DETERMINING THE INFLUENCE OF COGNITIVE STYLE ON INFORMATION SEEKING BEHAVIOR FOR PROPOSING USER PROFILE

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AUGUST 2012
I dedicated this thesis to my beloved "Kourosh" and my dear mother and father for their endless support and encouragement.
ACKNOWLEDGEMENT

First and foremost, I would like to express heartfelt gratitude to my supervisor **Dr. Roliana Ibrahim** for her constant support during my study at UTM. She inspired me greatly to work in this project. I have learned a lot from her and I am fortunate to have her as my mentor and supervisor.

Secondly, I would like to thank **Dr. Hamid Kashefi** for his kind assistance in conducting my work in this project.
ABSTRACT

An important issue that absorbs many attentions is studying the users’ required information and their pattern of dynamic interaction with online search. According to different needs of users in internet environments such as Digital Libraries, information services are prepared for them. For this propose, personalized digital libraries providing a way for different users to express their preferences clearly. Users may not attention to their preferences and cannot have an acceptable research. To address these problems, this thesis investigates an approach that gains user preferences based on cognitive style and recognizes relevant characteristics for information seeking and then to examine the influence of cognitive character on information seeking. More specifically, this thesis aim to study cognitive style can identify user preferences and explain how Current Web Personalization systems use different kinds of techniques. In order to use specific characteristics of the users to create a profile that is used as the primary filtering element for the adaptation and personalization of the Web content. This study proposes a user comprehensive profile that consists of cognitive processing factors in information space. This paper specifically focuses on the use of the Internet by postgraduate engineering students. The sample of this study consists of 53 postgraduate engineering students from the Faculty of Computer Science and Information System in Universiti Teknology Malaysia. The findings of this study revealed influence of users’ cognitive styles on information seeking and then present framework of user profile based cognitive style characters.
ABSTRAK

Suatu isu penting yang menarik ramai perhatian adalah membaca permintaan maklumat oleh pengguna dan corak dinamik interasi dalam pencarian atas rangkaian. Dengan mengikuti pelbagai keperluan yang berlainan dalam rangkaian seperti perpustakaan digital dan perkhidmatan informasi telah disediakan. Untuk tujuan tersebut, perpustakan digital peribadi membekalkan satu cara untuk pengguna supaya menunjukan kesukaan mereka dengan jelas. Pengguna yang mungkin tidak menumpu perhatian kepada kesukaan mereka akan gagal mendapatkan pengajian yang sesuai. Untuk mengaji masalah-masalah tersebut, tesis ini menyelidikkan satu cara yang dapat memperolehi kesukaan pengguna dengan mengikuti bentuk kognitif dan mengecam ciri-ciri yang berkaitan untuk pencarian maklumat dan untuk memeriksa pengaruhan sifat kognitif dalam pencarian maklumat. Untuk lebih spesifik, tesis ini bertujuan untuk mengaji ciri-ciri kognitif yang dapat mengenal kesukaan pengguna and menjelaskan bagaimana system Pelayar Individual Semasa menggunakan pelbagai teknik. Untuk mendapatkan ciri-ciri yang ditetapkan oleh pengguna untuk mewujubkan profil yang digunakan sebagai penapisan butiran yang utama bagi penyesuaian and peribadian dalam kandungan pelayar. Kajian ini mencadangkan satu profil pengguna yang lengkap dengan mengandungi faktor proses kognitif dalam ruang maklumat. Tesis ini terutamanya menumpu atas kegunaan rangkaian oleh pelajar kejuruteraan lepasan ijazah. Sampel yang diperolehi terdiri daripada 53 orang
pelajar kejuteraan lepasan ijazah dari Fakulti Komputer Sains dan Sistem Maklumat di Universiti Teknologi Malaysia. Perolehan dalam pengajian ini menunjukan pengaruh ciri kognitif pengguna atas pencarian information dan rangka bagi profil pengguna dengan mengikuti ciri bentuk kognitif ditunjukkan.
## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>TITLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DECLARATION</td>
<td></td>
<td>ii</td>
</tr>
<tr>
<td>DEDICATION</td>
<td></td>
<td>iii</td>
</tr>
<tr>
<td>ACKNOWLEDGMENT</td>
<td></td>
<td>iv</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td></td>
<td>v</td>
</tr>
<tr>
<td>ABSTRAK</td>
<td></td>
<td>vi</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td></td>
<td>vii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td></td>
<td>xi</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td></td>
<td>xii</td>
</tr>
<tr>
<td>LIST OF APPENDIX</td>
<td></td>
<td>xiii</td>
</tr>
</tbody>
</table>

