

Repository Choice: An Exploration of Accessibility, Satisfaction and Usefulness

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Abstract

This study explores factors that may explain choices between the library and Internet? The hypothesis that repository satisfaction, accessibility, and usefulness predict actual choice was tested using data from a competitive information acquisition task. It was found that repository choice was a function of library satisfaction and usefulness, but not library accessibility, nor Internet accessibility, satisfaction, and usefulness. The findings suggest that these common predictors of use were inadequate. Research and practical implications are discussed.

1. Introduction

Advanced information technologies are becoming increasingly central to the future of organizational competitiveness by enabling new organizational forms [4], and because competitiveness is in part “determined by the incremental differences in companies’ abilities to acquire, distribute, store, analyze, and invoke actions based on information” [20 p. 50]. Greater amounts of information are available to business persons today than ever before because of the development of new information channels and sources [7]. The importance of information to competitiveness, coupled with increasing amounts of accessible information from a greater variety of sources, has placed its acquisition and use at center stage [51]. Many business information demands are being fulfilled through the use of new information technologies such as the Internet. Thus, the growth and potential uses of the Internet in meeting business information needs require a thorough understanding of how it is used.

Despite a distinctively favorable rhetoric about the Internet and its uses, relatively little empirical research has been conducted [25]. This bias exists despite often-reported difficulties in using it to acquire relevant information [2,19,25,54]. For example, it is common to experience difficulties (e.g., locating relevant information)

and inefficiencies (e.g., takes longer) in searching for information on the Internet [47,57].

Given that the business information environment has become more intense and complex, it follows that managers must choose among a greater variety of information sources in making decisions, solving problems, and formulating strategy [11]. The Internet may be a new and potentially effective repository -- a collection of sources -- of business information. However, few empirical studies of the Internet as a business information repository have been published. If the Internet is to become a valuable business resource, then the scientific study of repository impacts on task performance and the factors that are associated with repository choice is necessary. This study will explore the latter, seeking to ascertain factors that influence choices among repositories.

2. Competitive Intelligence

Competitive intelligence (CI), also termed business intelligence, is the systematic collection and analysis of strategic information [27]. CI is aimed at reducing competitive uncertainties and ambiguities by gathering and analyzing data to produce strategic information about a firm’s external environment, especially its competitive environment [30,70]. The need for an organized system for collecting business information has been advocated by practitioners, consultants and academics alike [27,29,57]. This need is further supported by evidence of a relationship between CI and corporate performance. For example, Subramanian and IsHak [65] found that the more advanced the CI the higher the return on assets. A study of 101 companies conducted by The Futures Group [28] reported that many successful U.S. companies such as General Electric, Motorola, Microsoft, Hewlett-Packard, AT&T, Intel and 3M were cited as making best use of CI. In general, the CI literature is replete with anecdotes of its’ importance to business performance.

It is estimated that as much as ninety-percent of the information needed for CI is publicly available [15].

Moreover, accessibility to this information is increasing at a staggering rate, in part because of commercial information services (e.g., CompuServe, Dialog, etc.) and the Internet [41]. CI research typically evolves from general to specific beginning with a competitor profile. This profile is a compilation of company information such as key management personnel and basic financial status [27,41]. By all accounts the profile is the most basic of CI activities and is present in any CI activity [27,41]. This is because this information not only provides financial, product, and market information, but also results in the collection of data that may harbor more detailed intelligence. For example, careful reading of a quarterly report (i.e., 10Q) can reveal many corporate events that never reach the press. Useful sources for acquiring this type of information are found in SEC filings, annual reports, newspapers, business directories, information services, databases, and case studies; many of which are commonly available in libraries and on the Internet [28,41]. This important information acquisition task will be used as the basis of the task as well as the context of the study.

3. Information Repository Use

The information demands of modern organizations are great and varied. This is partly because of the many domains of information (e.g., financial, operations, customer, etc.) needed to attain business goals (e.g., strategy formulation, marketing, etc.). Accompanying this diversity is the use of many information "sources" (e.g., people, journals, books, reports, etc.) in responding to each task. In general, sources are located within a larger repository (e.g., library, management information system, etc.), with the notable exception of individuals (i.e., experts, trusted coworkers, etc.). By extension, these repositories are consequential to organizational functions such as decision-making and strategy.

