Academic Staff Perceptions on the E-Learning Recommender System: A Case of Saudi Arabia

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Abstract

This paper explores the academic staff perceptions on the factors affecting the acceptance and continuance usage of e-learning recommender system in Saudi Arabia on the basis of a qualitative data that were collected using the case study methodology. In this research, the case study design was selected for the qualitative methodology and semi-structured interviews were employed as the data collection method for the case study. The case study is based in a university implementing an e-learning recommender system in Saudi Arabia. We conducted interviews with five management staff and thus qualitative data were collected. Data analysis was performed and NVIVO 10th version software was also utilised. Data were coded and themes were then generated. Findings indicate several factors that affect an e-learning recommender system adoption that include user experience, service quality, perceived usefulness and perceived ease of use. Various suggestions were offered in this study and we also propose practical implications according to the identified insufficiencies.

Keywords: e-learning, recommender system, and Saudi Arabia university

1. Introduction

E-learning systems including e-learning recommender systems offer students various benefits related to performing their educational tasks effectively. For example, beside flexibility in terms of time and location, students could benefit from the discussion forums offered by the e-learning management systems to complete their assignments which may improve their performance in completing the required educational tasks. In addition, instructors may provide students with rich multimedia content to better facilitate students understanding of the course materials (Lee, 2013). Moreover, e-learning management systems facilitate better communication with educators outside the lecture time which offer students with effective communication medium to clarify any learning issues (Hsbollah and Idris, 2009). Furthermore, e-learning recommender systems offers a personalized content based on students' needs which enables them to make choices without prior experience of the alternatives, and it is noticeably required to reduce the information overload (Tan et al., 2008). In summary, e-learning management, over time, could enhance learners' performance and learning outcomes (Mohammadyari, and Singh, 2015). The use of e-learning systems can be regarded as an advantage to enhance learning and teaching process (Al-Hujran et al., 2014; Hsbollah and Idris, 2009).

E-learning systems have become progressively more important for supporting learning and teaching in higher educational institutions. Those systems offer students with several of benefits including: flexibility in terms of time and location (i.e. accessible to students anytime and anywhere) , convenience, cost effectiveness in content delivery and management, and the ability to design rich digital content via the integration of text, audio, video, images and animation (Abdullah and Ward, 2016; Al-Gahtani, 2016). Motivated by such compelling advantages, education institutions are embracing e-learning technologies by adopting a wide range of innovative e-learning technologies and services. An example of the recent innovative technologies that have been applied educational purposes is the e-learning recommender systems. Historically, recommender systems are widely used in different areas especially in e-commerce. These systems provide users with more personalized content and services according to their needs and preferences. This is an important addition to the valuable advantages that an e-learning system offers to learners and instructors. Students are expected to recognize more usefulness as these systems help them to identify the most interesting and relevant learning content/materials from a large number of possible alternatives (Sikka et al., 2012; Thai-Nghe et al., 2010). Indeed, e-learning recommender systems offers a personalized content based on students'

needs which enables them to make choices without prior experience of the alternatives, and it is noticeably required to reduce the information overload (Tan et al., 2008). Prior research showed that e-learning recommender systems could improve the academic performance of students (Thai-Nghe et al., 2010). For example, students can automatically receive relevant content instead of spending a lot of time just trying to find such content. Instructors also can recommend some useful and customized materials to students to help them to complete their tasks (Sikka et al., 2012). Evidence suggested that a better utilization of educational content/materials, resulting in a better achievement of knowledge, skills, and attitude and is likely be translated into increased performance and motivation (Ruiz et al., 2006).

