Towards an informed library decision making using Evidence-Based Librarianship (EBL) practice: incorporation of User Needs and Preferences

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ABSTRACT
This paper attempts to provide evidence on the importance of user needs and preferences in library decision making. Secondly, it reports the influence of user needs and preference evidence to the Evidence-Based Librarianship (EBL) practice. Librarians at present face a critical situation with decision making involving multiple interest groups including users and stakeholders. The current global economic and political crisis forces librarians to integrate pieces of evidence from different perspectives and contexts to ensure a well-informed decision. EBL practice provides a structured evidence model for library decision practically for a collective decision incorporating research evidence, local evidence, and librarians' professional knowledge. However, lack of literature discusses how user needs and preference components are imperative in decision making within EBL practice. To address the gaps, this research investigates 278 librarians from public, academic and special libraries. Data is collected using a questionnaire and analyzed using SmartPLS SEM. This research found a highly correlated and significant relationship between user needs and preference and EBL practice, thus, suggesting that the user needs and preferences be mandated as an element in the evidence-based practice and librarianship studies. Hence, it seconds the finding to incorporate user needs and preference element in the EBL model.

Keywords: User needs and preferences; Evidence-based Librarianship; Library acquisition; Library decision making

INTRODUCTION

Library decision making in the current global economic and political crisis has placed librarians in a very critical position. Librarians encounter multiple challenges in the process which requires them to integrate pieces of evidence from different perspectives and contexts to ensure a well-informed decision. Evidence-Based Librarianship is one of

the practices recognized by librarians in library decision making (Choemprayong & Wildemuth, 2009), as librarians collect, analyze and appraise the evidence from the research literature, local context and professional knowledge within the library and information science practice (Booth & Brice, 2004a; Koufogiannakis, 2013a). In securing a collective decision, Eldredge (2014) identifies user needs and preference as an important element in policy and practice of decision making, in which the library needs to encounter users in both decision making process despite other stakeholders.

Since mid-20th to date, researchers in library and information and science has embarked on the topic (Reddy, Krishnamurthy, & Asundi, 2018). Among the historical studies in user needs is providing a new perspective on user accessibility to the library resources (Bernal, 1960). A recent study by Lewter & Profit (2018) focuses on user engagement in social media. The advent of information and communication technology in libraries has influenced the context and trend of user studies from the use of the physical library to the use of the virtual library and recently in decision making. The changes are significantly caused by the introduction of online and electronic forms of the resources as an outcome from rapid development in library technology and user demand. However, studies on library users have acknowledged users as part of decision makers (Connaway, Lanclos, White, Le Cornu, & Hood, 2013; Dunn & Murgai, 2015; Huang, Chu, Liu, & Zheng, 2017). Thus, this research aims to explore the influence of user needs and preference in EBL practice for library decision making. User needs and preference in this research context focus on understanding user's desires while preference refers to the user's likelihood in one resource compared to others (Mitrano & Peterson, 2012).

LITERATURE REVIEW

User needs and preferences

Current research in Evidence-Based Practice (EBP) and Evidence-Based Medicine (EBM) embraces on user empowerment, user engagement, user preferences, and user-centric approaches in recognizing the patients' evidence in health care decision making. The same movement is also reported in library studies (House, 2012; Huang et al., 2017; Luo, 2017). Limited and almost rarely, a user study is reported in EBL. This is the main concern of Koufogiannakis (2013a) when she highlights "even though user needs and preferences are incorporated in the definition, but, there is a conversation on the element end at that point". Researcher investigates user needs and preferences in various contexts such as shared decision making approach (Stiggelbout, Pieterse, & De Haes, 2015), patient engagement (Hawley & Morris, 2017a; Higgins, Larson, & Schnall, 2017) user engagement (Adey & Eastman-Mullins, 2017; Huang et al., 2017; Lewter & Profit, 2018; Luo, 2017), and empowering patient (Hanley, Pinnock, Paterson, & McKinstry, 2018). Qualitatively, Huang et al. (2017) report the direct effect of social media implementation in library reference services, improving health professionals' experience (Rosenbaum, Glenton, & Cracknell, 2008), development of patron-centric management mechanism (Zhou, Song, & Zhou, 2016), and improving patient care (Higgins et al., 2017). In a quantitative research, a positive relationship is reported between user engagement and social media implementation (Lewter & Profit, 2018).

