Factors that affect the use of Malaysian e-learning websites by visually impaired users in the transfer of Islamic knowledge

MOHAMMED RAHEEL MOHAMMED ALAHOUL, NURDIANA AZIZAN*, NAJWA HAYAATI ALWI
Universiti Sains Islam Malaysia (USIM), Nilai, Malaysia

Abstract

One of the difficulties that the Visually Impaired Users (VIUs) experience in using e-Learning websites is the lack of effective Knowledge Transfer (KT) due to limitations in these websites such as usability and accessibility problems among others. Due to this problem, there is needed to identify the factors that affect the use of e-Learning websites for VIUs in the transfer of knowledge. However, this paper focuses on the transfer of Islamic knowledge for VIUs through e-Learning websites in Malaysia. Qualitative method through the use of interviews was used for this study. Respondents consist of three groups which consist of 14 VIUs, 14 Knowledge Providers (KPs) and 13 Service Providers (SPs) in 15 Malaysian institutions and organizations. Thematic analysis following inductive approach was used to analyze the data obtained from the respondents. Eight factors were identified which affect the use of e-Learning websites by VIUs. The findings from this paper can be considered in the development of e-Learning websites in Malaysia that can be used by VIUs to learn Islamic knowledge effectively.

Keywords: Visually Impaired Users, Islamic Knowledge, E-Learning Websites

INTRODUCTION

E-learning is a type of learning that requires the use of computers to be carried out and is delivered through a networked technology (Bell and Federman 2013; Munezero et al. 2016). The use of ICT has become a new reality nowadays and as a result, the use of e-Learning for learning has become more common (Xanthidis, Wali, and Nikolaidis 2013). This is as a result of each user having different set of circumstances relating to their disability, and e-Learning websites need to take into consideration the limitations posed by these circumstances. However, the main focus of our paper is on the VIUs. VIUs relate to those learners who are categorized as legally blind, having a visual acuity of 6/60 or less in the better eye, and/or a visual field of less than 10 degrees (Retina Australia 2012). As a result, there is need to identify the factors that affect the transfer of Islamic knowledge through e-Learning websites. The purpose of this paper is to present the findings from a case study on the factors that affect the VIU in the use of e-Learning websites in Malaysia for Islamic KT according to the VIUs, SPs and the KPs. The next section briefly reviews the relevant literature which includes the generation of a list of potential factors for EIKT to VIUs via e-learning websites; the subsequent section discusses about the methodology, followed by the result and discussion sections. Finally, the conclusion of the paper is presented. The purpose of this paper is to present the findings from a case study on the factors that affect Islamic knowledge transfer through e-learning websites in Malaysia to VIUs according to the VIU, SPs and the KPs. The next section briefly reviews the relevant literature which includes the generation of a list of potential factors for Effective Islamic KT (EIKT) to VIUs via e-Learning websites; the subsequent section discusses about the methodology, followed by the result and discussion sections. Finally, the conclusion of the paper is presented.

Islamic Knowledge Transfer

Knowledge in this paper is defined and scoped to include the Islamic knowledge resources which are made available for VIUs via the e-Learning medium which can be made use of and applied by the e-Learning website

*Corresponding author: Nurdiana Azizan
Email: nurdiana@usim.edu.my
users. While much has been written about the use of e-Learning as a tool in teaching the impaired people, there have been limited researches which are explicitly focused on Islamic knowledge (courseware content development process) for VIUs (Zheng et al. 2012). Knowledge Transfer (KT) is the sharing of knowledge with the receivers in order to fulfil the receivers knowledge needs (Hasnain, Jasimuddin, and Fuller-Love 2016).

The importance of KT is to multiply knowledge quickly in order for knowledge to reach a large group of people on time (Lindkvist 2005; Choi, Lee, and Yoo 2010). As a result, KT is based on the absorptive capacity of an individual and his motivation to share knowledge. Islamic KT as defined for this paper is the process through which the sources of Islamic knowledge are exchanged between providers and receivers through the knowledge management (KM) medium (e-Learning). Even though, e-Learning is being used as a medium of learning for people with impairments, Zheng et al. (2012) stated that there are limited researches specifically focused on the development of Islamic knowledge courseware for the VIUs. However, Abdullah et al. (2011) mentioned that the effectiveness of Islamic KT model can be realized if the purpose for which the website was developed is fully achieved.

