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# Application Usage and Usefulness Assessment for Web-Based Intranet Systems (W-BIS) Applications

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## Research Background

Previous research concerning Web-Based Intranet Systems (W-BIS) defined nine categories of activities or tasks for which the W-BIS systems were utilized (Myerscough, Richards, and Becker 1997). These categories are included in the following list:

1. Office administration
2. Document distribution and reduction
3. Information access
4. Individual connectivity
5. Group/team connectivity
6. Employee training
7. Competitive Intelligence
8. HRM tasks
9. Employee benefits

These categories identify the nine functional tasks which were defined for W-BIS systems, and were used as the basis of the questionnaire distributed in this study.

This study sought to investigate W-BIS system user's utilization of W-BIS systems, along with their assessment of the usefulness of the various application categories.

## Research Methodology

Surveys were distributed via U.S. Postal Mail to 262 employees at two firms which had deployed W-BIS systems. A total of 143 individuals responded to the survey, a response rate of approximately 55 percent. The firms were guaranteed anonymity, so their names will not be disclosed in this report. The surveys covered a number of other topics which are not included in this research report, including overall quality assessments, computer self-efficacy, and other personal measurements.

The surveys included three specific questions related to the individual's utilization of the W-BIS system. For each application category listed above, individuals were provided with a brief definition of the category, and then asked three questions; 1) did their company's system support this application category, 2) how frequently did they utilize this element of the W-BIS system (if supported), and 3) how did they assess the usefulness of this application (if supported). The frequency of use question used a Likert scale for the responses ranging from 1 representing never, 2-weekly, 3-several times a week, 4-daily, and 5 representing several times a day.

The overall usefulness scale also employed a Likert scale for the data, with 1 anchored by nearly useless and 7 anchored with extremely useful.

## Research Questions

This study posed two research questions related to the individual's utilization of the W-BIS system, and their assessment of the system's overall usefulness. These two questions, stated in the null form, were:

H1<sub>0</sub>: Usage levels of W-BIS application categories will not vary based upon application category.

H2<sub>0</sub>: An individual's assessment of W-BIS application categories usefulness will not vary based upon application category.

The first question addresses how individual's utilize the W-BIS system, while the second question is concerned with the individual's assessment of system usefulness.

## Research Results

Since the W-BIS systems included in this study were fairly well developed, some aspects of each of the nine initial categories were included in both systems. However, since an employee would not necessarily utilize every component of the system, the results in this table show that the utilization of the functions was extremely variable.

A review of the data contained in Table 1 showed that the three application categories which were utilized most frequently (in terms of frequency of use) were competitive intelligence, individual connectivity, and group connectivity activities. Since the competitive intelligence category included activities such as news services, stock market reports, and systems which monitor other market conditions, this category could also be defined as a connectivity activity as well, in that it allows employees connectivity to external events and information. Therefore, the top three activities (in terms of utilization) all represented connectivity functions – connections to external conditions, connections to individuals within the organization, and connections to groups or teams that the individual was involved with at the organization.

This result indicated that the concept of a W-BIS

system allowing for a virtual connection to employees throughout the organization is appropriate.

Table 1 – Utilization Rates for W-BIS Applications

W-BIS Applications	Number of Users	Average Usage
7. Competitive Intelligence	110	3.691
4. Individual Connectivity	93	3.516
5. Group Connectivity	46	3.217
3. Information Access	75	3.147
2. Document Reduction	66	3.076
1. Office Administration	18	2.611
9. Employee Benefits	92	2.554
8. HRM Tasks	67	2.433
6. Employee Training	72	2.250

Conversely, the three application categories which employees indicated the lowest level of utilization were employee training, human resource management tasks, and monitoring or accessing employee benefits information. These three categories represent three functions which are predominantly individual-centric activities. This finding indicated that activities which have the lowest level of connectivity-based functions represent the least utilized functions in the system. The three application categories which fell into the middle of the utilization rates were office administration, document reduction and information access.

Table 2 includes a summary for a total of 36 sets of pair-wise t-test comparisons between the means for each pair-wise comparison of the categories' usefulness question. Only those individuals who indicated that they used the W-BIS system for both application categories were included in this analysis. The table includes only those differences which were statistically significant at the .10 level or greater. However, reading and interpreting this table was somewhat difficult. Therefore, Figure 1 was created to illustrate only those differences which were significant (at a  $p > .10$  or better). This figure contains a path diagram of the significant differences (based on the paired samples t-tests) identified for each of the nine categories. The smaller mean scores, which indicate a lower assessment of usefulness, are placed on the left side in this drawing, and only those paths which were significant at a .10 level or better are shown.

