Review Article

# Analysis for the factors of DSpace towards academic library perspective using MCDM

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**ABSTRACT**

This study is made to find out the important factors of DSapce relevant to implementation in the academic libraries based on the experts' opinion view. There is lack of use the MCDM techniques in the library field. In this study authors used the Delphi technique to validate the factors which are important for implementing the software. The different studies related to using MCDM are studied as review of literature. The findings of the study provide the priority of the factors through using the Delphi. The results will be helpful as theoretical and managerial perspective to take decision regarding the implementation of the software.

## 1. Introduction

In spite of the fact that the Delphi strategy has existed as an authentic exploration technique for more than fifty years, there is limited information about the Delphi Technique among the Library domain professionals and a few specialist, academician from the library filed used this technique. A few know about how the technique has been utilized in the Library and Information Science research filed and how the information may control future LIS Delphi examines. The reason is also that a few review articles available to introduce to significance of Delphi use in LIS. Doubts made by researchers who use the Delphi strategy join that the contemplations created by experts are generally the best musings, that the examiner can lead this assessment without carrying precarious inclination into the iterative association, and that sufficient response rate can be cultivated for this kind of study (Hsu and Sandford, 2007).[1] There is some inspiration to acknowledge experts may not actually produce the best clever contemplations (Welty,

1972).[2] As found in industry and entertainment, as often as possible an outsider's perspective can truly convey the most supportive novel musings. In any case, perceiving potential untouchables that would be prepared for giving important analysis is fundamentally more irksome than recognizing the experts in a given region. The peruser of an assessment that utilizes Delphi should be pleasing that the researcher unfalteringly accumulated the responses in a strange and sporadic solicitation as to decrease tendency. The amount of investigation individuals for the first round of the Delphi should be extremely tremendous (particularly assuming that the survey will be scattered on the web or through mail). This is a result of an unquestionable level of consistent misfortune that routinely occurs between emphasess of the methodology as respondents lose income in reliably completing a comparable study.

## 2. Literature Review

Rathee and Kaushik (2019) provided the steps and planning process of digital libraries and repositories.[3] Lata and Somvir (2014) presented the process of developing the

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institutional repository through DSpace.[4] Rathee carried out a study and reported through a paper entitled "Develop a multiple-criteria decision analysis (MCDA) cause and effect factor model for the implementation of the Greenstone Digital Library (GSDL) software" (Rathee et al., 2020).[5] DEMATEL, a MCDM technique helps the managers to improve the status of the effect group and its performance because they can easily do this by improving the cause group's criteria (Kaushik and Somvir 2015).[6] A few LIS distributions have given some presentation or outline of the Delphi technique in LIS research; notwithstanding, these distributions each have a few constraints. Buckley (1995) gave one more work to philosophize about the usage of the Delphi method in LIS research. His article present a preface to the method like in the past region of this article, but doesn't overview prior LIS research using the Delphi methodology, rather fundamentally offering the essayist's appraisal of the way that the Delphi could best be used in LIS.[7] Lately, a couple of examinations have given short reviews of the Delphi system as a component of a dispersion proposing another variety/kind of the procedure. This is what is happening in the examinations of Ju and Jin (2013)[8] and Poirer and Robinson (2014). In the Ju and Jin (2013) article, a short review of LIS Delphi considers (dispersed between the extensive stretches of 1971 and 2011) is presented, which consolidates a discussion of normal model size and study reason. A total of 87 assessments were reviewed. This study, while significant at the hour of its conveyance, is old and has a couple of openings (e.g., it doesn't report in any detail what kinds of Delphi were used in these examinations). Poirer and Robinson (2014) give significantly more restricted and confined study of Delphi considers while introducing their variety, known as the Slow Delphi.[9] Somvir and Kaushik (2018) used the MCDM DEMATEL to evaluate the GSDL factors.[10] Chu (2015) surveyed research strategies in three huge LIS journals (Journal of Documentation, Journal of the Association for Information Science and Technology, and Library and Information Science Research) all through the long haul 2001 to 2010. Among these three journals and a decade, the Delphi procedure was used as an assessment methodology in only three circulated examinations. This suggests that, as of the year 2010, the Delphi system was a by and large extraordinary method in critical LIS research dispersions. In that limit, a bare essential show of how the procedure has been and may be used in LIS investigation may be important to future advancement in the usage of the strategy.[11]

## 3. Objectives of the Study

The objective of the present work is to find out the important factors for implementation of the digital library software for academic perspective. The study is related to Dspace. The main objectives of the present work are:

1. To identify of important factors of the digital library software (DSpace
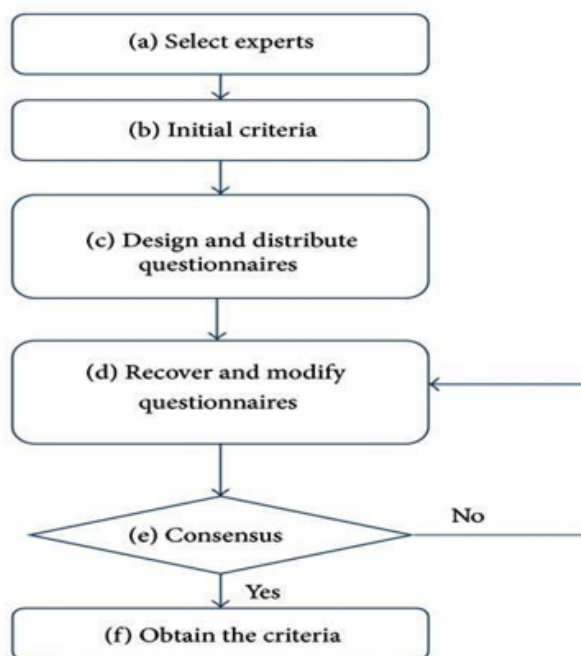2. To find out the prioritization of the factors



**Fig. 1:** Flow chart of delphi technique used

## 4. Materials and Methods

The people who decide for use the Delphi strategy in their assessment are overall attempting to perceive some great (as in, plan improvement) or estimate, by the day's end, shoot another region rather than work inside a space that is at this point generally portrayed. Delphi mitigates huge inadequacies in audit, meeting, and focus get-togethers methodologies: no one examination subject can run the conversation, as ought to be conceivable in a middle social affair, and (in the best Delphi) responses that are less standard (not shared by various people from the get-together, are most likely going to be cleared out in the iterative connection, rather than getting comparable burden in an outline or meeting plan). The constraints of Delphi rise out of that identical iterative cycle. There are various events where experts probably won't want to forgo responses that are less notable. These less standard responses can be huge pieces of data that, while less by and large occurring, really address the responses/impressions of a part of the respondents. Consequently, Delphi may be less reasonable for making inventories of respondents' insights regarding a matter; looking at individual experiences, sentiments; researching the association among individuals and their social orders; making new assessment on a topic/believed that has viably been out and out investigated in the

**Table 1:** Ranking of factors with reference to experts'

| | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12 | F13 | F14 | F15 | F16 | F17 | F18 | F19 | F20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E1 | 5 | 5 | 3 | 5 | 4 | 4 | 3 | 5 | 5 | 4 | 3 | 4 | 5 | 5 | 3 | 5 | 3 | 4 | 4 | 5 |
| E2 | 4 | 4 | 5 | 4 | 5 | 3 | 3 | 3 | 4 | 4 | 4 | 5 | 4 | 5 | 5 | 4 | 4 | 3 | 4 | 4 |
| E3 | 4 | 5 | 4 | 5 | 4 | 5 | 5 | 5 | 4 | 3 | 3 | 3 | 3 | 5 | 4 | 5 | 4 | 5 | 5 | 5 |
| E4 | 5 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 5 | 4 | 5 | 5 | 3 | 4 | 4 | 5 | 3 | 4 | 4 |
| E5 | 5 | 3 | 5 | 4 | 4 | 3 | 4 | 5 | 4 | 4 | 4 | 4 | 5 | 3 | 5 | 4 | 3 | 3 | 4 | 5 |
| E6 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 4 | 4 | 5 | 3 | 3 | 3 | 4 | 3 | 5 |
| E7 | 4 | 5 | 4 | 5 | 4 | 3 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 3 | 4 | 3 |
| E8 | 4 | 4 | 5 | 3 | 4 | 3 | 5 | 3 | 5 | 5 | 5 | 3 | 4 | 3 | 5 | 3 | 4 | 3 | 4 | 4 |
| E9 | 5 | 4 | 4 | 4 | 4 | 3 | 5 | 3 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 5 | 4 | 5 | 3 | 3 |
| E10 | 5 | 4 | 5 | 5 | 3 | 3 | 4 | 3 | 4 | 4 | 4 | 4 | 5 | 3 | 5 | 5 | 4 | 3 | 3 | 5 |
| E11 | 4 | 5 | 5 | 3 | 5 | 4 | 4 | 5 | 4 | 4 | 5 | 4 | 3 | 5 | 5 | 3 | 4 | 4 | 4 | 3 |
| E12 | 4 | 5 | 3 | 5 | 5 | 3 | 5 | 3 | 4 | 4 | 5 | 5 | 4 | 3 | 3 | 5 | 5 | 3 | 5 | 3 |
| E13 | 3 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 5 | 3 | 3 | 4 | 4 | 5 | 4 | 4 | 3 | 4 | 3 | 3 |
| E14 | 4 | 5 | 4 | 4 | 5 | 5 | 4 | 4 | 3 | 5 | 5 | 5 | 4 | 3 | 5 | 3 | 4 | 5 | 4 | 4 |
| E15 | 5 | 4 | 4 | 4 | 4 | 3 | 5 | 5 | 3 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 3 | 5 | 5 |
| E16 | 4 | 5 | 3 | 5 | 4 | 5 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 5 | 3 | 5 | 2 | 5 |
| E17 | 5 | 4 | 5 | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 5 | 4 | 5 | 4 | 5 | 4 | 3 | 4 |
| E18 | 5 | 4 | 3 | 4 | 4 | 3 | 5 | 4 | 3 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 5 | 3 | 5 | 5 |
| E19 | 5 | 5 | 3 | 5 | 4 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 4 |
| E20 | 4 | 4 | 3 | 5 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 5 | 4 | 3 | 4 | 4 | 4 | 4 | 5 | 4 |
| Total | 88 | 87 | 81 | 87 | 86 | 75 | 83 | 78 | 83 | 83 | 82 | 83 | 87 | 81 | 84 | 83 | 80 | 76 | 78 | 84 |
| Average | 4.40 | 4.35 | 4.05 | 4.35 | 4.30 | 3.75 | 4.15 | 3.90 | 4.15 | 4.15 | 4.10 | 4.15 | 4.35 | 4.05 | 4.20 | 4.15 | 4.00 | 3.80 | 3.90 | 4.20 |
| Alpha | 4.12 | | | | | | | | | | | | | | | | | | | |

