

CHAPTER III

METHODOLOGY

This chapter discusses the methodology and the research design utilized to accomplish the objectives of this study. The chapter starts with justifications to the chosen methodology, followed by a sketch of the research design. The research design comprises details of the chosen study population and sample, the design and creation of the data collection instruments and methods for data collection. The subsequent section explains the data source, how the data are treated and analyzed, and finally the validity and reliability of data.

The purpose of this study is to determine which Indonesian-based journals are most essential to a particular discipline i.e. agricultural science. In view of the above problem, this study intends to address the following research objectives:

- a. To assess the quality of Indonesian agricultural journals based on bibliometrics approach;
- b. To determine how Indonesia-based agricultural science researchers assign and calibrate trustworthiness to the journals they use;
- c. To determine how Indonesia-based agricultural science researchers assess the usability of the journals they read;
- d. To produce an internal ranking of the Indonesian agricultural journals based on (a), (b) and (c);
- e. To compare and contrast the internal ranking of Indonesian agricultural journals based on (a), (b) and (c) using gap analysis.

In order to address the research objectives, five research questions were posed.

- a. What is the quality of Indonesian agricultural journals based on productivity and impact indicator?
- b. To what extent do Indonesia-based researchers trust the agricultural science journals that they use?;
- c. To what extent do Indonesia-based researchers assess the usability of the agricultural science journals that they read?;
- d. What is the internal ranking of the Indonesian agricultural journals based on quality, trust and usability indicators?;
- e. How does the internal ranking differ based on quality, trust and usability indicators?.

A review of research methodology literature about empirical studies in scientific journals assessment and theoretical research assists in choosing the best approach and conceptual model used in this study.

3.1. Conceptual Model of the Study

In order to identify the relevant indicators for journal quality, trust and usability to develop the conceptual model for this study, a wide array of research methods can be used. Among them are for instance the realizations of case studies (Battleson et al. 2001 and Gossen et al., 2013), focus group interviews (Lim & Hew, 2014 and Stevenson and Nilsson, 2012), structured interviews (Gal and Prigat, 2005 and Harding, 2013), questionnaire, bibliometrics and citation analysis (Alkhatabi, 2011, Lee, 2010; Chung-Chi et al., 2010; Bharosa. 2011; Rhebergen et al., 2011; I-Chiu et al., 2012; Lei et. al., 2014; Papavasiliou et. al., 2013; and Zainab et. al., 2012), as well as the analysis of

relevant literature. This research has developed the conceptual model through analysis of relevant literature as has been described in Chapter Two of this thesis.

The researcher collected the attributes of quality, trust and usability from various forms of publication, covering paper-based literature such as scientific journals, monographs, conference proceedings, bulletins, and newsletters on scholarly communication and journal studies, to digital literature such as CD-ROMs, electronic journals, online databases and websites. From the obtained articles, identification of the attributes related to journal quality, trust and usability were carefully identified. The analysis of the literature resulted in the following:

- a. Four (4) attributes for journal quality: namely Impact Factor, Type of Cited Publication; Year Cited and self-citation.
- b. Eighteen (18) attributes for journal trust: namely Impartial Preview, Recognition, Confidence, Accuracy, Correctness, Objectivity, Clarity, Conciseness, Ease of Understanding, Clarity of Measurement Unit, Currency, Relevance, All Necessary Value, Comprehensiveness; Adequacy, Coverage, Reliability and Overall Trust.
- c. Four (4) attributes for journal usability: namely Journal Reading, Obtaining Time, Articles Read, and Reading Style.

Figure 3.1 present the conceptual framework of the study on quality, trust and usability of IAARD journals. Two approaches for the data collection are used to explore the quality, trust and usability attributes through revealed preference study to gauge the quality of the journals; and stated preference study to gauge the trust and usability of the journals. These two approaches are described in Section 3.2.