Conceptual Model of EiKT for VIUs in E-Learning

Despite the potential of e-Learning for supporting and improving learning and teaching in KT, e-Learning can often be a significant obstacle to users with physical disabilities especially those having a vision impaired problem because most e-Learning sources are designed for sighted users, utilizing complex visual images and interactive features (Permvattana, Armstrong, and Murray 2013). As a result of the lack of EiKT model for VIUs through e-Learning websites (Saowapakpongchai and Prougestaporn 2012) which is the focus of the research, the researcher tries to develop an EiKT model for VIUs by utilizing an adapted form of Abdullah et al. (2011) effective KT in e-Learning model to facilitate the identification of factors that affect Islamic KT for VIUs through e-Learning websites as a medium. This model has been chosen because of its e-Learning capability and the identification of influencing factors that affect e-Learning websites. The researcher has extended the application of Abdullah et al. (2011) model in order to identify the factors that affect the knowledge receiver, knowledge to be transferred and the medium of KT. Figure 1 presents the proposed conceptual model.

![Conceptual Model of EiKT for VIUs in E-Learning](image)

Figure 1. The proposed conceptual model of the study, EiKT for VIUs in e-Learning

This conceptual model has been derived through the use of a significant number of relevant and associated literatures that concentrate on the factors and concepts that have been raised. Table 1 presents the factors, descriptions and their association with extant literature.
<table>
<thead>
<tr>
<th>Groupings and Factors</th>
<th>Description</th>
<th>Associated Concepts &amp; Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile learning development</td>
<td>A mixture of online learning and learning using materials previously downloaded onto handheld devices helps to reduce costs and the inconvenience of signal disruption.</td>
<td>(Attewell 2005; Butean et al. 2015)</td>
</tr>
<tr>
<td>Format Information</td>
<td>Ability to change the face, font type and size of interface and have control over the e-Learning website.</td>
<td>(Nganji 2012; Rebaque-Riva, Gil-Rodriguez, and Manresa-Mallol 2013)</td>
</tr>
<tr>
<td>ICT Skills</td>
<td>A person’s belief in his capability to effectively use technology to improve learning or teaching.</td>
<td>(Luskin and Hirsen 2010; Permvetatana et al. 2013)</td>
</tr>
<tr>
<td>E-learning Quality</td>
<td>Transfer of credible knowledge effectively and efficiently in a specific time according to the official standards required.</td>
<td>(Hammoudeh 2016; Simonson et al. 2012)</td>
</tr>
<tr>
<td>ICT Infrastructure</td>
<td>The e-Learning websites should have appropriate supporting ICT infrastructures.</td>
<td>(Hussain 2004; Al-Sobhi, Weerakkody, and Al-Busaidy 2010; Karunasena, Deng, and Zhang 2012)</td>
</tr>
<tr>
<td>Usability</td>
<td>Usability is the ease of use of an e-Learning website for the VIUs. Adaptive, rehabilitative and assistive devices and processes for locating, selecting and helping in providing support for people with different disabilities through allowing them in accomplishing different tasks. Audio, textual and audio-visual content that users experience when using websites and they include videos, sounds, images, text and animations.</td>
<td>(Bocconi et al. 2007; Schulze and Kromker 2010; Saowapakpongchai and Prougestaporn 2012)</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Islamic knowledge content provided on e-Learning websites should meet the VIUs needs and expectations.</td>
<td>(Wang and Strong 1996; Ordonez 2014)</td>
</tr>
<tr>
<td>Timeliness</td>
<td>The extent to which Islamic knowledge is being regularly updated.</td>
<td>(Reimann 2009; Luskin and Hirsen 2010; Ordonez 2014)</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Islamic knowledge content provided on e-Learning websites should meet the VIUs’ needs and expectations.</td>
<td>(Wang and Strong 1996; Ordonez 2014)</td>
</tr>
<tr>
<td>Gnosis</td>
<td>Knowledge from experience especially experience of divinity or that which is beyond the five senses.</td>
<td>(Hassan et al. 2014)</td>
</tr>
<tr>
<td>Content Quality</td>
<td>The way content is exhibited and presented which will help in achieving easy reading and understanding.</td>
<td>(Abdullah et al. (2011); Simonson et al. 2012; Saowapakpongchai and Prougestaporn 2012)</td>
</tr>
<tr>
<td>Wisdom</td>
<td>Selecting the right way to transfer Islamic knowledge to VIUs depending on a suitable way according to their needs and ability, and total insight and having sound judgment concerning a matter or situation through understanding cause and effect phenomena.</td>
<td>(Walker and Christenson 2005; Burhan 2012; El Garah et al. 2012)</td>
</tr>
<tr>
<td>Co-operation</td>
<td>Implementation of Islamic teachings on e-Learning websites should be carried out with love and affection. Islamic preaching on love and affection should be encouraged and impacted in the daily lives of users.</td>
<td>(Buzzi, Mori, and Buzzi 2012)</td>
</tr>
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</table>
Table 1: (Continue) Potential factors for Islamic KT to VIUs through e-learning websites

