A DIGITAL INFORMATION BEHAVIOUR MODEL

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Graphical Abstract

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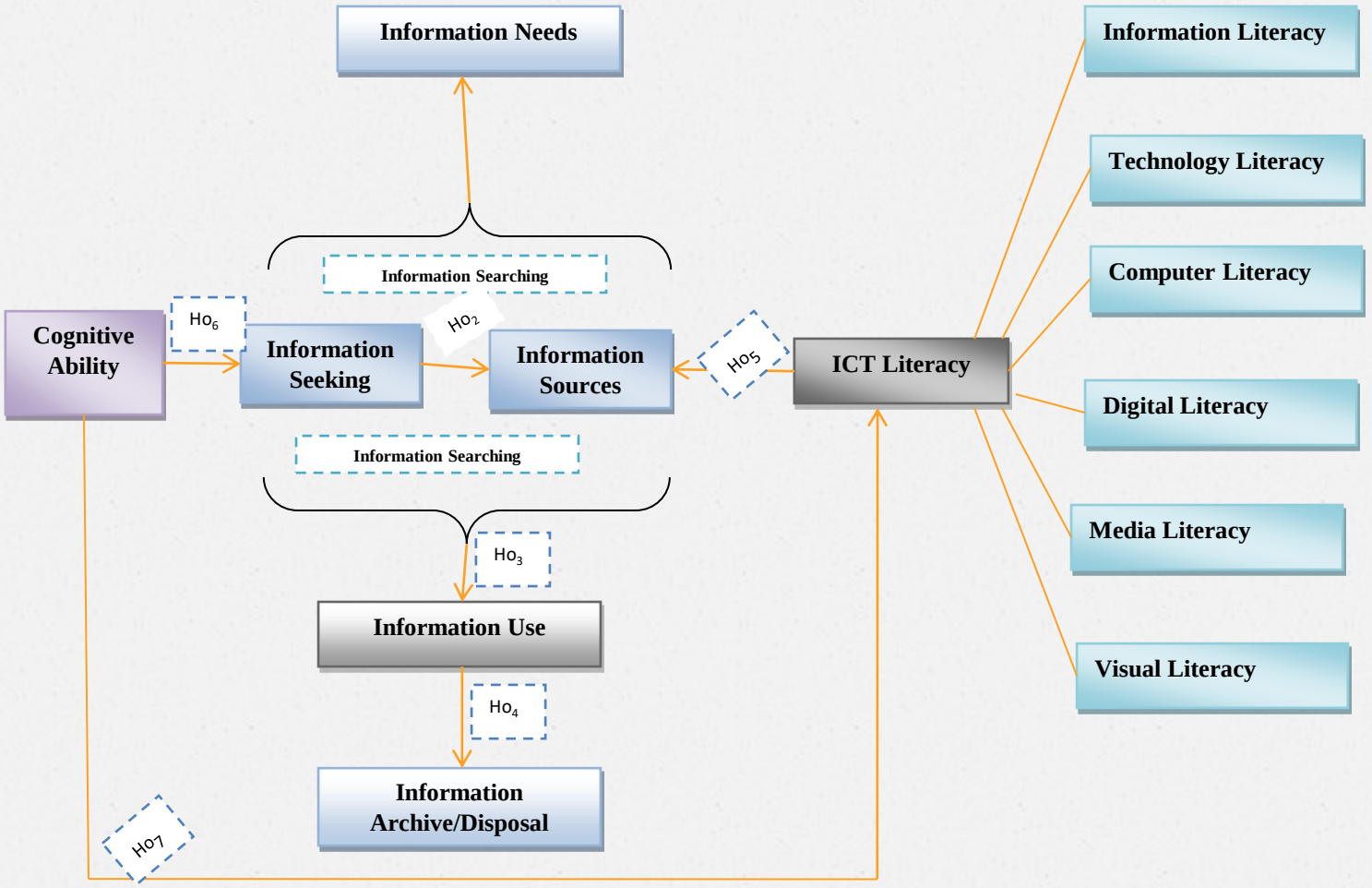

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Abstract

Previous Information Behaviour (IB) models were originally designed for the traditional environment and are not fit to explain human IB in the digital era. Also, the continuous and elastic revolutions of ICTs have questioned previous IB models, leaving a continuous need to review and rework previous models thereby subjecting them to scrutiny in the changing globalization and digital environment. Therefore, there is need to provide an up-to-date IB model. This study presents a digital information behaviour (DIB) model that is relevant in the changing digital environment. It adopts a correlational survey design; and a multi-stage technique was used to select 400 respondents but 233 questionnaires were retrieved from the field giving a total of approximately 58% retrieval rate. Questionnaires were used to obtain information and the psychometric property was presented. The descriptive (frequency and percentage) and inferential (ANOVA and Regression Analysis) statistics was adopted to analyse information obtained. This study revealed that there are significant relationships among IB components such as information needs, search and use but none exists between users' information use and archival/disposal. In addition, ICT literacy of users does not give a significant impetus to users' IB, which could affect the output quality of IB. Furthermore, among the four cognitive abilities, only verbal comprehension influenced users' IB. The study recommends the need to revisit curriculums in all fields of study, to expose students to the necessary ICT literacy levels and cognitive abilities necessary for enhancing IB quality in the digital environment.

