CHINESE PERCEPTIONS OF INFORMATION QUALITY ON AND OFF THE INTERNET: A VIEW FROM THE SECOND DECADE OF THE TWENTY-FIRST CENTURY

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Abstract

The number of people using the Internet in China is large and continuing to grow. Cultural and social factors may affect the way in which the Internet is used in China. This study reports the results of a survey examining perceptions of the quality of information from the Internet and information from traditional text sources among Chinese users of the Internet. Results show that users perceive differences in the believability, accuracy, objectivity, reputation, appropriate amount, interpretability, representational consistency, concise representation, and access security of Internet-based and traditional text sources of information. For all of these dimensions except for appropriate amount traditional text sources were rated higher than Internet-based sources of information.

Keywords: information quality, data quality, Chinese end users, China, Internet

INTRODUCTION

The number of people using the Internet in China is large and continuing to grow (CNNIC, 2013; Lu, Fu, Zhang, Ma, and Lee, 2002). This group of end users provides an interesting opportunity to study the quality of information accessed through the Internet and to increase our understanding of the perceptions of these end users. Given differences in national culture and policy the views of these end users may differ from those of users in other countries such as the United States (Yang, 2007).

The results of a survey of Chinese users of the Internet and traditional text sources of information such as books, magazines, journals, and newspapers are reported here. A comparison of differences in user perceptions across fifteen dimensions of information quality is reported. What follows is a review of the literature on the dimensions of information quality and Internet use in China, the research propositions, a discussion of the survey methodology, and a presentation of the findings of the study.

LITERATURE REVIEW

The literature review describes prior research on the use of the Internet in China, issues of information quality and the Internet generally, and the dimensions of information quality as applied in this study.

Chinese End Users and the Internet

The year 1987 marked the first use of the Internet to send and receive email in China (Lu et al., 2002). Internet use in China increased rapidly from that time, and as of June 2013 it is estimated that there are 591 million users of the Internet in China (CNNIC, 2013). It is generally recognized that the study of Chinese Internet users is important because of the unique social, cultural, and political factors surrounding use of the Internet in China and because of the unique history of the deployment of the Internet in China (Kluver and Yang, 2005). These factors and history are likely to affect users' attitudes, and consequently their perceptions of the information quality of information from a variety of sources may be different than those of users in other parts of the world (Li and Kirkup, 2007; Yang, 2007).

Kluver and Yang (2005) call for the study of Chinese Internet users in order to understand cultural and social factors that may affect the way in which the Internet is used in China. These factors may influence user attitudes about the use of the Internet (Li and Kirkup, 2007; Yang, 2007). A profile of the typical user of the Internet in China suggests that the majority of users are relatively young, unmarried, male, well educated, and highly compensated (Guo, 2005; Guo, 2007). The typical user of the Internet in China has also been found to be interested in using online resources for the purposes of entertainment, acquiring information, and interpersonal communication (Zhu and Wang, 2005; Fang and Yen, 2006). Chinese students have been found to use computers more for the purpose of entertainment and less for the purpose of education compared to users in the United Kingdom (Li and Kirkup, 2007). Recent trends suggest that this may be changing. An increase in search engine use from 43 percent of users in 2003 to 79 percent of users in 2007 has been found suggesting that Internet users in China are increasingly using the Internet as an information and study tool (Guo, 2007). Also, a study of pregnant women in China shows that the vast majority (91.9 percent) of the respondents have access to the Internet and that the majority of those with access use the Internet to retrieve pregnancy-related information (Gao, Larsso, and Luo, 2013).

The Internet is widely used in China for purposes of economic and civil development. At the same time, national policy has taken a more conservative approach to restricting access to controversial information compared to the approach taken in some other countries (Martinsons, Ng, Wong, and Yuen, 2005; Wang, 2002; Yang, 2007; Zittrain and Edelman, 2003). In contrast to governmental control, there is no specific law to protect the right of privacy in China. However, there are privacy

protections specified in the right of reputation in civil law (Wu, Lau, Atkin, and Lin, 2011).

