CHAPTER II

REVIEW OF LITERATURE

The key element in the research process is the review of literature. The review of literature examines previous research studies and relates them to the proposed research. The literature review enables the researcher to find out whether his proposed research subject had been done in the past by other researchers, the status of the similar researches, and research redundancy if any. It also tells the researcher of the applied materials and methods used in their methodologies.

For this particular study, both conventional and electronic tools were used to obtain information related to the research subject. Catalogs were used to find information, particularly brochures and other information related to IAARD's management. Electronic database (Indonesiana database) and electronic version of ICALTD (Indonesian Center for Agricultural Library and Technology Dissemination) journals on ICLTD website were used to obtain information related to Indonesian Agricultural Research and Development. The OPAC, web sites, online database (Proquest, Science Direct, TEEAL, EBSCO, AGRIS, etc.) and search engines (Google, Yahoo, and IxQuick) were used to obtain information pertaining to publication quality, quality evaluation, citation analysis, and other topics related to this research. Keywords such as publication/journal quality, information quality, journal and information quality assessment, citation analysis, bibliographic analysis, bibliometric analysis, publications, journals and its combinations were used to obtain information related to the topic.

This review of literature is divided into two sections; a) publications, and b) the information quality of the publications. The publications section includes definitions

and roles, types and formats of publication, while the section on information quality discusses on concepts, benefits, and assessment of the quality of information.

2.1.   An Overview on Scientific Publications

Publication is believed to be an important media to disseminate research findings. However, other media channels such as TV programs, exhibitions, and other types of media are growing very rapidly now. Thus, discussion on publication related to definitions, roles, types, formats, and quality of publication are still relevant. This section will describe three (3) inherent characters of publication.

Research findings should be communicated to the users to allow them to understand the achievement of the research. Researchers may choose any media to communicate their research findings. It can be an old style of communication media such as printed media or a more advanced technology communication media such as offline and online electronic publication.

Soehardjan (1997) said that printed communication media was the main publication and had been used as the printed version of manuscript which was published in a certain media. In this context, publication plays the following important roles:

a.   reference in which other researchers can measure the validity of the research and able not to repeat similar research with the similar findings;

b.   Document of research findings which can be used to trace the previous research by using search facilities available in the library as printed or the electronic media (soehardjan, 1997);

c.   Media can review the authors with regards to the explanation given in journal articles;

d.   Primary source of information by social science faculty (meho and haas, 2001);

e.   Journal exchange between two publishers or more (feil, 2012 and *pusat perpustakaan dan penyebaran teknologi pertanian*, 2012);

f.   Loan and interlibrary loan services (macan and konjevic, 2011);

g.   Reflect the responsibilities of researchers in using public budget for their researches (rivai, 1997 and scanes, 2007).

Classification of publication is varied according to the perspective of the author. Soehardjan (1997) distinguished publication into two perspectives, namely primary and secondary publications. Libraries (2011) defined primary research article as a peer-reviewed articles which reports empirical research study of the authors. McKibbon et al. (2004) defined secondary journal as journal that systematically reviews specified journals, or an independent audit. Miguel (2008) mentioned that secondary paper is a duplicate and offers an excellent example of how this information might be conveyed. Meanwhile Soehardjan (1997) stated secondary publication as publication which the content were reviewed, commented, summarized, or bibliographic information. The types of secondary publication are review journal, bulletin, newsletter, bibliographic index, abstract, etc.

Other classifications of publication are scientific and non scientific (popular) publications. Scientific publications defined as literature that reports original empirical and theoretical work in the natural and social sciences and within a scientific field (Scientific publications, 2012). Scientific publications aimed to provide scientific information particularly to scientists and scholars. This publication is characterized by

the availability of scientific articles which the information validity had been tested by board of experts. The articles in the scientific journal also follow certain format determined by the editor. The publication format should be consistent for all issues to avoid confusions to the readers with every change of format. In contrast, popular publication is aimed to reach the general readers. It is characterized by language which is easy to understand.

2.2.   Quality, Trust and Usability of Scientific Publication

The next paragraphs will describe topics regarding concepts, benefits, and assessment of quality, trust and usability of scientific publication. The descriptions are as follow:

2. 2. 1.   Concepts of Scientific Publication Quality

The concept of scientific publication quality cannot be separated from the concept of content quality itself. In the aspect of quality, Reeves and Bednar in Leung (2007) described four main elements on the concept of quality namely; a) excellence, b) value, c) conformance to specifications, and d) meeting and/or exceeding expectations. There are various definitions of scientific publication quality depending on the perspectives and fields of the scholars. scientific publication quality include term fulfillment of certain requirements of information and user's satisfaction of provided information. In short, scientific publication quality is a requirement that must be fulfilled by a certain journal to achieve user's satisfaction. As for trust and usability of scientific publication quality, definitions of journal quality can be related to information of the journal's content.