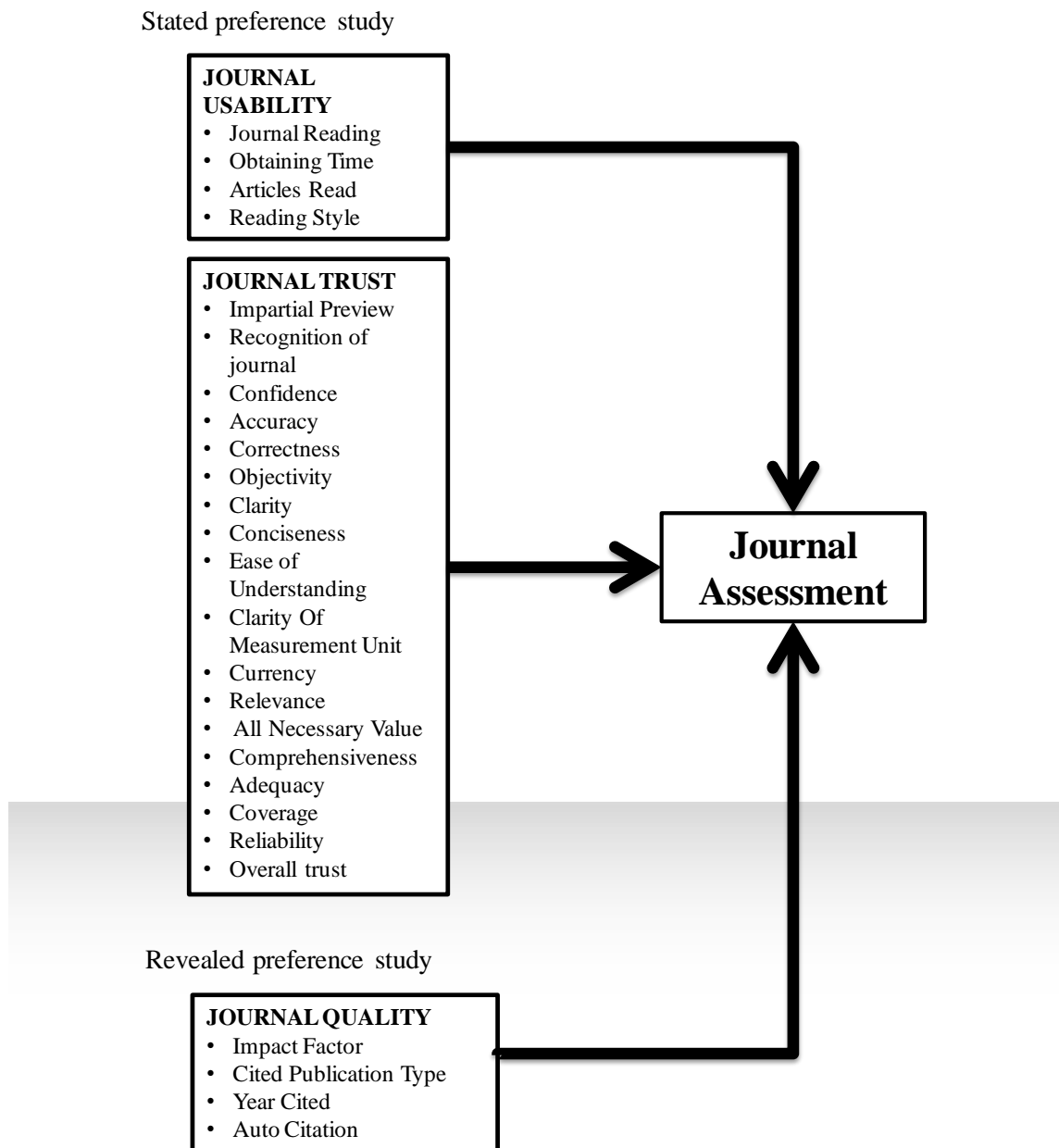


Figure 3.1. The Conceptual Model of Journal Quality, Trust and Usability Study.

3.2. Research Design

This study used a quantitative exploratory descriptive research design to identify, analyse and describe the quality, trust and usability of Indonesian-based agricultural journals. In the case of this study, exploratory examines the potential factors that

contribute to the trust and usability of the journals, using a survey; whereas descriptive provides an accurate account about the quality of the journals using bibliometrics approach. Uys and Basson (1991) identify the following characteristics of exploratory descriptive research design:

- a. It is a flexible research design that provides opportunity to examine all aspects of the problem being studied.
- b. It strives to develop new knowledge.
- c. The data may lead to suggestions of hypotheses for future studies.
- d. It is a field study in a natural setting, where the researcher does not manipulate the research environment.