<table>
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<tr>
<td>Social Presence</td>
<td>VIUs’ perception of being in and belonging in an online course. An instance of a higher degree communication medium is the video while that of a lower degree communication medium is the audio. People with the same interests coming together to share knowledge regularly.</td>
<td>(Russo and Benson 2005; Lowenthal 2009)</td>
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<tr>
<td>User Experience</td>
<td>User experience is the level of positive or negative feelings which a specific user is experiencing in a particular setting during and after a product use which will propel a user for further usage.</td>
<td>(Betts et al. 2015; Beauregard et al. 2007; Hassenzah 2008; Johnson, Gueutal, and Falbe 2009; Schulze and Krumker 2010; Chu and Chu 2010; Ordonez 2014)</td>
</tr>
<tr>
<td>Awareness Creation</td>
<td>The e-Learning websites should have appropriate supporting ICT infrastructures.</td>
<td>(Al-Sobhi et al. 2010; Karunasena et al. 2012)</td>
</tr>
<tr>
<td>Government and voluntary Support</td>
<td>Provision of support in terms of development of ICT infrastructures and funding by government and voluntary organizations.</td>
<td>(Schwester 2009; Al-Rashidi 2013)</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Tasks should comply with guidelines and standards and provide feedback on all sections of the e-Learning environment.</td>
<td>(Luskin and Hirsen 2010; Permvat-tana et al. 2013)</td>
</tr>
<tr>
<td>E-learning Experience</td>
<td>Providers of knowledge must be experienced and vast to impact effective knowledge through e-Learning.</td>
<td>(Cooper, Lichtenstein, and Smith 2006)</td>
</tr>
<tr>
<td>Motivation</td>
<td>Giving motivation and incentive to users so that they will be able to make use of the website by providing ICT infrastructures and assistive technologies that can be bought at a reduced price for the VIU.</td>
<td>(Faghih et al. 2013; Junus et al. 2015)</td>
</tr>
<tr>
<td>Perceived Enjoyment</td>
<td>Perceived enjoyment is related to perceived satisfaction as the enjoyment of any particular task will lead to satisfaction. Perceived enjoyment is influenced by perceived usefulness and self-efficacy.</td>
<td>(Liaw, Huang, and Shen 2007; Junus et al. 2015)</td>
</tr>
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</table>

METHODOLOGY

A semi-structured interview was conducted individually with 41 participants that consisted of 14 VIUs, 13 SPs and 14 KPs. Respondents that partook in this study were from Malaysian organizations which are: Malaysian Association for Blind (MAB), Society of the Blind in Malaysia (SBM), Persatuan Orang Cacat Penglihatan Islam Malaysia (PERTIS), Setapak Blindness Special Education Secondary School (SMPK), Ministry of Education (MOE), Jabatan Kemajuan Islam Malaysia (JAKIM), Universiti Kebangsaan Malaysia (UKM), International Islamic University Malaysia (IIUM), Universiti of Malaya and Teachers Training Institute for the Blind.

