



Effectiveness and Efficiency of the Open-Source Platform System OJS 3.2 Journal Management for Electronic-Based Article Publication: Author and Reviewer Perspectives

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ABSTRACT

Research articles play an important role in the advancement of education because they stimulate people to think critically, creatively, and innovatively in evaluating the education that has been taken. Research-based education can be pursued either systematically or non-systematically. The more researchers produce research articles, the more forums are needed for the publication of research articles that can be accessed by all users. Many journal management system applications have emerged such as OJS, Edas, EasyChair, and Eprint. In this study, we will test the reliability of OJS from the point of view of the authors and reviewers and compare it with other applications. The OJS (Open Journal System) platform is a platform used by a website-based CMS (Content Management System) that is devoted to handling the process of publishing research articles starting from calls for papers and peer reviews to publishing in online form through the OJS platform. The Faculty of Engineering, Surabaya State University has several electronic journals that actively manage the publication of electronic articles, including the journals INAJEEEE, INAJET, and Journal of Electrical Engineering. The three journals use the open-source OJS journal management system version 3.2. This journal is freely accessible to anyone without user restrictions. The scope of the three journals is technically oriented. Selection of authors and reviewers based on their region. In this study, we analyse the effectiveness and efficiency of using the OJS 3.2 open-source journal management system platform for electronic publications from various perspectives, including from the point of view of the author and reviewer, and also pay attention to some of the advantages, disadvantages, convenience, and difficulties of using it. The analysis of the effectiveness and efficiency of this platform uses the Thurstone scale quantitative method with the author's and reviewer's subject questionnaires. The number of respondents used was 83 from the authors and reviewers. From the Thurstone scale analysis, it can be seen that the experiences of the authors and reviewers in using OJS 3.2 have a positive attitude or strongly agree with the ease of use of the OJS 3.2 platform in operating electronic article publications. 70 reviewers and authors stated that the OJS application could be very easy to use when registering, logging in, submitting, and reviewing articles and 70 reviewers and authors with percentage 84% stated that the OJS application could be directly provide updates on the process of articles and publish in OJS 3.2.

Keywords: *OJS 1, Reviewer, Author, Thurstone, CMS.*

1. INTRODUCTION

Along with the development of science and technology, the need for scientific periodicals has become quite necessary for every tertiary institution, government and non-government institutions, and of

course for academics, researchers and practitioners as a medium for disseminating knowledge. Scientific journals have become one of the parameters for the development of science in an institution, both educational and non-educational institutions [1]. Journals can also be one of the requirements for

accreditation of an institution, especially educational institutions or higher education institutions [2].

With the development of information technology, scientific periodical publications can already be done online, known as e-journals [3]. Besides being able to reduce printing costs, the use of e-journals also allows wider access and dissemination of articles [4][5].

One of the online journal management service applications that is popularly used is the Open Journal System (OJS). Apart from being open source and free, OJS also has sufficient features to handle online publications and is linked to various search engines, making it easier to identify and search for articles [6].

Higher education academics implement online journal management but have several drawbacks compared to OJS journal management. A significant drawback is that in the process of managing publications it is still separated from the journal publication process which in this case is quite inconvenient for journal managers in monitoring the management process, especially in terms of management time, access, customization, indexation, legality of articles, log history, and additional needs [7] [8] [9].

By conducting this research, readers are expected to be able to understand the level of effectiveness and efficiency in using OJS which is used as an alternative electronic-based article publication to support education for academics both for lecturers and students, authors and reviewers.

2. LITERATURE

2.1 Open Journal System

OJS stands for Open Journal Systems. OJS is an open-source software platform developed to manage and publish scientific journals electronically [10].

OJS is designed to support the entire editorial and publishing process of scientific journals, starting from manuscript management, review processes by experts, to online publication of articles. By using OJS, journal publishers can manage articles efficiently, facilitate interaction between authors and reviewers, and allow open access to published scientific articles. Some of the main features of OJS include:

Manuscript management: OJS allows authors to submit manuscripts online, and editors can track and manage the review process and monitor the status of each article.

Review system: OJS provides tools to facilitate the expert review process, including the ability to provide comments and feedback to authors.

Online publication: OJS enables journals to publish articles electronically, allowing open access to published scientific articles.

Indexation: OJS provides support for indexing journals in well-known index databases such as Google Scholar, DOAJ (Directory of Open Access Journals), and others.

Records management: OJS assists in keeping and managing journal archives for a long period of time.

OJS has become a popular platform among scientific journal publishers because it provides an effective and affordable solution for e-journal publishing.

2.2 Edas

The EDAS journal stands for "European Journal of Argumentation Studies". This is an academic journal that focuses on research and the study of argumentation. This journal provides a platform for researchers to publish their scientific articles related to theory, methodology, and application of argumentation studies [6].