Yung-Pin (1996) defined information quality as information that fits for use by information consumers. Almost similar with Yung-Pin (1996), English (1999, 2001) stated that information quality is consistently meeting knowledge worker and end customer expectation. Worthington (2001) defined information quality as the effort to fulfill user's request. He expanded the definition of information quality by including information production and information distribution quality. Information production quality is a total features and characteristics of information production that bears on its ability to meet stated or implied needs and expectation of the customer. It includes aspects of creating, updating, collecting, and storing of information. Different to information production quality, information distribution quality is talking about information distribution which includes aspects of extraction, manipulation, and presentation of information.

Meanwhile, Haddow (2003) defined information quality as the difference between an effective treatment and potential dangerous and/or harmful outcomes. Whereas, information quality refers as the quality of outputs of the information system produced - (DeLone and McLean in Gorla et al., 2010). Gorla et al. (2010) also added that the data quality is the heart of information quality and determines the information quality, hence, the poor data quality will produce poor information quality. Adding to that, Wen (2012) defined information quality of website's travel as the potentially measurable, and generally acceptable, surrogate for utility in travelers' decision making.

2. 2. 2. Benefits of Publication Quality

Publication quality is beneficial for the organization in ways; first, for the organization to thrive. The failure of 7,989 high school senior students in St. Paul, MN on Basic Standard Test could be a good example. The failure was due to a very low information

quality when misinformation occurred in giving order to change the questions of the test without following the order to change the answers (English, 2001). Gorla et al. (2010) stated that high information quality benefits the organization in providing better product, cost control and increasing organizational efficiency.

Second, information quality protects users from harmful information. Nowadays, medical information has spread out through the internet. Some information is helpful to maintain user's health, but some is endangering users with regards to life and death. The medical information in internet will harm the inexpert users regarding to its low quality of information which can be misled or even hoax. Eysenbach and Diepgen (1998) revealed that information quality is beneficial to prevent inexpert users from possible endangerment by stating that the most important is not harmful, even it should be completed with other criteria.

Third, organization's prestige can be assessed from information quality perspective. Authors will raise their organization prestige by publishing their articles in a prestigious journal. It is due to the better recognition of their scientific community to them and their organizations. Publishing articles in prestigious journal will also raise their organizations' rankings in the community. Cameron (1997) reported the use of citation analysis to measure ranking of entire academic departments. Katerattanakul and Han (2003) and Rousseau (2002) applied citation analysis to evaluate journals' rankings. Meanwhile, Eysenbach and Diepgen (1998) proposed collaboration of medically qualified internet users to rate medical websites in a standard format. Joung and Jee-Hae (2011) reported that improvement firm value in the market by increasing public information precision. The other researchers, Hyde in Wen (2012) found that

uncovering certain information on travel websites will dissatisfy customers and the customers will then shift to other websites.

Fourth, is evaluating people competencies. Garfield (1979) indicated the use of citation analysis to evaluate people either as individual or in small formal groups. Citation analysis showed its capability on selecting candidates who published articles in international journals as criteria selection. Publishing articles in the first rank international journal assures high information quality of their articles. The candidate who passed the evaluation then would receive grant from Soros Foundation in Russia (Garfield, 1998a, 1998b). In this case, citation analysis selected scientists from 20,000 applicants within 3 months. Wierzbicki and Reynolds (2002) also applied citation analysis in assessing research productivity of all staff in chemical pathology in United Kingdom. Newman and Tumbull in Rupp and McKinney (2002) found that career citations, total publication, and quality of publication are significant determinants of earning of tenure in the economic faculty. Hargens in Cameron (1997) mentioned that the direct utilization of citation data was used for hiring, promotion and salary decision in surveyed biochemistry and sociology department. Franceschet and Costantini (2011) performed a large-scale multi-disciplinary comparison of peer review and bibliometric indicators for the Italian research system.

Fifth, information quality shall be able to prevent conflict of interest in publication (Haddow, 2003). Accountability aspect of information will decrease with the evidence of drug advertising in the information. This is due to the conflict of interest which possibly occurs as an effect of collaboration between a drug company and the author of whom the same company supports for his work.

Sixth, information quality also assures the user to obtain continuous access into certain information. Eysenbach in Haddow (2003) introduced the term of "context deficit' which is related to information found on or missing from the web page and the occurrence of information when search engine take a user directly to a web page without first accessing introductory information. According to this term, information should be put in the web for a long period of time. Investigation on the internet resources showed that not all information provided in the internet will be found after a certain period of time. Davis and Cohen (2001) found that in 1996 and 1999, 53 and 16 percent of the bibliography of under graduate term papers of students in the College of Art and Science and College of Agriculture and Live Science, Cornel University were no longer found, respectively.