The research has been designed as a combination of two studies: stated preference and revealed preference. Tahai and Meyer (1999) categorized two means by which journals are evaluated: through revealed preference studies and stated preference studies. Revealed preference studies, which Tahai and Meyer (1999) used in his study of management journals' influence and described as "more objective measure of a journal's quality and impact", rely upon citation analysis. A stated preference involves surveying members of a particular academic community in ranking journal on the basis of their own expert judgment (Tahai and Meyer 1999). Therefore, the journal quality study is the revealed preference study, involving bibliometrics and citation analysis of the nine journals sampled. Bibliometrics is a series of procedures that contribute to evaluating the scientific production of a scientist (or a group of scientists) on the basis of the number of publications, the prestige of the journals in which articles are published and citations to these publications (Institute de France Academie des Sciences, 2011). Jones (1999) said that one of established method for evaluating quality research journal is citation indices. Frandsen and Rousseau (2005) mentioned the impact

factor as quantities indicator for measuring journal quality. Other alternative journal quality metrics than IF include total citations, immediacy index, self cites, citable items, reviews (%), SJR, SNIP, EF, AI score, Not cited (%), SJR ranking, IF ranking, EF ranking, and AI ranking (Oosthuizen and Fenton, 2014)

The trust and usability study is the stated preference study. Trust of a journal can be evaluated from user's satisfaction perspective. Trust of a journal can be assessed by looking at the validity, credibility, and reliability of the provided information. Content analysis can be evaluated using Weber's classification of validity and reliability (Jones, 1999). Howkins (1999) and Haddow (2003) concerned on credibility as criteria to assess information quality. Fox et al. in Craigie et al. (2002) added that 86 percent of internet users concerned about reliability and 52 percent concerned about credibility of health information in the internet. Meanwhile, Impicciatore et al (1997) studied reliability and completeness of the websites to assess information quality on advice in managing fever of children at home.

Many researchers reported usability of a journal on their reports. King (2009) reported that scholars have read an average number of 22.6 scholarly articles per month and spent 132 hours per year reading scholarly articles. Seth (2006), Akinola (2009), King (2009), and Bhatti (2010) reported that scholars' purpose on reading journal is for supporting their research and expanding knowledge. However, how scholars read and use, cite and publish their research work has been discussed by many researchers. Weller (2001) pointed out that peer-review seems to be one pivotal criterion that many scientists employ in evaluating the legitimacy of publication venues. Tenopir (2003) indicated that peer-reviewed journals are more accepted and used by scholars because they are free of cost and accessible (Tenopir 2003). Rusch-Feja and Siebeky (1999)

found that physicists, biologists and biomedical scientists use electronic journals more than other resource types. Tenopir et al. (2009) found that electronic articles account for the majority of readings among scientists, though most readings are still printed on paper for final reading. Scientists reported reading a higher proportion of older articles from a wider range of journal titles, and more articles from library electronic collections.

The trust and usability study took place in some empirical phases: reviewing the literature, developing a list of potential trust and usability indicators factors from the literature, sending the list of potential success factors to a panel of experts for validation, developing a list of trust and usability statements; developing a survey questionnaire, distribute the questionnaire to three journal editors cum authors for face validity, conducting pilot test for reliability, and finally administering the actual survey instrument (Appendix A). Nisonger and Davis (2005) used this approach which they termed as “perception study” to capture the collective opinion of deans of ALA-accredited library schools and the ARL library directors on the prestige of 71 LIS journals, by ranking the journals on an ordinal scale of 1 to 5. Nixon (2013) also used this approach which she termed as “expert opinion survey” to create a tiered list of 217 LIS journal titles from UlrichsWeb to guide librarians who wish to make a serious contribution in scholarly publishing. The data collection procedures are discussed in detail in Section 3.6.