4. Information Repositories

Two important repositories of business information today are the library and the Internet. The choice of the term repository is intended to indicate that information may be warehoused within a repository that pertain to different domains (e.g., financial, marketing, etc.) in different forms (e.g., text, graphics, audio, etc.). The library is a familiar repository consisting of a collection of published materials housed in a building and organized by a hierarchical subject system (e.g., Standard Subject Classifications) accessed through an indexing system, such as the card catalog, or other reference materials. The Internet -- a distributed network of information resources - is another repository. Unlike a library, there is no easily

defined physical space, standardized indexing system or familiar bound pages. Instead, there are electronic files found using search engines, subject indexes, and URL's.

Currently the Internet includes some, but not all, of the information available in a library. Likewise, the library does not contain all information available on the Internet. For example, the complete text of books, magazines, and other publications is only sporadically available through digital library efforts such as that at the Library of Congress or electronic journals. This repository also includes sources comparable to those in a library. For example, the Securities and Exchange Commission (SEC) maintains a database of electronically filed corporate documents (e.g., 10K, 10Q, etc.; URL: <http://www.sec.gov>), and many corporate WWW sites also contain this information. This data is obtainable at a library in annual reports, or summarized in publications such as Standard and Poor's Stock Reports. Given the information content overlap between a library and the Internet it is reasonable to assume that they are partial substitutes for competitive intelligence [12,15,38,40,41,49].

4.1. Predictors of Repository Use

There are several factors that have been related to repository use and choice in the communications and information systems literatures such as accessibility [18,55], satisfaction [24], and usefulness [21]. These constructs as opposed to plethora of other constructs [22] were chosen for this study because they have appeared in a wide variety of research, and have been related to intention and actual use. The constructs' chosen were an amalgam of constructs gleaned from the Technology Acceptance Model (TAM) and Internet literature that are consistent with this new exploration of repository choices. Admittedly, there are other constructs that may prove to be important such as playfulness [46], results demonstrability [50], and social influence [68]. Their inclusion however had to be balanced with other constraints such as sample size and task demands.

We chose to measure actual repository choice because it represents the nexus of many different constraints not included in idealistic intention measures or hypothetical choices [63]. Although Chin and Gopal [9] argued that there are may be important differences between factors explaining intention to use and choice, several studies have found significant although moderate correlations between the constructs [65]. Again we have operationalized choice as the actual use.

4.1.1. Perceived Repository Accessibility. Not surprisingly, accessibility has been demonstrated to be a principal determinant of information source use [55]. Its

salience is echoed in individual, group and organizational research. For example, individuals rely heavily on available information (cf., recency effect and availability heuristic) in making judgments [36]. A brief overview of repository use studies supports this seemingly obvious proposition.

In most studies accessibility is operationalized in terms of what Culnan [17] defined as physical access although accessibility is a multi-dimensional construct composed of physical, interface and informational access [16]. Physical access refers to a user's physical ability to go to a library, log on to a computer network, or speak to an expert. Interface access refers to the ability to translate queries for information into the language of the repository. For example, knowing the appropriate key words and search syntax in using a bibliographic index or computerized library catalog. Finally, informational access refers to the ability to retrieve information. For example, the physical retrieval of a book from the stacks or viewing an article on microfilm. These dimensions provide insight into repository use by extending simplistic notion that does not capture the complexities of new computer-based information repositories. That is, one cannot use a source that is physically inaccessible, difficult to communicate with, or does not actually possess the needed information.

The importance of accessibility in explaining repository use has been clearly demonstrated in communication studies [55]. Similarly, information system accessibility is an important explanatory factor of information system use [33,44,59]. If an information system provides access to information that is useful in completing a task, then it is likely that it will be used in subsequent similar tasks.

4.1.2. Perceived Repository Satisfaction. User satisfaction is a key construct in the management information system [58], decision support system [5], and office automation [67] literatures. Although criticisms of its validity [43] and theoretical link to effectiveness have been made, satisfaction is the most frequently cited surrogate of system effectiveness [69]. User satisfaction may be defined as the extent to which users believe a system meets their information needs [39]. Studies relating satisfaction and usage have reported a consistently positive relationship between them [32]. For example, Mawhinney and Lederer [45] and many others have found that satisfaction is positively associated with use [3,5,6].