Introduction

Previous IB model :

- Wilson's model of Information Behavior (1981, 1999, 2000);
- Ellis's behavioral model for information system design (1989);
- Kuhlthau's information-seeking model (1991);
- Johnson and Meischke's comprehensive model of information-seeking (1993);
- Marchionini's information seeking in electronic environments model (1995);
- Bates's berry picking model (1989);
- Ingwersen's cognitive IR interaction model (1992;1996);
- Saracevic's stratified interactive IR model (1996);
- Spink's search process model (1997);
- Choo behavioural model for the web (2000);
- Broder's standard model of the search process (2002);
- Fisher, Fisher and Harman's (2003) information–motivation–behavioural skills model;
- Knight and Spink's macro model of human IR behaviour on the web (2008);
- Omiunu's (2014) information needs model;
- Ohtoshi-Gottschalg-Duque's Model of Information Behavior (2016); among others.

Introduction (Contd)

- Information Behaviour Variables : Information Needs, Searching, use, and Archive/Disposal (Wilson; *Kuhlthau, Kuhlthau; Edwards and Bruce;* Saracevic, among others)
- ICT Literacy: Information Literacy, Technology Literacy, Computer Literacy, Digital Literacy, Media Literacy, and Visual Literacy (Lowe and McAuley; Bilawara and Pujar ; MediaSmarts, *2017*).
- Cognitive Ability (Lowe and McAuley, 2000; Al-Maskari and Sanderson, 2010 & International Computer Driving Licence, 2017)
- So What …?

Hypotheses:

- Ho_1: There is no significant relationship between users information needs and search.
- Ho_2: There is no significant relationship between information seeking and sources
- Ho_3: There is no significant relationship between users information search and use.
- Ho_4: There is no significant relationship between users information use and archival/disposal.
- Ho_5: There is no significant relationship between ICT literacy and users information behaviour
- Ho_6: There is no significant relationship between cognitive ability and users' information behaviour
- Ho_7: There is no significant relationship between cognitive ability and ICT literacy

Research Framework

The present study adapts the framework of:

- Markov Decision Processes (MDPs) by Tishby and Polani (2011);
- Wilson's (1981) model of Information behaviour (Figire 1);
- Ohtoshi-Gottschalg-Duque's (2016) model of information behaviour (Figure 2); and
- Bates's (1989) berrypicking model.

Highlights of the DIB Model

The novelty of this study is hinged on the fact that:

- The recent digital environment poses a challenge on previous IB models in that several ICT related skills and literacy are needed to explain users' IB in this different ICT environment as affirmed by Husseini and Safa (2009); Katz (2005); Ojeniyi and Adetimirin (2016) and MediaSmarts (2017).
- Furthermore, this could explain stochastic behaviour of information users in Bates's berrypicking model (1989).
- Consequently, cognitive abilities and ICT literacy could affect users' IB in a digital environment hence, the Proposed Digital Information Behavior (DIB) model in this study.

Highlights of the DIB Model

The novelty (Contd):

- In reality, the IB of users is not static especially in the digital environment.
- Moreover, there is also an elasticity of differences in the stochastic level among different users which could be determined by several factors such as the cognitive factor and ICT literacy as presented in this study.
- The novelty of the Digital information behaviour (DIB) model in this study is hinged on the fact that users' IB is not static but stochastic and changes from one user to another or from one group of users to another or from one industrial revolution (IR) to another with respect to the peculiar digital environment the IB is operating in.
- Hence, it is liken to a stochastic or random movement from the information need definition, seeking/searching and use and across different information sources and systems.

Research Methods:

- Research Design: Correlational Survey Design
- Research Design: Correlational Survey Design
- Sampling Techniques: Multi-stage
  - Six states in Southwestern Nigeria, and a convenience method was used to select Oyo state
  - Two universities selected at random
  - Purposive sampling (Purposive) to select Departments
  - Proportionate systematic random sampling was used to select respondents
- Sample Size: formula of Rose, Spinks and Canhoto (2015) for the sample size determination of the study: $n = 4pq/d^2$

  Given 400 sample size

However, 233 questionnaires were retrieved from the field giving a total of approximately 58% retreieval rate and these were subjected to analysis.