2.3. Assessment of Quality, Trust, and Usability of Journal

Implications of journal quality cannot be ignored. As we know, low journal quality can damage trust of an institution which had been built for a long period of time. To prevent the risks of low journal quality, an organization should evaluate their journal regularly. It is important not only to understand their journal quality status compared to other organizations, but also to assure its improvement (Yang et al., 2002 and Katerattanakul and Han, 2003). Auburn University Libraries (2012) stated that there are other reasons for assessing journal quality which include: a) limitation of libraries to subscribe to all journals and need to determine core journals to be purchased; b) scholars need to know which journals are best suited to their researches when they are deciding which journals to submit articles to; and 3) the need to evaluate and measure the quality and impact of faculty member/staff for promotion and tenure decisions. Ugaz (2012) mentioned that the use of journal evaluation is to create the Basic List of Veterinary Medical Serials.

Journal evaluation can be varied depending on the perspective and field of the evaluator. They can use any tool as there are no perfect tools that can be used to measure information quality. The tools should be combined together to achieve the valid measurement. Garfield (1998a) pointed that citation data and analysis should always be used in combination with other indicators.

Quality of journal cannot be separated from its content. When assessing information quality, evaluator should not distinguish types of publication (whether it is printed, database, electronic journal, or website) due to the information contents. The results of information quality assessment are not depending on what types of media have been used to package the information. Koehler et al. (2000) stated that "we find differences among the five journals we analyzed, but we also find that that most differences can be explained by variable other than their publication status or medium".

Auburn University libraries (2012) named seven methodologies to assess journal quality, namely, citation analysis, impact factor, prestige and reputation of journal, in-depth knowledge of the field and journals in the field, acceptance/rejection rate of the journal, indexing services covering the journal, and total circulation of the journal. Ali et al. (1996) proposed citation analysis, peer analysis, circulation and coverage in indexing/abstracting services for assessing quality of publication. Morris et al (2009) on the other hand proposed individual citation, institutional lists, peer surveys, citation studies, and derived lists of most significant publications. Rafols (2012) used mean score of the Association of Business Schools' (ABS) journal rankings and mean number of citations per publication to evaluate journal performance. Meanwhile, Cherkowski (2012) classified methodology on assessing journal quality into 2 classes, namely: a)

human assessment includes expert panels, peer reviews, and peer assessment and b) objective measure includes citation indices, acceptance rates, and downloads from websites or libraries. Two methodologies of the information quality evaluation tools which widely used for information quality evaluation will be described in the next paragraphs. Chan et al. (2013) stated that journal ranking can be assessed using survey-based and citation-based methods approaches. Leung (2014) proposed peer review for journal manuscript. While Tsai (2014) emphasized on the implementation of using surveys, impact factor, and h-index approaches to rank journals.

2.3.1. User Satisfaction Analysis for Assessing Trust and Usability of a Journal

Trust and usability of a journal can be evaluated from user's satisfaction perspective. In measuring web consumer's satisfaction, McKinney, Yoon, and Zahedi (2002) mentioned that satisfaction is based on the quality of the information to purchase the products. They stated that web information quality satisfaction had three antecedents namely: information quality expectation, information quality disconfirmation, and information quality perceived performance. The user satisfaction is measured and evaluated feedback and/or completed with an interview to obtain the comprehensive, missing, and doubtful data. This methodology was carried out by Doll, Weidong, and Torkzadeh (1994), Gendron and D'Onofrio (2001), McKinney, Yoon, and Zahedi (2002), Yang (2002), Craigie et al. (2002), Leung (2007), Lee (2010), Gorla et al. (2010), Chung-Chi et al. (2010), Alkhattabi at al. (2011), Cohen (2011), Rhebergen et al. (2011) and Yu-Wei and Mu-Hsuan (2012).

Gendron and D'Onofrio (2001) conducted a survey on data quality in the healthcare industry by examining Wang and Strong's data quality dimensions. This research was carried out on a population of health care executives which was divided into three sub-populations. They were health executives employed by pharmaceutical company, health

maintenance organization, and public health agency. Researcher applied stratified random sampling with job title used to segregate the sub- populations based on the management level. Survey instruments were used to investigate 15 out of 20 data quality dimensions used by Wang and Strong in Yang et al. (2002).

McKinney, Yoon, and Zahedi (2002) carried out research on measuring web customer satisfaction through expectation and disconfirmation approach. The research was separated into two phases namely construct validation and construct measurement. Construct validation started by creating instruments to measure the construct of information quality and system quality. A 42-items instrument plus one direct question were created and reviewed by 10 internet customers and experts. Two pilot tests were conducted, resulted in dropping and adding information quality dimension and system quality dimension. The twice-piloted instrument was used for data collection regarding information quality dimension and system quality dimension. Examination showed that there was no item order bias. In the second phase, three most important dimensions of information quality (reliability, understandability, and usefulness) and system quality (access, usability, and navigation) were used to measure the level of expectation, perceive-performance, disconfirmation, and satisfaction of web customers. The research was designed using 4x4 factorial designs.