The EDAS journal specifically addresses topics such as argumentation theory and analysis, argumentation understanding, argument evaluation, argumentation practice in various contexts, and the implications of argumentation in everyday life and other fields. The journal welcomes contributions from a variety of disciplines, including philosophy, linguistics, psychology, communications, sociology, and other related fields.

Through the publication of quality scientific articles, the EDAS journal aims to advance our understanding of the argumentation process and its contribution to critical thinking, reasoning, and communication. This journal can also be a valuable reference source for academics, researchers, and students who are interested in the field of argumentation [11][12].

2.3 EasyChair

EasyChair is an online conference management system designed to facilitate the process of managing and organizing scientific conferences. EasyChair provides a complete and one-stop platform for managing the registration process, article review, and conference event schedule [13].

With EasyChair, conference organizers can create conference web pages, accept and process submitted articles, manage attendee lists, and monitor the review and decision-making process of submitted articles. This system also provides important features such as a notification system, schedule management, and communication facilities between conference organizers, article authors, and reviewers.

In this regard, EasyChair helps automate many administrative tasks related to holding conferences, making it easier for organizers and participants to participate in conferences more efficiently.

2.4 Eprints

Eprints journal is a term that refers to journals that use the Eprints system in publication management and distribution of scientific articles. Eprints is open-source software developed by the University of Southampton, UK, specifically designed to facilitate the dissemination and open access of scientific publications [14].

Eprints journals are usually associated with certain educational institutions or research organizations that use the Eprints system as a platform for storing, organizing and managing their scientific articles. In this context, "eprints" refers to digital copies of scientific articles stored in institutional or open repositories based on Eprints.

Through the Eprints journal, researchers can upload their scientific articles to the Eprints repository, which can then be freely accessed by the academic community and the general public. The Eprints system also provides search and indexation features that make it easier for users to find and access these articles.

In the context of scientific publications, Eprints journals often focus on certain topics or are under the auspices of certain academic or research institutions. They play an important role in promoting open access, collaboration and dissemination of scientific knowledge.

2.5 Thurstone Scale

The Thurstone scale is a psychological measurement method developed by Louis Leon Thurstone, an American psychologist in the early 20th century. This method is used to measure a person's attitude or preference towards a particular topic or object.

The Thurstone scale is based on the premise that a person's attitudes or preferences can be measured by their responses to a series of statements. In this method, a number of statements about a particular topic are presented to the respondent. Respondents were asked to rate the extent to which they agreed or disagreed with each of the statements given.

After the respondents provide an assessment of these statements, Thurstone uses statistical techniques to determine the appropriate scale for these statements. He uses a method called the "semantic differential method" to determine the actual level of preference or attitude towards the topic being measured.

The Thurstone scale gives results in the form of ordinal sequence, which means statements are classified into several levels according to the level of agree or disagree with the respondents. This scale also assumes that the differences between each level are constant, allowing statements to be placed on a measurable scale.

The Thurstone scale has been widely used in social and psychological research to measure attitudes, preferences, and evaluations in various contexts, such as

market research, public opinion research, and psychological research [15].

2.6 Thurstone Scale Stage

The following is Thurstone's research stage which describes the attitude measurement process:

2.6.1 First Stage: Statement Formation

1. Researchers identify and formulate relevant statements related to the object or topic whose attitude will be measured.
2. These statements must be clear, unambiguous, and cover various relevant aspects of the object or topic being observed.

2.6.2 Second Stage: Expert Panel Assessment

1. An expert panel consists of individuals who have expertise or knowledge relevant to the topic under study.
2. The expert panel evaluates the statements formulated by the researcher.
3. They provide an assessment of the relevance, clarity, and suitability of the statement for the purpose of measuring attitudes.

2.6.3 Third Stage: Dissent Scale

1. Statements that have been approved by a panel of experts are then given to a number of respondents.
2. Respondents were asked to determine the extent to which they agreed or disagreed with each statement.
3. A Likert scale is often used, in which respondents provide their responses using a five- or seven-point scale, for example from "Strongly Agree" to "Strongly Disagree".

2.6.4 Fourth Stage: Data Analysis

1. Data obtained from respondents were analysed using statistical methods.
2. Thurstone's analysis involves calculating the average score and the variation of each statement.
3. Furthermore, these statements are grouped into different attitude categories based on the level of approval or disapproval given by the respondents.
4. Thurstone's research diagram describes the steps in developing statements, evaluating by a panel of experts, collecting data from respondents, and analysing data to gain an

understanding of respondents' attitudes towards the object or topic under study.

2.7 Pearson Correlation

The Pearson Correlation method is a statistical method used to measure the strength and direction of a linear relationship between two numerical variables. This method is named after Karl Pearson, a British statistician [16].

