

Disruptive collection acquisition: awareness, readiness and adoption among Malaysian Academic libraries

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Abstract:

The adoption and application of information technology has triggered momentous evolution in virtually every facet of the economy. Information technology in tandem with the internet has in reality transformed several activities by disrupting the ways these activities are usually performed. Technological gadgets such as smart phones and others devices are getting smarter almost daily and its application has redesigned the way several activities and tasks are implemented. The speedy innovations brought about by globalization have created remarkable opportunities and choices in the

marketplace for individual, organisations, businesses and their customers. Shopping has become an online activity and payments are driven virtually. Other activities such as automated airport check-in, online taxi booking, smart contract, transactions and crypto currency, online human resources and marketing are services remodelled to challenge status quo. Massive transformation have also been observed in the activities of major and leading electronic book vendors such as Amazon, eBay, kindle due to adoption of innovation. The aforementioned impact and prospects in the application of the emerging and evolving technological innovation have created a great deal and ground breaking excitements in all sectors. Therefore, libraries cannot be left behind in these on-going disruptive developments. This study aims to investigate the current awareness and adoption of user driven (Demand driven) collection acquisition (DDA) among Malaysian academic libraries. Demand-Driven Acquisition (DDA) is a disruptive technology for library collection acquisition. DDA is a patron-focused model of acquisitions that allows library patrons to decide on what their libraries purchase without librarian mediation. The model also permits libraries to have unrestricted access to the usage of unlimited pools of resources. This study on library disruptive collection acquisition is motivated considering the recent economic recess which has a noticeable effect on the budget allocation to universities and academic libraries in Malaysia and beyond. The study is also essentially important to understand the effect of disruptive technology on library bookshelves in the nearest future. The study integrates the Diffusion of Innovation model to understand the present state of Malaysian academic libraries as regards awareness, readiness and intention to adopt or not to adopt DDA model. The study employs the use of online questionnaires to gather responses from chief librarians, acquisition librarians and liaison librarians from each of the libraries in the sample. This study finds out that DDA adoption in Malaysian academic libraries is still at its infancy despite the effect of budget cut on libraries. The results from several studies have highlighted the impact and return on Investment (ROI) of DDA though no massive adoption in Malaysian academic libraries yet, although, respondents reported their libraries plans to embrace the model in earnest.

Keywords: Disruptive technology, collection acquisition, demand driven technology, returns on investment (ROI), adoption, users' initiated collection.

Introduction

Several studies and research evidences have shown the revolutionary activities and effect of internet and other information communication technology in the transformation of the society. The transformation brought by the internet and other information communication technology has redesigned and created remarkable opportunities and market share for individual, institutions, businesses, organisations and their customers. The opportunities created by this transformation have really disrupted the way several task and activities are carried out. Business transactions have become online activities, education and other undertakings have become operational and accessible virtually.

Researchers have described disruptive technology, innovations and their effect on business and other societal and economic operations. In the study by (Danneels, 2004), the author declared that disruptive technology at first usually underperform an established technology though later displaced the said established technology. Danneels further postulated that many incumbent technologies studied had no difficulty surviving the technology shift. Therefore, the improved technologies have been discovered to have displaced earlier technologies through modification, improvement and enhancement of the newer technologies.

Improved technologies have been adopted, applied and thereby disrupted the activities of several sectors of the society. The procedure for task accomplishment has likewise been modified and rationalised, and in so doing challenged the status quo. Activities such as

human resources activities, shopping, banking transactions, transportation, airport check-in, library activities and many more have been redesigned. The technological improvement and transformation have created numerous impacts and prospects. However, the effect of the improvement and transformation as regards its effectiveness and disruptions of library services and activities cannot be overlooked as researches have shown that library are contributing to patron learning experiences (Wilders, 2017).

Libraries are presently in a transitional period thereby forcing them (libraries) to adopt and apply a number of technologies and other users' engagement undertakings to disrupt activities and services delivery to their patrons. Advanced technology and customer behaviours have forced businesses including libraries to change the way services are rendered. Libraries are gradually transforming into environment where variety of library services are been replaced with open shelves (Wilders, 2017). However, considering the effect of disruption, financial recess and continuous budget cut (Van Dyk, 2011) affecting educational institutions and libraries specifically, there is need to explore library collection acquisition procedure especially during this disruptive time. Therefore, this study aims to address the issue of collection acquisition in Malaysia by considering its awareness and academic libraries readiness to adopt disruptive collection bearing in mind its effect on libraries shelves.