Doll and Torkzadeh (1988) measured end-user computing satisfaction by conducting survey on end-user computing. This study was piloted to five firms, 40-item instrument was developed using a five point Likert scale. Validity of each item and criterion had been investigated. The pilot study resulted in 18-items instrument which then administered to 44 firms.

Investigation of end-users satisfaction was also conducted by Doll, Weidong, and Torkzadeh (1994). They investigated a confirmatory factor analysis of end-user computing satisfaction instrument by proposing four alternative models namely, first-order factor, 12 items form into five uncorrelated or orthogonal first-order factor, five first-order factor are correlated with each other, and five first-order factor and one second order factor. Relative or incremental fit indexes (such as ratio of chi-square to degree of freedom), normed fit index (NFI), and target coefficient were used to compare model reflecting the improvement in fit of one model over an alternative, while absolute indexes of goodness-of fit such as chi square, goodness of fit index (GFI), adjusted goodness of fit index (AGFI) and root mean square residual (RMSR) were used to evaluate individual model.

Yang et al. (2002) developed methodology for information quality assessment named (in full first) AIMQ. This methodology consists of three components: PSP/IQ model, IQA instrument, and IQ gap Analysis. To measure information quality, pilot test had been carried out to provide an initial assessment of the reliability of the item of the dimensions and to reduce number of the item per dimension. The 120-item instrument of 11-point scale was applied for 52 respondents consisted of information collectors, information consumers, and IS professionals from six companies. Cronbach alpha were applied to eliminate items that did not add to reliability of the scale and did not measure the similar construct. The data were then collected from 261 respondents of five organizations. Using 65-items instrument resulted from the pilot study, Cronbach alpha was used to construct reliability of the dimensions and correlation among dimensions.

Investigation of reliability of health information on the internet had been done by Craigie et al. (2002). Five specialist medical doctors were involved to assess

information contained in the newsgroup threads using 6 point scale. The research concluded that a low agreement when rating the postings from the newsgroup. Hence, it is important to test inter-rater reliability in research assessing the accuracy and quality of health-related information on the Internet. It was also important to consider the assumptions underlying a measure of reliability before using it.

Trust and usability 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.

Measurement of credibility and reliability can be carried out by assessing its dimension. Classification and nomenclature of the dimension are varied depending on the authors which were described in table 2.1.

Table 2.1. Summary on dimension of credibility and reliability for assessing information quality

No.	Attributes	Auhors
1	Accuracy/Precision	− Hawkins (1999), − Gendron and D'Onofrio (2001), − Wang and Strong in Yang et al. (2002), − Zmud in Yang et al. (2002), − Jarke and Vassiliou in Yang et al. (2002), − Dlone and McLean in Yang et al. (2002), − Goodhue in Yang et al. (2002), − Ballou and Pazer in Yang et al. (2002), − O'Reilly in Leung, (2007),

No.	Attributes	Auhors
		− Su at al. (2009), − Gorla et al. (2010), − Lee (2010), − Alkhatabi (2011), − Cohen (2011), − I-Chiu et al. (2012).
2	Accessibility/ System availability/ Connection	− Gendron and D'Onofrio (2001), − Croft and Peterson (2002), − Goodhue in Yang et al. (2002), − Wang and Strong in Yang et al. (2002), − Jarke and Vassiliou in Yang et al. (2002), − O'Reilly in Leung (2007), − Alkhatabi (2011) − Bharosa (2011)
3	Appearance/Design Format/ Arrangement/ Presentation/ Structure	− Wang and Strong in Yang et al. (2002), − Zmud in and Vassiliou in Yang et al. (2002), − Dlone and McLean in Yang et al. (2002); − Goodhue in Yang et al. (2002), − Lee, (2010), − Bharosa (2011).
4	Completeness/Appropriate amount/Sufficiency/Quantity/ Variety of data source.	− Gendron and D'Onofrio (2001), − Wang and Strong in Yang et al. (2002), − Zmud in Yang et al. (2002), − Dlone and McLean in Yang et al. (2002), − Gorla et al. (2010), − Alkhatabi (2011) − Lee (2010), − Bharosa (2011), − Rhebergen et al. (2011)
5	Author(s) identity and credential	− Hawkins (1999) − Croft and Peterson, (2002).
6	Believability/ Reputation	− Gendron and D'Onofrio (2001), − Wang and Strong in Yang et al. (2002), − Jarke and Vassiliou in Yang et al. (2002), − Alkhatabi (2011) − I-Chiu et al. (2012)
7	Understandability/Clarity/Readability/Interpretability/Language/Semantic/syntax/Easy to read/Writing	− Hawkins (1999), − Gendron and D'Onofrio (2001), − Croft and Peterson (2002), − Wang and Strong in Yang et al. (2002), − Alkhatabi (2011) − I-Chiu et al. (2012), − Chung-Chi et al. (2010
8	Credibility	Jarke and Vassiliou in Yang et al., 2002
9	Consistency	− Gendron and D'Onofrio (2001), − Jarke and Vassiliou in Yang et al., (2002), − Bharosa (2011)

