

THE CRITICAL SUCCESS FACTORS FOR DATA QUALITY IN ACCOUNTING INFORMATION SYSTEM --- DIFFERENT INDUSTRIES' PERSPECTIVE

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ABSTRACT

This paper attempts to reveal how different industries consider the importance and performance of critical success factors for data quality in accounting information system. This study hypothesizes that different industries have the same perspective in these factors. The One-Way ANOVA analysis is used for the hypothesis testing. The results show that the hypotheses are partially supported where all the industries have similar evaluations of most factors. However, it is also found that industries have different perspective in the importance of data supplier quality management factor, continuous improvement factor, and risk management factor. The same findings are also applying to the performance of user focus factor and employee relations' factor.

Keywords: data quality, information quality, accounting information systems, critical success factors

INTRODUCTION

Different industries often have their own sets of assessments for quality management. Information quality management has extended the traditional quality management methods to suit the rapid increased information technology usages. Whether different industries treated information quality management the same way is the question to be answered by this study. The study use Accounting Information Systems (AIS) as the application of the IT systems in organisations. AIS maintain and produce the data used by organisations to plan, evaluate, and diagnose the dynamics of operations and financial circumstances [1]. With the advent of the information technology age and ever increasing customer expectations, AIS begins to play more of an influencing role than a traditional informing role [9]. AIS now reports on non-traditional items affecting customer's expectations on quality and costs such as machine utilization rate, non-productive times [6] and increases in wages due to improvement in skills, personnel accident rate, etc. [5]. In addition, to collect and report internally generated information, accountants must report on important external information and monitor the strategy of their organisation's competitors [6][8]. Such information is important to evaluate the cost advantages which an organization enjoys over its competitors to support its strategic market positions. Similarly, AIS can help in measuring and improving productivity and services to both manufacturing and service industries [3].

Information quality has become crucial for the AIS's success in today's IT age. The rapid developed IT has changed the way in which traditional accounting systems work. More and more electronically captured information needs to be processed, stored, and distributed through IT-based accounting systems. Advances in IT have dramatically increased the ability and capability of processing accounting information. At the same time, however, it also brings some

issues that the traditional accounting systems have not experienced. One critical issue is the data quality in the AIS. Real-world practice suggests that data quality (DQ) problems are becoming increasingly prevalent [7][10][11]. The traditional focus on the input and recording of data needs to be offset with recognition that the systems themselves may affect the quality of data [4]. Many organizations have experienced the adverse effects of decisions based on information of inferior quality [7]. This research attempts to gain knowledge of the critical factors influencing data quality in AIS, which would help organizations to increase the awareness of data quality issues in the operation of their AIS, and concentrate on only the important factors to the success of the system.

METHODOLOGY

The primary purpose of this research is to assess how different industries considering the importance and performance of critical success factors for data quality in AIS. From July to November 2001, a national wide survey was conducted, which supported and administrated by Australian Certified Practicing Accountants (CPA) Association. The target of this survey was the member of this association. One thousand questionnaires were sent to them by mail and one hundred and eighty-two were completed and returned.

The survey questions and design were developed based on the results of the multiple case studies conducted by the authors in the earlier stage of the research project. The questionnaire comprises three key sections: listed 25 Critical Success Factors for AIS's data quality; the three most and least important factors; and demographic details about the respondents and their organizations. Most of the questions were closed-ended to elicit comparable and measurable responses. The respondents were also given the opportunity to add written comments at the end of the survey.

The primary analysis tool used for the research is SPSS. One-Way ANOVA model is employed for the hypothesis testing. Turkey Post Hoc within ANOVA model is applied to the further analysis to determine the relationships between paired groups.

FINDINGS

The findings section is divided into two sections: (1) the demographic information about the respondents and their organizations, including the main role of the respondents, organizations' city distribution, and the industries that the organizations belong; and (2) hypothesis tests based on One-Way ANOVA model.

