficient. Section 2 of the survey also underwent a split-half reliability measure. The alpha for part 1 was 0.81 and the alpha for part 2 was 0.84, with both measures well above the 0.70 recommended value for reliability.

Summary

The author of this instrument did a number of checks to ensure validity. Reliability of the instrument was also well thought out, with an in-depth description of the methods used along with a detailed analysis of the results. It should be noted that this instrument is quite limited in scope, with instrument usage limited to an examination of personal attributes as they relate to technology adoption. However, the instrument appears to be quite easy to administer in either a paper-based or electronic-based formats. The instrument was found to be well documented and appears to have been thoroughly tested for reliability and validity.
References


