JISYM: Desktop Application to Increase Lecturer Publication Ratio

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Abstract

This research aims to develop Delphi software as Graphical User Interface (GUI) connected to Microsoft Access as a database based on desktop with file type Setup Compiler called JISYM (Journal Information System Management). The scope of development includes (1) National Journal Information System, (2) International Journal Information System, (3) Information System of National and International Seminar, and (4) Scopus Indexed Journal Information System including Elsevier. Development of this application using 4-D development model that is done through 4 stages namely: Define, Design, Development, and Dissemination. Based on the results of data analysis obtained information that the expert validation stage obtained the level of the average validity of 4.286 which means product "valid". Then on a limited trial the average respondent gave a response of 80.67% which means product "very good". While on field trial the average respondent gave 81.20% response which means product "very good". Then, amount of journals in Indonesia which already have ISSN is 48,147 journals and only 1.03% have been accredited and mostly in the health sector. While the scientific meeting in the form of seminar most widely conducted in May.

Keywords: GUI of Delphi, Microsoft Access, Journal, Information, System, 4-D Model.

1. Introduction

Scopus and Thomson Reuters are the two recognized journal indexing agencies in Indonesia, but Scopus rankings are higher than Thomson Reuters. Indonesia ranks 55th from 239th in Scopus. This means that the publication of research results and devotion of researchers in Indonesia is still low. Meanwhile, research is one indicator of a lecturer's work in a college other than education (teaching) and community service [2]. Every year and even semesters in universities internally and governments globally prepare research funds including dedication for lecturers in the development and application of their scholarship. This is certainly a passion in the personality of a lecturer or team to pour his ideas, ideas, and creativity into a research or devotion useful for the advancement of Science and Technology.

All lecturers can do research, but not all can publish the results of his research. Fatal mistakes are often done by a novice writer is trying to make a scientific article first, then find a suitable Journal to load it, the result is no Journal is willing to load it. This is because when writing, there is no references criteria of writing that are used in accordance with the desired by each journal either in terms of areas of expertise, content substance, grammar, or requirements. This is certainly a big problem in the world of research. Because the final step that becomes the key of a research is publication, at least in local journals that already have ISSN. This is an interesting issue also occurs in the environment of some of the cluster campus below (built) in Indonesia. The average of lecturers' research results is only in the form of regular reports and has not yet reached the process of scientific publication of the journal class.

Scientific publication is an absolute requirement in research at higher levels, the government requires every team of researchers to conduct scientific publications at least not accredited national. So it becomes a big duty and responsibility for lecturers in the scope of universities in Indonesia. This problem is caused by the lack of information obtained by lecturers about the journal for the purpose of publication, and the weak ability of lecturers in writing journals to be published. Therefore, the research team wanted to build or design a desktop-based offline application that provides journal information both nationally and internationally. Hopefully, this application can be utilized well in order to improve the ratio of lecturer publications (researchers) in Indonesia. One of the database software developers is quite good in this case is Delphi which has a very good interface, quick and easy access in deployment [2, 5, 8]. Then the database is stored in Microsoft Access is easy and careful in database applications and is a common application found in personal computer, so no need to perform the installation first [3].

2. Development Methods

2.1 Development Model

This research type is Research and Development (R&D). Research development is a research method used to produce a particular product, and test the effectiveness of the product [7]. The resulting product is a desktop-based database application for lecturers' needs in deciding the publication of scientific journals of research results. The development model used is **4-D** (**Define, Design, Development, and Dissemination**) developed by Thiangarajan, Semmel and Semmel. Then by the research team modified as needed. The modified development model is shown in Figure 1 below.
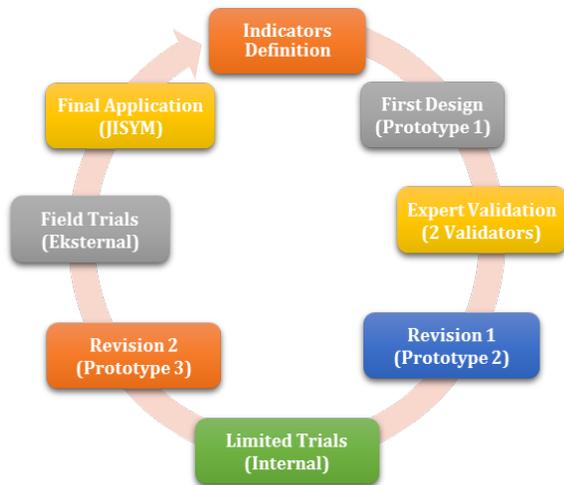