These social and political factors suggest that Chinese users of the Internet may have perceptions of the quality of various information sources that are different than those of users in other societies. For example, in addition to richness and high speed, they value the accuracy and authority of information (Dong, 2003). Chinese users of the Internet also believe that information available through the Internet tends to be general, commercial, static, and unreliable (Lu et al., 2002; Fang and Yen, 2006). They rate interaction, response time, and design appeal more poorly than users in the United States and trust Internet-based information more than users in the United States (Loiacono and Lin, 2003). However, a decline of trust in the reliability of online content from 52 percent in 2003 to 26 percent in 2008 was found by Fallows (2008). Even so, Chinese Internet users trust government websites more than other types of websites. Furthermore, 85 percent of Chinese users of the Internet believe that the government should manage or control the Internet (Guo, 2007).

Issues of Information Quality and the Internet

Information quality problems associated with material published on the Internet have been recognized for many years (Clausen, 1996; Keltner, 1998; Saha, Nath, and Salehi-Sangari, 2012). These problems can affect organizational outcomes (Fuld, 1998; Gelle and Karhu, 2003; Madnick, Wang, Lee, and Zhu, 2009) as well as social and economic development (Khovanova-Rubicondo, 2011). The absence of editorial and peer review processes (Cappiello, Daniel, Matera, and Pautasso, 2010; Kane, 2011; Kargar, 2011; Pack, 1999; Stvilia, Mon, and Yi, 2008; Shen, Cheung, and Lee, 2012; Yaari, Baruchson-Arbib, and Bar-Ilan, 2011) and the speed with which information can be published on the Internet (Notess, 2011) tend to magnify these problems.

Users have been found to recognize differences in Internet-based sources of information and traditional text sources of information such as books, magazines, journals and newspapers in a number of studies. For example, Rieh and Belkin (1998) found that users find the information on the Internet to be less authoritative and credible than other types of information systems. End users in the United States, China, and Mexico have been found to perceive Internet-based sources of information and traditional text sources of information differently along a number of dimensions of information quality (Klein, 2001; Klein, Guo, and Zhou, 2011a; Klein Valero, and Guo, 2011b).

What is Information Quality?

Information quality is critical to the success of information systems (DeLone and McLean, 1992; 2002; 2003; Kuo and Lee, 2009; Seddon, 1997) and organizations (Al-Hakim, 2004; English, 2005; Eppler, 2006; Redman, 1995).

The research reported here builds on prior studies that have developed frameworks of the dimensions of information quality. A good deal of prior research on information quality has sought to articulate the dimensions of information quality (Arazy and Kopak, 2011; Davis and Olson, 1985; Fox, Levitin, and Redman, 1993; Helfert and Foley, 2009; Huh, Keller, Redman, and Watkins, 1990). More recently information quality frameworks have been developed for specific domains such as social networking (Schaal, Smyth, Mueller, and MacLean, 2012), the evaluation of health information (McKemmish, Manaszewicz, Burstein, and Fisher, 2009; Stvilia, Mon, and Yi, 2009), and the assessment of e-learning systems (Alkhattabi, Neagu, and Cullen, 2010).

The framework used in this study articulates fifteen dimensions of information quality, is based on the views of data consumers, and was developed and validated using a multi-step research approach (Huang, Lee, and Wang, 1999; Lee, Strong, Kahn, and Wang, 2002; Pipino, Lee, Wang, 2002; Strong, Lee, and Wang, 1997; Wang and Strong, 1996). The fifteen dimensions of information quality included in the framework along with the measures or data attributes for each dimension are given in Appendix A (Wang and Strong, 1996).