4.1.3. Perceived Repository Usefulness. Perceived usefulness is also a commonly cited explanatory variable of information system use. Usefulness refers to "the degree to which a person believes a particular system

would enhance his or her job performance" [21 p. 320]. The ubiquity of constructs similar usefulness across a variety of disciplines strongly supports their importance in explaining the frequency of system use [22,61].

Usefulness has been found to be is strongly related to actual use [21,65]. For example, Davis [21] found that perceived usefulness and ease of use were positively associated with self-reported use and intentions to use although usefulness was a better predictor than ease of use. Adams, Nelson and Todd [1] replicated Davis' [21] study finding that usefulness was correlated to system use for voice mail, electronic mail, a word processor, a spreadsheet, and a graphics program. Others have reported similar findings for voice mail and dial-up services [64]; voice mail alone [10]; electronic mail [66] and group decision support systems [60]. In summary, perceived usefulness is positively related to actual and intended use [22].

Based on the preceding review, repository choice is hypothesized to be a function of perceived repository satisfaction, accessibility, and usefulness (see Figure 1).

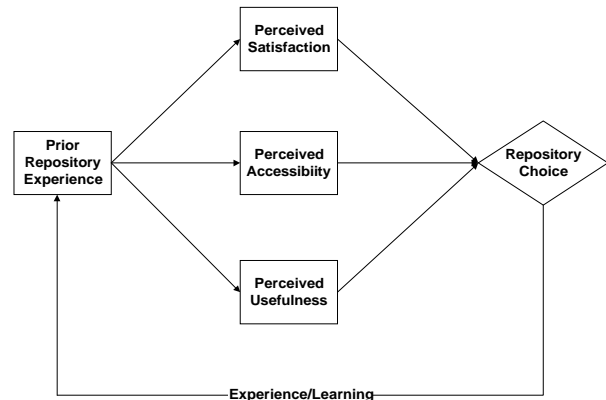


Figure 1. Repository choice model

5. Methods

5.1. Participants

Participants in this study were one hundred and nineteen business students at a small private mid-Atlantic university enrolled in two sections of an undergraduate management information systems class (N=66), and a graduate information management class (N=53). Forty three percent were male, averaging 29 years of age, and reporting an average of 3.81 years of managerial experience at the supervisory level and above. Seventy-five percent owned a computer and 53% had access to the Internet from home.

5.2. Design and Procedure

In order to collect the data necessary to competently test the hypothesis, a within subjects design was selected. This design was chosen because it economizes participant usage, controls for variance due to individual differences, and provides for the efficient collection of data necessary to test the repository choice model.

Participants were randomly assigned to a company/repository sequence and completed three company profiles in the order specified by the sequence. Prior to assigning the tasks, participants attended a one-hour general training session on how to use the Internet and library for acquiring business information. For each company order (1-2-3, 2-3-1, 1-3-2, 2-1-3, 3-1-2 or 3-1-2) there was a corresponding repository order (Library-Internet or Internet-Library) resulting in twelve unique sequences of three tasks necessary to counterbalance order confounds inherent to a repeated measures design. Following the completion of each profile, participants were given a questionnaire that included measures of repository satisfaction, accessibility, usefulness and task performance. Thus, in this study there were 119 participants whom completed three identical tasks for three different companies; one using the library, one using the Internet, and a third (and final) task in which they were given a choice to use the library, the Internet, or both. The study was completed in a four week period.

5.3. Manipulation Checks

In order to assure internal validity of the measures it was necessary that the manipulations of repository and company were adhered to by participants. To verify this, the repository manipulation was checked by comparing the actual repository used (self-report) with the intended repository manipulation. In every case, there was a perfect match between the repository used and the manipulation. In addition, the company manipulation was verified during the scoring of the number of correct items completed on the task sheet. If a participant's responses were consistent with the expected responses for a company then the manipulation check was passed, if not then the check was failed. In no case was information written on the task sheet that was inconsistent with the company manipulation. Repository and company order was ensured in the collection and distribution of task sheets which were coded with a sequence number from 1 to 12 and a task order from 1 to 3 (e.g., 1-1, 1-2, 1-3, 2-1, 2-2, etc.). Thus, the first task was distributed (randomized by sequence) to each participant, one week later the next task in the sequence was distributed upon submission of the first task, and one week later the second task was

returned and the final task was distributed. For example, a participant assigned to sequence 6 was first given a profile for the Boise Cascade Corporation which specified that they use only the library, one week later they were given the same profile for the Sonoco Products Corporation using only the Internet, and finally they were given the James River Corporation and told they could use either or both repositories. In this case, library perceptions are measured following the first task, Internet perceptions following the second, and repository choice is the actual repository chosen for the third task.