Fig. 1. JISYM Application Development Procedure

2.2 Development Procedures

1.   Definition of Application Indicator.
At this stage the researcher determines the outline of the application according to the needs of the user (lecturer), developed based on the results of references or research results of previous development. From this definition stage is constructed the initial design (Prototype 1) which is then validated with the appropriate team of experts.

2.   Expert Validation.
At this stage, the research team used the Expert Team Assessment Sheet to validate the application to 2 experts ie design experts and scholarly publications. Then all the deficiencies are revised according to the suggestion and the validator's instructions to get Prototype 2.

3.   Limited Trials.
The research team used the Limited Trial Batch Sheet instrument to conduct limited trials of 3 lecturers in the campus internal environment to see how far the user's

response to the application is being developed. Suggestions and feedback from users on this limited trial became a foothold for revision, to obtain Prototype 3.

4.   Field Trials
The research team used the Field Test Questionnaire Sheet instrument to conduct field trials by requesting the opinions or responses of 10 campus external lecturers and the revised results at this stage are called Final Application.

5.   Data Analysis
The process of data analysis of the validity of developed products is done with the following formula [9]:

$$R = \frac{\sum_{i=1}^{n} V_i}{n} \qquad (1)$$

Table 1. Intervals of Validity Value

Interval	Level of Validity
R = 5	Very valid
$4 \leq R < 5$	Valid
$3 \leq R < 4$	Quite valid
$2 \leq R < 3$	Less valid
$1 \leq R < 2$	Invalid

While the data response (lecturer response) through the questionnaire that was collected, then tabulated. The result of tabulation of each response is searched for percentage using the following formula [9].

$$P = \sum \frac{Score\ Per\ Item}{Maximum\ Score} \times 100\% \qquad (2)$$

Table 2. Category Intervals of Application

Percentage (P)	Categories
$P \leq 20$	Not Good
$20 \leq P < 40$	Less Good
$40 \leq P < 60$	Pretty Good
$60 \leq P < 80$	Good
$P \geq 80$	Very Good

Stages will resume if the product being validated or tested is either "Quite Valid" or "Pretty Good".

3. Result and Discussion

3.1 First Design

At this stage, the research team studied several references related to the journal information system so that the initial design, including the application indicator, the number of forms (GUI) used, and the structure of the programming

language and flow chart used, so that the input-output of the application according to the following Table 3.

Table 3. Menu and Input-Output JISYM

No	Menu	Data Source	Input-Output
1	Seminar	www.google.com	Implementation (Month), Event Name (Theme), Implementing Institution / University, Field of Study, Category (National / International), and Contribution of Speaker
2	National Journal	www.simlitabmas.ristekdikti.go.id	E-ISSN, Science Field, Journal Name, Publisher Institution, Website, Email Editor, and Accreditation Status.
3	International Journal	www.google.com	E-ISSN, Science Field, Journal Name, Publisher Institution, Website, Email Editor, Publishing Period, Indexing Institute, and Contribution (Publication Cost)
4	Scimagojr (Scopus)	www.scimagojr.com	Rank, Title, Type, ISSN, Country, Categories, SJR, Quartile, H-Index, Cites, Reference Documents
5	Elsevier (Scopus)	www.elsevier.com	ISSN, Journal Title, OA Model, Currency, Price

As for Scimagojr and Elsevier Input Forms not made, because the data directly taken from the website www.scimagojr.com and www.elsevier.com.

After creating the GUI design in Delphi, then the data taken from each website entered into the database file in Microsoft Access that has been made before. Seminar data inputed 255 activities, National Journal data of 494 accredited journals, International Journal data 150 journals, Scimagojr data 23.226 journals, 703 books, and 4,677 conferences and proceedings, and Elsevier data as many as 2,547 journals.

