

Gauging the Quality and Trustworthiness in the Citation Practices of Malaysian Academic Researchers

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The origin of this research is illuminated by CIBER's exploratory research on Trust in Scholarly Communications conducted in 2012-2013. This study's interest lies with Malaysian academic researchers both as producers and consumers and how they deal with the quality and trust consequences of the digital transition, especially, but not exclusively, the impact of social media and open access publishing on their scholarly communications. This paper reports on a survey on citation behaviour, part of a wider study of gauging quality and trustworthiness in scholarly communication in the emerging digital environment. It focuses on investigating what Malaysian researchers trust or find reliable to cite in their publications. In order to make the study results comparable, we adapted the same questionnaire that CIBER has developed and used in previous surveys. We used surveymonkey.com, a web-based questionnaire which has been widely used for surveys. The questionnaire went online on the 1 October 2014 and closed on the 30 December 2014. More than 400 respondents completed the questionnaire. The answers were analysed quantitatively and then grouped under descriptive headings of the

types of reasons for citation provided. Similar to CIBER's study, the motivations for citing were found to be complex and multi-faceted but, in nearly all cases, researchers do regard the authority and trustworthiness of the cited source as an important factor in choosing to cite it. Citing behaviour includes an acknowledgement of useful intellectual content, and this process cannot be separated from the researcher's position in networks of trusted social and research influence. The digital transition has provided tools to help maintain and develop these social networks and it has also made it easier for researchers to investigate the credentials of the sources of documents. Peer-reviewed journals still hold influential. Measures of establishing trust and authority do not seem to have changed profoundly in Malaysia. The digital environment may bring ease and convenience to scholarly communication, but it gives more pressure for scholarly communication on high quality platforms. Looking at the researchers' trust-related views, it is emphasised that academic librarians apply their understanding of scholarly communication towards delivering the right services to meet the needs of the academic community.

Keywords Citation behaviour; Scholarly communications; Trust; Authority; Information behaviour; Social media; Open access publishing

Introduction

This study constitutes the second phase of a major investigation into what is unquestionably the most important characteristic of scholarly communication, in terms of quality and trustworthiness. The origins of the current research lie in CIBER's Trust and Authority in Scholarly Communications in the Light of Digital Transition project conducted by University of Tennessee USA and CIBER Research Ltd UK (Tenopir et.al. 2013) for the Alfred P. Sloan Foundation. The investigation is being conducted world-wide in recognition of the universality, connectedness and, possible inequalities in scholarly communication and began in 2012 with two countries, USA and UK, which are at the centre of scholarly communication. It is now being conducted in China and India (Jamali et.al. 2014) in recognition of the universality, connectedness and, possible, inequalities in scholarly communication. We wish to follow this up, with an investigation of countries currently on the 'periphery' of the scholarly endeavor. In the current research we shall establish whether that has come about for Malaysia, a country currently on the 'periphery' of the scholarly endeavour.

The overall research project provides for an examination of the behaviours and attitudes of academic researchers as producers and consumers of scholarly information resources in the digital era in respect to how they determine authority and trustworthiness in the sources they use, cite, and publish in. The purpose of this paper is to ascertain what resources Malaysian scholars choose to cite in their publications. It determines how scholars from Malaysia characteristically behave in regard to quality and trustworthiness in scholarly research activities; determine whether they act differently in regard to sources and channels

that originate from the core countries and the peripheral countries. The study intends to address the following research objective i.e. to establish how Malaysian researchers assign and calibrate authority and trustworthiness to the sources and channels they choose to cite in their publications.

Literature Review

According to Charles (2006), citation shows how a piece of research arises out of, and is grounded in the current state of disciplinary knowledge and thus constitutes an overt manifestation of ongoing 'conversation of the discipline'. Charles, who studied the importance of phraseology in academic writing, adds that citation enables the writer to acknowledge or take issue with the contributions of other researchers, display knowledge of the field and to establish his/her own academic authority and credibility. In other words, citation analysis could prove an important tool for researchers and scholars of particular scholarly topics or controversies in their attempts to establish the origin and distribution of particular ideas and discoveries, and to trace major networks of influence, collaboration and dependence. Citation research is used as a valuable marker in gauging a researcher's merit or influence in his or her academic field. Accordingly, researchers will find information on citation analysis helpful as they explore the citation patterns available to them in their disciplines. This will enable them to make citations that fulfil the expected communicative purposes in their disciplines.