5.4. Materials

5.4.1. Task. The "company profile" task was created specifying the information to be acquired by the participants, the company to be profiled, and the repository to be used. The items on the task sheet were selected from among common business information acquired by intelligence professionals [27] and required information from several domains to be obtained for each company: organizational, financial and managerial. An industry was randomly chosen from the Fortune 500 and retained if the requisite information was available in both the library and Internet for at least three firms within that industry. The selection of firms within a specific industry was necessary to minimize industry variation as a potential confound given the skewed industry presence on the Internet [14]. The industry chosen was the Paper Products Industry (SIC 26) including the three firms: James River Corporation, Sonoco Products Company, and Boise Cascade Corporation.

For each information need specified on the task sheet participants were asked to write in the requested information (i.e., content) and the source of that information. For example, Microsoft's 1995 net revenues of \$8.67 billion was acquired from their WWW site at <http://www.microsoft.com/msft/annual/fh.htm>.

Participants were instructed to only use the university library and Internet connections in completing each task. This restriction was necessary to control for the likely event of unequal Internet access from home or work, and for differences in the available resources in university and local libraries. Although seemingly less of a problem for the Internet than the library, it was logically necessary to restrict participants to university resources for both repositories in order to reduce confounds stemming from differences in aids (e.g., reference librarians and computer assistance) and other potential differences such as speed of dial-up connections, browser versions and plug-ins.

5.4.2. Post Task Questionnaire. Measures of repository perceptions for the constructs of satisfaction, accessibility and usefulness, and a manipulation check were included

on a single page questionnaire with 23 items (modified to represent the repository appropriately) completed immediately after each of the three profiles. The measurement of each construct is outlined below.

Perceived Accessibility (ACC): Accessibility was measured along the three dimensions suggested by Culnan [16,17]. Although many studies have employed single-item measures of accessibility [13,16,44] we chose a multiple item measure. One five-point bi-polar item anchored by the adjectives “difficult” and “easy” was created for each of the three accessibility types. An overall accessibility item was also included anchored by the adjectives “accessible” and “inaccessible”.

Perceived Satisfaction (SAT): Although commonly used, insufficient data about the content, criterion and construct validity of many user satisfaction instruments makes plausible arguments that measurement error may drive inconsistencies across studies in correlation's with items such as system use [43]. An exception to this weakness is the Doll and Torkzadeh [23,24] instrument. This instrument has been shown to exhibit adequate psychometric properties [71] (overall scale $\alpha=.92$) and a criterion validity of .76 with global ratings of satisfaction [23]. Hendrickson, Glorfeld and Cronan [34] report test-retest reliabilities for mainframe ($\alpha_{1990}=.85$ $\alpha_{1992}=.96$) and personal computer ($\alpha_{1990}=.92$ $\alpha_{1992}=.87$) applications across a two year period. The satisfaction instrument was modified such that the items retained were those most salient to the hypothesis and minimized overlap with other constructs. For example, the accuracy and format items in the original scale are more relevant to reports generated from an information system as opposed to information acquired from a repository. Given that neither the Internet nor library provide “reports” these items were deemed unnecessary. An overall satisfaction item was added as an additional satisfaction criterion. Thus satisfaction was measured using nine five-point scales anchored with the bipolar adjectives of “almost never” and “almost always”.

Perceived Usefulness (USE): Davis [21] developed and validated a measure of perceived ease of use and usefulness, using data from a field and laboratory study in which a six-item scale for each construct attained high reliabilities, and exhibited high convergent, discriminant, and content validity [21,62]. Continuing Davis’ work, others have examined psychometric properties such as test-retest reliability [35] and the construct’s theoretical link to use. Adams, Nelson and Todd [1] presented the results of two studies designed to replicate Davis [21] research, concluding that these measures were both reliable and valid. In summary, perceived usefulness is a reliable correlate of use [37]. A modification of Davis’ [21] perceived usefulness measure incorporated the appropriate wording for the two repositories. The items

were five-point Likert type scales anchored with the adjectives “agree” and “disagree”.

