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The Relationship of Age and Gender on User Information Satisfaction for Web-Based Intranet Systems (W-BIS) Applications

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Introduction

A recent survey of business executives showed that of 169 decision makers who responded to a survey by the Business Research Group, over fifty percent have either already implemented an internal web site or are in the process of developing such a site (Engler, 1996). These results were similar to those reported in Information Week, which showed that 49% of those firms responding to the survey already had direct Internet access for their employees. According to this same survey, this figure is expected to increase to 67% of these same firms by the spring of 1997 with another 10% of the firms testing the viability of such a connectivity policy (Yankelovich, 1996).

Published reports concerning Web-Based Intranet Systems (W-BIS) have cited extraordinary return on investment values exceeding 1300% and direct payback time periods of six to twelve weeks (Campbell, 1996). While these systems have already been widely accepted and implemented, scant attention has been paid to rigorous research in relation to users’ acceptance and utilization of these systems or the perceived quality of these systems. Since Web-Based Intranet Systems are being increasingly deployed in organizations, this study was designed to investigate user’s acceptance and perceptions of quality for these systems.

Research Background

The research issue addressed in this paper focuses on specific demographic variables (age and gender) and their relationship with the user’s perceptions of overall system quality for the W-BIS systems, as measured with the User Information Satisfaction instrument.

The construct of User Information Satisfaction (UIS) has been used as a surrogate for a variety of information systems quality measures in a large number of research projects since it was first developed in 1983 (Ives, Olson and Baroudi, 1983). Melone (1990) attributes its application, in part, to two considerations. These are the provision of "a standard for making comparisons across organizational units and over time within units" and the fact that they are "relatively simple and inexpensive to administer" (Melone 1990, p. 76). Whether these are in fact the reasons for this acceptance and utilization, it is an indisputable fact that a large number of research projects in a variety of topics have incorporated the User Information Satisfaction construct as a component of their systems measures. For this reason, the User Information Satisfaction instrument has been selected to serve as one of the surrogates for the assessment of system quality.

Research Questions

The specific questions addressed in this study focus on how user’s evaluate the overall quality of the Web-Based Intranet System. The UIS instrument, as previously mentioned, was selected as a viable surrogate for overall system quality. This paper specifically addresses only two elements of the overall study - the relationship (if any) between age and gender with the user’s assessment of system quality. The null hypothesis for this investigation are stated as:

\[ H_{1_0} \] An individual’s age is not related to their overall assessment of quality for a Web-Based Intranet System.
\[ H_{2_0} \] An individual’s gender is not related to their overall assessment of quality for a Web-Based Intranet System.

For each of these null hypothesis, three additional, supporting hypothesis will be tested. Each of these will be of the form:

\[ H_{1.1_0} \] An individual’s age is not related to their assessment of satisfaction with Knowledge of and Involvement with the Web-Based Intranet System.
\[ H_{2.2_0} \] An individual’s gender is not related to their assessment of satisfaction with Knowledge of and Involvement with the Web-Based Intranet System.

H1.2o deals with the individual’s interactions with Information Systems personnel associated with the W-BIS, while H1.3o deals with the individual’s assessment of Information Quality supplied by the W-BIS. These three sub-scales comprise the three factors identified with the UIS instrument by Ives, et.al (1983) and confirmed by Baroudi and Orlikowski (1988). A similar set of three supporting hypotheses will be tested for H2o, numbered H2.2o and H2.3o respectively.

Data Collection

Data concerning the users perceptions of these systems quality was collected by an anonymous mail survey at two different organizations. Both organizations represent large information technology related firms, with a extensive Web-Based Intranet System already in place. Employees received the survey instrument, which included a number of other questions not included in the present data analysis through the mail system, with instructions to complete the survey and return it in an enclosed return envelope. Response rates for both organizations exceeded 50% and are summarized in Table 1. Since the entire survey included
several other instruments (including Computer Self-Efficacy, ServQual, Computer Playfulness, and other items) only those individuals who completed the User Information Satisfaction instrument and the demographics section are used as the basis for this paper.

### Table 1. Survey Response Rates

<table>
<thead>
<tr>
<th>Company</th>
<th>#1</th>
<th>#2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of surveys mailed</td>
<td>198</td>
<td>64</td>
</tr>
<tr>
<td>Returned due to bad addresses</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Fully completed surveys returned</td>
<td>86 (43.7%)</td>
<td>26 (42.6%)</td>
</tr>
<tr>
<td>Partially completed surveys returned</td>
<td>24 (12.2%)</td>
<td>7 (11.5%)</td>
</tr>
<tr>
<td>Completed demographics section and the User Information Satisfaction survey (used for data analysis in this project)</td>
<td>90 (45.6%)</td>
<td>30 (49.2%)</td>
</tr>
<tr>
<td>Unusable (Incomplete) Surveys returned</td>
<td>7 (3.6%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>No Response to Survey</td>
<td>80 (40.6%)</td>
<td>28 (45.9%)</td>
</tr>
</tbody>
</table>

### Data Analysis

SPSS for Windows was utilized to conduct the data analysis for this project. Three sets of analysis were conducted. The first set analyzed the differences in responses between the two companies, in order to identify whether it would be appropriate to combine the data for the purposes of data analysis. Independent sample T-test were conducted to investigate this issue. The results of this analysis found that there were no items where the differences between the two companies exceeded a significance level of .05, and in fact only one of the seven items exceeded a significance level of .10. For this reason it was determined that the remaining data analysis could be conducted on the combined data, rather than segmenting the analysis based on the company where the data originated.