VIUs refer to the people who are legally blind or have vision impairment and as a result make use of assistive technologies to make use of the computer, internet or e-Learning websites. The SPs refer to the organizations or companies that provide and manage the e-Learning websites through which Islamic knowledge (such as Hadith, Tawhid, Islamic economy and finance) is learned and transferred to users (VIUs). The KPs include the lecturers and teachers who teach users and impact knowledge to them.

The author asked each group of respondents direct questions regarding the factors that affect the use of e-Learning websites as a medium of KT for VIUs. Data obtained from interview were classified according to the three groups of respondents. As the sample size used was small, the data analysis was done manually and the shared factors from all groups of respondents were stated. The interview transcripts were then analyzed, using inductive thematic techniques (Boyzatis 1998; Braun and Clarke 2006; Azizan 2011). The potential factors were available to seed this analysis, supplemented with the outcomes of the thematic analysis which allowed the researchers to code category names that emerged from the data.
RESULTS

This section shows the response of participants on the factors that affect the use of e-Learning for obtaining Islamic knowledge by VIUs. The factors stated are presented below according to the group of respondents.

Visually Impaired Users (VIUs)

Drawing upon analysis of the interviews, VIUs have identified four factors that affect the visually impaired user’s usage of Malaysian e-Learning websites for obtaining Islamic knowledge. The factors include social presence, user experience, ICT infrastructure, government and voluntary support.

VIUs - Social Presence

E-learning websites should allow users to be able to communicate, share knowledge and form online communities for all users to interact with one to another. Online communities should be developed through which the users of an e-Learning website can communicate, provide assistance, share and transfer knowledge and share a sense of belonging from one to another. It is a critical influence on VIUs’ online social interaction in an e-Learning website via computer-mediated communication systems. “Create a community that includes intimate social relationships to assist us to communicate, understand, belong, respect and share knowledge is important” (VIU_1: Chairman of Youth Development Committee).

VIUs - User Experience

Knowledge and information should be easy to access even through the use of screen readers in order to increase user experience of the VIUs. It is defined as the level of negative or positive feelings that a user experiences during the usage of an e-Learning website which can increase his motivation to continue making use of the website. User experience is important during the design of e-Learning websites for VIUs. It consists of a number of criteria such as components of users’ interaction with websites and their reactions to websites by which a website should be evaluated. “Like I mentioned before, through the screen reader, we can test information in real time, so we can get information easily. Compare to books which are very thick. In order for us to read books, we need to scan. It is more difficult, but from website, we can access the knowledge in the real time” (VIU_1: Chairman of Youth Development Committee).

VIUs - ICT Infrastructure

Basic ICT infrastructure such as fast internet access, development of software and assistive technologies should be made available to e-Learning website users. It should function properly and respond quickly to assist users to be able to access knowledge easily and make use of the knowledge resources available on the e-Learning websites. “We have JAWS and other voice synthesizer. We are talking about technology. We started using JAWS and DUXBURY. DUXBURY is used to transfer normal printing to braille printing. That’s Duxbury software. Also there is a machine that duplicates and converts diagram” (VIU_8: Lecturer).

VIUs - Government and Voluntary Support

This refers to an individual, group or organization that provides services to VIUs for no financial gain. Volunteering is also renowned for skill development, and is often intended to promote goodness or to improve human quality of life. Volunteering may have positive benefits for the volunteer as well as for the person or community served. “And most of us in rural areas do not have the facilities. So that is our problem; facilities. Government support for our group is very important” (VIU_11: Chairman of Planning and Monitoring).

Service Providers (SPs)

Six factors have been identified by SPs as factors that affect the use of e-learning website for Islamic knowledge by VIUs in Malaysia. These factors are user experience, social presence, e-learning experience, awareness creation, government, voluntary support, funding and evaluation.
SPs - User Experience

The process of getting skills by using e-Learning from doing, seeing and feeling to acquire Islamic knowledge. “We use all of the media, meaning they can’t see, they can’t read from the screen, so you have to add the software, the interface for them to focus on voice, to produce the sound for them to hear. That’s the basic; at least, you can do to have that kind of software. So when browsing the internet, they can hear what the internet is talking about” (SP_4: Director of ICT).