Repository Choice: A single-item was included that asked the participant to indicate which repository was actually used in completing the task and served as a check for the repository manipulation for tasks th first two tasks, and as the dependent variable of repository choice for the third and final task.

To be perfectly clear, choice was coded as the self-reported repository used in completing the third task. Repository perceptions of accessibility, satisfaction and usefulness were measured with the items described above immediately following the task which called for that repository to be used exclusively. For example, Internet perceptions were measured when the Internet was prescribed, library perceptions when the library was prescribed, and choice on the thrid task. Thus the repository perceptions were measured in tasks one and two and choice was measured in task three, making repository perceptions temporally antecedent to choice.

6. Results

6.1. Construct Validity and Reliability

The nineteen items that comprised the accessibility, satisfaction and usefulness measures were subject to exploratory factor analysis as a means of establishing convergent and discriminant validity. The result of this factor analysis demonstrates that the constructs exhibit reasonable convergent and discriminant validity, explaining 72.2 percent of the variance. With the exception of two items, each correctly loads on the expected factor; these mis-classifications are not theoretically consistent with the a priori scale structure. Factor scores were calculated for each of the three constructs with the reliability of each factor exceeding the recommended level of .70. It should be noted that the reliability of perceived satisfaction previously reported [24,34] is consistent with this study. The usefulness scale also exhibited a reliability consistent with the previously reported levels ($\alpha=.92$) [21]. In addition, the reliabilities with respect to each repository are acceptable for accessibility ($\alpha_{\text{INTERNET}}=.80$ $\alpha_{\text{LIBRARY}}=.75$), satisfaction ($\alpha_{\text{INTERNET}}=.91$ $\alpha_{\text{LIBRARY}}=.92$), and usefulness ($\alpha_{\text{INTERNET}}=.96$ $\alpha_{\text{LIBRARY}}=.96$). Thus, the repository measures used in this study demonstrate convergent and discriminant validity, as well as adequate reliability.

6.2. Analyses of Repository Choice

Table 1 presents the correlation's among the variables used in this study. Given that the perceptions of

repositories need not have a specific relationship and that factor scores were created the near zero correlation among the variables is as expected. The appropriate analysis for this study is a logistic regression in which all six predictors of repository choice are included in the model because the dependent variable, repository choice, had only two useable values (library or Internet). This regression (Table 2) was significant ($\chi^2=19.31$ $p=.03$) and correctly predicted 67.2% of the observations with an pseudo- R^2 of .20. Two coefficients reached statistical significance: library satisfaction ($b=-.43$ $p=.04$) and library usefulness ($b=-.70$ $p=.002$). These results are consistent with the point biserial correlations between the factors and choices shown in Table 1. Thus, library satisfaction reduces the likelihood of choosing the Internet by a factor of .65 and library usefulness by a factor of .49. That is for each unit increase in library satisfaction the odds of choosing the Internet decreased by about one-third and for each unit increase in library usefulness the odds decreased by about one-half. The conclusion is that the more satisfied with and useful participants found the library, the less likely they were to choose the Internet for completing the task.

Table 1
Correlation Coefficient's Among Variables^a in the Study

	ACC _I	ACC _L	SAT _I	SAT _L	USE _I	USE _L	Choice
ACC _I	X						
ACC _L	.08	X					
SAT _I	.05	.04	X				
SAT _L	.10	.23 [*]	.27 ^{**}	X			
USE _I	.16 ⁺	.04	.09	-.03	X		
USE _L	-.43 ^{***}	.02	-.09	-.06	-.08	X	
Choice ^b	.20 [*]	-.03	.09	-.16 ⁺	.14	-.30 ^{***}	X
Mean	-.32	.34	-.20	.11	.19	-.37	1.58
s.d	1.01	.92	.92	1.10	.89	1.08	.50

$p \leq .05$ ^{**} $p \leq .01$ ^{***} $p \leq .001$

^a Subscripts refer to the repository—Library or Internet.