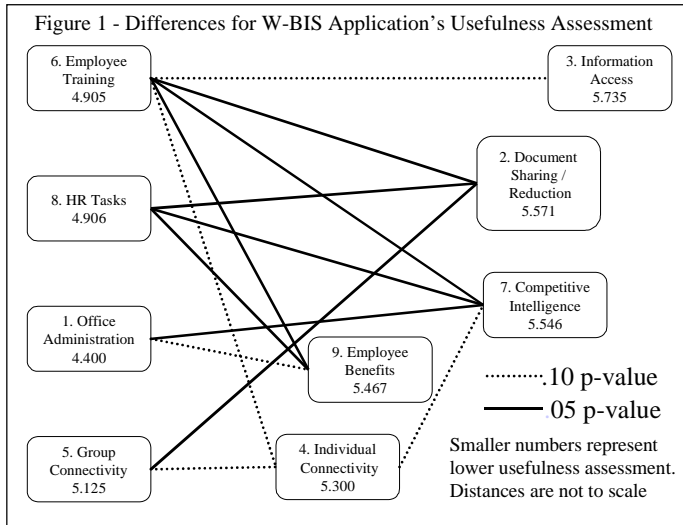
Table 2 - Pair-wise T-tests for Differences in Application Category Usefulness

Category Number and Description	Direction of Differences	
	.05 Differences	.10 Differences
1 Office Administration	(<#7)	(<#9)
2 Document Reduction / Document Sharing	(>#5, >#6, >#8)	
3 Information Access and Dissemination		(>#6)
4 Individual connectivity		(>#5, >#6, <#7)
5 Group Connectivity	(<#2)	(<#4)
6 Employee Training	(<#2, <#7, <#9)	(<#4, <#3)
7 Competitive Intelligence	(>#1, >#6, >#8)	(>#4)
8 Human Resource Management	(<#2, <#7, <#9)	
9 Employee Benefits	(>#6, >#8)	(>#1)

Since the actual value of the difference is included in Figure 1, the placement of the variables within the diagram is not based on a distance scale. However, the arrangement of the significant paths between items did suggest a pattern of differences in the data. Competitive intelligence activities were significantly different, and larger than, four of the remaining items directly, and one of the categories indirectly (group connectivity, which was less than individual connectivity, which was less than competitive intelligence). One of the categories which was directly less than the competitive intelligence was also indirectly less through Individual Connectivity. There were five categories (employee training, human resource management tasks, office administration, and group connectivity, and individual connectivity) for which a total of thirteen pair-wise t-tests identified the category as being less useful than another paired category (i.e. employee training was less than information access, group connectivity was less than individual connectivity, etc.).

### Analysis of Results

The results of this study showed that the three task categories for which individuals reported the highest levels of use were: 1) competitive intelligence, 2) individual connectivity, and 3) group connectivity. All three of these categories involved activities which required, or were facilitated by, interactions with other individuals or organizations. Competitive intelligence activities (such as providing links to news services, stock



market reports, or other systems which monitor market competitors and/or market conditions) clearly involved interactions with other organizations, while both of the connectivity categories revolved around the individual's ability to interact with others within their organization. Individual connectivity activities were defined as those activities which increased the ease of communication within the organization such as maintaining an updated electronic employee directory, facilitating employee e-mail contacts, or providing additional employee contact information. Group connectivity activities included increasing the ease of communications within project teams or cross functional groups by providing an easy to access group directory, electronically developing, revising, or disseminating group reports, and / or publishing project schedules and progress reports electronically.

Conversely, the three task categories for which individuals reported the lowest levels of utilization were: 1) Employee Benefits, 2) Human Resource Management Tasks, and 3) Employee Training. All three of these categories represent tasks which are predominantly individual-oriented activities.

Based on the analysis contained in Table 1, applications which were intended to engender interaction between employees, or which facilitated these interactions, represented applications which employees were most likely to utilize. Additionally, components which provide access to competitive intelligence data, such as news services, stock markets, or similar types of external data also promoted higher utilization rates for the W-BIS system.

The results of the system usefulness analysis found moderate differences in the user's assessment of usefulness for the various system application categories included in this study. The use of W-BIS systems for competitive intelligence activities was identified as the single-most useful category based on a path diagram of significant differences. The use of W-BIS systems for the purposes of information access and dissemination and for

document distribution and reduction were also found to have a higher level of usefulness to the employee, and resulted in a higher overall quality assessment.

The competitive intelligence results are consistent with the earlier finding that this activity represented the most frequently utilized component of the W-BIS system. The inclusion of categories such as external linkages to news services and stock market reports in the competitive intelligence description may indicate that even with internal-based Intranet systems, users find the external linkages to be the most useful component of the system.

Based on this result, it is recommended that organizations which are developing internal W-BIS systems include the ability to access external, Internet-based systems with the internal W-BIS. The inclusion of external systems may help to generate additional utilization of the system, which in turn may result in users becoming more familiar with the overall system.

## Reference

- Myerscough, Mark A., Thomas Richards, and Jack D. Becker. 1997. A Framework for Intranet-Based Information Systems (I-BIS) Applications. Association for Information Systems - 1997 Americas Conference Proceedings. Indianapolis, Indiana. August 1997.