This framework has been widely applied to the assessment of information quality (e.g., Baskarada, 2010; Katerattanakul and Siau, 2008; Klein, 2001; Klein and Callahan, 2007; Lee et al., 2002; Michnik and Lo, 2007; Pipino et al., 2002). Prior studies have used the framework to assess information quality among Chinese (Klein et al., 2011a) and Mexican (Klein et al., 2011b) end users. This study updates work on Chinese end users' perceptions of information quality because of the rapid change in cultural, social, and political factors associated with use of the Internet in China in recent years (CNNIC, 2013).

RESEARCH PROPOSITIONS

The survey used in this study is based on Wang and Strong's (1996) fifteen dimensions of information quality. The study examines differences between users' perceptions of the information quality of Internet and traditional text sources of information. A comprehensive review of the research literature on information quality provided no basis for predicting that Internet sources would be perceived as better along any of the fifteen dimensions of information quality or vice versa. Consequently, the fifteen propositions given below are tested using the data collected in the study.

Proposition 1: There are no differences between perceptions of the **believability** of information from the Internet and of information from traditional text sources among Chinese users of the Internet.

Proposition 2: There are no differences between perceptions of the **accuracy** of information from the Internet and of information from traditional text sources among Chinese users of the Internet.

Proposition 3: There are no differences between perceptions of the **objectivity** of information from the Internet and of information from traditional text sources among Chinese users of the Internet.

Proposition 4: There are no differences between perceptions of the **completeness** of information from the Internet and of information from traditional text sources among Chinese users of the Internet.

Proposition 5: There are no differences between perceptions of the **reputation** of information from the Internet and of information from traditional text sources among Chinese users of the Internet.

Proposition 6: There are no differences between perceptions of the **value added** by information from the Internet and by information from traditional text sources among Chinese users of the Internet.

Proposition 7: There are no differences between perceptions of the **relevancy** of information from the Internet and of information from traditional text sources among Chinese users of the Internet.

Proposition 8: There are no differences between perceptions of the **timeliness** of information from the Internet and of information from traditional text sources among Chinese users of the Internet.

Proposition 9: There are no differences between perceptions of the **appropriateness of the amount** of information from the Internet and of information from traditional text sources among Chinese users of the Internet.

Proposition 10: There are no differences between perceptions of the **interpretabilit**y of information from the Internet and of information from traditional text sources among Chinese users of the Internet.

Proposition 11: There are no differences between perceptions of the **ease of understanding** of information from the Internet and of information from traditional text sources among Chinese users of the Internet.

Proposition 12: There are no differences between perceptions of the **representational consistency** of information from the Internet and of information from traditional text sources among Chinese users of the Internet.

Proposition 13: There are no differences between perceptions of the **conciseness of the representation** of information from the Internet and of information from traditional text sources among Chinese users of the Internet.

Proposition 14: There are no differences between perceptions of the **accessibility** of information from the Internet and of information from traditional text sources among Chinese users of the Internet.

Proposition 15: There are no differences between the **access security** of information from the Internet and of information from traditional text sources among Chinese users of the Internet.

SURVEY METHODOLOGY

A survey using the fifteen dimensions of information quality identified by Wang and Strong (1996) was developed to measure user perceptions of information quality. The survey includes fifty data attributes making up fifteen dimensions of information quality as suggested by the work of Wang and Strong (1996) (see Appendix A). The fifty data attributes are measured both for information from the Internet and information from traditional text sources (i.e., books, magazines, journals, and newspapers). This is illustrated below for the 'accurate' data item.

Data from Internet sources are accurate.
Strongly Disagree 12 3 4 5 6 7 Strongly Agree

Data from traditional text sources are accurate.
Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

The survey presented to subjects had all instructions and items written in Chinese and English.

Two hundred twenty-four students taking MIS classes in a university in Beijing, China, completed the survey. Twenty-four surveys were excluded from the analysis because of problems with survey completion leaving a total of two hundred surveys for the data analysis.