^b Point Biserial Correlation

The adequacy of the model is presented in Table 3, which along with the regression χ^2 shows that the model correctly predicted significantly more observations than a proportional chance ($Z=3.08$ $p=.001$) model [8]. Moreover, the percentage of correct predictions is not based entirely on correctly predicting one repository choice category as evidenced by the Phi of .33 ($p<.01$)

between predicted and observed choices. One difficulty in using logistic regression is that the R^2 is an approximation and must be carefully interpreted as the ratio between the likelihood of a null model (only a constant) and the likelihood of the full model. In comparison to other studies which have attempted to predict usage this R^2 of .20 is smaller but not inconsistent with the R^2 of .50 reported by Taylor and Todd [68] given that in the current study the dependent variable was actual use and did not include intention to use. The correlation between intention and actual use has been reported elsewhere between .34 [21] and .54 [68]. Following the results of Taylor and Todd [68] and the correlation between intention and actual use it is logical to assume that the current R^2 is attenuated by the lack of inclusion of intention.

Table 2
Logistic Regression for Repository Choice
(N=119)

	B	S.E.	Model χ^2	ϕ	Odds Factor	Hit Rate
ACC _I	.08	.24	19.31 ^{**}	.33 ^{***}	1.08	67.2
ACC _L	-.02	.25			.98	
SAT _I	.16	.25			1.18	
SAT _L	-.43 [*]	.23			.65	
USE _I	.23	.26			1.25	
USE _L	-.70 ^{**}	.26			.50	

Table 3
Logistic Regression Fit for Repository Choice

Repository	Observed	Predicted	Hit Rate (%) ¹	
			Chance Model ²	Full Model
Internet	68	49	50.7 ^a	67.2 ^a
Library	51	31		

¹ Hit rates with the same letter are different at $p<.05$ as determined by Z-test for proportion differences [8].

² Proportional Chance Model: $p^2+(1-p)^2$, where p is the observed probability of choosing the Internet [31 p. 103].

7. Discussion

This study was designed to explore the applicability of factors which may predict repository choices between the library and Internet for a competitive intelligence task. The results raise the question as to why certain repository measures were better predictors of choice than others. In particular, only library satisfaction and usefulness were found to be significant predictors of repository choice.

Thus, repository choice was best predicted by two library and no Internet repository perceptions. This finding would be consistent with a lack of experience among the participants in using the Internet. Another plausible explanation is that there was relatively little variation between repository perceptions for this task. This explanation has little support because the differences between the repository perceptions for accessibility ($t=5.55$ $p<.001$), satisfaction ($t=2.94$ $p<.01$), and usefulness ($t=4.50$ $p<.001$), were statistically significant.

The low variance explained ($R^2=.20$) in actual choice by the predictors of accessibility, satisfaction, and usefulness was disappointing given the these constructs were selected from a group of existing and well documented constructs related to use. The obvious conclusion is that other factors such as those described by work on the 'Theory of Planned Behavior' and the Technology Acceptance Model (TAM) should be tested. One important factor may be the lack of including intention to use as discussed earlier given that it has been found to be an important mediating variable of actual use [68]. Another factor for consideration is the novelty of using the Internet as opposed to a library since many of the participants chose to use the Internet (57%) over the library, commenting afterward that they wanted to know more about how to use the Internet. Nonetheless, the applicability of TAM to the Internet has come under question elsewhere as well [26].

Another important issue is the selection of the dependent variable as actual use as opposed to a choice prior to use, a hypothetical choice or a measure of intention to use. Following the logic of Chin and Gopal [9] there may be a striking difference between a choice among a given set of repositories and intention to use a repository. The first, forces a choice without consideration for other alternatives, while the second allows for a potential comparison of all known ways of completing the task. In this study the choice was constrained to not allow for alternatives such as another repository such as another library, an expert, a research consultant using channels such the Internet, the mail, or the telephone.