3.3. Population and Sample

IAARD was chosen as the case setting because the agency has been appointed by the government of the Republic of Indonesia to be responsible at the national level of the country’s agricultural research and development. IAARD had also proven the worthy of

its contribution to agricultural development in Indonesia. IAARD is a huge research agency in Indonesia which conducts research and is supported by the availability of strong competency of human resources, structures, infrastructures, and budget. IAARD publications are the leading media communication used for IAARD research findings dissemination particularly within IAARD researchers and other scholars. Accreditation on IAARD journals conducted by Indonesian Institute of Science awarded A to C scores for several IAARD publications (Pusat Dokumentasi dan Informasi Ilmiah (PDII-LIPI), 2012).

The research population for the revealed preference study comprised all researchers who are affiliated to IAARD who specify the following eligibility criteria: (a) their names are listed in the IAARD website, in their capacity as a researcher and author; (b) they have published at least one article from any of the nine IAARD journals. When selecting samples for the study, the research considered two aspects: representativeness for the study and generalizability for the survey.

Systematic random sampling was applied for selecting the sample researchers. A list of 1917 researchers at four levels was obtained from the website: comprising 290 Senior Researchers, 722 Intermediate Researchers, 533 junior researchers, and 372 First Level Researchers (*Badan Penelitian dan Pengembangan Pertanian*, 2002). The ratio of each level of researchers was then applied as a formula to determine the targeted researchers. Researcher number 3 of each researcher level was picked up as the first group of sample (i.e. four samples). The next researcher was selected by dividing number of total researchers in each researcher level with the desired number of selected sample. The dividing results were applied as interval and were applied on the list of sample. Finally, name of the selected researchers were used for the sample of the survey. Four hundred

and ninety three researchers (493) were selected as samples, comprising 72 Senior Researchers, 187 Intermediate Researchers, 139 Junior Researchers, and 95 First Level Researchers. The similar method has applied for researcher from Gadjah Mada University (Mardiastuti, 2011) who studied evaluation of public services quality on reference unit of Gadjah mada University Library. Randomly, additional 46 researchers had been selected from the university. A total of 229 researchers affiliated to IAARD Institutions and Agricultural related faculties of Gadjah Mada University, Indonesia responded to the survey. The response rate is a low 42.49%.

3.4 Research Instrument

Data on journal trust and usability through the stated preference study was administered through a survey instrument i.e. a questionnaire (see appendix A) to IAARD Centers and institutes and selected agricultural related faculties of Gadjah Mada University which were the affiliation organization of the researchers. The officers then sent the instrument to the targeted researchers and collected the returned instrument. From 539 of total instruments that have been sent to targeted researchers, 229 (42.49%) of the instruments were returned.

The survey instrument consisted of three sections: (a) guidelines for the respondents, (b) respondents' demographic information; (c) respondents' responses on their perceived trust and usability of the sampled journals. Demographic information includes gender, affiliation, level of functional job title, field of research, and English Language mastery level (Poor/Good/Excellent). Respondents respond to the following questions regarding journal trust where they need to give a score to each statement using a five-point Likert scale: Very Poor, Bad, Fair, Good, and Excellent.

- Do you think that these journals are impartial preview?
- How many percent of the authors of these journals do you recognize?
- Do you trust the information provided by these journals?
- Please give a score to the accuracy of these journals
- Please give a score to the correctness of these journals content.
- Please give a score to the information objectivity of these journals.
- Please give a score to the clarity of these journals content.
- Please give a score to the conciseness of these journals content.
- Please give a score to the ease of understanding of these journals content.
- Please give a score to the clarity of measurement unit of these journals content.
- Please give a score to the currency of the journal.
- Please give a score to the relevance of journals content.
- Please give a score to the journals content including all necessary value.
- Please give a score to that the journals providing comprehend information.
- Please give a score to the adequacy of the journals content.
- Please give a score to the coverage of the information of the journals content.
- Please give a score to the reliability level of the journals content; and
- In general, please give a score to the overall level of trust of the journal's content
- Respondents also respond to the following questions regarding journal usability based on the response option given:
 - Which is the IAARD publication in the list below that you use to read?
 - How long do you get the journal after it has been published?
 - How many articles of these publications do you read?
 - How do you read the article/s of this/these journal
 - What is the purpose you read this/these journal/s?