Pearson correlation is calculated using the following formula:

$$r = (\Sigma((X - \bar{Y}) * (Y - \bar{Y}))) / (\sqrt{\Sigma(X - \bar{Y})^2} * \sqrt{\Sigma(Y - \bar{Y})^2})$$

explanation:

r is the Pearson correlation coefficient between the X and Y variables.

X and Y are the two data sets for which you want to calculate the correlation.

\bar{Y} is the average of the Y data set.

The Pearson correlation coefficient (r) has a value range between -1 to 1. The interpretation of the correlation coefficient value is as follows:

- If the value of r is close to 1, then there is a strong positive correlation between X and Y. This indicates a positive linear relationship between the two.
- If the value of r is close to -1, then there is a strong negative correlation between X and Y. This shows that there is a negative linear relationship between the two.
- If the value of r is close to 0, then there is no significant linear correlation between X and Y. This indicates that the two tend not to be linearly related.

It is important to note that Pearson correlation only measures the linear relationship between two variables. If the relationship between variables is not linear, then this method may not provide an accurate picture of the relationship. Moreover, correlation does not imply a causal relationship between variables.

The Pearson correlation method is widely used in a variety of fields, including the social sciences, economics, and natural sciences, to analyse relationships between numerical variables and determine the strength and direction of those relationships.

2.8 The relationship between the Thurstone scale method and the Pearson Correlation

Combining the Thurstone scale method with Pearson correlation can be done in the following steps:

First Step: Collecting Data

Collect data from respondents who will provide an assessment of several items or objects. For example, if you wanted to rate customer satisfaction with various product features, you could give a survey to a group of customers and ask them to rate each feature.

Step Two: Determine the Scale Value

The Thurstone scale method involves relative ratings of the items provided by the respondents. Respondents must provide an assessment of each pair of items, which is then used to determine the relative scale of the items. You need to collect this assessment data.

Step Three: Calculating the Thurstone Scale Value

Use the Thurstone scale method to calculate the relative scale of items based on the ratings given by respondents. This method involves calculating the average relative rating for each item. You can use the formula or algorithm according to the Thurstone scaling method you choose.

Step Four: Calculating Pearson's Correlation

Once you have a relative scale for each item, you can use Pearson's correlation to analyse the relationship between the items. You need to calculate the correlation between the relative scores of each pair of items. Pearson correlation provides information about the strength and direction of the relationship between two variables.

Step Five: Interpretation of Results

After calculating the Pearson correlation between items, you can interpret the results to understand the relationship between the items. A positive correlation indicates a positive relationship, while a negative correlation indicates a negative relationship between the items.

Combining the Thurstone scale method with Pearson correlation allows you to gain a more complete understanding of the relative relationships between items based on respondents' ratings.

3. METHODS

In this research, we used several steps to obtain research results. The stages that we do are as shown in Figure 1.

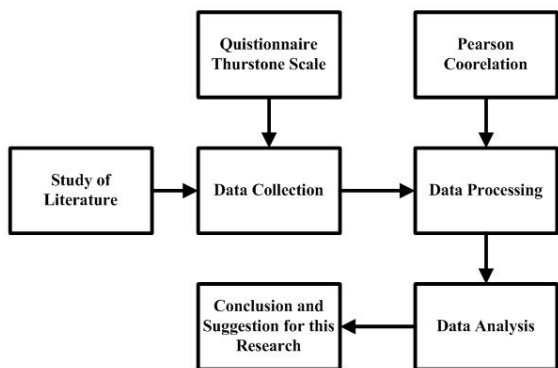


Figure 1. Research Step.

The stages of activities for carrying out research described in Figure 2 are the first stage of collecting supporting references to assess the effectiveness and efficiency of online learning.

By arranging question items that refer to the influencing factors in the research. To compile statement items, these factors are translated into a grid of research instruments which are then developed into items or statements. The statement items must be in the form of a description of the contents of the factors described above, then translated into existing indicators, a question item is compiled that can provide a description of the state of these factors. The items collected are positive and negative. Negative statements are intended to vary the statement so that it is not monotonous.

Then an online questionnaire was conducted using the Thurstone scale method. The questionnaire was carried out to authors who were once assigned as reviewers using OJS 3.2. Questionnaire using google form with 2 basic positive questions on the effectiveness and efficiency of using OJS 3.2

The next stage of activity is to test the validity of the questionnaire data that has been filled in by the author and the reviewer using Pearson's correlation. At the data analysis stage, the percentages obtained for each positive question were given from the author and reviewers. From the data analysis, it can be seen that the distribution of the number of positive question points related to the effectiveness and efficiency of using OJS 3.2. For the last activity stage, the percentage value distribution has been analysed previously so that it can be a reference for evaluating the use of OJS 3.2.