No.	Attributes	Auhors
10	Correctness	− Wand and Wang in Yang et al. (2002), − Alkhatabi (2011) − Bharosa (2011) − Rhebergen et al. (2011)
11	Compatibility/Relevancy	− Hawkins (1999), − Gendron and D'Onofrio (2001), − O'Reilly in Leung (2007), − Gorla et al. (2010), − Alkhattabi at al. (2010), − Alkhatabi (2011) − Bharosa (2011), − Cohen (2011)
12	Concise	− Gendron and D'Onofrio (2001), − Wang and Strong in Lee et al. (2002), − Dlone and McLean in Lee et al. (2002), − Gorla et al. (2010), − Alkhattabi at al. (2010) − Alkhatabi (2011)
13	Content/Scope	− Hawkins (1999), − Dlone and McLean in Yang et al. (2002), − Chung-Chi et al. (2010) − Alkhatabi (2011)
14	Currency/Timelines of modification/Version control	− Hawkins (1999), − Croft and Peterson (2002), − Jarke and Vassiliou in Yang et al. (2002), − Dlone and McLean in Yang et al. (2002), − Goodhue in Yang et al. (2002), − O'Reilly in Leung (2007), − Lee (2010), − Bharosa (2011), − Cohen (2011)
15	Ease of use/Ease of operation	− Wang and Strong in Yang et al. (2002), − Goodhue in Yang et al. (2002), − Rhebergen et al. (2011)
16	Level of details	− Goodhue in Yang et al. (2002), − Cohen (2011), − Chang et al. (2012)
17	Importance/meaningfulness	− Dlone and McLean in Yang et al. (2002), − Wand and Wang in Yang et al. (2002)
18	Non-volatility/ Stability/Traceability/Locality	− Hawkins (1999); − Gendron and D'Onofrio (2001), − Jarke and Vassiliou in Yang et al. (2002), − Goodhue in Yang et al. (2002), − Alkhatabi (2011) − Chang et al. (2012)
19	Reliability	− Impiciatore et al. (1997), − Dlone and McLean in Yang et al. (2002), − Goodhue in Yang et al. (2002),

No.	Attributes	Auhors
		− Chung-Chi et al. (2010), − Cohen (2011), − Kun-Hsi and Ming-Fang, (2011)
20	Usefulness/Usage	− Jarke and Vassiliou in Yang et al. (2002), − Dlone and McLean in Yang et al. (2002), − Gorla et al. (2010), − Chung-Chi et al. (2010), − Cohen (2011), − I-Chiu et al. (2012), − Rhebergen et al. (2011)

2.3.2. Citation Analysis of Scientific Publications

Sengupta (1992) defined bibliometric as organization, classification, and quantitative evaluation of publication pattern of all macro and micro communications along with their authorships by mathematical and statistical calculus. Another researchers, Archambault and Gagné (2004) defined bibliometric as made up of methods for conducting quantitative analysis of science. Institute de France Academie des Sciences (2011) stated that bibliometric refers to 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.

The purpose of bibliometric is to shed light on the process of written communication and of the nature and cause the development of a descriptive means of counting and analyzing the various facet of written communication (Pritchard in Sangupta, 1992). Then, Nicholas and Ritchi in Sangupta, (1992) mentioned that the scope of bibliometric is to provide information about the structure of knowledge, and how it is communicated. Sangupta (1992) then stated that a major trusted area of bibliometric is citation analysis which is based on hypothesis that any act of earlier paper citing is always meaningful. According to Garfield (1972, 1979, 1998b), citation analysis can be used to:

a.	Determine optimum level that made up of both special and general collection;

b.	Determine maximum size of back file;

c.	Establish rational binding and retention schedule journal by journal rather than groups of journal;

d.	Provide solid basis for cost benefit analysis;

e.	Evaluate people either as individual or in small formal groups;

f.	Define the history of scientific development;

g.	Measure the activities and interaction of scientific specialties;

h.	Measure scientific activities;

i.	Judge scientific achievement, indicator of journal performance, and rate journal;

j.	Evaluate the implementation of science policy.

Chun et al. (1999) mentioned that citation analysis is a well-established procedure in academic scholarships for examining and evaluating the contribution, dissemination, and extend of knowledge exchange in a given field. It also allows researchers to study the relationships between different fields of study and to assess contribution of a given journal. Jones (1999) said that two main established methods for evaluating quality research journal are peer review and citation indices. While, Ormerod (1997) added that citation analysis and peer reviews have roles to play in the evaluation of research output. 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)

Several researchers conducted bibliometric analysis for different perspectives. Zainab et al. (2012) conducted bibliometric analysis of scholarly journals published in Malaysia. Franceschet and Costantini (2011) performed a large-scale multi-disciplinary comparison of peer review and bibliometric indicators for the Italian research system. Another researcher, Vanclay (2012) conducted bibliometric analysis of publication patterns of award-winning forest scientists and implications for the Australian ERA journal ranking. Meanwhile, Kumbhar (2012) conducted bibliometric analysis on Trends in Classification Literature: Analysis of Literature published during 2000 to 2009 in the LISA database.