3.5 Data Source

Data source for the stated preference study using bibliometric approach sampled nine (9) IAARD scientific journals published by IAARD centers. These journals were selected based on their characteristics as primary or review scientific journal that played important roles as the main scholarly communication platform for researchers within IAARD, instead of researchers outside of IAARD. The content of IAARD journal articles is mainly on agricultural innovations and these journals became input for agricultural development in Indonesia. These journals are also used as scientific reference sources by other researchers in the country and the South-east Asian region.

The journals are:

- a. Indonesian Journal of Agricultural Science (ISSN No: 1411-982X),
- b. *Jurnal Enjiniring Pertanian* (Inonesian Jurnal of Agricultural Engineering, ISSN No.: 1693-2900),
- c. *Jurnal Hortikultura* (Indonesian Journal of Horticulture, ISSN No.: 0853-7097),
- d. *Jurnal Penelitiandan Pengembangan Pertanian* (Indonesian Agricultural Research and DevelopmentJournal, ISSN No.: 0216-4418),
- e. *Jurnal Ilmu Ternak dan Veteriner* (Indonesian Journal of Animal Science and Veterinary, ISSN No. : 0853-7380),
- f. *Penelitian Pertanian Tanaman Pangan* (Indonesian Journal Food Crops Research, ISSN No. :0216-9959),
- g. *Jurnal Tanah dan Iklim* (Indonesian Soil and Climate Journal, ISSN No. : 1410-7244),
- h. *Jurnal Agro Ekonomi* (Indonesian Journal for Agro Economic, ISSN No.: 0216-9053),
- i. *Jurnal Penelitian Tanaman Industri* (Indonesian Estate Crops Research Journal, ISSN No. : 0853-8212).

For the bibliometrics approach, systematic random sampling was used for selecting the targeted articles of IAARD journals (Singarimbun and Effendi, 1995). Milat et al. (2011) used random sampling for determining the selected articles from public health research output. Yu-Wei and Mu-Hsuan (2012) used systematic sampling to select articles on the study of the evolution of interdisciplinary in Library and Information Science.

All available volumes and issues of journals these journal titles from 1995 to 2010 were collected. The numbers of articles in these nine journals were counted to get the total number of the journal articles. This total number was used to select the sample. In the beginning when the researcher embarked on this study, 50 articles were used as samples for each journal published during 1995 to 2005. The data source were then added and updated using the similar method, from the journal volumes and issues published from 2006 to 2010.

Determining the selected articles followed the procedures describe below:

- a. All the obtained articles of each journal title were sorted in the ascending order according to years, volume, and issue number. This means the oldest articles for each volume were placed in first row.
- b. The division of the total number of articles with 50 resulted intervals was used for articles selection;
- c. Article number three was listed as the first sample. The subsequent samples were chosen using the interval obtained from formula on item 2. The selection was carried out until the last article. This procedure resulted in 50 articles that would be used as samples. The number of the sample articles for 2006 to 2010 is similar as depicted in Table 3.1.

Table 3.1. Number of the articles in IAARD journals sampled in this study.

No.	IAARD Journal Titles	Total number of articles	Selected Articles	Available Articles
1	<i>Jurnal Tanah dan Iklim</i>	135	88	84
2	Indonesian Journal of Agricultural Science	129	115	103
3	<i>Jurnal Ilmu Ternak dan Veteriner</i>	595	68	67
4	<i>Jurnal Penelitian dan Pengembangan Pertanian</i>	308	63	60
5	<i>Jurnal Hortikultura</i>	740	92	91
6	<i>Jurnal Enjiniring Pertanian</i>	108	80	77
7	<i>Jurnal Agro Ekonomi</i>	140	70	68
8	<i>Jurnal Penelitian Tanaman Industri</i>	414	69	63
9	<i>Penelitian Pertanian Tanaman Pangan</i>	389	65	61
	Total	2,958	710	674

For each journal article, the following bibliographic and citation information were extracted and inputted in a Microsoft Excel spreadsheet to facilitate further analysis. Bibliographic information comprised journal title, article title, authors' name, authors' affiliation, year of publication; while citation information consisted of authors' name of the cited articles, year of publication of the cited articles, title of cited articles, and the source of articles (e.g. journal titles, monographic series, conference proceedings). This citation information was extracted from the list of references of each sampled article.