### 1 INTRODUCTION

1.1 Introduction 1

1.2 Background of the Study 2

1.3 Problem Background 3

1.4 Research Question 4

1.5 Research Hypothesis 4

1.6 Research Objective 4

1.7 Research Scope 5

1.8 Thesis Organization 5

### 2 LITERATURE REVIEW

2.1 Introduction 6

2.2 Models of information behavior 7

2.2.1 Wilson’s model of information behavior 8

2.2.2 A model of internet-based information system 9
3 METHODOLOGY

3.1 Introduction 42
3.2 This Research Proposed Methodology 42
    3.2.1 Project Initiation and Planning 44
    3.2.2 Conduct Literature Review 44
3.2.3 Pilot study and Reliability Testing 44
3.2.4 Data Collection 45
3.2.4.1 Research Instrument 45
3.2.5 Data Analysis 47
3.2.5.1 Testing on the Assumption of Normality 48
3.2.5.2 Multiple Linear Regression Analysis 48
3.2.6 User Profile Framework Based Cognitive Elements 49
3.3 Conceptual Framework 50
3.3.1 User Activity 51
3.3.1.1 User Context 51
3.3.1.2 Information Behaviour 52
3.3.2 User Model 53
3.4 Conclusion 55

4 EXPERIMENTAL RESULTS AND ANALYSIS
4.1 Introduction 57
4.2 Data collection 57
4.3 Pilot study and Reliability Testing 58
4.4 Multiple Linear Regression Analysis 59
4.4.1 Testing on the Assumption of Normality 59
4.4.2 Correlation Analysis 62
4.4.3 Result of Multiple Linear Regression Analysis 64
4.4.3.1 Hypothesis 64
4.5 Discussion on the Results 67
4.6 User profile frame work 68
4.7 Summary 72

5 CONCLUSION
5.1 Introduction 73
5.2 Achievement of the Study 73
5.3 Limitations of the Study and Recommendations for Further Research 74
5.4 Research Contribution 74
5.5 Summary 75

REFERENCES 76
## LIST OF TABLES

<table>
<thead>
<tr>
<th>TABLE</th>
<th>TITLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Some of the Critical Research about Information Seeking</td>
<td>27</td>
</tr>
<tr>
<td>2.2</td>
<td>A User Profile Upper Level Classes</td>
<td>39</td>
</tr>
<tr>
<td>2.3</td>
<td>Properties of User Profile Context</td>
<td>40</td>
</tr>
<tr>
<td>3.1</td>
<td>Demographic User Profile and its Transition into User Profile Classes</td>
<td>54</td>
</tr>
<tr>
<td>3.2</td>
<td>An Instance of User Profile Upper Level Classes Based on Data Collection in this Research</td>
<td>55</td>
</tr>
<tr>
<td>4.1</td>
<td>Variables and Item in Data Set</td>
<td>58</td>
</tr>
<tr>
<td>4.2</td>
<td>The Instruments and Cronbach's Alpha</td>
<td>59</td>
</tr>
<tr>
<td>4.3</td>
<td>Normality Test for information Seeking</td>
<td>60</td>
</tr>
<tr>
<td>4.4</td>
<td>Relationship Between Information Seeking and Cognitive Style Element</td>
<td>63</td>
</tr>
<tr>
<td>4.5</td>
<td>Simultaneously Test (F-Test) Output</td>
<td>65</td>
</tr>
<tr>
<td>4.6</td>
<td>Partial Test (T-Test)</td>
<td>65</td>
</tr>
<tr>
<td>4.7</td>
<td>User Profile Ontology Upper Level Classes</td>
<td>70</td>
</tr>
<tr>
<td>4.8</td>
<td>Ability Hierarchy that is Modeled With the User Profile Ontology</td>
<td>70</td>
</tr>
<tr>
<td>4.9</td>
<td>User Profile Based Items of Internal Knowledge</td>
<td>71</td>
</tr>
<tr>
<td>4.10</td>
<td>User Profile Based Items of Uncertainty</td>
<td>71</td>
</tr>
<tr>
<td>4.11</td>
<td>User Profile Based Items of Change</td>
<td>72</td>
</tr>
</tbody>
</table>
## LIST OF FIGURE