However, despite the rapid growth in the Saudi ICT market the adoption of ICT applications such as e-learning solutions is still limited (Alenezi et al., 2012; Al-Gahtani, 2016; Asiri et al., 2012). As such Saudi Arabia is still considered as a late adopter in the e-learning field. Therefore, explanation of the decision behavior of individuals toward the acceptance and continual usage of e-learning in academic settings in Saudi Arabia is believed to be important for this developing country. In addition, although there is a well-established research on e-learning adoption worldwide, it is evident in the related literature that only a paucity of research into e-learning technologies adoption in Saudi Arabia can be found (Al-Hujran et al., 2014). Filling this gap in the literature is another motivation for conducting this research.

The rest of the paper is structured as follows. In the next section, the paper describes the research methods employed in this study are described. Data analysis and results are presented in Section 3. In Section 4 the research conclusions are offered.

2. Methodology

In this research, the case study design was selected for the qualitative methodology and semi-structured interviews were employed as the data collection method for the case study. Case study research is being widely used in academia (Baskarada, 2014). Yin (1994) defined the case study as "an empirical inquiry that investigates a real-life phenomenon within its real life context, especially when the boundaries between phenomenon and context are not clearly evident". Case study research is encouraged for studding poorly understood situations (Miles and Huberman, 1994). In addition, Baskarada (2014) argued case study as a suitable and reliable method for investigating human experiences with established technologies. Consequently, the case study is considered as a proper complementary method for this study because it focuses on exploring a specific and newly adopted technology - which is the e-learning recommender system. The use of qualitative methods, such as in this research the interviews, has been suggested for exploratory research when little is known about the area of study and when there is a need to identify unanticipated or new issues in regard to the phenomenon of interest (Sekaran and Bougie, 2010). Five direct face-to face full-length semi-structured interviews were conducted with academic staff who are using the e-learning system in the selected university in an attempt to meet the main objectives of this research. Those expected to have in-depth information about the factors that might affect the acceptance and the continued use the e-learning recommender system from an academic perspective in a real world situation. Data collection took place between February and April 2016. The interviews lasted between 30 and 45 minutes. All data were audio recorded with the consent of each interviewee. All interviews were conducted in Arabic language, and professionally translated and transcribed to English language, prior the analysis. Data also came from secondary sources that included published work in peer reviewed academic journals, high impact business magazines and reviews, media releases and websites, and documents obtained from the sample's participants.

Coding is essential in qualitative analysis (Patton, 2002). Codification allows the linking of different segments of data to create conceptual categories of data which have common elements in order to facilitate the classification of the observations. The assigning of observations to categories is known as coding which links the data segments to particular ideas or concepts (Boisot, 1998). Thematic analysis of interviews followed Auerbach and Silverstein (2003) four steps for coding procedure as guidelines:

1. Identifying relevant text;
2. Discovering repeating ideas in the relevant text;
3. Organising repeating ideas into themes, and
4. Organising themes into larger, more abstract ideas - theoretical constructs.

Case study data was transcribed, proof-read, and then analyzed using using content and thematic analysis approach as described by Auerbach and Silverstein, (2003) and Miles and Huberman (1994).The main aim of the analysis was to transform data into findings. Throughout the analysis, a number of recurring ideas and patterns of beliefs were extracted. Those ideas were then clustered based on significant headings to form the concepts. Afterward, related

concepts were gathered in categories to form the themes that constitute the results of this research. The emerging themes were then examined based on their intensity, depth, and specificity with the research questions, with additional emphasis given to comments that were frequently repeated or refuted by the interviewees. The results are then presented in a narrative form granting detailed insights into the main issues related to acceptance and continued use of e-learning recommended system in Saudi Arabia. Further details about the case study findings will be reported in the following sections.