3.6 Data Collection Procedure

This study uses two means by which journals are evaluated: through revealed preference studies and stated preference studies. The following data collection techniques were used:

- a. Bibliometrics: the bibliographic information for each article that could reveal the characteristics of the journals were extracted and analyzed. The characteristics are associated with:

- **Author Name:** The list of author names presents the list of author who contributed to selected articles in IAARD publications. It has also informed the researcher, the most active author not only for the respective journals. To do so, the authors' names have been sorted in an ascending order to assure that the similar names of the author names would not written differently (checking for name disambiguation or variant names). Descending sorting was needed to apply on the frequency of author name to obtain the most active authors.
- **Number of Authors per Articles.** Number author per articles figure out how many person contribute in the planning, experiment and writing process. Number author per articles was counted as number of contributed author/s in single articles. It could be a single author or multiple authors. The obtained author number, and then have been counted in SPSS to obtain the frequency of the number author per article. Many bibliometricians studied the number author per articles such as those by Swarna et al. (2008) and Al-Qallaf (2009).
- **Author Affiliation.** Fagbola and Adejoro (2012) and Zainab et al. (2012) conducted research on affiliation of the authors. Similarly this research also evaluated the affiliation of the authors. Almost similar procedure to the author name analysis was done on author affiliation data. The result was used to determine the most active institutes on IAARD publications contribution.
- **Language Used in Publication.** To obtain the language use in IAARD journal publications, the language of the selected articles has been codified into number. One (1) is for *Bahasa Indonesia* and two (2) for English

language. Bibliometricians such as Bartol (2010) and Konur (2011) studied language used on articles.

- **Knowledge Fields.** Analysis on field of knowledge of IAARD research was based on AGRIS/CARIS Categorization Scheme published by FAO (Prince-Perciballi, 1998). This categorization scheme (see appendix B) was used to classify agricultural information.
- **Article Title.** Article's titles were the key to determine in which category the article will be classified. The author determined the subject of the articles, then determined whether the subject were within the scope of agriculture or not. If so, AGRIS/CARIS categorization scheme was applied to determine the field of knowledge of the articles. If not, it should be categorized as General Aspect of Agriculture. For the articles with two or more categories, determining category was focused by looking for main subject for primary category. The primary category has been used for determining field of knowledge. If it was difficult to determine the primary category, the category should go to general category.
- **Researched Commodities.** Commodities are object of agricultural research. Author explores articles titles of IAARD journals to reveal commodities. Sundari and Rufaidah (2009) and Sutardji (2011) studied commodities included in *Jurnal Penelitian Pertanian Tanaman Pangan* and in CARIS database respectively. The analysis began by picking up all commodities appeared in the article titles. This step gave a list of commodity. The next step has assured clean commodities names. Finally, the list was sorted in a descending order to get the information on the most researched commodities.

b. Citation analysis: the citation information for each article cited in the reference section of each citing article were extracted and analysed. The characteristics are associated with:

- **Cited Authors.** Exploring cited authors were carried out by using procedure similar to the procedure of exploring name of authors on analyzing bibliographic information section. Study on languages of cited articles, knowledge field of cited articles, and commodities of cited articles used similar procedures on the study of author name, languages, knowledge field, and commodities in analyzing bibliographic information.
- **Year of publication.** Sutardji (2011) and Ezema and Eze (2012) evaluated publication year of cited articles. Cited date revealed year of cited articles on IAARD journals. This will show currency of the cited articles. In concordance, revealing currency of cited articles will also enable to show the quality information of the journals. Procedure on determining cited date followed steps similarly to the procedure of determining number author per articles on articles analysis section. List of year publish of the journals was picked up from citation information table.
- **IAARD and Non-IAARD Publications.** This study showed whether the cited publications came from IAARD publication or others. Kumar and Kumar (2011) distinguished Indian and foreign journal as the resources of Journal of Oil Seed Research. This study started by focusing at the cited publishers list on the main table. From the selected list, the next step was determining whether the cited articles came from IAARD publication or not. Codification of the list into number one (1) for IAARD publication and number two (2) for Non-IAARD publication were carried out to facilitate statistical procedure.

