Examining User-Driven Factors for Intentions to Use Video Digital Libraries

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ABSTRACT
The purpose of the present study is to examine potential influences of certain user-driven factors on the intentions to use or target video digital libraries. The overarching objective of the study is to present a validated research model which depicts such phenomenon between users and video digital libraries. A total of 229 respondents participated in an online survey, which included questions for seven distinct variables: retrieval functionality, user interface characteristics, user support, collection quality, perceived ease of use, perceived usefulness, and intention to use. Multiple regression and correlation coefficient were used to analyze the collected survey data and test the hypotheses for validating the proposed research model. The preliminary results show that both perceived ease of use and perceived usefulness are determinant factors of users’ intention to use video digital library resources. In addition, retrieval functionality, user support, and collection quality significantly affected users’ perceived ease of use of digital library resources. Further study of additional variables is currently in progress in order to assess influential factors that affect use of digital video libraries and ultimate adoption of such tools.

Keywords
Video digital libraries, human computer interaction.

INTRODUCTION
The user-driven factors, as examined in the present study, derived from examinations of users and their perspectives and/or expectations for using digital video and digital libraries. Such factors include various categorical criteria, as they emerged from the responses of participants in prior video digital library research (Ju & Albertson, 2014; Albertson & Ju, 2015). Furthermore, users (i.e. study participants) were previously asked to list five criteria (features, characteristics, or other) that come to mind when reflecting on prior use of video search tools. Analysis of these responses formed four primary categories of criteria including retrieval functionality (RF), user interface characteristics (UI), user support (US) features, and collection quality (CQ). Each category (or criteria category) was weighted, according to the respective number of occurrences for each, demonstrating their level of importance for users (Albertson & Ju, 2015).

The purpose of the present study is to extend upon these previous findings, i.e. of what the user-driven factors are for video digital libraries, to examine potential influences on ultimate intentions to use or decision to target video digital library resources. The overarching objective of this analysis is to present a validated research model which depicts such phenomenon between users and video digital libraries.

RESEARCH QUESTION
RQ: To what extent do system characteristics of video digital libraries, as emerging and specified from prior research, influence users’ intention to use digital video tools/libraries?

As previously mentioned, we operationalized and further tested four different criteria or categories that emerged from a prior examination to test their relationships with potential users’ ultimate intention to accept and use video digital libraries. Two additional factors, perceived ease of use (PEU) and perceived usefulness (PU), taken from Technology Acceptance Model (TAM; Davis, 1989), and, more specifically, the intention to use (INU) factor. PEU refers to “the degree to which a person believes that using a particular system would be free of effort” (Davis, 1989, p. 320), and PU is defined as an expected outcome produced by the results of adoption behavior (Venkatesh, 1999). These two
factors are widely applied and validated as determinant factors in various studies of users’ adoption and intention to use various systems and technologies (Kim et al., 2014; Booker et al., 2012; Lin, 2009; Wu et al., 2007, Kim, 2006; Wixom & Todd, 2005) and digital libraries (Nov & Ye, 2009; Nov & Ye 2009; Hong et al., 2002; Thong et al., 2002). Incorporating them into the present study enabled a more holistic understanding of users’ ultimate acceptance and use of video digital libraries.

The following seven hypotheses were developed to test to answer our overarching research question:

1) Retrieval functionality (RF)

\[ H1: \text{Retrieval functionality will have a positive effect on perceived ease of use of video digital libraries.} \]

2) User Interface characteristics (UI)

\[ H2: \text{User interface characteristics will have a positive effect on perceived ease of use of video digital libraries.} \]

3) User Support (US)

\[ H3: \text{User support features will have a positive effect on perceived ease of use of video digital libraries.} \]

4) Collection Quality (CQ)

\[ H4: \text{Collection quality will have a positive effect on perceived ease of use of video digital libraries.} \]

5) Perceived Ease of Use (PEU) and PU (Perceived Usefulness)

\[ H5: \text{Perceived ease of use will have a positive effect on perceived usefulness.} \]

\[ H6: \text{Perceived usefulness will have a positive effect on users’ intention to use a video digital library.} \]

\[ H7: \text{Perceived ease of use will have a positive effect on users’ intention to use a video digital library.} \]

**METHODOLOGY**

The present study conducted a survey-based method. The data collection instrument (survey) utilized scaled questions, therefore, quantitative analyses were performed to examine the research question and corresponding hypotheses of the present study.