Literature Review

Information is continuously and increasing becoming more available especially in digital format which has triggered several questions on value added as regards to library shelves. This has however encouraged libraries to become fully digital, thereby creating space for collaboration and facilities online to meet the present and future needs of the users. Library literatures over the past two decades have thrived on the aspect of disruptive collection acquisition which is the initiation of collections by library users. A modern library must be better adjusted to users' needs as it is time for a shift (disruption) towards user driven library services. Users driven collection acquisition is an evolving model of collections acquisition for libraries that is initiated by library users based on their needs.

There have been perceived growing needs for wide ranges of collections by library users and at the same time, libraries are faced with continuous cut in their budget allocation. Earlier library practice has been collection acquisition just-in-case library users may be in need. Though the improved in technologies and user engagements has forced libraries to acquire resources in real-time "just-in-time". The just-in-time collection acquisition model is a growing model that allows library patrons to order, purchase and make unavailable library resources instantly within a short period, thereby discouraging libraries to keep collections in storage "just-in-case" (Brinkman Dzwig, 2013).

The just-in-time collection has been described by several authors, researchers and librarian using various terms and acronyms. Purchase-on-demand (POD) is adopted by (Van Dyk, 2011), while (Arch, 2011; Goedeken & Lawson, 2015; S.Y. Kwok, L.H. Chan, S.M. Cheung, & Kan Wong, 2014; Yusuf, Abdullah, & Zaidi, 2018) choose Demand driven acquisition (DDA), Patron driven acquisition (PDA) is used to describe the model by (Macicak & Schell, 2009; Nixon, Freeman, & Ward, 2010; Teper, Rudasill, & Wiley, 2016; Walters, 2012). Some others embraced terms such as Patrons initiated collection (Herrera & Greenwood, 2011; Hodges, Preston, & Hamilton, 2010) and others terminology as decided by the library or institution in question.

Several libraries especially in the developed world have experimented and embraced the user initiated collection development model (Yusuf et al., 2018) to disrupt library resources collection acquisition process. It has become clearer that, for libraries to compete favourably in this information era, some issues such as increase access to collection, users' engagement, shrinking library budget and non-usage of acquired collections need to be addressed. These and perhaps other factors have encouraged libraries to embrace the user driven product and services (Brinkman Dzwig, 2013). Libraries that have embraced the model have reported overall and high level of satisfaction as resources acquired through the model are relevant and enhance the libraries existing collections (Allison, 2013).

The implementation of the users initiated models have been traced to be as a result of concerns expressed by numerous libraries as regards non-usage of the acquired just-in-case collections (Kerby, Trei, Laskowski, Abbott, & Norman, 2015). Reasonable number of libraries are also discovered to have implemented the model due to the severe effect of budget cut on their library resources purchasing power (Enoch & Harker, 2015). In the study by (Downey, Zhang, Urbano, & Klinger, 2014) the authors mentioned that libraries have battled to find the most appropriate collection acquisition model that best suit their needs, at the same time within their budget. The dwindled budget has also forced some libraries not only to have less purchasing power but also to cancel some of their collection subscription (Price, 2009). Consequent studies have likewise revealed that resources purchased through the user initiated model attract more accessed compare to those purchased using the package model (Enoch & Harker, 2015).

In addition to attracting more access, the user initiated model have been discovered to have highly satisfied the needs of the several requesting library users, thereby generating higher return on investment (ROI) for the libraries (Abdullah, 2014) and also pacifying experience for the library users. Library users are now sure of more and quality collections that are cross disciplinary in nature and also covering emerging areas of research and scholarly interest (Nixon et al., 2010). Also, not only the needs of the requesting patrons are met, subsequent users' needs are also satisfied (Kont, 2015).

Methodology

Data Collection and Sample Characteristic

This study adopted the survey research method using questionnaire to elicit responses from librarians (acquisition librarians, liaison librarians, chief librarians) on find out about their awareness and readiness to adopt the user initiated model. The questionnaire adopted a seven point likert scale (1-7) where seven (7) indicate the highest level of agreement and (1) signifies the lowest (Vagias, 2006). The questionnaire was distributed to the librarians by a delegated librarian (from each library) who serves as intermediary between the researchers and other librarians. The selected libraries were randomly chosen while the librarians were chosen purposively. The rationale for choosing librarians is that the acquisition librarians are in charge of collection procurement activities, liaison librarians are intermediary between the library and the faculties while chief librarians are the overall head of the libraries.