- **Frequency of Cited Articles.** Frequency of the cited articles was studied to explore how many times certain articles have been cited in IAARD publications. Rethlefsen and Wallis (2007) and Khan and Yuh-Shan (2012) evaluated frequency of cited articles in their evaluative bibliometrics studies. The analysis begins with preparing titles list of the cited articles of the main table. The list then had been sorted in ascending order to place the similar articles in a group and to check mistyping of the similar articles.
- **Type of Cited Publication.** This study observed type of cited publications on IAARD journals. Sutardji (2011) and Kumar and Kumar (2011) investigated different resource's types of cited articles. Analyzing list of sources on the main tables will get the publication type of the cited journal. First, the sources on the list commonly cited in an agricultural science publication are coded into several types of publications as follow:
 - Bulletins: applied for all bulletins cited on the IAARD journals;
 - Dictionary: used for dictionary and encyclopedia cited in IAARD journal;
 - Dissertations: employed for all thesis and dissertation at the bachelors, masters, and doctoral degrees level;
 - Documents: used for any kind of administrative document included ministerial and presidential decrees;
 - Journals: applied for journals cited in the IAARD journals;
 - Manuals: applied for all instruction manual of an equipments used in researches reported in IAARD journals;
 - Maps: used for all types of maps;
 - Monographs: include monograph, textbook, and handbook;

- Newsletters: applied to news, letters, magazines, and other popular-scientific publication;
 - Papers: employed for all unpublished articles in seminars, workshops, congress, and other scientific meeting; articles published in a website, blog and other internet media other than online version of printed media;
 - Proceedings: applied for articles publish in a proceeding of a seminar, workshop, congress and other scientific meetings.
 - Reports: used for any kind of report of an institutions, projects, and official report of a certain research;
 - Software: included all software used in cited articles; and
 - Statistical Data: applied to any kind of statistical data released by statistics institutions or government bodies.
- **Self-citation.** Self-citation analysis enables to show that the authors cited their owned articles. Shahbodaghi¹ and Sajjadi (2010) and Kurmis and Kurmis (2010) investigated self-citation on their researches. To reveal citation analysis occurred in an article, the procedure started by listing author's names in the investigated articles and listing the author names of the cited articles on the list of references. The next steps were matching the similar author names of the two mentioned lists and counting the number of the similar names. The percentage of self-citation authors was formulated by dividing number of similar names in the list of cited articles with total number of cited articles. The obtained number then was multiplied by one hundred.
 - **Impact factor.** Thomson Reuters (2012b) define impact factor as 'measure of the frequency with which the "average article" in a journal has been cited

in a particular year or period'. Commonly researchers investigate 2 years impact factor (Sutardji, 2011 and Lokker et al., 2012). Impact factor also can be measured for 5 years which commonly named 5-year impact factor (Springer (nd) and Thomson Reuters (2012a). These institutes proposed formula for 5-years impact factor counting as dividing the number of citations in the JCR year by the total number of articles published in the five previous years.

The steps for counting 2010 15-years impact factor began with counting number of cited IAARD journals articles from 1995 to 2009 published in 2010, excluding self citation in the counting result. The next step is counting the number of articles published in IAARD journals from 2005 to 2009. Then apply the formula of 15-years impact factor above for the counting to derive the five-year impact in 2010.

c. Expert survey

The stated preference study uses expert survey as the data collection technique. A survey was applied to collect data. A pilot survey involving 27 IAARD researchers to gain insight on the signifiers of journal quality, trust and usability was conducted prior to the administration of the actual survey. The pilot study (detailed in Section 3.8) was conducted which helped detect and remedy a wide range of potential problems with the instrument. It also provided opportunity to make revisions on the instrument and data collection procedures to ensure that appropriate questions are being asked and the right data is being collected so that the data collection methods will work. Responses from the 27 respondents showed that the questionnaire was found reliable. Prior to the actual fieldwork, the questionnaire was refined and rephrased accordingly.