EBL in decision making

EBL is a key practice in decision making, as it provides a structured approach to aid decision making (Brettle, 2017). Koufogiannakis & Brettle (2016) conclude that EBL is a practice that provides a continual cycle of improvement in library decision making by incorporating the evaluation element at the final stage to evaluate the outcome or the whole process. The decision making process according to Cleyle & McKenna (2007) as described by Booth & Brice (2004b), is a process model that consists of six steps; 1. Define the problem, 2. Find evidence, 3. Appraise evidence, 4. Apply the results of the appraisal, 5. Evaluate change, and 6. Redefine problem. The process model practice is a vital step in gathering the best available evidence in the decision-making process. A general understanding has been developed in the library decision-making process, whereas the library and librarians are not independent in making a decision. It is rather a cumulative decision and the library is in a dilemma in facilitating the needs and requirement of the patron and at the same time bearing in mind the other stakeholders' decision. In this situation, EBL decision-making plays an important role in justifying the decision.

EBL Process Model

EBL process model describes the process or steps in the evidence process for decision making using evidence-based practice. Four main models appear in the practice literature including a five-step practice by Eldredge (2000a), five-stage practice (Booth & Brice, 2004b), 5As model (Booth, 2009) and Koufogiannakis' (2013b) model. The models incorporate similar elements in the stages and steps. Some similarities in the process can be found in Stage 2/step 2 "Search", "Find", "Acquire" and, "Assemble" that carry the same meaning process of gathering the evidence. Stage 3/step 3 uses the terms "Evaluate", "Appraise", and "Assess" which refer to the same process of assessing the validity, reliability, and usefulness of the evidence source. Stage 5/step 5 "Evaluate "and "Assess" refer to the same process to evaluate the outcome or the process. Varieties in the term are used by the models such as stage 1 and step 1 as "Formulate", "Identify" and "Ask". Stage 4/step 4 uses the terms "Apply" and "Assess". Differences in the terms used on the stages carry variations in the meaning of the process. Eldredge (2007) dictates that the model is based on the authors' focus. The stages include the formulation of the question (Booth, 2006, Eldredge, 2000a), searching stages (Eldredge, 2000b; Winning, 2004), and appraising stages (Booth & Brice, 2004a; Glynn, 2006). However, Booth and Koufogiannakis share the same elements. Table 1 below describes the selected models and terms used.

Table 1: the EBL process model

	(Eldredge, 2000a)	Booth & Brice (2004b)	(Booth, 2009)	(Koufogiannakis (2013)
Step/Stages	Process			
1	Formulate	Identify	Articulate	Articulate
2	Search	Find	Assemble	Assemble
3	Evaluate	Appraise	Assess	Assess

4	Assess	Apply	Agree	Agree
5	Evaluate	Evaluate	Adapt	Adapt

PROBLEM STATEMENT

Based on the comprehensive study, the literature reveals the need for user evidence in EBL practice. The EBL model is established with three evident components, namely research evidence, local evidence, and professional knowledge. Generally, EBL is defined as a practice that applies the best available evidence and insight derived from working experience, moderated by user needs and preferences in library decision-making. An early study by Rieke & Sillars (1984) classify the wide range of evidence onto anecdotal, statistical, causal and expert. Similarly, Glasby, Walshe, & Harvey (2007) segregate the evidence into a typology with three types of evidence (theoretical, empirical and experiments). These two studies agree that the definition of user evidence needs to be further embraced in various perspectives and contexts. It also encourages exploration in different sorts of knowledge to identify more evidence, which entails a sound decision. At a glance, this discloses that user needs and preferences are left unexplored in EBL research. Thus, it opens for further exploration of evidence on the user needs and preferences to be possibly viewed as part of the EBL model.