The survey met with reasonable level of feedback from respondents though with few non responses that led to missing data. The sample of respondents was composed of more females (84.7%) than males (15.3%). A total of 32.4% of respondents were between 32 and 36 years

old, 30.6% were between 37 and 41 years old, and 12.6% were within 27-31 years of age, while others (23.7%) are above 46 years old. Of the respondents, 39.6 % have 6-10 years of experience, while 27.6% have 11-15 years of experience and 16.3% have above 16 years of experience in the library services. The respondents have varied educational degree ranging from bachelor to PhD. Degree in varied courses ranging from Library and Information Science to Knowledge management.

Data Analysis Method

Simple statistical analysis was conducted using data gathered from the librarian responses. Statistical Packages for Social Sciences (SPSS) Software is used for the analysis. Data screen and cleaning was first conducted on the gathered data to ensure a clean and perfect data. The conducted data screening is to ensure that the data is free from any form of avoidable missing data and outliers. The missing data was checked using the descriptive statistics and value analysis option in SPSS while, outliers was checked using the Mahalanobis' distance option.

Data normality test was performed on the data, using the software to display the normality of data gathered. Data normality can be perform both mathematically and graphically to demonstrate the skewness and kurtosis of the data set. The z-value for the skewness and kurtosis as represented in table below signposts that the (awareness (0.500), readiness (0.002) and adoption (-0.25)) are within the acceptable z-value range (-1.0 and +1.0) of skewness for normal distribution. While for kurtosis for the variables (awareness (-0.142), readiness (-0.501) and adoption (0.457)) are also within the range of the z-value (-1.0 and +1.0) of kurtosis.

Table 1: Skewness and Kurtosis

Variable	Skewness	Std. error of skewness	Kurtosis	Std. error of kurtosis
Awareness	.500	.229	-.142	.455
Readiness	.002	.229	-.501	.455
Adoption	-.025	.230	-.628	.457

As part of the data scrutiny process, the researcher further adopted the multicollinearity test to find out collinearity among the variables. The multicollinearity is carried out to test its presence (multicollinearity) in the data set. The multicollinearity is detected with the tolerance and variance inflation factor (VIF) in the SPSS. To calculate multicollinearity, tolerance and VIF is put to use. If the tolerance value is below 0.2 or 0.1 and, simultaneously, VIF value 10 and above, then it is an indication of a problematic multicollinearity.

Table 2: Multicollinearity table

Model	Collinearity Statistic	
	Tolerance	VIF
Readiness	.568	1.759
Awareness	.597	1.675

Reliability testing

Reliability test is also conducted on the gathered data to measure the consistency of the survey instrument and items contained in the instrument. Reliability is important to evaluate instrument trustworthiness, as reliable instrument is expected to yield similar outcome from

similar respondent overtime. Reliability as a statistical tool is coxswained to find out by testing if an instrument and the items therein are reliable and consistent. According to (Cohen et al., 2008) the concept of reliability in quantitative and qualitative varies. In quantitative studies, reliability can be substitute for consistency, dependability or replicability of specific measuring instrument over group of respondents. Cronbach alpha is therefore used in this study as a quantitative study. Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. It is considered to be a measure of scale reliability.

The table below displays the values of the study constructs' Cronbach alpha based on the reliability testing. The Cronbach alpha values ranges from 0.71(adoption of demand driven acquisition model) to 0.93(awareness). The Cronbach alpha values evidently exceed the minimum recommended value of 0.70. Studies have suggested reliability scores above 0.70 as a good reliability scores (McIntire & Miller, 2007). The study concluded based on the analysis and opinions of various researches that the adopted items for measurement of respondents' responses are reliable and consistent in various facets.

Table 3: Reliability

Dimension	Cronbach alpha	Numbers of items
Awareness	0.936	15
Readiness	0.871	14
Adoption	0.719	16

Discussion and results

In this study, 15 items in the questionnaire is used to measure librarian awareness about the user initiated collection acquisition model (DDA). The questionnaire adopted a seven (7) point likert scale. The items to measure librarians' awareness are directed to investigate librarians based on their knowledge about DDA (4 items), familiarity with DDA (4 items), discovery about DDA (4 items) and their evaluation of DDA (3 items).