3. Findings and Discussions

3.1 Academic Staff Experience with the E-Learning Recommender System

As expected, the way academic staff looked at the e-learning recommender system is to a large extent from pedagogical perspective as they were focusing on the way in which such a system would help them and the students in the teaching and learning processes and in making these processes more effective and productive. Most of the academic staff interviewees agreed that the e-learning recommender system works as a collaboration framework between the academic staff and students. With the e-learning recommender system, academic staff starts to notice a higher level of engagement coming from students side in the learning process. For example, Academic Staff 2 stated:

> *"The Recommender system provides a heap of a useful platform for engaging with students and collaborating with them on the topics set for study".*

Indeed, it was apparent from the academic staff interviewees that the e-learning recommender system promotes collaborative learning amongst students themselves and/or between academics Academic and students. This collaborative practice seems to widen students' horizons and add value by allowing them to look at the same study topic from different perspectives. Academic Staff 3 concurred with that and stated:

> *"The main way my experience of the Recommender system has evolved my teaching is by promoting collaborative practices. When academic staff and students collaborate among themselves or between groups it provides more scope to consider study topics and learning materials from different perspectives and to identify different learning styles".*

Academic staff also highlighted that e-learning recommender system provides a new, novel, and better communication experience with students. Academic staff believed that the recommender system opens more venues for bi-directional communication and collaboration with their students as students can rate various recommended material based on their own experiences which is helpful not only to other students, but also to academic staff. With e-learning recommender system, students can be more confident about the efficacy of the material to their particular study area. There is a utility for academic staff as they become more aware of what is of interest to students and accordingly can alter the way in which teaching and learning process is handled and provided. For example, Academic Staff 3 stated:

> *"The recommender system provides a better experience in relation to the communication pathways between lecturers and students. It is more meaningful as I can make recommendations to use learning materials and the students can provide ratings feedback, and even provide their own recommendations if they want. This helps to engage the students in the learning process".*

Academic Staff 4 concurred with that and stated:

> *"The pathway for me to provide online recommendation to students and the ability of the students themselves to retrieve their own recommendations helps the students to feel confident about the information they are using to learn…The recommender system can provide me with information about what is of interest to my students and how they respond to certain learning materials. This significantly helps me in making better plans for learning programs".*

In the same venue and in alignment with other academic staff, Academic Staff 5 stated:

> *"I have recommended content to students using the recommender system and can see how they have used the material and also get their feedback. This can help the teaching process sometimes because I can see how students respond to the recommendations and get insights about the way students evaluate learning material".*

Indeed, our analysis of the qualitative data that was generated from the conducted interviews with academic staff reveals that e-learning recommender system provides both academic staff and students with new interactive experience where both can contribute to the learning process and make it more effective. For example, Academic Staff 4 stated:

"People are used to having recommendations when they use Google search, or when they receive pop up ads. For e-learning in particular, I guess the Recommender system provides a more interactive experience for teachers and students because we can all contribute to the recommendations that are produced".

Despite the fact that there is a consensus amongst academic staff concerning the beneficial interactive experience that e-learning recommender system provides them with, our analysis also reveals that most of academic staff complained about the increase of workload with the introduction of e-learning recommender system. It seems that all academic staff believes that using e-learning recommender system adds complexity to their work and consumes significant working time. For example, Academic Staff 1 stated:

"Content of the e-learning recommender system needs to be first selected and then categorized and classified. Thereafter, a description of the content needs to be prepared and filled in the system before the content is uploaded. Finally, the content needs to be monitored, frequently updated, and sometimes maybe replaced or dropped. This is a lot of work which make my life in many times more complicated".

The academic staff interviewed in this research agreed that the success of e-learning recommender system in terms of acceptance and usage is very much dependent on having enough, varied, and updated material within the system, but they also complained that in order to do that they need to allocate more time and dedicate more efforts to the e-learning recommender system which they usually don't have. For example, Academic Staff 2 stated:

"The recommender system without enough material will be of little value. Moreover, the content within the recommender system needs to be updated and reviewed frequently. For us, this is can be considered as a burden given our heavy load in teaching and other administration duties".