Oneway Analysis of Variance was used (ANOVA) to identify any areas where the data failed to confirm the null hypothesis. Tables 2 and 3 detail the data analysis results for each of the primary and supporting hypothesis. For each of the supporting hypothesis, two different ANOVA tests were conducted. One was based on the summary statement included in the UIS instrument relevant to the specific supporting hypothesis, the second is a combined analysis of the underlying statements which are defined as making up the individual scales. Items which were identified as significant at the .05 level are boldfaced and shaded in each of the tables.

### Table 2. Analysis Based on Gender (N=120)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H1a</td>
<td>UIS Summary statement for Overall Quality of W-BIS</td>
<td>.087</td>
<td>.769</td>
</tr>
<tr>
<td>H1.b</td>
<td>Summary statement for Knowledge and Involvement</td>
<td>.032</td>
<td>.859</td>
</tr>
<tr>
<td></td>
<td>3 Individual factor items for Knowledge and Involvement</td>
<td>.789</td>
<td>.376</td>
</tr>
<tr>
<td>H1.2b</td>
<td>Summary statement for Information Services Personnel</td>
<td>1.363</td>
<td>.245</td>
</tr>
<tr>
<td></td>
<td>5 Individual factor items for Information Services Personnel</td>
<td>4.756</td>
<td>.031</td>
</tr>
<tr>
<td>H1.3b</td>
<td>Summary statement for Information Product Quality</td>
<td>.845</td>
<td>.360</td>
</tr>
<tr>
<td></td>
<td>5 Individual factor items for Information Product Quality</td>
<td>.137</td>
<td>.712</td>
</tr>
</tbody>
</table>

Discussion of Results

The coverage of the results of the Gender-based analysis is the most straight-forward, and will therefore be addressed first. The UIS instrument uses a Semantic Differential scale, and the answers were then coded as a 7 point Likert scale, with a 1 indicating a level of dissatisfaction, and a 7 representing a level of satisfaction with each of the items included on the survey. Therefore, higher scores on the UIS items represents a greater level of satisfaction with the W-BIS system. Of the seven items included in this study, four (both Information Systems personnel items, the summary information product quality, and the overall or global measure of satisfaction) had females indicating a higher level of satisfaction than males. However, only in the case of the 5 individual items making up the Information Systems Personnel factor were the results statistically significant, with an average of 4.529 for females and 4.090 for males. Even though the difference is a statistically significant one, it represents less than one-half point on the original seven point scale.

As illustrated in Table 3, several significant differences were identified in the analysis of UIS data based on the age of the respondent. When analyzing the results, a very clear pattern showed up in the data. For all seven items, younger respondents indicated a higher level of satisfaction than older respondents. In fact, for all but one item, there is a consistent progression of individuals 30 and under being most satisfied, individuals 31 to 40 being less satisfied, and the individuals 41 and over being least satisfied. The only item where this pattern did not hold true was for the summary item concerning knowledge and involvement with the system, where the 31 to 40 and 40 and over groups were virtually identical (averages of 3.541 and 3.585 respectively).
Scheffe’s post-hoc tests for multiple comparisons were conducted when the initial results indicated a significant difference between the groups. For all three items where a significant difference was found, the results indicated that the individuals 30 and under were more satisfied with the W-BIS system than were individuals 41 and over. In the case of the summary statement concerning the information product quality, individuals 31 to 40 were also found to be significantly different (and more satisfied) than individuals 41 and over. In all three items, the 30 and under group and the 31 to 40 group were not found to have any statistically significant differences. The overall analysis of these results would suggest that the older user’s are significantly less satisfied with the quality of information provided via the W-BIS than are younger individuals. The differences in terms of overall averages between the groups showed a nearly one full point difference on the seven point scale used in this study.

It is important to note in this analysis that the varying levels of satisfaction reported in the components which make up the UIS instrument for the three age groups did not show up in overall “global” measure of satisfaction included in the UIS instrument. Therefore, it is probable that the results garnered with the both the individual items and the summary statements as well indicate a level of specificity that does not show up the overall assessment of satisfaction.

**Research Significance and Future**

The first contribution from this research effort is showing the applicability of the UIS instrument to a new information system delivery vehicle. While not reported in this study due to space limitations, exploratory and confirmatory factor analysis of the data indicated that the UIS instrument is a valid and stable instrument in this environment. Further analysis of the data remains to be done, but these initial results indicate that the UIS instrument will deliver satisfactory results when evaluating W-BIS systems. This analysis shows that the UIS instrument is substantially indifferent to individual’s gender when analyzing system quality. Further analysis will be required to investigate why older individuals tended to evaluate W-BIS systems differently than younger users.

As previously mentioned, considerably more data was collected with the survey instrument utilized in this project, data analysis of the remaining issues is just beginning. Further analysis may assist in the identification of patterns which may help identify underlying reasons for the results reported in this paper.

**Acknowledgements**

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**References**