The total means score and standard deviation for librarian awareness are computed as (M=4.97, SD=1.11), while the sub dimension to measure awareness also generated scores. Knowledge of librarians about DDA generated (M=5.05, SD=1.09), familiarity of librarians to DDA model generated (M=4.88, SD=1.25), discovery about DDA by librarians gathered (M=5.21, SD=1.02) and librarian evaluation about DDA (M=4.65, SD=1.10). The generated mean and standard deviation scores of each sub dimension demonstrated that librarians have made some discoveries (M=5.21, SD=1.02) about the DDA model which led to a fairly reasonable knowledge (M=5.05, SD=1.09) and familiarity (M=4.88, SD=1.25) about the model. Evaluation of DDA had the lowest average (M=4.65, SD=1.10) which indicates that librarian are yet to critically evaluate the model.

The table below illustrate a detailed analysis of the mean and standard deviation of individual item measuring awareness.

Table 4: Awareness about demand driven acquisition

No	Statement	Mean	Std Deviation
	<i>Awareness about demand driven acquisition</i>		
	<i>Knowledge</i>		
1	I am aware that Demand Driven Acquisition (DDA) is an acquisition model driven by users.	5.18	1.130
2	I am aware that Demand Driven Acquisition (DDA) helps libraries to build better collections	5.20	1.094
3	I am aware that Demand Driven Acquisition (DDA) allows users to have access to unlimited collections	4.83	1.159
4	I am aware that Demand Driven Acquisition (DDA) can set criteria to initiate or exclude item for purchase	5.01	0.968
		5.05	1.09
	<i>Familiarity</i>		
1	The library I work for is familiar with activities that trigger purchases in DDA model	5.01	1.247
2	The library I work for is familiar with using Inter Library Loan (ILL) request in DDA model	5.10	1.279
3	The library I work for is familiar with vendors policies in DDA model	4.89	1.209
4	The library I work for is familiar with Short Term Loan (STL) in DDA model	4.51	1.249
		4.88	1.25
	<i>Discovery</i>		
1	I agree that DDA is of great benefits to libraries	5.19	0.920
2	I agree that DDA is of great benefits to patrons	5.33	0.888
3	I agree that DDA enhances interdisciplinary research	5.24	1.089
4	I agree that DDA is an economically sustainable model	5.07	1.173
		5.21	1.02
	<i>Evaluation</i>		
1	The library I work for has appraises the possibilities of integrating library and vendors' catalogue in DDA model	4.77	1.059
2	The library I work for has appraises initial deposit for implementation in DDA model	4.53	1.143
3	The library I work for has appraises how library budget is justified in DDA model	4.66	1.100
		4.65	1.10
	Overall Total	4.97	1.11

Libraries readiness for implementation of the user initiated collection acquisition model is measured using 12 items with seven (7) point likert scales to rate them. Readiness of the libraries is measured using sub dimension which includes librarian behaviour towards the model, library preparation and finally library practice as regards the model.

The overall mean and standard deviation for librarian readiness generated (M= 4.48, SD=1.33) which indicated average readiness on the part of the libraries to implement the DDA model. Other sub dimension to measure DDA were also computed, the mean and standard deviation are as follows: library and librarian behaviour towards DDA generated

(M=4.26, SD=1.24), while preparation on the part of libraries is computed at (M=4.45, SD=1.58), and finally practice of libraries relating to the activities of the model gathered (M=4.85, SD=1.21).

Malaysian libraries readiness towards DDA model as measured using the sub dimension - behaviour, preparation and practices indicated that the library have some practices (M=4.85, SD=1.21) that are related to the DDA operational procedures and activities. The practices is perceived to have led to reasonable preparation (M=4.45, SD=1.58), for the model implementation.

The below table indicates the readiness of Malaysia library readiness using the mean and standard deviation scores.