<table>
<thead>
<tr>
<th>FIGURE</th>
<th>TITLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Wilson’s model of information behaviour</td>
<td>8</td>
</tr>
<tr>
<td>2.2</td>
<td>Model of information Environment</td>
<td>10</td>
</tr>
<tr>
<td>2.3</td>
<td>A nested model of the information searching, information seeking, and research areas</td>
<td>12</td>
</tr>
<tr>
<td>2.4</td>
<td>Wilson model of information seeking behaviour</td>
<td>14</td>
</tr>
<tr>
<td>2.5</td>
<td>A stage process version of Ellis’s behavioural framework</td>
<td>15</td>
</tr>
<tr>
<td>2.6</td>
<td>A comparison of Figure 3 with Kuhlthau’s stage process</td>
<td>17</td>
</tr>
<tr>
<td>2.7</td>
<td>Ingwersen’s model of the IR process</td>
<td>19</td>
</tr>
<tr>
<td>2.8</td>
<td>The Scatter Plot of Correlation</td>
<td>30</td>
</tr>
<tr>
<td>2.9</td>
<td>Overview of personalization on a user-profile-base</td>
<td>35</td>
</tr>
<tr>
<td>2.10</td>
<td>Ontological User Profile as the Context Model</td>
<td>37</td>
</tr>
<tr>
<td>3.1</td>
<td>Research Operation Framework</td>
<td>43</td>
</tr>
<tr>
<td>3.2</td>
<td>A conceptual Framework According to the Study</td>
<td>50</td>
</tr>
<tr>
<td>4.1</td>
<td>The scatter plot of CGPA</td>
<td>61</td>
</tr>
<tr>
<td>4.2</td>
<td>The histogram of information seeking</td>
<td>62</td>
</tr>
<tr>
<td>4.3</td>
<td>User profile framework based cognitive character</td>
<td>69</td>
</tr>
</tbody>
</table>
## LIST OF APPENDIX

<table>
<thead>
<tr>
<th>APPENDIX</th>
<th>TITLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Appendix A</td>
<td>82</td>
</tr>
<tr>
<td>B</td>
<td>Appendix B</td>
<td>90</td>
</tr>
</tbody>
</table>
CHAPTER 1

INTRODUCTION

1.1 Introduction

The web has maintained a continuous growth rate in the last decade. This fact makes the web an important information resource accessible to a great number of people who continuously use it. Offering widespread access to data and exchange of new ideas on a wide range of topics and interests, the web is a powerful vehicle of communication that breaks through geographical, cultural and political boundaries. It integrates diverse audiences on a national and international level. The widespread use of the available Web Information Retrieval Systems has subjected the nature of information seeking to a significant transformation. As the number of search engines and their use increase, knowledge and understanding of users' information seeking and their patterns of dynamic interaction with online Information Retrieval Systems is getting increasingly significant. Information seeking behaviour is vital for improving the quality of systems designed to retrieve information by modifying their design in relation to the needs and expectations of the user.

In order to be able to utilize the web or make adequate use of it, people need to be learned in order to create a mental image, picture, or representation of a system or service. This mental picture, image, or representation can be referred to as a reflection of the experiences of the past, expectations, belief system, knowledge structure, etc. System users or service users who use the internet are seeking some information which will be used for identifying unfamiliar entity using things that are...
more common or easily adopted with existing cognitive structure (Bruce and Policy, 1999). With the exponential growth of the World Wide Web in the past decades and its development into an enormous and heterogeneous collection of information resources, people have come to deal with new techniques and methods for accessing information. The internet is now an important channel of communication and is used for information distribution and gathering, “it is using power for the evolution and improvement of information seeking” (Nahl, 1998).