On average respondents were twenty-one years old. A majority of the respondents were male (112), juniors (144) studying telecommunications (126). Respondents had an average of a little over eight years of computer experience and almost seven years of experience using the Internet.

RESULTS

The results of the survey of Chinese end users' perceptions of the information quality are reported here. The measurement properties of the survey and mean scores of perceptions of Internet and traditional text sources of information are discussed.

Measurement Properties of the Survey

The survey items are based on the work of Wang and Strong (1996) which validated fifteen dimensions of information quality and their corresponding data attributes. Although prior work has validated the survey constructs, Cronbach's alpha was determined here for all of the dimensions of information quality measured with multiple data attributes because the measures of objectivity had a Cronbach's alpha below .6 in a prior study that used the measures (Klein et al., 2011a). The results are presented in Table 1 both for Internet sources and for traditional text sources. As shown in Table 1, the measures of the objectivity dimension have relatively poor reliability while the measures for the other dimensions have acceptable reliability.

TABLE 1: Cronbach's Alpha for the Dimensions of Information Quality

Dimension of Information Quality	Cronbach's Alpha	
	Internet Sources	**Traditional Text Sources**
Accuracy	.902	.905
Objectivity	.636	.676
Completeness	.742	.741
Reputation	.728	.717
Value-added	.705	.705
Relevancy	.796	.794
Ease of Understanding	.756	.803
Representational Consistency	.753	.813
Concise Representation	.822	.881
Accessibility	.853	.778
Access Security	.776	.729

Table 2 shows the mean response for each of the fifteen measures of information quality, both for Internet sources and for traditional text sources. The data attributes were measured on a seven-point scale with 1 indicating 'Strongly Disagree' and 7 indicating 'Strongly Agree.'

For Internet sources, the mean responses range from 4.54 to 3.65; while the mean responses for traditional text sources range from 4.40 to 4.05. Statistically significant differences (p<.05) between the mean response for Internet and traditional text

sources were found for sixty percent of the dimensions of information quality: (believability, accuracy, objectivity, reputation, appropriate amount, interpretability, representational consistency, concise representation, and access security). In all of these dimensions except for appropriate amount, traditional text sources were rated higher than Internet sources of information.

TABLE 2: Mean Scores for Information Quality Dimensions

Dimension of Information Quality	Perception of Internet Sources	Perception of Traditional Text Sources	Significant Difference (at p<.05)
Believability	3.67	4.24	Yes
Accuracy	3.72	4.09	Yes
Objectivity	3.69	4.23	Yes
Completeness	4.18	4.25	No
Reputation	3.65	4.40	Yes
Value-added	4.04	4.08	No
Relevancy	4.24	4.19	No
Timeliness	4.43	4.35	No
Appropriate Amount	4.54	4.05	Yes
Interpretability	4.00	4.40	Yes
Ease of Understanding	4.17	4.37	No
Representational Consistency	3.83	4.21	Yes
Concise Representation	3.85	4.14	Yes
Accessibility	4.28	4.12	No
Access Security	3.77	4.21	Yes

Differences were also noted in the highest and lowest rated dimensions for Internet and traditional text sources of information as shown in Table 3.

TABLE 3: Highest and Lowest Mean Responses for Internet and Traditional Text Sources

	Internet	Traditional Text Sources
Highest Mean Responses	Appropriate amount Timeliness Accessibility	Interpretability Reputation Ease of Understanding
Lowest Mean Responses	Reputation Believability Objectivity	Appropriate amount Value-added Accuracy

DISCUSSION AND CONCLUSION

These differences suggest that Chinese end users are sensitive to the different aspects of Internet and traditional text sources of information. First, the results of the study reveal that, in general, Chinese users rate information from Internet sources lower than information from traditional text sources with the majority of the dimensions of information quality having lower mean values for Internet sources.