Our analysis also reveals that the e-learning recommender system adds more worries to academic staff in regards to the balance which they try to maintain amongst teaching, research and administration duties. In particular, academic staff seems to be concerned that if they allocate enough time and dedicate adequate efforts to the e-learning recommender system, the quality of their research outputs would be adversely affected. For example, Academic Staff 4 stated:

"As a professor, I always try to have a healthy balance in terms of time and effort between teaching and research. With the introduction of e-learning recommender system, it seems that I need to spend more time and to put more efforts on the teaching side which might negatively impact my research outcome. This is a major concern to me as the evaluation process within the university focuses more on research than teaching".

Many of the interviewed academic staff suggested that assigning Teaching Assistant (TAs), librarians, and administration staff to assist them in managing material and content within the e-learning recommender system would be of a great value and would help them in maintaining a good balance amongst teaching, research, and administration duties. For example, Academic staff 1 stated:

"It might be a good idea to recruit more teaching assistants to help professors manage their content on the e-learning recommender system. This way most of the operational work related to e-learning recommender system is handled by the teaching assistants but indeed under the supervision of the professor they are helping".

Academic Staff 4 concurred with that and stated:

"…although it should be monitored and controlled by professors, I believe that work related to the e-learning recommender system should be directly handled by teaching assistants, library staff, or even administration staff".

Some academic staff expressed their opinions about their confidence and skills in using the e-learning recommender system. Academic staff believes that have the required skills and capabilities to operate the system given that they are used to work with similar systems and technologies, but maybe not as efficient or as effective as possible. However, academic staff also highlighted that their skills and capabilities in using the system more efficiently and effectively evolve over time based on their pervious usage and experiences with the e-learning recommender system. For example, Academic Staff 1 stated:

"As a professor, I think that we have worked with similar systems and can find our way to make it work, but like anything else, I think you get better and more confident the more you use the system. For example, at the beginning I wasn't quite sure about my capabilities in using the system. For example, I wasn't that

confident about how to make sure that learning materials were uploaded correctly and how to use the filters to get the best results. But I am getting better and better over time and recently found myself more confident in using the system".

Academic Staff 3 concurred with that and stated:

"I think that the basic operations within the e-learning recommender system can be handled by professors with no or little help from others. Nonetheless, we become more and more advanced with all features and capabilities overtime and based on our usage frequency. For example, I can now do more advanced things with the system and can also do the basic operations more efficiently and effectively given the time I spent using and interacting with the system."

3.2 Academic Staff Perceptions on the Quality of the E-Learning Recommender System

This research tackles the quality of the e-learning recommender system from two different dimensions: system quality and information quality. As mentioned earlier, system quality refers to the quality of the e-learning recommender system itself and measures its performance and functionality issues. It other words, the e-learning recommender system would be considered of a high system quality if the system works correctly and performs necessary tasks as planned and with no flaws. On the other hand, information quality refers to the e-learning recommender system content issues such as information timeliness (i.e. up-to-date) and information accuracy (i.e. free from errors).

As expected, the conducted analysis revealed that academic staff are very much concerned with information quality and gives no or very little attention to system quality. Indeed, professors are keener about the quality of learning material in terms of correctness, relevance, and timeliness rather than the technical aspects and performance of the recommender system itself. It was apparent from the conducted analysis that academic staff has complaints about the accuracy of the recommendations provided by the system. This lack of accuracy could be related to system quality if the filters are not working as intended, information quality if the metadata of learning material were inserted incorrectly, or both. For example, Academic Staff 2 stated:

"Despite the fact that I believe that the recommender system is of good quality in general, I believe that the system does not handle large amount of learning material efficiently and effectively as it sometimes shows some irrelevant material based on the filters that you set. Information overload is a real problem in the modern age and the university is using the feedback that it gets from students and academic staff so as to improve the Recommender system and its filtering system".

Academic Staff 3 highlighted an important issue related to the recommender system. He/She encouraged students to examine recommendations provided by the system and warned them for taking these recommendations for granted. This issue may imply that the academic staff is not really certain about the quality of the recommender system from both system and information quality. In particular, Academic Staff 3 stated:

"Helping students to identify relevant learning materials quickly and easily is great, but making decisions based on recommendations is critical here. Students should examine the recommendations being offered and don't just take them for granted".