The actual study was conducted from 17 July 2006 to 30 September 2006. The statistical population is composed of researchers affiliated with IAARD institutions and listed in the IAARD website. Data collected were based on responses to the questionnaire. The questionnaire (Appendix A) was personally administered to 539 researchers based on systematic random sampling (see Section 3.3). Data collection ended after 3.5 months, and the sample volume of usable questionnaires reached 229. This volume of data, which returns 42.49% response rate, although low, will be enough for analysis. All 229 questionnaires from the institutional repository managers were found usable for analysis.

3.7 Treatment of Data and Statistical Analysis Procedure

After obtaining the responses from usable questionnaires, the data has to be summarized and then analyzed with statistical methods in quantitative research using the following procedures: First, descriptive statistics were computed for the understanding of demographic characteristics of respondents and attributes characteristics of journal quality, trust and usability. Summarizing information in away that highlights the important numerical features of the data is one of the goals of descriptive statistics, the most often used descriptive statistic is the frequency counts, percentage and mean. This research identifies a list of journal quality, trust and usability attributes using the mean value of each item statement (variable) and the standard deviation using the Statistical Products, Services and Solutions (SPSS) version 17.0 software, Data on returned instruments were codified to allow data analysis on SPSS.

Average indices value of the journal based on bibliometrics approach in the revealed preference study determines the quality of the journals. Determination of IAARD

journal ranking is associated with journal quality. The journal that is highly ranked denotes its quality, as vice versa.

The index value of the journals determined journal quality. Index value is counted as the weighted mean value of journal attributes. Weighted mean value of each IAARD journal attributes are counted using formula which was developed by mathematical curiosity and Madansky (2010) and Alexander (nd) below:

$$\mathbf{WMV} = \frac{\sum_{t=1}^n (\omega_i \cdot x_i)}{\sum_{t=1}^n (\omega_i)}$$

Where:

WMV= Weighted Mean Value

ω_i = allocated weighted value

x_i = observed value

The comparison between indicators resulted from revealed preference and stated preference study is conducted using gap analysis. Comparisons of two dimensions, namely, quality and trustworthiness, quality and usability, and trustworthiness and usability are applied to show which pair is similar. The estimation gap between each pair show high similarity if the gap value is low.

3.8 Validity And Reliability Of Instrument

To provide content validity, all the item statements in the survey instrument had been broadly studied and discussed in the literature review, as well as obtained from some informants who are authors and editorial members of scholarly journals in Malaysia. To provide face validity, the first draft of the questionnaire was reviewed by two journal editors (*Jurnal Ilmu Tanah dan Iklim*, and *Jurnal Hortikultura*) for comments. After

amending the questionnaire based on the journal editors' comments, the revised version was pilot-tested. It was to ensure that the entire items in the questionnaire were clearly understandable and presented in a proper manner. Ambiguous terms were revised after a discussion with the research supervisors.

The purpose of reliability analysis is to find those items that contribute to internal consistency and to eliminate those items that do not. To test the reliability of the instrument, the survey process and the questionnaire were field-tested. Twenty seven researchers from the Assessment Institute for Agricultural Technology Indonesia answered the survey questionnaire in the pilot study to identify the trust and usability of their journals - *Jurnal Ilmu Tanah dan Iklim*, and *Jurnal Hortikultura*. All responses were collected and the questionnaire was found reliable. Reliability tests were performed to find those items that contribute to internal consistency and to eliminate those items that do not. The reliability of the scale used in this survey was determined using Cronbach's alpha. The result showed that the Cronbach's Alpha of reliability test for the two journal, *Jurnal Ilmu Tanah dan Iklim*, and *Jurnal Hortikultura* achieved Cronbach's Alpha score between 0.840 and 0.927. This indicated that there were no difficulties of the researchers to comprehend the survey instrument

3.9 Summary of Chapter Three

This chapter discussed the research methodology and described the conceptual model, research design, population and sample, the data source, the data collection techniques and the survey instrument. It also presented a method of analyzing the data collected, as well as providing elements of this study that enhanced the research rigor.

The study uses two approaches for the data collection to determine the quality, trust and usability of nine Indonesian agricultural journals: bibliometrics for the revealed preference study to gauge the quality of the journals; and expert opinions sampling authors and researchers for the stated preference study to gauge the trust and usability of the journals.