Secondly, Chinese end users view the strengths and weaknesses of information from the Internet and traditional text sources quite differently. The comparatively high and low mean responses shown in Table 3 reflect the assessment of these strengths and weaknesses. As the table shows, Chinese end users recognize that information distributed through the Internet is generally quickly made available in abundant quantities and in an easily accessible fashion. They also express skepticism about potential biases in information distributed through the Internet with the three lowest rated dimensions being reputation, believability, and objectivity. With respect to traditional text sources of information, Chinese end users recognize that information published in more traditional ways may be less prone to bias (i.e., the rating for reputation is comparatively high) but may also be less readily available and provide less value for some tasks. Additionally, accuracy is rated comparatively low. This suggests that Chinese end users have somewhat mixed feelings toward traditional text sources of information, possibly because of the long-standing practice of governmental control of publishing and the media.

Thirdly, a detailed look at the results shows that nine out of the fifteen dimensions have a statistically significant difference between user perceptions of information from Internet sources and traditional text sources, with eight dimensions higher for traditional text sources. These dimensions are mainly related to the credibility (e.g., believability, accuracy, objectivity, and reputation) and presentation (e.g., precise presentation, presentation consistency, and interpretability). The only dimension Chinese end users rate higher for information from Internet sources than for traditional text sources is appropriate amount, which is also the highest rated dimension. This may be because the Internet is easily searched so that users can explore and access more information easily whenever they desire.

Perhaps the most intriguing finding of the study lies in the user perceptions of the timeliness dimension. This dimension is the second highest rated dimension for Internet sources, and there is no statistically significant difference for the ratings of the timeliness of Internet and traditional text sources of information. Of course, timeliness is normally the hallmark of information from the Internet; and Chinese users, too, recognize this as a key strength of Internet sources of information. Nevertheless they do not view the timeliness of Internet sources of information as significantly better than the timeliness of traditional text sources of information. This study does not provide an explanation for this phenomenon, and it is certainly an observation worthy of further investigation.

Consistent with the findings of prior studies (Klein, 2001; Klein et al., 2011a; Klein et al., 2011b), this study demonstrates that Chinese end users recognize differences between the information quality of Internet and traditional text sources of information. Although the study suggests that differences between Internet and traditional text sources are recognized by Chinese end users, it should be noted that the survey was conducted in a single university setting in China and that many of the survey respondents were seeking degrees in technical areas. The survey results are likely generalizable to younger, more sophisticated end users in China but may not be reflective of the perceptions of all end users in all part of China. We suggest that future studies therefore examine the perceptions of Chinese end users in other parts of China, those of older Chinese end users, and those of Chinese end users with less sophisticated technical knowledge and skills.

REFERENCES

Al-Hakim, L. 2004. Information Quality Function Deployment. In *Proceedings of the Ninth International Conference on Information Quality*, November 5-7, 2004, Cambridge, MA, 170-182.

Alkhattabi, M., Neagu, D., and Cullen, A. 2010. Assessing Information Quality of E-Learning Systems: A Web Mining Approach. *Computers in Human Behavior* (27:2), 862-873.

Arazy, O., and Kopak, R. 2011. On the Measurability of Information Quality. *Journal of the American Society for Information Science and Technology* (62:1), 89-99.

Baskarada, S. 2010. How Spreadsheet Applications Affect Information Quality. *The Journal of Computer Information Systems* (51:3), 77-84.

Cappiello, C., Daniel, F., Matera, M., and Pautasso, C. 2010. Information Quality in Mashups. *IEEE Internet Computing* (13:4), 14-22.

Clausen, H. 1996. Web Information Quality as Seen from the Libraries. *New Library World* (97:1130), 4-8.

CNNIC. 2013. China Internet Development Statistics Report. http://www.cnnic.cn/hlwfzyj/ hlwxzbg/hlwtjbg/201307/t20130717_40664.htm [Retrieved: Oct. 24, 2013]

Davis, G.B., and Olson, M.H. 1985. *Management Information Systems: Conceptual Foundations, Structure, and Development*. McGraw-Hill Book Company, New York.