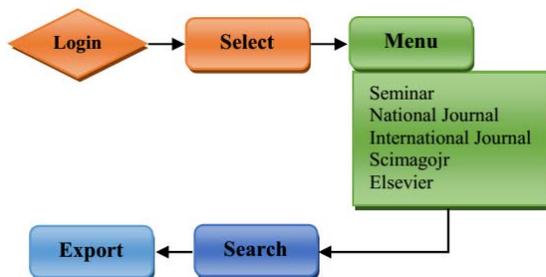The use of JISM application flow follows the following chart.

Fig. 2. Flow Chart of JISYM

3.2 Expert Validation

Furthermore, the application is validated to a team of experts in the field of publication and GUI design. Based on the data analysis from the expert validation obtained an average valuation of 4.286 which means "valid". While some input related display (design) such as size and typeface, the division of the menu of each form, icon button, and skins GUI has been improved.

3.3 Product Trial

Based on the results of expert validation, then proceed to trial the product (limited and field). The results of responses from respondents very well related to JISYM application, because it is used as a benchmark in determining the purpose of scientific publication of research results from lecturers and students or other practitioners. Then the results of data analysis on limited trials generated an average of 4.03 or 80.67% of respondents answered "very good". While in the field trial generated an average of 4.06 or 81.20% of respondents answered "very good". Inputs or suggestions from respondents in field trials related to JISYM display are not very different from results in a limited trial.

3.4 Data Interpretation

In addition, the research team can interpret data from inputs that specifically provide important information for the author, namely:

1. Seminar
In the GUI Seminar there are some data that can be presented ie (1) Frequency of Activities Each Month and (2) Frequency of Activities by Field.
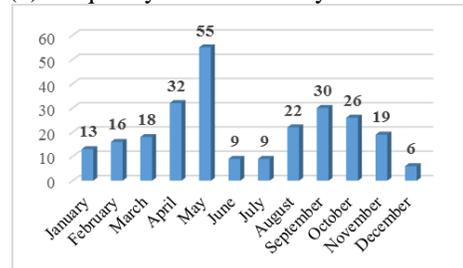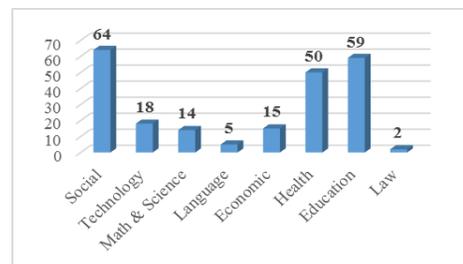

Fig. 3. Seminar Based on Month

Fig. 4. Seminar Based on Field

Based on the two graphs above, obtained information that in Indonesia most of the seminar activities conducted in May, while the field of study of the most seminars namely the field of Social and Science.

2. National Journal

Based on data from the Indonesian Institute of Sciences, the number of journals that already have International Standard of Serial Number (ISSN) is 48,147 journals, but only 494 accredited journals or 1.03% accredited "A" for 24 journals and 470 accredited journals "B". While based on the field is described in Figure 4 below.
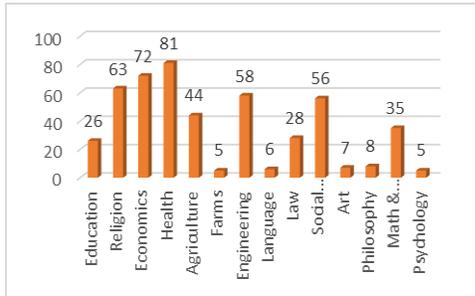