SPs - Social Presence

VIUs should have the feeling of social presence as this is a critical influence on VIUs’ online social interaction in an e-Learning via computer-mediated communication systems. “A community should be created that includes intimate social relationships to assist VIUs to communicate, understand, belong, respect and share knowledge and information or news” (SP_2: IT Instructor).

SPs - E-Learning Experience

This refers to how VIUs feel about using e-Learning websites. Providers of knowledge must be experienced and vast to impact effective knowledge through e-Learning. Experience is needed to transfer Islamic knowledge to VIUs especially through an online medium. “We must get the people who do these sorts of things. Say e-Learning, I mean some have done that. Experience is very important. You can learn from them from the experience. So we can avoid the mistakes that they have made in order to develop these sorts of websites” (SP_4: Director of ICT).

SPs - Awareness Creation

The ability to perceive, to feel, or to be conscious of events, objects, thoughts, emotions, or sensory patterns. “If I buy a piece of equipment, I go to the website and download a menu and read. Because the standard printing is something I cannot access, I can access electronic data so this is what I do when I go on internet. Then, I download the menu and read from there because we have gadgets that can read electronic data” (SP_9: Administrator).

SPs - Government, Voluntary Support and Funding

Providing government or voluntary funding from organizations for VIUs can be supportive and productive. All necessary support in terms of financial, social, physical and moral should be given to the VIUs. Government should provide money and support for the development of software to help VIUs to make use of e-Learning websites. The government should also invest more funds to get experts who can help in the development of the needed software. “The government must work hand in hand to support each other. The ideas keep coming in to improve and such. The environment that encourages you to do what you want to do. You want to come up with the software for the blind so if your boss doesn’t like it. The people call you, this is wastage. Something like that. You won’t get the will to do it. Then of course, the next one will be the political will. You understand politics. We must first of all have more funds. More money must be invested to get this expertise, the resource of the powerful, machine competence to develop the software” (SP_4: Director of ICT).

SPs - Evaluation

The determination of the importance, effectiveness, worth, assessment of performance of an e-learning website is important for the VIUs to be able to carry out in order to facilitate the use of the websites for Islamic knowledge transfer. It addresses the issue of feedback to the website. “The e-learning websites should match the VIUs’ expectations and needs” (SP_9: Secretary, Administrative and Management Section). “The methods being used to transfer knowledge via this website should adopt a wise and intelligent way based on Islamic values and principles; for instance, they should let us know about courses available in our country; make known for us, the available opportunities for learning, sponsors program for learning Islamic knowledge and things like that should be made available. Also, as we are facing so many problems and we have so many questions, we need someone that can answer our questions as soon as possible on these e-learning websites” (SP_7: Community Head).
Knowledge Providers (KPs)

KPs have identified two factors based on factors that affect the VIUs’ usage of e-Learning websites for Islamic knowledge in Malaysia. The factors identified are user experience and social presence.

KPs - User Experience

The use of software such as voice recognition software by VIUs to communicate with the e-Learning websites. That is designed to help them to be able to make use of e-Learning websites. The incorporation of voice recognition or voice commands into the websites helps VIUs in using the websites for searching for topics or information. “Through my experiences, I mean working with visually impaired students, the main challenges regarding the websites are their accessibilities, effective navigations, and their match with visually impaired screen readers software. According to visually impaired, their screen readers such as JAWS cannot work in some websites which indicate the website has not followed the W3C and is not disabled friendly” (KP_9: Research Assistant) (W3C 2006).