DeLone, W.H., and McLean, E.R. 1992. Information Systems Success: The Quest for the Dependent Variable. *Information Systems Research* (3:1), 60-95.

DeLone, W.H., and McLean, E.R. 2002. Information Systems Success Revisited. In *Proceedings of the 35th Annual Hawaii International Conference on System Sciences*, January 7-10, 2002, Waikoloa, Hawaii, 238-248.

DeLone, W.H., and McLean, E.R. 2003. The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. *Journal of Management Information Systems* (19:4), 9-30.

Dong, X. 2003. Searching Information and Evaluation of Internet: A Chinese Academic User Survey. *International Journal of Library Review* (35: 2), 163-187

English, L.P. 2005. Information Quality: Critical Ingredient for National Security. *Journal of Database Management* (16:1), 18-32.

Eppler, M.J. 2006. *Managing Information Quality: Increasing the Value of Information in Knowledge-Intensive Products and Processes*. Springer, Berlin.

Fallows, D. 2008. Most Chinese Say They Approve of Government Internet Control. http://pewinternet.org/Reports/2008/Most-Chinese-Say-They-Approve-of-Government-Internet-Control.aspx. [Retrieved: Oct. 24, 2013].

Fang, X., and Yen, D.C. 2006. Demographics and Behavior of Internet Users in China. *Technology in Society* (28: 3), 363-387.

Fox, C., Levitin, A., and Redman, T. 1993. The Notion of Data and Its Quality Dimensions. *Information Processing & Management* (30: 1), 9-19.

Fuld, L.M. 1998. The Danger of Data Slam. *CIO* (11:23), 28-33.

Gao, L., Larsso, M., and Luo, S. 2013. Internet Use by Chinese Women Seeking Pregnancy-Related Information. *Midwifery* (29: 7), 730-735.

Gelle, E., and Karhu, K. 2003. Information Quality for Strategic Technology Planning. *Industrial Management + Data Systems* (103:8/9), 633-643.

Guo, L. 2005. Surveying Internet Usage and Impact in Five Chinese Cities. Report of Research Center for Social Development, *Chinese Academy of Social Sciences*, http://news.bbc.co.uk/2/shared/bsp/hi/pdfs/10_02_06_china.pdf. [Retrieved: Oct. 24, 2013].

Guo, L. 2007. Surveying Internet Usage and Impact in Seven Chinese Cities. Report of Research Center for Social Development, *Chinese Academy of Social Sciences*. http://www.worldinternetproject.com/_files/_Published/_oldis/_China%20Internet%20Project%20Survey%20Report%202007.pdf. [Retrieved: Oct. 24, 2013].

Helfert, M., and Foley, O. 2009. A Context Aware Information Quality Framework. In *Fourth International Conference on Cooperation and Promotion of Information Resources in Science and Technology*, November 21-23, 2009, Beijing, China, 187-193.

Huang, K., Lee, Y.W., and Wang, R.Y. 1999. *Quality Information and Knowledge*. Prentice Hall, Upper Saddle River, NJ.

Huh, Y.U., Keller, F.R., Redman, T.C., and Watkins, A.R. 1990. Data Quality. *Information and Software Technology* (32: 8), 559-565.

Kane, G.C. 2011. A Multimethod Study of Information Quality in Wiki Collaboration. *ACM Transactions on Management Information Systems* (2:1), Article 4, 1-16.

Kargar, M.J. 2011. Prioritization of Information Quality Criteria in the Blog Context. In *2011 International Conference on Uncertainty Reasoning and Knowledge Engineering*, August 4-7, 2011, Bali, Indonesia, 205-208.

Katerattanakul, P., and Siau, K. 2008. Factors Affecting the Information Quality of Personal Web Portfolios. *Journal of the American Society for Information Science and Technology* (59:1), 63-76.