RESEARCH DESIGN

This research embarked on a quantitative research approach applying a survey research method. The survey instrument was developed through adapting previous research and literature related to user needs and preferences. The instrument underwent the validity and reliability procedure. The validity and reliability was reported by Mustafa & Abdullah (2017). The detail variables and items are displayed in Table 2: variables and measures.

Table 2: Variables and measures

Variables	Items		References
User Needs and Preferences	UNAP1	I normally consider individual user needs in acquisition decision.	Koufogiannakis (2013b), Booth (2003), Mitrano & Peterson (2012), Eldredge (2016)
	UNAP2	I normally consider user behavior (activity and action) in acquisition decision	
	UNAP3	I normally consider user circulation behavior (pattern of usage) in acquisition decision	
	UNAP4	I normally consider user feedback in acquisition decision.	
	UNAP5	I normally consider faculty/department priorities in acquisition decision.	
Implementation			
Research	RESEV1	I refer to a research report in	Koufogiannakis

evidence		acquisition decision.	(2012) Eldredge (2000a)
	RESEV2	I refer to supplier statistical report in acquisition decision	
	RESEV3	I refer to literature report in acquisition decision	
	RESEV4	I refer to reviews in the acquisition decision *(Example: publisher's review and reader's review).*	
	RESEV5	I refer to systematic reviews in acquisition decision	
	RESEV6	I refer to Bibliometric report in acquisition decision	
Local evidence	LOCAL1	I refer to internal standard *(Standard Operating Procedure)* in acquisition decision	Eldredge (2000a), Sackett et al., (2000), Koufogiannakis (2013b)
	LOCAL2	I refer to the best practice in acquisition decision	
	LOCAL3	I refer to unpublished survey report in acquisition decision	
	LOCAL4	I refer to in-house usage statistics in acquisition decision. *(Example: ILL report)*	
	LOCAL5	I refer to collection analysis report in acquisition decision. *(Example: Circulation report)*	
Professional Knowledge	PROK1	I refer to professional standard in acquisition decision. *(Example: Standard Perpustakaan dan Kolej dan Universiti Awam)*	(Koufogiannakis, 2013b), Todd(2001)
	PROK2	I refer to professional guidelines in acquisition decision. *(Example: IFLA Standard for Information Literacy)*	
	PROK3	I consider professional tacit knowledge in acquisition decision	
	PROK4	I consider my own experience in acquisition decision	
	PROK5	I consider other librarians experience in acquisition decision	
	PROK6	I consider the expert opinion in acquisition decision.	

Research variables

This research explores the relationship between user needs and preferences and EBL practice implementation. The user needs and preferences variable is explained as the ability of librarians to identify personalized information for specific individual or group of users. User needs and preferences are reported in a number of studies (Adey & Eastman-Mullins, 2017; Hanley et al., 2018; Hawley & Morris, 2017b; Higgins et al., 2017; Huang et al., 2017; Lewter & Profit, 2018; Stiggelbout et al., 2015). Based on the

significant relationship obtained in previous studies, this research hypothesizes a statistically significant relationship between user needs and preferences with EBL implementation.

The variables of EBL implementation are defined as when the practice is applied in daily use of the librarians. This research adopts the Rogers' IDT Five Stages of the Innovation-Decision Process (Rogers, 1983). The five stages of innovation-decision process are Knowledge, Persuasion, Decision, Implementation, and finally, Confirmation. This research used the *Implementation Stage* to investigate EBL implementation and its relationship with user needs and preferences. Implementation is measured by the three evidence elements of the EBL model namely research evidence, local evidence, and professional knowledge. Implementation is the fourth stage in the innovation-decision model which is used to measure the implementation level of a particular innovation or practice (Rogers, 1983). According to Wani & Ali (2015), the implementation stage involves an obvious "behavioral change", and a dynamic stage which individuals might be affected by the free flow of information during the adoption stage.