- Research Instrument: Structured Questionnaire, divided into four (4) sections namely the demographic characteristics of respondents; cognitive ability, information behaviour and ICT literacy of respondents. They were captured in three likert scale measurements of low, average and high. The questionnaire was subjected to psychometric test using Cronbach Alpha and results of the coefficients were presented as follows: information behaviour (0.71); ICT literacy (0.73) and cognitive ability (0.67).
- Data Analysis Methods: Descriptive analysus (frequency and percentage) and inferential statistics (ANOVA and Regression Analysis) to test the hypotheses of interest at 0.05 level of significance

Results and Discussion

- Demographic: males (58%) than females (42%) in the study; 27% above 51 years while only 3% are below 25 years; 80% are presently running a Masters programme while only 2% are running a Post graduate diploma programme.
- There is a high significant relationship between information needs of users and information search processes ($p<0.05$)- Concurred Wilson (1981, 1989, 2000); Savolainen (2008); Rees et al. (2003) and Omiunu (2014); Savolainen (2016); among others.
- There is a high significant relationship between information seeking and sources used ($p<0.05$)- Support Wilson (1981); Omiunu (2014); Savolainen (2016); among others
- There is a significant relationship between users' information search and use- Propped up Wilson (1981, 2000); Savolainen (2008); among others.
- There is no significant relationship between users' information use and archival/disposal- Contrast Patel et al. (2008) and Gray et al. (2013); among others.

Results and Discussion (Contd)

- There is no significant relationship between ICT literacy and users' IB- Contradicts Lowe and McAuley (2000); Al-Maskari and Sanderson (2010) and Ohtoshi and Gottschalg-Duque (2016). Thus leading to poor evaluation of Information sources as stated by Bilawara and Pujar (2016). Also, considering Abubakar and Adetimirin (2015) Ping (2016); Ojeniyi and Adetimirin (2016); Samuel and Nkechi (2016); MediaSmarts (2017); among others, that ICT literacy is needed by potential information users to fully enjoy the information society, hence, may be unable to enjoy the digital and information society towards enhancing IB. Thus, either one or all of the IB components may face some challenges in the digital environment. This is why Penniman (1975); Fenichel (1981) and Marchionini et al. (1990) that ICT literacy could pose a significant difference between novice and experienced information search and users.
- Among the four cognitive abilities, only verbal comprehension was found to have significant influence on users' IB- South County Child & Family Consultants (2014), it can be deduced that majority of respondents in this study could only use their cognitive ability to process information presented to them verbally hence, may depend on middle men such as information brokers either in an informal or formal environment to them what to do. Thus, contradicting Bates in the berrypicking model (1989) that IB process is stochastic in nature and that the elasticity of the stochastic nature is enhanced by users ICT literacy.
- There is no significant relationship between cognitive ability and ICT literacy- contrast from the works of Lowe and McAuley (2000); Al-Maskari and Sanderson (2010) and the International Computer Driving Licence, (2017) that cognitive ability of information users tends to increase ICT literacy

Conclusion

- This implies that though, a significant relationships exists among information behavior components, these relationships were brought about by the fact that information users rely on external assistive mechanisms and intermediaries such as information brokers or librarians to meet their information needs.
- Hence, cognitive ability of information users does not have significant influence on ICT literacy implying that many of the users do not have the ICT literacy to enhance their IB in the digital and information society.
- This may result in elastic differences in IB models between countries with higher level of ICT literacy and those with lower ICT literacy at the global level.
- However, information users possess the ability to maximise the information obtained through intermediaries or other assistive mechanisms to create impetus among the IB components.

Recommendations

- Institutional curriculum should be revisited to include human information behaviour as a course at the institutional level irrespective of the field of study because it is germane that IB is understood by students especially in an online environment.
- There should be need to expose them to the necessary skills and literacy in the recent Industrial revolution such as Cognitive skills, and ICT literacy that is needed to be able to partake and function well in the digital and information society such as literacy, technology literacy, visual literacy, internet literacy, media literacy and computer literacy.
- There should also be the need for constant workshop and training in the development of relevant ICT skills and literacy that could aid their participation in the digital and information society towards enhancing their IB processes and activities in an online environment.
- There is also much need for the information users to develop relevant cognitive abilities which cuts across the perceptual speed, logical reasoning, verbal comprehension, and spatial scanning. This could have significant impetus on the IB and also on the ICT literacy hence, the significant effect would be felt on the quality of IB among information users. This could further influence their academics and career activities in the long run.

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