Bornmann and Daniel (2008) and Nicolaisen (2007) highlighted two main theoretical frameworks with contrasting perspectives on the relative role of intellectual content and the social and political power context in terms of what drives people to cite. The first is the normative theory of citing behaviour which Merton (1973) claimed that a citation is an acknowledgement of the intellectual influence of the cited work. As such it is generally appropriate to use citation counts as a method of evaluating research, as each citation can be

seen as an endorsement by one's peers. The alternative view is the social constructionist perspective by Gilbert (1977), which demotes the importance of intellectual content as a motivation for citing and emphasizes the importance of the social context in which researchers work. Researchers may cite others' work to create a certain impression or to try and persuade their peers of certain viewpoints. In this case, citing can be seen as a tool of rhetoric rather than a certain acknowledgement of intellectual value, because researchers sometimes cite others' work not because they think these works have made an important intellectual contribution, but because they think the citation will make their arguments (or writing) more convincing. Therefore, rather than simply indicating an acknowledgement of intellectual content, a citation should be seen as action strongly influenced by the social and power context of its author.

In terms of the value of citation counts, bibliometrics and citation analysis, as a tool for measuring the quality of research if the normative theory of citation is truthful, would seem broadly a fair evaluation system. This is clearly dependent on the assumption that reliable data was gathered and that disciplinary differences were taken into account (Garfield, 1986; Thornley et.al., 2011). If the social constructionist theory of citation is correct, then citation measures are not a fair evaluation system. Empirical studies which examined the evidence for and against these theories as discussed by Bornmann and Daniel (2008) suggest there is strong evidence that, in most cases, the normative theory is a better fit with the data. People tend to cite mainly because they are using and acknowledging the intellectual content of what they cite. This is also supported by Brooks' (1985) and Garfield's (1986) studies which show a correlation between high citation counts and other measures of esteem such as the Nobel Prize.

How scholars use and cite research works has been discussed in a few studies. Bornmann and Daniel (2008) who reviewed the citing

behaviour of scientists in the past 15 years, showed that what motivated scientists to cite and publish were not related to "acknowledging intellectual and cognitive debts to colleague scientists" (p.66) but also due to non-scientific factors. They concluded that, scientists' motivations to cite and not to cite show that authors have differing views as to the necessity for citations in their documents; and they do not cite all works that have influenced their own work.

Tenopir et.al. (2009) pointed out that many studies had demonstrated that faculty in the sciences tend to use more electronic journals or from e-prints than do humanists or those in the social sciences although Vakkari (2008) has shown that when normalising for availability, humanities faculty are no less inclined to use electronic journals. In another study to understand how economists cite the literature, Sharif and Mahmood (2004) used citation analysis and found that the highly-cited journals are mainly from the USA. Tenopir et.al. (2013) carried out the international survey to investigate how trustworthiness and quality can cause making decision on researchers reading, citing and publishing behaviour. According to their results the topic and title of the article was the most important reason that help user choose an article. Other factors were online accessibility, source of the article, author reputation and type of publication and author institution.

Overall, the studies on how scholars establish trust in reading, citing and publishing in the current digital environment are limited and only one study (Nicholas et. al 2014) exist in this area, covering USA and the UK. Jamali et.al. (2014) extended the study and identified factors which influence how academic scholars in different geographical regions establish trust in deciding to read, cite and publish. Their findings showed that scholars from developing countries such as India and China were motivated by external factors of article such as authority and publisher's reputation. However, the factors that are more important for scholars

from developed countries such as USA and UK are the citation practices and whether or not the source has been peer reviewed.