KPs - Social Presence

Knowledge sharing should be encouraged especially outside an online setting to improve social presence of website users. Seminars and community for knowledge sharing should be developed. This will assist in increasing the social presence for the VIUs. Training sessions for VIUs to interact, learn and share experiences are important towards EiKT. “I think video for the VIU will have a big impact rather than images because in the movies even though you close your eyes, you can imagine what is happening with some sound. So I think even though, they cannot see but I think they can imagine. We should capitalize on video because video allows them to use other senses to imagine rather than audio alone which could be monotonous and tiring sometimes” (KP_8: Director for Teaching and Learning Technology). Table 2 shows the factors that affect the use of e-Learning websites by VIUs according to VIUs, SPs and KPs

<table>
<thead>
<tr>
<th>VIUs</th>
<th>SPs</th>
<th>KPs</th>
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<tr>
<td>VIU_F1 - Social Presence</td>
<td>SP_F1 User’s Experience</td>
<td>KP_F1 User’s Experience</td>
</tr>
<tr>
<td>VIU_F2 - User Experience</td>
<td>SP_F2 Social Presence</td>
<td>KP_F2 Perceived Enjoyment</td>
</tr>
<tr>
<td>VIU_F3 - ICT Infrastructure</td>
<td>SP_F3 Experience</td>
<td>KP_F3 Social Presence</td>
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<tr>
<td>VIU_F4 - Government and voluntary support</td>
<td>SP_F4 Awareness Creation</td>
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<td></td>
<td>SP_F5 Government, voluntary support and funding</td>
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<td>SP_F6 Evaluation</td>
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</table>

DISCUSSION

There are two shared factors identified from VIUs, SPs and KPs which are social presence and user experience. One factor was identified by VIUs and SPs only as the factor that affects the use of e-Learning website by VIUs which is government and voluntary support. Other factors identified by respondents include ICT infrastructure, perceived enjoyment, experience, awareness creation and evaluation. User experience can be a positive experience if the users can navigate the website easily, easily accessible, high quality of Islamic knowledge content, understanding the needs of the users and good presentation of contents (Petrie and Bevan 2009).

Liaw and Huang (2013) from their findings identified that perceived user’s satisfaction may be affected by the kind of interactive learning environment being used, the interactive learning environments, perceived self-efficacy, and perceived anxiety. They also found that perceived enjoyment is related to perceived satisfaction due to the fact that the enjoyment of any particular task leads to satisfaction.

Extant literatures identified the importance of availability of ICT infrastructure capability, user’s ICT literacy to the achievement of KT (Cooper et al. 2006; Azizan 2011). Awareness should be created on the availability
of e-Learning facilities for VIUs’ accessibility and development of technologies that can be used with e-Learning websites. Bowers and Kumar (2015) finding likewise revealed that learners perceive stronger teacher and social presences in an online environment. As a result, social presence should be encouraged via e-Learning websites for VIUs to be able to make use of e-Learning websites for learning Islamic knowledge.

Kear (2010) discussed that an important attribute of any medium of communication that can influence the learner’s interaction and method of communication is social presence. Users on an e-Learning website should be able to share knowledge with other users of the website, interact and discuss.

As image content is still an issue for the VIUs to access an e-Learning website, technological advancement is required to explain imagery to VIUs. E-learning websites should be compatible with voice synthesizer software for VIUs to have access to e-Learning materials.

A study carried out by The Institute for Higher Education Policy, 2000 discovered evaluation, course development, course structure, assessment, student support, learning process and so on as the factors of e-Learning. Additional support such as education and training should be provided to users to assist them in retrieving and applying knowledge.

Support management can be provided via face-to-face sessions, telephone, e-mail or other channels. Instruction manuals can also be provided on the website. This factor is consistent with the findings of Cooper et al. (2006), who stressed the criticality of educating and assisting users in order to achieve KT via WSS in B2B environments.

CONCLUSION

This paper has reported the factors that affect the usage of e-Learning websites for Islamic KT for VIUs through e-Learning websites. The analysis draws upon interviews from VIUs, KPs and SPs. The results included the identification of these factors which are social presence, evaluation, perceived enjoyment, government and voluntary support among others. These factors are enjoined to be standardized, reviewed and improved upon by the VIUs, SPs and KPs in Malaysia.

REFERENCES


Xanthidis, D., Wali, S. W., and Nikolaidis, P. 2013. “*E-Learning in Saudi Universities, Challenges and Issues in E-Learning.*” Presented at the fourth international conference on best practices in management, design and development of e-courses: Standards of excellence and creativity (pp. 473-478), May, 07-09, Manama, Bahrain.