Demographic Information

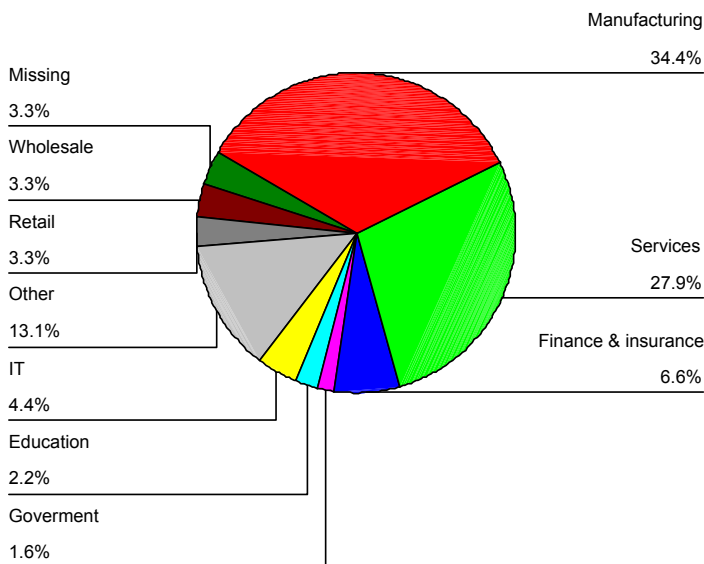
This part of the findings shows the background of the respondents and their organizations. A total of 182 usable responses were analyzed. Table 1 to 2 and figure 1 show the results.

Table 1: Respondents' Main Roles

<i>Stakeholder</i>	<i>Main Role</i>	<i>Percent</i>
<i>Information producer</i>	Create or collect data for the AIS	36.0
	Manage those who create or collect data for the AIS	
<i>Information custodian</i>	Design, develop and operate the AIS	32.3
	Manage those who design, develop and operate the AIS	
<i>Information manager</i>	Manage data and / or data quality in AIS	17.5
<i>Internal auditor</i>	Audit or review data in AIS	0.5
<i>Information user</i>	Use accounting information in tasks	11.5

Table 1 illustrates the respondents' main roles in their accounting information system. Over one-third respondents (36%) were information producers who created or collected data for the AIS or managed those who created or collected data. Another 32.3 percent of respondents were information custodians. They were responsible to design, develop and operate their AIS or to manage those who design, develop and operate the AIS. Only 0.5 percent of respondents were internal auditors who were auditing or reviewing data in AIS.

Figure 1: Industry



Since this research focuses on revealing how different industries evaluate the critical success factors for data quality in AIS. The respondents were asked to select the industry his or her organization belonged to. Figure 1 shows the result. The largest part of the organizations (34.4%) was in manufacturing industry; another 27.9 percent of organizations were service organizations.

Key Findings

Based on the literature survey results, this paper proposes two research hypotheses. The first hypothesis examines the relationship between industry and the importance of critical success factors.

H₀: Different industries have the same perspective in the importance of critical success factors.

H₁: Different industries have different perspectives in the importance of critical success factors.

The second hypothesis examines the relationship between industry and the performance of critical success factors.

H₀: Different industries have the same perspective in the performance of critical success factors.

H₁: Different industries have different perspectives in the performance of critical success factors.

The One-Way ANOVA model is employed for the hypothesis testing. The significance level is set to 0.05. Table 2 shows how the respondents from different industries evaluated the factors. They were asked to rank the importance and performance of the total twenty-five factors in their AIS. A five-scaled measurement was used for the importance, where one represents “Not Important” to five represents “Extremely Important”. Also, a same five-scaled measurement was used for the performance, where one represents “Poor Performance” to five represents “Excellent Performance”. Considered being a possibility, “Not Applicable” was also provided as the sixth option to the respondents for the performance. But since it is not proper to include value six that represents this option to calculate mean and standard deviation, all the ‘6’s were eliminated for the analysis.

Table 2: Different industries’ ratings of the importance and performance of the factors

Factors	Industry	Importance			Performance		
		Mean	Std. Deviation	Sig.	Mean	Std. Deviation	Sig.
User Focus	Manufacturing	4.08	.809	.067	2.75	.933	.026
	Services	4.16	.731		3.02	1.191	
	Finance And Insurance	3.83	.718		2.33	1.073	
	Government	3.00	1.000		3.67	1.528	
	Education	4.50	.577		3.75	.500	
	IT	4.25	.707		3.00	1.195	
	Retail	3.67	.516		2.67	1.033	
Employee Relations	Wholesale	3.83	.408	1.83	1.329	.029	
	Manufacturing	4.08	.848	.528	2.73		.971
	Services	4.08	.821	3.06	1.190		