Academic Staff 3 also stated:

"My opinion is that the Recommender system is another way that the University is trying to merge technology with learning. The university should create a mechanism to control the availability and quality of information. Moreover, I am not sure whether students can tell the difference between a good and a bad recommendation coming from the system".

The conducted analysis also revealed that academic staff are motivated and usually provide their feedback about the system along with its content. Providing feedback is critical to ensure that flaws and errors and handled promptly, continuous improvement of the system is usually performed, and information quality in terms of accuracy, relevance, and timeliness is always maintained. For example, Academic Staff 1 stated:

"Yes I am always motivated to provide feedback in regards to the recommender system as I believe it is all about improving the teaching and learning practices. It's important to know what works and what doesn't, and I like to get feedback myself, so I think I should provide it also… I have been asked regularly by the IT staff about my thoughts and overall evaluation of the Recommender system and I do always provide them with my notes and comments…".

Academic Staff 2 concurred and stressed on the fact that feedback is vital for continuous improvement of the

recommender system. Academic Staff 2 stated:

> *"I am always keen to provide my feedback about the system to help with the improvement process… Sometime systems are not designed and developed in the best way and there is always room for improvement".*

Academic Staff 3 also concurred and stated:

> *"I am motivated to provide my feedback about the recommender system by the fact that the system can improve teaching and learning practices. I value the feedback from other people and I hope that other people will value my feedback. The whole point of the system is to understand interests and target useful material, and this heavily relies on user feedback".*

Academic Staff 3 raised an important issue about the feedback and stated that IT department is more concerned with the feedback than the university management. This implies that the kind of feedback that is usually provided is related to system quality. However, the university management should also be keen to get a feedback from academic staff concerning the quality of learning material so as to keep the system's quality high as this is important for the acceptance and continued usage of the recommender system. In particular, Academic Staff 3 stated:

> *"However, I think the IT department is keener about getting a feedback on the recommender system than the university management. But university management should value feedback because, as I mentioned, staff and students are only going to use it if they have a positive experience".*

3.3 Academic Staff Perceptions on the Usefulness of the E-Learning Recommender System

The interviewed academic staff highlighted the importance of e-learning recommender system in making the educational process more effective and in accessing and retrieving relevant information more efficiently and effectively. All academic staff agreed that information delivery mechanism is now enjoying more efficacy with the introduction of e-learning recommender system and that the system offer handy and effective ways for accessing and locating relevant information and material. For example, Academic Staff 1 stated:

> *"I find it [e-learning recommender system] useful for my teaching because it offers me a platform to help students in accessing ideas and information for learning activities that I might not have thought of myself".*

Academic Staff 2 also concurred and highlighted that e-learning recommender system is very handy to locate and access information related to a particular subject area. Academic Staff 2 stated:

> *"…it [e-learning recommender system] has helped us [Academic Staff and Students] with the way we access and use information related to the subject area".*

Moreover, academic staff stressed on the fact that nowadays information and learning material are available to students at any point of time and wherever they are located. The academic staff highlighted that in this digital age, technology need to be utilized in a way that improves information delivery when it comes to education. For example, Academic Staff 3 stated:

> *"Technology is becoming more and more essential for teaching and learning. I remember when I was an undergraduate. I used to spend hours and even days trying to get hold of useful information for assignments. With everything available online these day, lecturers and students both need ways to improve how we manage information delivery. In this regard, the recommendation system provides a great value".*

It is also apparent from the conducted analysis that is an agreement amongst academic staff that the recommender system adds significant value to students and to the learning process in general as the system is smart enough to suggest relevant and useful learning material to students in accordance with their study subjects. For instance, Academic Staff 5 stated:

> *"The recommender system seems to be useful for offering students the useful learning materials as well as making suggestions about what they might have an interest in".*