The recent study by Nicholas et.al. (2015) examined how trustworthiness is defined in digital environment in terms of scholarly reading, citing and publishing. Their study confirmed that peer review is still the trust worthiest characteristics for scholars' reading, citing and publishing. They revealed that scholars do not trust social media and they believe that it is not an appropriate tool for professional an academic interaction.

Our earlier findings on trust and authority (Abrizah et.al., 2014) of five focus groups conducted in three universities in Kuala Lumpur involving a total of 48 science and social science researchers cum authors reported that when talking about what Malaysian authors trust to cite, the channels identified are from indexed journals by global citation databases and journals subscribed by the library databases. In terms of the characteristics of scholarly resources, authors cite articles that have the characteristics similar to that they read: (a) current; (b) relevant; (c) written by credible authors; (d) peer-reviewed; (e) having credible reference list; and (f) published in reputable journals. Unlike reading, it appears that none of the participants indicated that they were likely to cite a resource that has its web presence or the version found on the open web. This shows that they were more likely to read, not cite, by ease of access factors.

Objectives and Method

The overall objective of the research is to examine the changing behaviours and attitudes of academic researchers in today's scholarly digital environment, as consumers of scholarly information resources. This paper specifically sought to establish how Malaysian researchers assign and calibrate authority and trustworthiness to the sources and channels they choose cite. That is, it is about academic researchers as both producers and consumers and how they deal with the trust and authority

consequences of the digital transition, especially in regard to changing digital behaviours, social media and open access publishing. The research questions are:

1. What are the citation characteristics of the authors' discipline in relation to their citation practices?
2. To what extent do the authors agree with the citation practices concerning the quality and trustworthiness of the sources they cite?

In order to make the study results comparable, we used the same questionnaire that CIBER (Tenopir et al. 2013) has developed and used in previous surveys, except that we added the following two statements in the questionnaire regarding citation behavior:

- Citing, if possible, only sources published in Malaysia.
- I cite journals that previously published articles from Malaysia.

An online survey tool, SurveyMonkey.com. was used to execute the survey by sending e-mail messages linking authors to the web-based questionnaire. The questionnaire went online for three months, in early October 2014, and closed in December 2014. During that time, a total of 514 responded to the survey, from a target audience of 2500, a 20.56% participation rate. The response rate is exceptionally good for an online survey as Gravetter and Forzano (2009) indicated a typical response rate for online survey is only about 18%. Although in total, 514 authors responded to the survey, different number of respondents completed the various parts of the survey questions, of which the number of responses reduced or degraded towards the end of the questionnaire, most probably because there were respondents who felt that the survey was too long to be completed. A total of 424 and 406 completed the questions related to the first and second research questions respectively.

In general, majority of respondents representing 60.10% are working at research-

intensive university, 30.95% are working at primarily teaching university/college, 4.09% are working at a government agency, 1.02% are working at a hospital or medical school, 1.79% are working at a research institute, 0.51% working at a commercial organization, 0.26% is self-employed while 1.28% responded others whom are PhD students and works at a private university. Majority of the respondents representing 72.12% are full-time faculty member, 23.53% are full-time researcher, 11.51% are post graduate students, 10.23% are part-time researcher followed by 1.28% are part-time faculty members.

In terms of research productivity, the participants were classified into three groups named "low producers (LP, 21.5%)", "moderate producers (MP, 46.5%)" and "heavy producers (HP, 32.0%)", according to the number of published papers in recent three years, i.e. "0-2", "3-10" and "more than 10" articles respectively. With regards to experiences in scholarly publishing, majority of the respondents 66.24% stated that they have never been a journal editor while 33.76% stated that they have been a journal editor. Majority of the respondents 57.80% stated that they had never been a member of the editorial board of a journal while 42.27% stated that they have been a member of the editorial board of a journal. Majority of the respondents 76.21% stated that they have reviewed articles for journals while 23.79% have never reviewed articles for journals before.