Many researchers investigated bibliometric, scientometric, or informetric on the subject of agriculture. Research on fisheries and aquaculture conducted by researchers as follows: a) Azevedo at al. (2010) conducted research on Brazilian freshwater ichthyology, b) Konur (2011) evaluated the algae and bio-energy, and c) Ram (2011) studied on Artemisia annua. Relatively, researchers like Sutardji (2011) and Charrondière et al. (2012) conducted researches on Food Crops and Food Composition respectively. Other bibliometric studies on agriculture were conducted by Cohen et al. (2010) and Tobacco, Garg et al. (2010) who studied Genetic and Heredity, Fasae (2011) studied Agricultural Economics and Extension, Metz (2011) studied Landscape of Literatures, and Kumar and Kumar (2008) studied Oil Seed.

Researchers also paid attention on medicine and veterinary researches. Lokker et al. (2012) conducted research on clinical article. Arya (2012) and Ugaz (2012) bibliographic conducted research on veterinary medicine. Meanwhile, Ram (2010) studied herbal medicinal plant and Shahbodaghi and Sajjadi (2011) studied Iranian medical informatics.

Regarding citation analysis, Rousseau (1997) investigated Lotka function and self-citation to study the link between sites on the internet. Citation and cited of commercial law journals were evaluated by Ramsay and Stapledon (1998). Meanwhile, Yin (1998) measured percentage of e-references, percentage of articles having e-reference, e-reference per article, and percentage of articles having e-source pointers to evaluate impact of internet based electronic resource on formal scholarly communication in the area of library and information science. Researches on evaluated number of citation and self citation were carried out by Noyons et al. (1999), Rad (2012), and Kurmis and Kurmis (2010). Other researchers conducted citation analysis were Fagbola and Adejoro (2012) on Horticulture, (Khan and Yuh-Shan (2012) on environmental sciences, Hadimani and Rajgoli (2010) on applied agriculture engineering, and Ezema and Eze (2012) on animal health and production. Table 2.1 shows criteria of bibliographic analysis and citation analysis used for evaluating publication.

Table 2.2. Criteria used in Bibliographic and Citation Analysis Studies

NO.	AUTHOR	BIBLIOGRAPHIC ANALYSIS	CITATION ANALYSIS
1	Ferreira, et. al. (2014)	– . Evaluation of articles	– Most cited works – The most cited references – Co-citation network
2	Cañas-Guerrero, et. al. (2014)	– Weighted number of articles – Number of citations per article – Collaboration – Language – Research topic – Journal relationship	– Impact Factor
3	Lei, et. al. (2014)	– Publication issue, – Type of manuscript, – Corresponding author's name, – Country/region of corresponding author, – Funded research paper, – International collaboration – Manuscript acceptance rate, – Number of different types of manuscripts, – Percentage of funded research papers with excel software – Distribution of contributor's country,	– Total number of citations of the journalAverage cites of each manuscript has Received, – H-index, – Impact factors – Trends in changes over the past six – Half years – Patterns of 10 top-cited papers of the journal

NO.	AUTHOR	BIBLIOGRAPHIC ANALYSIS	CITATION ANALYSIS
		− International collaboration between authors from different countries/regions	
4	Joyce et. al. (2014)	− subject matter, − authorship, − article type, − institution, − country, − level of evidence − year of publication	−
5	Stoops (2014)	− number of publications, − number of authors per paper, − language used, − publication media − topic − field experiments	−
6	Papavasiliou et. al. (2013)	− participant criteria − outcome measures, − language, − time frame	− published outputs − type of published outputs − journal of publication; − journal subject (sub)fields; − authorship; − research activity vs. research productivity (per country) − research methodologies.
7	Canas-Guerrero et. al. (2013)	− number of publications, − international collaborations, − authors, − research centers, − year impact factor, − number of citations per article	−
8	Kennedy, et. al. (2013)	− publication year − publication type − country of origin − research theme. − Publications per million (PmP)	− impact factor
9	Zainab et. al. (2012)	− Total journals published − Trends of publications − Publishers − Publishers affiliation − Broad discipline/ fields of study − Number of issues published Publishing format	− Impact factor Immediacy index − SJR index − H index
10	Vanclay (2012)	--	− Number of contributions − Cites/year − Impact factor − AI − SNIP − H-index − Cited journals
11	Kumbhar (2012)	− Law of Scattering − Core Journals − Authorship pattern. − Trends in collaboration − List of authors	--
12	Khan and Yuh- Shan	--	− Cited articles