The conducted analysis over the qualitative data that was generated from the conducted interviews with academic staff shows the positive perception the academic staff holds in regards to the recommender system and its contribution to their academic performance in terms of teaching. It is apparent that the academic staff believes that the recommender system contributes to their effective performance and also impacting the teaching process positively. The recommender system seems to be helpful in suggesting relevant useful material and in identifying the

most useful material by students and academic staff based on the rates and evaluation coming from users. The system is also useful in allowing academic staff and students do more things with less time and effort. For example, Academic Staff 1 stated:

> *"It [e-learning recommender system] contributes to my performance by helping me to direct students towards identifying interesting and relevant learning materials I make available. I also like to use the user ratings on the system to evaluate activities and materials and this is effective for my performance because I can identify what others have used and found useful…I also think it [e-learning recommender system] can speed up the process of preparing activities because it directs the students to what they are looking for so they don't have to do much of Internet browsing".*

Academic Staff 2 concurred with that and also stated:

> *"I gauge my effectiveness as a professor on whether or not I an improving learning outcomes. The Recommender system helps me to be more effective in drawing students' attention to information of interest".*

It was also highlighted by academic staff that the recommender system can be viewed as an empowerment to them by allowing them to create more positive learning experience to their students. For instance, Academic Staff 2 stated:

> *"The Recommender system empowered us [Academic Staff] with a platform for making the learning material more relevant and accessible to students and as such I believe that the system is greatly helping in creating more positive learning experiences for students".*

Academic Staff 3 concurred with that and stated:

> *"Technology such as Recommender systems helps me to perform better as a professor because it improves the way I can manage and use information. The system can recommend different types of learning materials and this means I can help the students explore the topics in different ways".*

Similarly, Academic Staff 5 stated:

> *"I think the recommender system helps me to perform better as a professor because it has improved my approach to lesson preparation and implementation. I generally find the recommended material to be useful, and I can also use the system to guide the students towards narrowing down their search fields and learning about their interests".*

3.4 Academic Staff Perceptions on the Ease of Use of the E-Learning Recommender System

Ease of use of the e-learning recommender systems can be judged on the basis of simplicity and understandability. If the system is to be easy to be used, then it should be simple in terms of design and structure and its functions and feature are easily understood by its users. The conducted analysis of the qualitative data that was generated from the interviews with academic staff showed inconsistent views in regards to the ease of use of the e-learning recommender system.

Some of the academic staff expressed their positive views about the ease of use of the e-learning recommender system. This group of academic staff believe that their previous experiences with other similar educational systems helped them significantly in knowing how to operate and use the recommender system. For example, Academic Staff 1 stated:

> *"…If any technology system is not easy to use and does not save time, then why would someone bother about using it? I think the designers of the Recommender system know this well and that's why they are always looking for ways to improve the design for users. I always take a long time to learn new systems, but so far my experiences of the Recommender system have been good… I think that we have worked with similar systems and can find our way to make it work".*

Similarly, Academic Staff 3 concurred and stated:

> *"I think that the basic operations within the e-learning recommender system can be handled by professors with no or little help from others".*

Academic Staff 2 also highlighted that the design of the recommender system is very intuitive where academic staff can easily figure out how to do various functions and utilize its different features. In particular, Academic Staff 2 stated:

> *"The design of the recommender system is very intuitive and modern. It is similar in terms of design and*

operations to many other technologies that we use on daily basis on the Web such as social media sites and search engines. As such, one can easily use the recommender system without any formal training".

Moreover, Academic Staff 5 brought an important point to the discussion and highlighted that the recommender system structures content and learning material in a simple way that make it easy for students to retrieve only relevant material. In Particular, Academic Staff 5 stated:

"The recommender system is structured for exchanging information. With the Recommender system the information is more targeted and so students would not be bombarded with useless information".