A total of 391 respondents specified their research fields in 27 categories and after reclassification of their research areas into broad ones, the social scientists comprised the majority of the survey respondents (38.1%), followed by physical scientists (32.8%), life scientists (14.1%) and humanists (6.6%).

In the process of data analysis, only the mean value of each statement is worthy to pay attention to and included all responses to each statement. Since the questionnaire adopts the method of 5 degrees scale, the values from 1 to

5 to the options from "strongly disagree" to "strongly agree", were assigned.

Findings

RQ 1. What are the citation characteristics of the authors' discipline in relation to their citation practices?

The first research question explores the citation characteristic of the researchers' discipline in relation to their citation practices; in other words, the respondents were asked if their citation practice is a characteristic of their research discipline. Table 1 presents the findings from 424 who completed the question. Findings indicate that the top five citation practices which are common across disciplines are citing: (a) the most recent source; (b) the most highly cited source; (c) articles written by reputable authors; (d) articles with high quality references; and (e) seminal information published on a topic. This shows that researchers are mostly concerned with external factors such as reputation of source and the authors. Researchers also reported cite decisions that are not related to quality of sources. Political issues involved in citation practices (Tenopir et.al. 2013) have been identified as characteristics, i.e. citing (a) papers mentioned by reviewers to increase chances of acceptance; (b) papers in the journal to which an article is submitted for publication to increase chances of acceptance; and (c) one's own work to improve one's citation ranking, such as h-index.

In regard to citing only journals subscribed by the library databases, most researchers agreed reliable sources through online database and from their institutional library holdings is a citation characteristic of their disciplines (Statement 10).

The following citation practices received relatively lower rank probably because these "publications" had not been reviewed: Citing non-peer reviewed sources written by reputable authors in the discipline; Citing sources disseminated with comments posted on a dedicated website (open peer review), and

Citing a pre-print which has not yet been accepted by a journal.

Citing, only sources published in developed countries or in Malaysia (Statement 16) also received a relatively lower rank and this show

Table 1

Citation characteristics (n=424)

that many researchers feel that citation practices based on regions are not a characteristic of their discipline. Researchers hardly cite sources published in developed countries and sources published in Malaysia

	Citation practices	E	VC	C	SC	NC	Mean Score
1	Citing the most recent source published on a topic.	29.25% 124	43.63% 185	20.52% 87	4.95% 21	1.65% 7	3.93
2	Citing the most highly cited information sources.	26.65% 113	37.97% 161	25.94% 110	6.84% 29	2.59% 11	3.79
3	Citing the articles written by reputable authors in the discipline.	25.94% 110	38.44% 163	26.65% 113	5.42% 23	3.54% 15	3.77
4	Citing articles with high quality references.	21.75% 92	38.30% 162	29.79% 126	6.38% 27	3.78% 16	3.66
5	Citing the seminal information source published on a topic.	16.08% 68	38.30% 162	33.57% 142	10.40% 44	1.65% 7	3.55
6	Citing the first information source published on a topic.	16.31% 69	38.77% 164	31.44% 133	10.87% 46	2.60% 11	3.54
7	Citing papers mentioned by reviewers to increase chances of acceptance.	19.58% 83	32.31% 137	29.25% 124	12.50% 53	6.37% 27	3.46
8	Citing papers in the journal to which an article is submitted for publication to increase chances of acceptance.	16.51% 70	33.73% 143	28.54% 121	12.97% 55	8.25% 35	3.37
9	Citing one's own work to improve one's citation ranking (e.g. H-Index).	13.92% 59	26.65% 113	29.95% 127	17.22% 73	12.26% 52	3.12
10	Citing only journals subscribed by the library databases.	8.51% 36	25.06% 106	31.68% 134	17.02% 72	17.73% 75	2.88
11	Citing non-peer reviewed sources (e.g.	5.42% 23	19.10% 81	31.37% 133	22.17% 94	21.93% 93	2.63