Keltner, K.B. 1998. Networked Health Information: Assuring Quality Control on the Internet. *Federal Communication Law Journal* (50:2), 417-439.

Khovanova-Rubicondo, K. 2011. Evaluating ICT Potential for Improving Health Information Quality in Africa. In *IST-Africa 2011 Conference Proceedings*, May 11-13, 2011, Gaborone, Botswana, 1-8.

Klein, B.D. 2001. User Perceptions of Data Quality: Internet and Traditional Text Sources. *Journal of Computer Information Systems* (41:4), 9-15.

Klein, B.D., and Callahan, T.J. 2007. A Comparison of Information Technology Professionals' and Data Consumers' Perceptions of the Importance of the Dimensions of Information Quality. *International Journal of Information Quality* (1:4), 392-411.

Klein, B.D., Guo, Y.M., and Zhou, C. 2011a. Perceptions of the Information Quality of Internet and Traditional Text Sources among Chinese Users of the Internet. *International Journal of Information Quality* (2:3), 231-243.

Klein, B.D., Valero, M., and Guo, Y.M. 2011b. An Examination of the Information Quality Perceptions of Mexican Internet Users. *International Journal of Information Quality* (2:4), 287-299.

Kluver, R., and Yang, C. 2005. The Internet in China: A Meta-Review of Research. *The Information Society* (21: 2), 301-308,

Kuo, R.-Z., and Lee, G.-G. 2009. KMS Adoption: The Effects of Information Quality. *Management Decision* (47:10), 1633-1651.

Lee, Y.W., Strong, D.M., Kahn, B.K., and Wang, R.Y. 2002. AIMQ: A Methodology for Information Quality Assessment. *Information & Management* (40: 2), 133-146.

Li, N., and Kirkup, G. 2007. Gender and Cultural Differences in Internet Use: A Study of China and the UK. *Computers & Education* (48: 2), 301-317.

Loiacono, E., and Lin, H. 2003. Website Quality: A Cross-Cultural Comparison of United States and China Business Customers. In *Ninth Americas Conference on Information Systems*, August 4-6, 2003, Tampa, Florida, 1156-1160.

Lu, W., Fu, J., Zhang, J., Ma, F., and Le, T. 2002. Internet Development in China. *Journal of Information Science* (28:3), 207-223.

Madnick, S., Wang, R.Y., Lee, Y.W., and Zhu, H. 2009. Overview and Framework for Data and Information Quality Research. *ACM Journal of Data and Information Quality* (1:1), Article 2, 1-22.

Martinsons, M., Ng, S., Wong, W., and Yuen, R. 2005. State Censorship of the Internet in China. *Communications of the ACM* (48:4), 67.

McKemmish, S., Manaszewicz, R., Burstein, F., and Fisher, J. 2009. Consumer Empowerment through Metadata-Based Information Quality Reporting: The Breast Cancer Knowledge Online Portal. *Journal of the American Society for Information Science and Technology* (60:9), 1792-1807.

Michnik, J., and Lo, M.-C. 2007. The Assessment of the Information Quality with the Aid of Multiple Criteria Analysis. *European Journal of Operational Research* (195: 3), 850-856.

Notess, G.R. 2011. Content Farming, Quick Creation, and Declining Information Quality. *Online* (35:3), 46-48.

Pack, T. 1999. Can You Trust Internet Information? *Link-up* (16:6), 24.

Pipino, L.L., Lee, Y.W., and Wang, R.Y. 2002. Data Quality Assessment. *Communications of the ACM* (45:4), 211-218.

Redman, T.C. 1995. Improve Data Quality for Competitive Advantage. *Sloan Management Review* (36:2), 99-107.

Rieh, S.Y. and Belkin, N.J. 1998. Understanding Judgment of Information Quality and Cognitive Authority in the WWW. *Journal of the American Society for Information Science* (35: 2), 279-289.