On the other hand, some other academic staff expressed negative views about the ease of use of the e-learning recommender system. It seems that the second group of the academic staff finds the system to be complex. They also believe that a formal training should be provided to academic staff so as to be able to use the system efficiently and effectively. For example, Academic Staff 4 stated:

"The e-learning recommender system is not easy to be used. The design is somehow complex and its functions are not that clear. For example, I cannot tell what kinds of activities that are needed to be completed so as to upload new content, or to revise an existing one. I believe that there should be a formal training provided to academic staff through which the system structure along with its operations is explained deeply and comprehensively".

Similarly, Academic Staff 5 argued that technology by itself does not add value to the teaching and learning process, unless it is properly used by its intended users and for that a proper training and helpdesk services need to be in place. The academic staff argued that technology needs to be complemented with proper management and processes. In particular, Academic Staff 5 stated:

"Powerful technologies would fail if they are not used properly and effectively by users. However, effective use of technologies is a direct outcome of effective training. I believe that the University should not only plan to have innovative technologies such as the recommender system without having complementary plans related to technology management, processes, and training. The reason I can now do only limited stuff in the recommender system is due to lack of training. All I get now is some ad hoc advices and tips from here and there. For me and maybe some other colleagues, the use of the recommender system is not straightforward and thus training and assistance are considered vital so as to be used effectively".

3.5 Academic Staff Perceptions on Acceptance and Continuance Usage of E-Learning Recommender System

In general, the analysis conducted on the qualitative data generated from the interviews revealed that academic staff have positive views about the system and found the idea of implementing such a system in a university appealing and promising as it would enhance the quality of education. This indeed shows their acceptance of the implemented e-learning recommender system. The interviewed Academic Staff showed their positive views and acceptance of the implemented e-learning recommender system. For example, Academic Staff 1 stated:

"I think that the university has made a good decision to use the Recommender system. As a learning institution it is important to provide staff and students with access to the most efficient ways to deliver and locate information and learning materials. Also, if the technology is available and serves a good purpose, then it is the responsibility of a university to promote its use".

Similarly, Academic Staff 2 showed an acceptance of the system by expressing positive views about the decision of the university to implement such a technology-enabled solution for higher education. Academic Staff 2 stated:

"The university is using the Recommender system very well… The recommender system certainly helps in improving teaching and learning process. Any technological system that helps to manage huge amounts of information and support collaboration among students will enhance the teaching and learning processs".

Similarly, Academic Staff 5 showed an acceptance to the e-learning recommender system and stated:

"The Recommender system is okay. I like the fact that the University is using advanced technologies to modernise the learning process".

It was also apparent from our analysis that one of main the main motives for academic staff to use the e-learning recommender system is to enhance the way in which teaching and learning processes are conducted within higher education institution. It seems that academic staff is eager to make their students get more information and

knowledge in an easier, quicker, and more effective manner. For example, Academic Staff 1 stated:

> *"The main factor is that I use this technology [e-learning recommender system] for is to make my teaching practices easier and more effective as students need to be able to access learning materials quickly and easily".*

It is also apparent that academic staff uses the e-learning recommender system due to the value that it adds to the learning process through providing personalized recommendation to students. For example, Academic Staff 2 stated:

> *"In these days, the learning process is becoming more and more personalised for the students. As such, I am regularly using the Recommender system because it is a step in that direction and it represents a positive initiative to improve student learning outcomes".*

Academic staff also highlighted that that are motivated to continue using the e-learning recommender system as it enhances professors' evaluation and confidence on the material used in teaching and learning process through the feedback they get based on users' reviews. Academic Staff 4 stated:

> *"I like using the Recommender system for teaching as it makes me more confident that recommended materials have been assessed as good or at least used by many other lecturers or students".*

4. Emerged Constructs

Based on the qualitative analysis four main constructs were identified by academic staff as significant predictors of e-learning acceptance and continued usage of e-learning recommender system in Saudi Arabia. These are: academic staff experience with e-learning recommender system, service quality (i.e. system quality and information quality), perceived ease of use and perceived usefulness of e-learning recommender system.