**Data Collection Method**

We conducted an online survey during February and March of 2015. A total of 299 participants responded to the survey questionnaires and contributed responses. Participants derived from two research universities in the southeastern United States, and their participation was solicited through departmental listservs and a student subject pool, as coordinated through the research office of one of the universities. Participation in the study was not restricted based on (participants’) level of experience, such as prior use of video search tools and/or digital libraries. Anonymity and voluntary participation was assured by the survey software, which provided an anonymous link to the online survey site.

The final survey questionnaire incorporated seven variables (RF, UI, US, CQ, PEU, PU, and INU) for testing. All questions used on the survey were measured with a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Questions pertaining to the system characteristics (retrieval functionality, user interface, user support, and collection quality) were based on the findings of a previous study on user-centered criteria on video digital libraries (Albertson & Ju, 2015).

The survey was piloted through six participants with prior video digital library experience to assess and identify any potential improvements before the formal data collection period. The final version of the survey instrument was posted online to collect responses of study participants. Data collection was open for approximately five weeks.

**Data Analysis**

A two-phased data analysis method enabled assessment of the measurement instrument and the research model. When assessing the measurement instrument (phase 1), reliability (internal consistency) and construct validity were calculated. Cronbach alphas (for reliability assessment) for six out of seven constructs were above the recommended level of 0.70, indicating a high degree of internal consistency. US was a construct (alpha = 0.60) slightly below the threshold. Validity of the instrument was measured by factor analysis in order to identify underlying constructs that explain the correlations among a set of items. All factor loadings of the items exceeded 0.50 level (all range from 0.588 to 0.807), which is considered critical for construct validity. In the phase for assessing the research model, correlation coefficient analysis was used to examine the degree of association among variables, and multiple regressions tested the hypothesized relationships among multiple variables. The correlation coefficient indicates the degree of association between factors, while multiple regression demonstrates the causal relationships among multiple variables.

**RESULTS AND DISCUSSION**

Out of the 229 total responses, 202 responses were valid for data analysis; 27 responses were incomplete. In terms of age distribution among the participants, 80.7% (163) were ages 20–29, 9.4% (19) were 30–39, 6.4% (13) were 50 or older, and 3.5% (7) were 40–49. Nearly 58% (118) of the study participants were female with the remainder (84) being male. Educational levels showed that 56.4% were undergraduate students, 21.3% held associates’ or bachelors’ degrees, and 17.3% possessed graduate degrees. The rest (5%) did not identify their educational levels. Participants reported their level of frequency of searching video online; daily users of video search tools comprise 38.1% of the sample, searching for online video one or more times on a given week averaged 50%, and 12% searched video online monthly or rarely.

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Correlation coefficient and multiple regression analyses were employed to test the seven hypotheses. As Table 1 shows, retrieval functionality (r=.279), user interface (r=.351), user support (r=.267), and collection quality (r=.365) all have statistically significant association with intention to use (INU). Perceived ease of use (r=.539) and perceived usefulness (r=.495) also both demonstrated significant association with intention to use.

A series of multiple regression tests were conducted to determine the cause/effect relationships among variables presented in Figure 1. Three significant sub-models emerged as shown in Table 2. The relationship between the four independent system (or digital library) variables (RF, UI, US, and CQ) and dependent variable (PEU) was valid ($R^2 = .223$, $F=14.105$, $p < .001$). The regression coefficients for RF ($\beta=.327$), US ($\beta=1.168$) and CQ ($\beta=.250$) are all significant, rejecting $H_{10}$, $H_{30}$, and $H_{40}$ respectively. Another sub-model for the relationship between PEU and PU also proved to be valid ($R^2 = .246$, $F=65.147$, $p < .001$). The regression coefficient for PEU ($\beta=.336$) is significant, rejecting $H_{50}$. The next significant sub-model ($R^2 = .360$, $F=55.888$, $p < .001$) was one for the relationship between PEU, PU, and INU. Both PEU ($\beta=.323$) and PU ($\beta=.206$) have positive effect on INU, since $H_{60}$ and $H_{70}$ were rejected. These sub-models as presented demonstrate moderate levels of predictability, thus all variables except UI (non-significant) can serve as reasonable predictors for INU. Also the findings of the present study support the inclusion and significance of TAM variables for better understanding users’ acceptance and intention to use video digital libraries.

The results presented here comprise the preliminary results of a study analyzing various user-driven factors and their associations with users’ ultimate intentions to use video digital libraries.
digital libraries. As the present study does not incorporate a comprehensive set of factors, future studies incorporating other variables, such as individual characteristics (e.g. topic knowledge, computer anxiety, and other preconception of the users) and situational context of use (task relevance, importance, and system accessibility / visibility) is also currently under way. Additional analysis of other variables is currently in progress in order to assess the significant factors affecting digital video libraries and users intentions to use them.

REFERENCES