Data collection and analysis

This research elects librarians as the unit of analysis, which covers librarians from the public, academic and special library. The selected librarians are members of *Persidangan Pustakawan Universiti dan Negara* (PERPUN), *Kumpulan Kerja Perpustakaan Swasta* (KKPI), and *Perpustakaan Gunasama* under the National Library of Malaysia (PNM). The total population is identified as 1040 and a sample of 278 is determined using Krejcie & Morgan sample size table (Krejcie & Morgan, 1970). The research respondents are identified through proportionate stratified sampling technique. Questionnaires were sent to the respondents which require a reply within 15 days. The response rate was 93.52% (260 returned questionnaires), however, only 89.92% (250 questionnaires) were useable for data analysis. The collected data were analyzed using SPSS v24 and SmartPLS SEM software. Particularly, Path Coefficient Analysis in the SmartPLS Bootstrapping was used to examine the relationship between user needs and preferences and implementation.

RESULTS

Model analysis

The SmartPLS analysis of the research model revealed that the measurement model has achieved internal consistency, convergent validity, and meeting the discriminant validity requirements. Overall, the measurement model analysis for both constructs recorded the Cronbach's Alpha value of 0.880 and 0.960, CR value 0.914 and 0.964, AVE of 0.683 and 0.625. Discriminant validity obtained below than 1 and item cross-loading from 0.710 to 0.916. The internal consistency and composite validity was analyzed using Cronbach's Alpha and Composite reliability value (CR) which requires a cut-off point at >.07 (Gefen, Straub, & Boudreau, 2000), while the convergent validity was assessed using Indicator loading and Average Variance Extraction (AVE) value dictating a cut-off

point of >.05 (Hair, Hult, Ringle, & Sarstedt, 2014). The discriminant validity was assessed using Fornell Larcker Criterion which requires a value of less than 0.1 (Chin, 1998) and Item Cross-loading between 0.7 and 0.4, which is acceptable (Hair et al., 2014). The result of the analysis is demonstrated in Table 3: Result of the Measurement Model Analysis (Refer to Appendix 1).

Analysis of the structural model reports the model predictive accuracy as follows: Predictive relevancy (Q2) for implementation is recorded at 0.227 which indicates that it meets the requirement of value >0, effect size, f 2 (0.081), indicating that user needs and preferences has a small effect towards implementation. The collinearity statistic (VIF) 1.606 for user needs and preferences and implementation indicates no collinearity problems arising in the model. The path coefficient analysis of the relationship between user needs and preferences and implementation reveals a value of t ($\beta = 0.280$, $t= 3.844$, $p<0.01$) indicating a high correlation and a highly significant relationship.

Discussions

This finding confirms the relationship between user needs and preferences and EBL implementation, sufficient evidence is specified. Thus, this indicates librarians do refer to user needs and preferences in their decision making. The concern of user needs and preferences in both EBP and EBL is widely discussed in previous research. A comparable understanding is also highlighted (Fischer, Wright, Clatanoff, Barton, & Shreeves, 2012; Huang et al., 2017), where both studies indicate the importance of understanding and meeting the user needs and preferences in library service offerings. On the other hand, user needs and preferences has been long discussed in the field of library and information science, and among the noticeable movement is the introduction of "user logic" (Harbo & Hansen, 2012; Kuhlthau, 2003) and user-centric concept (Connaway, Hood, Lanclos, White, & Le Cornu, 2013), as these studies investigate ways on how to make the library services logic to them. Users' involvement later appears to attract the users to participate in library activities, and user engagement (Huang et al., 2017; Luo, 2017) contributes towards library content and decision, and shared decision making addressed (Stiggelbout et al., 2015). These are the platforms created to gain more user perspectives and incorporate them as part of EBL in decision making. These study findings are in line with Koufogiannakis & Brettle (2016), as positioning user needs is a component of EBL which is equally important as the patients in EBM. A similar finding in library studies which highlight user evidence in the service offerings (Connaway et al., 2013) emphasizes user influence in the success or failure of services.