	personal correspondence, newspaper articles, blogs, tweets) written by reputable authors in the discipline.						
12	Citing the published version of record, but reading another version found on the open web.	5.42% 23	15.57% 66	32.08% 136	23.11% 98	23.82% 101	2.55
13	Citing, if possible, only sources published in developed countries.	5.42% 23	17.69% 75	25.47% 108	26.42% 112	25.00% 106	2.52
14	Citing sources disseminated with comments posted on a dedicated website (open peer review).	4.48% 19	17.22% 73	28.77% 122	24.76% 105	24.76% 105	2.51
15	Citing a pre-print which has not yet been accepted by a journal.	4.25% 18	14.86% 63	27.36% 116	25.71% 109	27.83% 118	2.41
16	Citing, if possible, only sources published in Malaysia.	5.19% 22	10.61% 45	24.29% 103	23.82% 101	36.08% 153	2.25

E (5) - Essential of my discipline; VC (4) – Very characteristics of my discipline; C (3)- Characteristics of my discipline; SC (2) - Somewhat characteristics of my discipline; NC91) – Not characteristics of my discipline

RQ 2. To what extent do the authors agree with the citation practices concerning the quality and trustworthiness of the sources they cite?

In terms of agreement of the quality and trustworthiness of the sources cited, 16 out of 17 statements receive a mean score of more than 3.0, i.e. the tendency towards agreement (Table 2). Findings detailed in Table 2 indicate that majority of authors do exercise caution with the selection of sources cited (Statement 2), and rigidity in citing an article, compared to reading it (Statement 4), to the extent than many agree that they “tend to check the originality of a paper for plagiarism using

Turnitin before making decision to cite it” (Statement 15).

Journal impact factor adds credibility to the authors for citing a source (Statement 5). In principle, Open Access is welcomed because it facilitates greater access and authors indicated Open access journals help them in making decision to cite articles related to their research (Statement 10). However, findings also indicate that many authors agree that citing a paper from an open access journal has nothing to do with quality (Statement 17). Therefore, the study suggests that citing a paper from an open access journal is a good idea only if the open access journal has a good impact factor, peer-reviewed (Statement 1) and published by reputable publishers (Statement 7). Unfortunately, many open access journals have a low impact factor because they accept too many papers of a low scientific quality that will be never cited.

Authors also agreed that they cite on the basis of personal trust to the authors of the cited articles (Statement 14). Political issues involved in citing also appear as majority of authors agree that the references they cite may ease the process article acceptance (Statement 6). Authors also agree that they have the tendency to cite articles published from Malaysia

(Statement 16), although our findings indicate that this practice is not a characteristic of their disciplines. Conference papers are perceived as less authoritative to be cited (Statement 13).

Authors agree that social media usage (e.g. downloads) and derived metrics (e.g. likes and mentions) are indicators of popularity, not credibility and quality.

Table 2

Agreement on the Quality and Trustworthiness of Sources Cited (n=406)

	Quality and trustworthiness of sources cited	Strongly agree	Agree	Slightly agree	Disagree	Strongly disagree	Mean Score
1	I have no problem citing an article published in an Open Access journal if it has been properly peer reviewed.	19.21% 78	58.37% 237	18.47% 75	3.20% 13	0.74% 3	3.92
2	I am very careful with the selection of sources I cite.	19.95% 81	54.19% 220	21.67% 88	3.20% 13	0.99% 4	3.88
3	I have the tendency to cite articles with the full-text available online.	22.17% 90	50.74% 206	19.95% 81	4.93% 20	2.22% 9	3.85
4	From a trust perspective I am more easy-going in what I read than what I cite.	16.01% 65	52.71% 214	23.65% 96	5.67% 23	1.97% 8	3.75
5	The journal Impact Factor is important for deciding what to cite.	17.24% 70	43.84% 178	26.85% 109	7.88% 32	4.19% 17	3.62
6	The references that I cite may ease the process of acceptance of my article.	14.53% 59	44.58% 181	32.27% 131	6.16% 25	2.46% 10	3.62
7	I prefer to cite articles published in an Open Access journal only if they are of a reputable publisher.	10.84% 44	50.00% 203	29.31% 119	7.88% 32	1.97% 8	3.59
8	Social media mentions/likes are indications of popularity only, not credibility.	13.05% 53	43.10% 175	33.25% 135	8.37% 34	2.22% 9	3.56
9	Social media mentions/likes are indications of popularity only, not quality.	12.07% 49	43.60% 177	33.99% 138	8.37% 34	1.97% 8	3.55
10	Open access journals help me in making decision to cite articles related to my research.	11.08% 45	45.81% 186	33.25% 135	7.39% 30	2.46% 10	3.55
11	Usage metrics are indications of popularity only, not credibility.	7.14% 29	42.61% 173	38.92% 158	9.11% 37	2.22% 9	3.43