1.2 Background of the Study

The ability of users in creating, interacting, or manipulating digital content that are on different platform in the information and digital era have made users so dependent on digital technology (Wilson, 2000a). In today’s world, the information that an individual would need at a given time may be available in different sources which can be accessed via different information channels. Most research students look for a wide range of resources and they continually use these resources for their school work like assignments, projects, etc. (Ford, 1999). However, identifying the most useful information can be quite difficult (Chowdhury, 2006).

The identification of what users do is always related to the behavioural approach,(Wilson, 2000a). It can also be referred to as knowing how users search, what kind of errors do users make, what do users really consider as important or relevant, what feelings do users express, and how much of importance or value they (users) place on the outcome. To seek information is a kind of generic cognitive activity (Marchionini, 1995a, Berryman, 2006, Byström, 2005b). Cognitive processes determine the ways in which knowledge is assessed, filtered, stored, organised, and continually re-structured in individuals’ mind.

A system (web site) that has to be personalized must be able to distinguish between groups of users and individual users. The above process can be called users profiling. The main aim or objective of the user profiling system is to be able to
create an information base that contains the characteristics, the activity of users and the preferences of users. These factors all need to gather and exploit some information about individuals in order to be effective (Kazunari Sugiyama 2004). This study is conducted to determine the information-seeking behaviour on academic website of post graduate students. It studies on the Faculty of computer science at the Universiti Teknologi Malaysia (UTM). It presents an outline of models of information seeking and cognitive style in the Web domain and surveys user’s cognitive style for collecting information about users and finally using them to propose a user profile.

1.3 Problem Background

In order to investigate the area of information seeking it is, firstly, important to study and critically review the most relevant and significant existing works in the field. Results achieved from information seeking study are used to support the notion of successive search of digital information environments over time by considering human progress via different phases or stages, adopting different strategies, and exhibiting several information behaviours at phases or stages of their information seeking process (Ellis, 1989, Kuhlthau, 1993).

Current research of the characteristics of users in user system interaction shows that individuals are different in their abilities and the way they react to a system. Studying digital journals helped to take different approaches and objectives for the study. Kind of research has been conducted on the information behaviour of academicians in the websites. Students need to obtain information in the best way in order to reduce in searching time and achieve satisfaction in retrieval information. Identification of general knowledge system provides a proper coverage for users to search topics which can be incorporated into different models of user preferences.

Aspects of information seeking that are related to students are seriously subjective. Different users have different needs, values, and ways of seeking for
information. It is difficult to design a system on our web site to identify specific information needs for each researcher that could show the best results.

1.4 Research Questions

This research is conducted as an attempt to find the answers for following questions:

1. What are the existing models in information behaviour and users’ cognitive style?
2. Does the cognitive style have any influence on information seeking behaviour?
3. How can the user profile be designed based on the cognitive style to achieve information needed from academic websites?

1.5 Research Hypothesis

The research hypothesis is related to the research questions 2:

\[ H_0: \text{There is no significant influence of cognitive style on information seeking behaviour.} \]

1.6 Research Objective

The objectives of this study are:

1. To study existing information behaviour models and cognitive style models.
2. To investigate the influence of cognitive style on information seeking behaviour.
3. To propose a framework of user profile based on the identified characters of cognitive style.
1.7 Research Scope

1. This study is carried out on the research students (PhD and master course) of the faculty of computer science and information system of UTM.

2. The respondents are students who use the academic websites. They look for information based on their preferences, assignments, and other related work.

3. This study focuses on students’ cognitive character towards the use of academic website to a successful search.

1.8 Thesis Organization

The remaining parts of this proposal are arranged as follow. In Chapter 2 reviews the literature, fundamental concepts relative to this study and also theories regarding this research. Chapter 3 presents the research methodology of the present study, and it discusses the advantages and techniques used for designing user profile. Presenting the details of the data collection, analyzing data, and identifying more effective cognitive characters in order to propose the framework of user profile are discussed in Chapter 4. Chapter 5 presents the conclusions of the study.
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