Saha, P., Nath, A.K., and Salehi-Sangari, E. 2012. Evaluation of Government E-Tax Websites: An Information Quality and System Quality Approach. *Transforming Government: People, Process and Policy* (6:3), 300-321.

Schaal, M., Smyth, B., Mueller, R.M., and MacLean, R. 2012. Information Quality Dimensions for the Social Web. In *Proceedings of the International Conference on Management of Emergent Digital Ecosystems*, October 27-30, 2009, Lyon, France, 53-58.

Seddon, P.B. 1997. A Respecification and Extension of the DeLone and McLean Model of IS Success. *Information Systems Research* (8:3), 240-253.

Shen, X.-L., Cheung, C.M.K., and Lee, M.K.O. 2012. What Leads Students to Adopt Information from Wikipedia? An Empirical Investigation into the Role of Trust and Information Usefulness. *British Journal of Educational Technology* (44:3), 502-517.

Strong, D.M., Lee, Y.W., and Wang, R.Y. 1997. Data Quality in Context. *Communications of the ACM* (40:5), 103-110.

Stvilia, B., Mon, L., and Yi, Y.J. 2009. A Model for Online Consumer Health Information Quality. *Journal of the American Society for Information Science and Technology* (60:9), 1781-1791.

Stvilia, B., Twidale, M.B., Smith, L.C., and Gasser, L. 2008. Information Quality Work Organization in Wikipedia. *Journal of the American Society for Information Science and Technology* (59:6), 983-1001.

Wang, R. 2002. Government Information of the People's Republic of China on the Internet. *Journal of Government Information* (29: 1), 31-37.

Wang, R.Y., and Strong, D.M. 1996. Beyond Accuracy: What Data Quality Means to Data Consumers. *Journal of Management Information Systems* (12:4), 5-34.

Wu, Y., Lau, T., Atkin, D., and Lin, C. 2011. A Comparative Study of Online Privacy Regulations in the U.S. and China. *Telecommunications Policy* (35: 7), 603-616.

Yaari, E., Baruchson-Arbib, S., and Bar-Ilan, J. 2011. Information Quality Assessment of Community-Generated Content: A User Study of Wikipedia. *Journal of Information Science* (37:5), 487-498.

Yang, K.C.C. 2007. A Comparative Study of Internet Regulatory Policies in the Greater China Region: Emerging Regulatory Models and Issues in China, Hong-Kong SAR, and Taiwan. *Telematics and Informatics* (24: 1), 30-40.

Zhu, J.J.H., and Wang, E. 2005. Diffusion, Use, and Effect of the Internet in China. *Communications of the ACM* (48:4), 49-53.

Zittrain, J., and Edelman, B. 2003. Internet Filtering in China. *IEEE Internet Computing* (7:2), 70-77.

APPENDIX A: Dimensions of Information Quality and Data Attributes from Wang and Strong (1996)

Dimension of Information Quality	Data Attributes
Believability	Believable
Accuracy	Data are certified error-free; Error free; Accurate; Correct; Flawless; Reliable; Errors can be easily identified; The integrity of the data; Precise
Objectivity	Unbiased; Objective
Completeness	The breadth of information; The depth of information; The scope of information
Reputation	The reputation of the data source; The reputation of the data
Value-added	Data give you a competitive edge; Data add value to your operations
Relevancy	Applicable; Relevant; Interesting; Usable
Timeliness	Age of data
Appropriate Amount	The amount of data
Interpretability	Interpretable
Ease of Understanding	Easily understood; Clear; Readable

Representational Consistency	Data are continuously presented in same format; Consistently represented; Consistently formatted; Data are compatible with previous data
Concise Representation	Well-presented; Concise; Compactly represented; Well-organized; Aesthetically pleasing; Form of presentation; Well-formatted; Format of the data
Accessibility	Accessible; Retrievable; Speed of access; Available; Up-to-date
Access Security	Data cannot be accessed by competitors; Data are of a proprietary nature; Access to data can be restricted; Secure

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