NO.	AUTHOR	BIBLIOGRAPHIC ANALYSIS	CITATION ANALYSIS
	(2012)		− Countries of top-cited articles − Distribution of top-cited articles − Productive institutions − Article life
13	Fagbola and Adejoro (2012)	− Author − Affiliations, − Number of citations, − Number of author(s),	Total of each cited work
14	Ezema and Eze (2012)	−	− Type of cited information sources − Timeliness of cited sources − Age distribution of cited − sources − Authorship pattern − Cited journals − Researched animal
15	Charrondière et al. 2012	− Number of food entries per Foods groups − Number of food entries per continent	−
16	Arya (2012)	− Year wise distribution of Papers − Productivity Pattern − No. Of authors per paper − Degree of collaboration	−
17	Sutardji (2011)	− Distribution of articles − Commodities − Subject category − Author collaboration − Authors − Author affiliation	− Type of cited information − Year of cited information − Impact factor
18	Kumar and Kumar (2011)	−	− Year wise distribution of citations − Number of citations per article − Types of documents cited and frequency of citations − Ranked list of periodicals of citations − Authorship pattern and collaboration coefficient of citations − Journals with number of citations − Geographical distribution of cited
19	Konur (2011)	− Author − Country − Document type − Institution name − Language − Publication year − Source title − Subject area	− Cited papers − Cited authors

Several researchers assessed information quality or journal quality using citation analysis. Journal Impact Factor is one of citation analysis study to assess journal quality. Since it emergence in 1955, Journal Impact Factor (JIF) has been used widely. Shuhua et al. (2010) studied effects of cooperation between Chinese scientific journals and international publishers on journals' impact factor. Beatty at al. (2012) compared journal impact factor and intellectual influence on Communication Monographs and Human Communication Research. Meanwhile, Mutz and Daniel (2012) using Journal Impact Factor for overcoming core problem in Skewed citation distributions and bias factors. Bar-Ilan (2010) used JIF for determining rankings of information and library science journals and Polit and Northam (2011) investigated impact factors in nursing journals.

Eventhough journal impact factor has been widely used, some researchers disagree with the utilization of journal impact factor as an assessment tool for assessing information, journal, or research quality. Khan and Yuh-Shan (2012) stated that "citation analysis provides a good tool to judge the research quality to a great extent but still it suffers from certain limitations that are to be addressed". Amin and Mabe (2000) said that impact factor, and citation measures are not direct measures of journal's quality and must be used with considerable care. Hennessey et al. and Brandt et al. in Khan and Yuh-Shan (2012), Harvey and Morris in Cherkowski (2012), Creagh (2011) and Rodrıguez-Ruiz (2009) criticized the utilization of citation analysis for information/journal quality assessment. Ramsden (2009) identified defects on impact factor as follows:

a. The IF of journals covering a broad area of science with a rapidly growing but ephemeral literature that tends to cite many articles will inevitably be higher than the IF of more specialised journals which articles may reach peak citation many years after their publications;

b. Review articles tend to be much more heavily cited than primary research articles and hence journals carrying some review articles, and especially journals exclusively devoted to them, will have high IF—it seems absurd to include them both in the same statistic; and

c. As a cursory check will quickly verify, the distribution of citations received by individual articles in a journal is so broad as to make the mean almost meaningless. Technical reports describing a new methodology and "data-rich" papers such as the articles reporting the human genome sequence tend to be very heavily cited.

Creagh (2011) presented the pro-contra of replacing peer review with journal ranking on evaluation of the Australian based researches. Australian researchers found limitations on citation analysis as described below:

a. Citations have been displayed without correlating the age factor,;

b. Citation only citing high impact journals;

c. Some very good papers may appear in smaller journals;

d. Citation do not take into account papers published outside the list;

e. More self-citations;

f. Favoring native language article;

g. Obliteration by incorporation;

h. Not weighted according to the influence of the journals; and

i. Cited more on fundamental research than applied research.

The critics on utilization of citation analysis increased the number of researchers who are in favour of utilizing this methodology. Creagh (2011) quoted Professor Margaret Sheil, CEO of the Australian Research Council who said "If you are a scientist and you see a unit that has 20 papers in Science and 10 papers in Nature, you do actually know a lot about the quality (of research being produced by that unit)". This quotation reflected the support of utilization of journal ranking by Australian Research Council. Hoeffel in Garfield (2006) stated, "… impact factor is not a perfect tool to measure the quality of articles but there is nothing better, so it has the advantage of it is already being in existence and is, therefore, a good technique for scientific evaluation. The use of impact factor as a measure of quality is widespread because it fits well with the opinion we have in each field of the best journals in our specialty".