In the questionnaire used for data collection, we used 2 questions containing questions of effectiveness and efficiency, especially the use of OJS 3.2 for authors and reviewers. The respondents we use are authors and also reviewers who have experience using OJS 3.2. Q-1. The level of effectiveness of register access, login access, submission, and review of OJS 3.2 articles that have been carried out by the author and reviewer Q-2. Efficiency in updating articles and publishing processes in OJS 3.2 for authors and reviewers

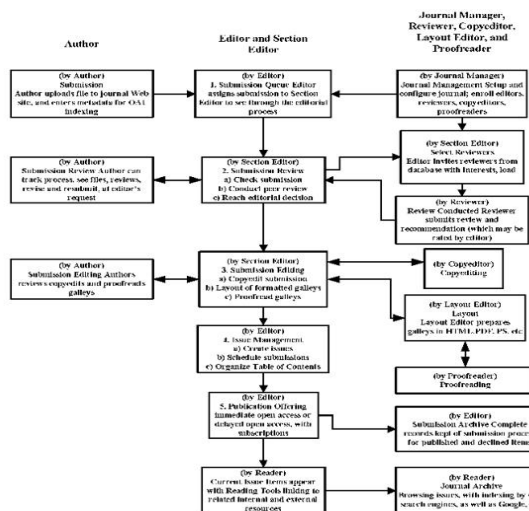


Figure 2. OJS Editorial and Publishing Process.

From Figure 2 we can pay special attention to authors and reviewers, for authors to have 3 segments of activity namely registering, entering the website, submitting articles, monitoring the article process, and updating the final article that has been reviewed. Whereas the reviewer has 1 activity segment, namely reviewing articles that have been assigned by the editor, but previously the reviewer has an account first so that he can review articles given by the editor.

3. RESULTS AND DISCUSSION

Data analysis for collecting questionnaire data about the effectiveness and efficiency of using OJS 3.2, we present and explain the data we have obtained in several tables.

From table 1 we can note that OJS, especially version 3.2, has more complete features than the other three journal management applications.

Table 1. Comparison of journal management applications.

Article management	Journal Application			
	OJS	EDAS	Easychair	Eprint
Article Submission	Yes	Yes	Yes	Yes
Process of article management	Yes	Yes	Yes	Yes
Process of article editing	Yes	Yes	Yes	Yes
Process of article review	Yes	Yes	Yes	Yes
Process of publication and indexation	Yes	No	No	Yes
Process of distribution of articles to reviewers	Yes	No	No	No
Journal optimization	Yes	No	No	No

Journal website customization	Yes	No	No	No
Process of conference article	Yes (OCS)	Yes	Yes	No

Table 2. The level of effectiveness of register access, login access, submission, and review of OJS 3.2 articles that have been carried out by the author and reviewer (Q-1).

Scale	Number of respondents	Percentage
1	0	0%
2	0	0%
3	0	0%
4	0	0%
5	3	4%
6	10	12%
7	17	20%
8	18	22%
9	15	18%
10	20	24%
Total	83	100%

From table 2, the Thurstone scale analysis shows that the experiences of the authors and reviewers in using OJS 3.2 have a positive attitude or strongly agree with the ease of using the OJS 3.2 platform in operating electronic article publications. 70 reviewers and authors stated that the OJS application can be very easy to use when registering, logging in, submitting, and reviewing articles.

Table 3. Efficiency of updating articles and publishing processes in OJS 3.2 for authors and reviewers (Q-2)

Scale	Number of respondents	Percentage
1	0	0%
2	0	0%
3	0	0%
4	0	0%
5	1	1%
6	12	14.5%
7	22	26.5%
8	15	18%
9	15	18%
10	18	22%
Total	83	100%

From table 3, the Thurstone scale analysis shows that the experiences of the authors and reviewers in using OJS 3.2 have a positive attitude or strongly agree with the ease of using the OJS 3.2 platform in operating electronic article publications. 70 reviewers and authors stated that the OJS application can immediately provide updates on the article and publish process in OJS 3.2.

5. CONCLUSION

From the research conducted, it can be concluded by looking at a scale ranging from 7 to 10, it was found that 70 reviewers and authors stated that the OJS application

could be very easy to use when registering, logging in, submitting, and reviewing articles and 70 reviewers and authors stated that the OJS application could be directly provide updates on the process of articles and publish in OJS 3.2. The use of the 2 questionnaires turned out to have the same number of author and reviewer respondents, namely 70 people or with a percentage of 84%. With these results it can be concluded that the use of OJS 3.2 can be categorized as effective and efficient for use in alternative article publication processes.

AUTHORS' CONTRIBUTIONS

Author 1:

- Conceived and designed the analysis
- Collected the data
- Contributed data or analysis tools
- Performed the analysis
- Wrote the paper

Author 2, 3, and 4:

- Collected the data
- Performed the analysis

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