Table 5: Readiness for Demand Driven Acquisition (DDA) model

<i>Readiness for Demand Driven Acquisition (DDA) model</i>			
<i>Behaviour</i>			
1	The library I work for is ready to change the present acquisition model to DDA model	4.44	1.173
2	The library I work for is already tackling issues affecting her adoption of DDA model	4.34	1.338
3	The library I work for is evaluating various vendor policies on DDA model	4.26	1.284
4	The library I work for is consulting stakeholders on DDA model	4.22	1.224
5	The library I work for has set aside a separate budget for DDA model	4.14	1.190
6	The library I work for has adopted framework to guide our implementation of DDA model	4.18	1.230
		4.26	1.24
<i>Preparation</i>			
1	The library I work for allows patrons to request for unavailable titles in the collection	5.41	1.449
2	The library I work for allows patrons to request for purchase through library website	3.81	1.781
3	The library I work for allows patrons to request for purchase through vendors interfaces	3.61	1.630
4	The library I work for allows patrons to request for resources; using email, Social media, emails etc.	4.97	1.449
		4.45	1.58
<i>Practice</i>			
1	The library I work for uses request from patron as guide to acquire resources	5.33	1.238
2	The library I work for uses Evidence Based Acquisition (EBA) to acquire resources	4.75	1.210
3	The library I work for uses perpetual model of collection acquisition to acquire resources	4.77	1.196
4	The library I work for uses freedom model of purchasing collections to acquire resources	4.54	1.197
		4.85	1.21
	Overall Total	4.48	1.33

Adoption of Demand driven acquisition in Malaysian academic libraries was analysed using adoption rationale, existing practice, level of implementation and adoption prospects as indicators to measure adoption. From the table on adoption below, item 2 in the prospect sub dimension “the library I work for has being using DDA model” generated a mean score of 1.62 from a seven (7) likert scale. This is an indication that the adoption of DDA in Malaysia academic libraries is at its infancy if adopted at all. The overall mean and standard deviation score for adoption is generated at (M=4.45, SD=1.28). Libraries existing practice in relation to DDA practice generated (M=4.76, SD=1.24) which a fairly average score indicating that the libraries are already practicing some activities in line with the DDA model. Libraries rationale also measured (M=5.19, SD=1.14) which demonstrated that libraries have strong motivation to embrace DDA model.

The table below illustrate librarian responses on the DDA model as related to their libraries

Table 6: Adoption of Demand Driven Acquisition (DDA) model

<i>Adoption of Demand Driven Acquisition (DDA) model</i>			
<i>Existing practice</i>			
1	The library I work for uses OPAC to showcase its resources.	5.80	0.942
2	The library I work for uses vendor Interface to display resources.	4.27	1.495
3	The library I work for uses STL to initiate title purchase resources.	4.14	1.217
4	The library I work for uses patron request to acquire electronic resources.	4.84	1.290
		4.76	1.24
<i>Rationale</i>			
1	I acknowledged Patron participation as priorities for DDA adoption	5.17	1.008
2	I acknowledged acknowledge high collection usage as priorities for DDA adoption	5.12	1.219
3	I acknowledged effective budget utilization as priorities for DDA adoption	5.08	1.207
4	I acknowledged enrichment of collections as priorities for DDA adoption	5.16	1.187
5	I acknowledged Patron Satisfaction as priorities for DDA adoption	5.40	1.064
		5.19	1.14
<i>Level</i>			
1	The library I work for has implemented the Auto purchase option	3.33	1.317
2	The library I work for has implemented the Short term loan (STL)	3.69	1.333
3	The library I work for has implemented the Evidence based Acquisition (EBA) option	4.40	1.397
4	The library I work for implemented the Free title browse before Purchase option	4.74	1.248
5	The library I work for implemented the Simultaneous Users Access to title option	4.86	1.148
		4.20	1.29
<i>Prospect</i>			
1	Library I work for will commence DDA model	5.71	2.117
2	library I work for has being using DDA model	1.62	1.133
3	What is the present state of DDA in your library?	2.47	1.361
		3.27	1.54
	Overall Total	4.45	1.28

Conclusion

This study explores Malaysian academic libraries awareness, readiness and prospect for adoption of Demand driven acquisition, which is a user initiated model. The study investigates and explores some of the construct and the sub dimensions affecting libraries awareness, readiness and prospect for DDA model adoption. The level and prospect for the adoption of DDA model was traced to follow a specific and normal sequential phase which is from awareness to readiness or preparedness and to finally adoption of the said model.

The adoption of DDA among Malaysian academic libraries is perceived to be at its infancy despite the libraries awareness about the model return on investment and appraisal of the model. The libraries needs to take time to critically assess the model and practiced by other libraries in the developed nations to understand their practice especially during this budget cut and growing demands for information resources.

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