5. Conclusions

The e-learning recommender system was implemented to help both academic staff and students in the teaching and learning processes by making these processes more efficient, effective and productive. Indeed, the university implemented e-learning recommender system as a channel to effectively deliver educational material to learners. The e-learning recommender system is expected to offer time - saving benefits such as finding relevant information quickly. In this study, academic staff disclosed a notable knowledge about the system and hold positive perceptions about the value of implementing such system. This modern system extends the exiting e-learning management system by offering advance feature such as such as content analysis, clustering and providing recommendations. The e-learning recommender systems provides students with a personalized content based on their needs which enables them to make choices without prior experience of the alternatives, and it is noticeably required to reduce the information overload, especially in the current digital age where the information overload is a serious challenge. In addition, most of the academic and IT management staff interviewees agreed that the e-learning recommender system would help the university to build a collaborative environment between the academic staff and students and amongst the students themselves which is expected to bring a higher level of engagement in the learning process. This collaborative process appears to broaden students' horizons and add value by enabling them to look at the same study topic from different angles. The e-learning recommender system provides a novel, innovative, and enhanced communication channel amongst students and/or between academic staff and their students. It was believed that that the recommender system releases additional venues for bi-directional communication and collaboration as students can rate various recommended material based on their own experiences which is helpful not only to other students, but also to academic staff. With e-learning recommender system, students can be more confident about the efficacy of the material to their particular study area. There is a utility for academic staff as they become more aware of what is of interest to students and accordingly can alter the way in which teaching and learning process is handled and provided. Indeed, our analysis of the qualitative data that was generated from the conducted interviews with academic staff reveals that e-learning recommender system provides both academic staff and students with new interactive experience where both can contribute to the learning process and make it more effective.

On the basis of a qualitative data that were collected using the case study methodology, this paper discussed the perceptions of the academic staff on the factors affecting the acceptance and continuance usage of e-learning recommender system in Saudi Arabia. As for academic staff experience with the e-learning recommender system, the conducted analysis revealed that academic staff experienced a higher level of students' engagement in the learning process associated with the introduction of the recommender system, the so-called collaborative learning. The conducted analysis also revealed that most of academic staff complained about the increase of workload with the introduction of e-learning recommender system. The recommender system seems to add complexity to their work and to demand more time and effort. As such, academic staff suggested that Teaching Assistant (TAs), librarians, and

administration staff should be assigned to help in managing material and content within the e-learning recommender system so as for them to maintain a healthy balance amongst teaching, research, and administration duties.

As for the academic staff perceptions on the quality of e-learning recommender system, the conducted analysis revealed that academic staff is more concerned with information quality than system quality. Academic staff highlighted important complaints about the accuracy of the recommender system and showed their motivations to provide a regular feedback for continuous improvement purposes. As for the academic staff perceptions on the perceived usefulness of e-learning recommender system, the conducted analysis revealed that academic staff believes that the recommender system offer handy and effective ways for accessing and locating relevant information and material. Academic staff also believes that the recommender system provides a significant contribution to their academic performance and also impacting the teaching process positively.

Moreover and as for the perceptions of the academic staff on the ease of use of the e-learning recommender system, it is apparent that academic staff showed inconsistent views. Some of the academic staff expressed their positive views about the ease of use of the e-learning recommender system, whilst others complaints about its complexity. This was largely based on personal previous experiences with similar systems.

Finally and as for the perceptions of the academic staff on the acceptance and continuance usage of the e-learning recommender system, the conducted analysis revealed that academic staff has positive views about the system which showed their acceptance. The analysis also revealed that academic staff are motivated to use the system frequently as it enhances the quality of education and adds significant value to teaching and learning process. Indeed, the viewpoints of the academic staff which were discussed in this chapter are useful in understanding and interpreting the factors affecting the acceptance and continuance usage of e-learning recommender system from a pedagogical perspective.

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