This finding also highlights five important elements in user needs and preferences that contribute to the significant relationship. The research investigates a similar element reported to highlight consistent result. Research investigating the first element of individual user needs as an entity in the library and information science decision making has been reported in various approaches. Anttiroiko & Savolainen (2011) have reported on the tracking of individual user needs. The effect of taking individual user needs into account on health decision making has proven to improve healthcare outcomes (Blumenthal-Barby, 2017; Jha et al., 2009). The second element is the dynamic of user behavior which has been discussed by Connaway et al. (2013), mentioning the change in

user behavior that influences their information needs. User behavior is also reported to be influenced by the user experience (Rosenbaum et al., 2008). The third element is circulation behavior. In acquisition of serial collection (O'Connor, Légaré, & Stacey, 2003; Rajendiran, Desphande, Bhushan, & Parihar, 2008; Wennberg, 2014), reporting user borrowing pattern explains the changes required in the collection development practice. The fourth element is user feedback (Bell, 2012; Farnum, Baird, & Ball, 2011; Lewter & Profit, 2018, and Robison & Connell, 2017). User feedback in social media (Facebook and twitter) confirms its use to gather user feedback in library marketing (Adey & Eastman-Mullins, 2017). The fifth element in user needs and preferences is priorities. Priorities refer to privileges given to faculty or departments to contribute to acquisition decision in a form of suggestions to purchase.

This collaboration between libraries and department/faculty is important in assessing the true value of the library resources (Adey & Eastman-Mullins, 2017). This collaborative effort was earlier introduced in healthcare practice with the term "shared decision making" (Veatch, 1972). The underlying philosophy behind the shared decision-making approach highlighted by Stiggelbout et al. (2015) is as an engaging patient in the decision making of their own preference-sensitive (high in risk) decision.

Research reporting the importance of the user evidence shows underutilization of library self-service facilities which is the result of ignoring users' needs and requirements (Zhou et al., 2016). This is further aided by Reddy et al. (2018) that the library service design is determined by the user needs. Thus, this suggests that users' needs and preferences are mandated as an important evident component in the evidence-based practice and librarianship studies. Hence, it seconds the finding to incorporate users' needs and preference evidence in the EBL model.

CONCLUSION

User needs and preferences have proven itself to be an important evidence in library decision making. User evidence, in general, plays a significant role in finalizing decision especially pertaining to a decision involving the user. These signal librarians to be sensitive to individual needs as well as the group needs. Failure may cause a decline in library visit, resources, and service usage. This will further tarnish or damage the professional image of librarians. This research defines an informed decision in EBL as the decision made my librarians after consulting the evidence components from research, local, professional knowledge, and user needs and preferences. Overall, this research provides insight into the importance of user needs and preferences evidence in library decision making. Thus, the findings contribute to the new EBL model for library decision making with the introduction of the user needs and preferences evidence.

ACKNOWLEDGEMENT

The authors received academic funding from the Ministry of Higher Education Malaysia and Universiti Teknologi MARA (UiTM), Shah Alam, Malaysia to conduct this study. An acknowledgment to the Universiti of Malaya for the opportunity to conduct this study.

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Appendix 1

Table 3: Result of the measurement model analysis.

Construct	Item	Loading	Cronbach's Alpha	CR	AVE
User Needs and Preferences			**0.880**	**0.914**	**0.683**
	UNAP1	0.719			
	UNAP2	0.866			
	UNAP3	0.896			
	UNAP4	0.916			
	UNAP5	0.710			
Implementation			**0.960**	**0.964**	**0.625**
	RESEV1	0.761			
	RESEV2	0.809			
	RESEV3	0.752			
	RESEV4	0.798			
	RESEV5	0.859			
	RESEV6	0.818			
	LOCAL1	0.779			
	LOCAL2	0.781			
	LOCAL3*	**0.327**			
	LOCAL4	0.807			
	LOCAL5	0.841			
	PROK1	0.848			
	PROK2	0.848			
	PROK3	0.735			
	PROK4	0.677			
	PROK5	0.750			
	PROK6	0.758			

**Item deleted due to low loadings*