We developed a conceptual model (see chapter 3) that describes relation of journal quality trust, and usability using bibliometrics and expert survey. Quality attributes consist of:

a. Type of Cited Publication which distinguished cited publication in the reference of an article into journal, proceeding, monograph, etc. Every type of publication has different weight. Information quality determined by number of a certain type of article cited in the reference and its weight. Ezema and Eze (2012), Sutardji (2011), and Kumar and Kumar (2011) conducted analysis on cited publication type;

b. Impact Factor counts the numbers of cited journals in a certain period of time. The impact factor calculates on a 5-year period of the cited journals to determimine the information quality of the journals. The higher the impact factor, the higher quality of the journal. Zainab et. al. (2012), Vanclay (2012), and Sutardji (2011) analyzed Impact Factor;

c.   Auto citation calculates on how many certain authors cited their own manuscripts. The more auto citation he made, the lower information quality of the journal. Noyons et al. (1999), Rad (2012), and Kurmis and Kurmis (2010) analyzed auto/self citation;

d.   Year Cited calculates the number of years cited of the articles. The recent the year cited, the better information quality of the journals. Several researchers such as Vanclay (2012), Sutardji (2011), and Kumar and Kumar (2011) analyzed Year Cited of journal/articles.

On the other hand, end user satisfaction through expert survey measures journal trust and usability using 5 point likert's scale. The attributes include:

a.   Confidence   assessing information quality of a journal by measuring user's perspective on how information in the journal is true. Alkhatabi (2011) and I-Chiu et al. (2012) analysed trust on asessing information quality;

b.   Currency assessing information quality of a journal by measuring user's perspective on how the journal provides only recent information. Researchers such as O'Reilly in Leung (2007), Bharosa (2011), and Cohen (2011) assessed currency for determining information quality;

c.   Objectivity assessing information quality of a journal by measuring user's perspective if the journal provides biased information;
Correctness assessing information quality of a journal by measuring user's perspective on how the journal provides information without any mistake. Alkhatabi (2011), Bharosa (2011), Rhebergen et al. (2011) asessed correctness on information quality determination;

d.   Reliability assessing information quality of a journal by measuring user's perspective on how the journal provides only reliable information. Chung-Chi et al.

(2010), Cohen (2011), Kun-Hsi and Ming-Fang, (2011) were researchers who assessed reliability for determining information quality;

e. Accuracy assessing information quality of a journal by measuring user's perspective on how the journal provides only precised information. Gorla et al. (2010), Lee (2010), Alkhatabi et al. (2011), Cohen (2011), and I-Chiu et al. (2012) asessed accuracy for information quality determination;

f. Relevance assessing information quality of a journal by measuring user's perspective on how the journal provides only relevant information to the topic. Gorla et al. (2010), Alkhattabi at al. (2010), Alkhatabi (2011), Bharosa (2011), and Cohen (2011) were the researchers who asessed relevancy for determining information quality;

g. Impartial Preview assessed whether one journal trend tends to give more benefits to one institution or not;

h. Recognition Author to assess whether author of the journal had published previous articles;

i. Clarity assessing journal quality by measuring user's perspective on how the articles have been well and clearly written. Life Science Network (2014);

j. Conciseness assessing information quality of a journal by measuring user's perspective on how the author writes the words and free of repetitions. Gorla et al. (2010), Alkhatabi, (2011) were the researchers who asessed conciseness for determining information quality;

k. Ease of Understanding assessing information quality of a journal by measuring user's perspective that reader can catch the messages on the manuscript easily. Wang and Strong in Yang et al. (2002), Goodhue in Yang et al. (2002), Rhebergen et al. (2011) used this parameter on their researches;

l. Clarity of Measurement unit assessing information quality of a journal by

measuring user's perspective where the measurement unit is written clearly without bias. Life Science Network (2014) mentioned it;

m. All Necessary Values, measure and assure that all values of a journal should be there. Researchers investigating this values included Gorla et al. (2010), Alkhatabi (2011), Lee (2010), Bharosa (2011), Rhebergen et al. (2011);

n. Adequacy means explanation in the manuscript fulfills its needs. There is no single question in the manuscript that cannot be answered. Gorla et al. (2010), Alkhatabi (2011), Lee (2010), Bharosa (2011), Rhebergen et al. (2011) investigated this parameter;

o. Coverage reflect how the statement and explanation in the manuscript have been written until the detailed level;

p. Overall trust means that in general, the respondent satisfied with the journal.

q. Comprehensiveness means all necessary explanation providen in the disscussion on the article.

r. Correctness means that respondent get correct information from the journal

s. Journal reading assesses journal read by respondent

t. obtaining time assesses time is consumed by respondents to get the journals

u. articles read assesses reading style of the respondents . Respondents reads all articles,only interesting articles; or only articles support my Research

2.4.   Summary of Chapter Two

Scientific publication has important roles not only in scientific activities but also for our daily activities. Journal is one type of scientific publication use for bridging communication between one and other scientists in information sharing regarding their researches. Scientists use journal with consideration of journal quality, and the high quality journal will provide them with valid and reliable information. Understanding

high cited journals, scientists in library and information fields developed many tools to assess journal quality. Human assessment includes expert panels, peer reviews, and peer assessment, and objective measure includes citation indices, acceptance rates, and downloads from websites or libraries are several methods to assess journal quality. This chapter described journal, journal quality, and assessment of journal quality.