Task complexity is also an important issue in this study. The task used in this study was a simple and routine competitive intelligence task. Thus, the use of either repository may not have had a significant impact on task performance and subsequently to the preference for one repository over the other. In a more complex task, task demands may result in a much stronger preference for one repository as indicated by accessibility, satisfaction and usefulness. In this case, the likelihood that a combination of repositories or other sources of information would be necessary to complete the task effectively or efficiently increases. In the same vein, the

application of media richness theory in the selection of repository may be of use such that media richness choices involve interaction of media and source perceptions and choices [13]. Following this approach repository choice may be affected by the perceptions of equivocality and ambiguity in the task which are themselves moderated by task complexity. Thus a more complex task may allow a multiplicity of possible solutions and have increased ambiguity leading to a preference for richer media.

If these findings are valid then it is plausible that an Internet choice is based on a low level of satisfaction and perceived usefulness with the library for this task. This is striking because the rhetoric concerning the Internet is predominantly about its convenience in general, and accessibility in particular. Thus, an Internet choice should be best influenced by demonstrating that library use will not be as useful as the Internet or by a poor experience in using the library which produces a low level of satisfaction. In general, an Internet choice was best predicted by a poor perception of the library and not by a positive perception of the Internet.

Based on the repository choice results several practical implications are evident. Recall that repository perceptions are not equally weighed in making a repository choice. The popular notion of Internet accessibility salience was not substantiated in this study. Instead, library satisfaction and usefulness were the only significant predictors of repository choice. The current study suggests librarians should be marketing the usefulness of the library for specific tasks as a counter to Internet accessibility. Complementing this is the need for improving systems and interface designs so as to equalize the differences in perception between information repositories.

Overcoming initial technical difficulties in using the Internet and a general sense among participants that their participation provided them with considerable insight into how to use these repositories for intelligence tasks were reported in the debriefing. Additionally, participants related that tasks requiring the use of various repositories would be beneficial in their future careers.

In this study several potentially confounding factors were controlled for such as the repositories to be used (e.g., only university resources were used), order effects of company or repository (e.g., counterbalancing), motivation (e.g., credit for participation and extra credit as a function of task performance), individual differences (e.g., within subjects) and familiarity with task requirements (e.g., training session). Although these controls varied in their effectiveness the results were considerably more consistent with the hypothesis than if these controls had not been imposed.

One potential problem with a repeated measures design is a learning effect [42] in which the participants simply

improve with task repetition. Thus their choice would be determinable by the repository that was easiest for them to learn how to use. This effect is minimized in the current research because each repository was only used once prior to the final choice condition and thus a learning effect would be evident in the choice itself and the task performance. Another problem may be the recency effect, in which participants simply may choose the repository that they last used. There is little evidence for this problem given that the correlation between the repository used in task two and the third task was .14 ($p=.14$).

The results are limited to the industry, companies, task, repositories, and sample. Subsequent studies that ease these controls in more natural settings are needed to increase the generalizability and predictability of the results. For example, replication of the current study with another set of companies in another industry would further enhance the generalizability of the results. A more complex task that is less a measure of the information acquired and more a test of its application would also improve on the present study such as a study in which a competitive intelligence analysis of a company was created using only one repository. This might be accomplished by specifying the task as a competitive intelligence report that would include industry relative data and analysis of the data collected. Finally, a survey of business professionals engaged in competitive intelligence would greatly enhance the present findings.

8. Conclusion

This study has provided insight into a set of factors theoretically associated with repository choice. The results are generally supportive of the logic that repository choice is based on perceptions of repository satisfaction, accessibility, and usefulness. However, their impact in predicting choice differed by the repository being referenced (e.g., accessibility of the Internet), and lacked a high degree of predictability as evidenced by a low R^2 . This suggests an inequality in repository perceptions as they apply to choice that warrants further study. That is, what perceptions need to be emphasized and which need to be overcome in systems implementation to encourage acceptance and use of that system.

The information revolution has effectively been transformed into the network revolution. An important feature of this new paradigm is the Internet which has connected millions of information sources throughout the world across temporal, geographical and language boundaries. It suggests that the basis for choice between the Internet and the traditional library is not based on equal perceptions about each repository. Rather, repository choices may be driven by complex perceptions repository accessibility, satisfaction and usefulness.

Taken as whole, this study is a first step towards our understanding of the choices of users among traditional and electronic information repositories. More importantly, there is little evidence of how the Internet is currently used because of its relative "newness". If the Internet is going to enable improved information accessibility that is useful to business then it is imperative that we build a scientific base of knowledge of its weaknesses and strengths.

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