Fig. 5. Journal Frequency Based on Field

3. International Journal

In Indonesia there are two recognized journal indexers namely Scopus (SJR-Scimagojr) and Thomson Reuters (ISI). But in this study, researchers only do interpretation of data from Scopus. Based on data taken from www.scimagojr.com as of September 2017 obtained the information as described in Figure 5 below.
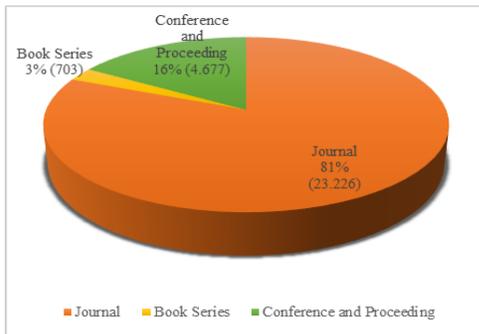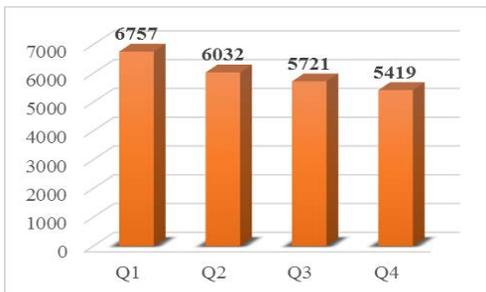

Fig. 6. Data Based on Category

Fig. 7. Journal Based on Quartile

Based on the statistical results of the journal incorporated in Elsevier there are 2,102 Hybrid models and 445 Open Access model.

4. Conclusions

Based on the results of data analysis and discussion obtained some conclusions as follows.

a. The final product result is developed in the form of application program which then called "JISYM" which is abbreviated from "Journal Information System Management"

b. The final result of the developed product is application with system: (1) Seminar Data, (2) National Journal Data, (3) International Journal Data, (4) Journal of Scopus Data, and (5) Elsevier Journal Data.

c. In the expert validation stage obtained the level of the average validity of 4.286 which means the product "valid". Then on a limited trial the average respondent gave a response of 80.67% which means product "very good". While on field trial the average respondent gave 81.20% response which means product "very good".

d. Amount of journals in Indonesia which already have ISSN is 48,147 journals and only 1.03% have been accredited and mostly in the health sector. While the scientific meeting in the form of seminar most widely conducted in May.

e. Publications in Scopus are divided into 3 types with different frequency ie Journal of 81%, Book Series of 3%, and Conference and Proceeding of 16%. While the distribution of Quartile on the journal consists of 7,657 (Q1), 6.032 (Q2), 5.721 (Q3) and 5.419 (Q4).

Applications that have been developed need more extensive field trials. Some menus need to be added such as symposium and other scientific meetings, then add new features such as histogram simulation (graph) of each menu and filter buttons with certain characters from the selection (search).

Acknowledgments

References

[1] Amit K, M., and Deependra, K., J., "For Text Data Miningan Improved FP-Tree Algorithm", *International Journal of Innovative Science, Engineering & Technology*, Vol. 4, No. 10, Oktober 2017, pp. 165-169.

[2] A Selçuk, K., Levent, D., and Aykut, B. "Information Systems in Globalization Process and Their Reflections in Education", Procedia Social and Behavioral Sciences, Vol. 191, 2015. pp. 1349-1354.

[3] Andrii, B. and Vira, S. "System Integration and Security of Information Systems", Procedia Computer Science, Vol. 104, 2017. pp. 35-42.

[4] James, B. "Databases", Anaesthesia & Intensive Care Medicine, Volume 18, Issue 3, 2017. pp. 155-157

[5] Marius, M. "Metadata Repositories in Database-Driven Information Systems", Procedia Technology, Vol. 25, 2015. pp. 816-819.

[6] Rosemary, O., "Integrating Information Communication Technology (ICT) into guidanceand Counselling Services", *International Journal of Innovative Science, Engineering & Technology*, Vol. 4, No. 9, July 2017, pp. 169-177.

[7] Sugiono. Metode Penelitian Kuantitatif, Kualitatif dan R & D, Bandung: Alfabeta, 2016

[8] Syaharuddin, V. Mandailina, and Y. S. Anwar, "Pengembangan Software Matematika SMP/MTs Berbasis Solutif Menggunakan Borland Delphi". Beta Jurnal, Vol. 8, No. 2, 2015, pp. 183-192.

[9] Syaharuddin, Habib, R., Vera M., Lalu, S., "Calculus Problem Solution And Simulation Using GUI Of Matlab", International Journal of Scientific & Technology Research, Vol. 6, No. 09, September 2017, pp. 275-279.

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