12	Usage metrics are indications of popularity only, not quality.	7.14% 29	41.87% 170	38.92% 158	10.10% 41	1.97% 8	3.42
13	I only cite conference proceedings if there is no other alternative because the work there is still speculative, and, as such, a little unreliable.	8.13% 33	38.42% 156	32.51% 132	17.73% 72	3.20% 13	3.30
14	I tend to cite people I know because I trust them.	9.36% 38	35.47% 144	29.31% 119	21.18% 86	4.68% 19	3.23
15	I tend to check the originality of a paper for plagiarism using Turnitin before making decision to cite it.	10.59% 43	28.08% 114	30.30% 123	20.69% 84	10.34% 42	3.07
16	I cite journals that previously published articles from Malaysia.	6.65% 27	28.57% 116	38.42% 156	16.01% 65	10.34% 42	3.05
17	I do not cite articles published in Open Access journals because they are of low quality.	1.97% 8	15.02% 61	34.73% 141	34.98% 142	13.30% 54	2.57

Discussion and Conclusion

This study has shown views, perception and behaviours of authors in respect to scholarly channels and resource they trust to cite. The findings show that although technology has made it easier for researchers to access and use scholarly information, the criteria for modifying trust remains traditional among Malaysian scholars. Similar findings were found in Tenopir et.al. (2013) that confirmed "the methods in order to justify trustworthiness and quality in the digital age remain surprisingly traditional". However, the trust characteristics identified in their study of authors from developed countries are different from the results of the present study. Their criteria were mostly internal which relate to the quality of the content. Tenopir et.al. (2009) also stated that researchers continue to check the content for credible data and reading the abstract. The results of the current study showed that the criteria for Malaysian scholars are more external similar to China and India reported in Jamali et.al. (2014) which relate to reputation of author and source. For example, the scholars mentioned that they trust sources from databases subscribed by the library, yet the researchers are still concerned about the content by

checking the originality of the article using plagiarism detection software.

Peer review which was highlighted in previous studies by Tenopir et.al. (2015) and Nicholas et.al. (2015) as the most important factor for trust and authority, applied to Malaysian researchers only when it comes to evaluate open access journals.

Findings on motivation for citing in order to increase chances of acceptance in specific journal have not been discussed in previous research which might be interesting to be further investigated in future studies through focus groups and critical incident interviews.

The findings here are in line with the evidence of previous studies which do, in general, show that a citation to a work is normally an indicator that it is of a certain quality and has made some contribution. One of the most important conclusion this study derived at is that citation is more towards a socially constructed feature. The influence of a community of practice in which the writing takes place is evident. Therefore, writing citations is ideologically driven. In addition, citations are not free from the values and beliefs of those involved in producing and processing them. Journals were more heavily cited than other publications.

Journals known to have rigorous peer review processes were especially seen as objects of trust. The journal name could add credibility to the author. In making choices, people often started with abstract, then the methodology, then the major figures, and then they would read the entire article. Abstracts were very important tools to determine the article's reliability. Among the scholars, social media were unlikely to be cited. Open access articles typically came into the category of newer and therefore less established journal articles. Therefore, the study suggests that citing a paper from an open access journal is a good idea only if the open access journal has a high impact factor. Unfortunately, many open access journals have a low impact factor because they accept too many papers of a low scientific quality that will be never cited.

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