	Finance And Insurance	3.92	.793		2.83	.937	
	Government	3.33	1.155		4.00	1.000	
	Education	4.75	.500		3.75	.500	
	IT	3.88	.991		3.38	1.302	
	Retail	4.33	.816		4.00	.894	
	Wholesale	4.17	.408		2.33	1.033	
Data Supplier Quality Management	Manufacturing	3.70	.775		2.89	1.179	.611
	Services	3.54	.930		2.76	1.170	
	Finance And Insurance	3.08	1.240		3.42	1.730	
	Government	4.67	1.155	.017	3.33	1.155	
	Education	4.25	.500		2.75	.957	
	IT	2.88	.641		2.75	1.488	
	Retail	3.17	.753		2.50	1.378	
	Wholesale	3.33	.516		2.17	.753	
Continuous Improvement	Manufacturing	3.97	.647		2.67	.933	.405
	Services	3.75	.891		2.80	1.059	
	Finance And Insurance	3.75	.622		2.25	.866	
	Government	3.33	1.528	.026	2.33	1.528	
	Education	4.25	.500		3.00	.816	
	IT	2.88	.991		2.88	1.458	
	Retail	4.00	.632		2.83	1.602	
Wholesale	3.67	.516		1.83	.753		
Risk Management	Manufacturing	3.86	.669		2.49	.998	.751
	Services	3.71	.832		2.78	1.172	
	Finance And Insurance	3.92	.900		2.50	.905	
	Government	4.00	1.000	.026	2.33	1.528	
	Education	4.50	.577		3.50	.577	
	IT	3.13	.641		2.63	1.188	
	Retail	3.67	1.366		2.50	1.643	
Wholesale	3.17	1.169		2.83	1.722		

■ Highlighted have significant difference between groups

Table 2 only shows the factors that were found to have significant difference between different industry groups. Factors that have difference in regarding the importance are: *data supplier quality management* factor, *continuous improvement* factor, and *risk management* factor. There are also significant differences in the performance of *user focus* factor and *employee relations* factor. Therefore, both of the hypotheses are partially supported.

For the data supplier quality management factor, respondents from governments considered it very important. They rated 4.67 out of 5. It is probably determined by the nature of the organization. Meanwhile, IT people found this factor much less important. The average rating was only 2.88. Respondents from education institutes rated the highest for the importance of both continuous improvement factor and risk management factor. Eventually, education institutes are long-time organizations. It is not surprise to find out that they considered these two factors very important. However, respondents from IT also rated the lowest of these two factors. Actually, since the industries are divided into eight groups, further analysis is conducted to exam which two of the groups had the significant difference. Turkey Post Hoc analysis is applied to compare

the pairs. The significant difference is found to only exist between the IT and manufacturing under the importance of *continuous improvement* factor. Table 3 shows the fact.

Table 3: Turkey Post Hoc test of paired difference between groups

Dependent Variable: the Importance of Continuous Improvement

Industry	Industry	Mean Difference	Sig.
IT	Manufacturing	-1.09	.006

Table 3 shows that respondents from IT filed had significant different evaluations of the importance of continuous improvement factor comparing with the respondents from manufacturing industry. In fact, the respondents from IT rated the importance of this factor much lower than the ones from manufacturing. This is probably because IT is a new and high technical industry; people in this industry concentrate more on inventing new technologies. It is understandable that they may not consider continuous improvement as an important factor in their systems.

As for the performance of the factors, respondents from education institutes and governments reported that the performance of user focus factor in their accounting information systems were great. Oppositely, respondents from wholesale industry considered the performance of this factor in their systems were really not good. Actually, the performance of employee relations was also not good for the respondents from wholesale industry.

CONCLUSIONS

Statistical results provide supports on the research hypotheses. The study reveals some insights in data quality issues in AIS that have not been investigated before. The most significant findings are the respondents who were in different industries had significant different evaluations about the importance and performance of some of the factors. Therefore, the study could help IT professionals and different sizes of the organizations have better understanding on critical success factors' impact upon data quality in their AIS. It also provides a benchmark to help organizations evaluate their own data quality performance against other organizations in the similar category.

The findings of this study also indicate that the surveyed Australian organizations were aware of the importance of the critical success factors that impact on data quality of accounting information systems. Comparing to their consideration of the importance of the factors, actual performance of these factors is not up to the satisfactory level.

Future studies can do cross-country surveys to address more issues in this field. In addition, it will be better to expand the sample with more respondents from different industries to enhance the empirical study. Also, future studies can focus on connecting other fields to critical success factors, such as organization's size and respondent's job level.

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