composition, etc (Donohoe and Needham, 2009; Keeney and Hasson, 2011).[12,13] It is easy to use Delphi for these assessment purposes, but various techniques might make more overwhelming results.

## 5. Analysis

This investigation utilized a Delphi procedure as the philosophy to respond to the exploration questions. The Delphi strategy is a technique for getting an educated agreement in certain subjects. One of the points of this investigation is to distinguish the variables that contribute towards the foundation of advanced library or institutional storehouse. Since there is restricted foundation data accessible to work with dynamic or create thought concerning the assessment of computerized library virtual products in the country, the Delphi technique was utilized. The strategy utilized in this examination is characterized as changed Delphi study in light of the fact that the plan of substance for the Delphi procedure instrument didn't start with an open-finished or unstructured inquiry where topic specialists were needed to recognize and create things.

After analyzing the data using Delphi Approach and comparing it, there are some findings. These findings are as: DSpace has important factors the most considered factor is Content Acquisition and less is Privacy and Management with descending values as Content Acquisition > Content Management > Classification > Extensibility > Information search and retrieval > Copyright issues > Backup and Restore > Usability > Software Installation > User friendly > Meta Data Submission and Support > Customization, System Support/ Maintenance > Storage > Hardware/ Software Requirements > Interoperability > Architecture of Software > Security > Authorization and Authentication > Advanced Feature > Privacy and Management.

## 6. Theoretical and Practical Implications

These implications are used for the further research work, study and creating model. From a theoretical perspective the study contribute a lot in library science domain for this researcher complete the research based on decision in making approach Delphi through extensive literature review and experts' opinion. These implications are recommended based on the results for practical implementations. Practically what should be do or do not.

From managerial perspective while we choose the Dspace software for digital library we should keep in mind that Content Acquisition, Content Management, Classification, Extensibility, Copyright issues, Information search and retrieval, Usability, Backup & Restore score, Software Installation and User friendly factors are most important for Dspace.

## 7. Limitation

The research objectives were narrow and demanded the thorough study about the OSS for digital libraries and the requirements of the academic libraries. Even though the research was taken up with full spirit, the response from the college librarians to participate in the research was not appropriate, due to lack of awareness, hands-on experience and domain knowledge. Hence, the researcher has to adopted the services and technical support providers also as experts.

1. There is a lack of literature availability on different decision making methods used in the field of library science.
2. Delphi Method is not so much popular in the field of research work in library domain.
3. The representativeness of sample as the large sample size might not be representative of the entire population of library professionals.

## 8. Conclusion

For knowledge management and disseminating the same the digital libraries are the best way. For creation and success of the project, the right software selection is very important. For selection of software the different factors should be kept in view, and for this the decision making approaches are the best way for the same. Delphi is one of them method which is very helpful for the success of project.

While planning to create a digital library, there is need of digital library software, for this open source softwares are the best option. While selecting the software the librarians / managers should be noted that for the Dspace Content Acquisition, Content Management, Classification, Extensibility, Copyright issues, Information search and retrieval, Usability, Backup & Restore score, Software Installation and User friendly factors are most important.

## 9. Source of Funding

None.

## 10. Conflict of Interest

None.

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