FACTORS AFFECTING TRUST WITHIN AUSTRALIAN BEEF SUPPLY CHAIN

Roberta Li Chua
Faculty of Business, University of Southern Queensland
Queensland, Australia, 4350

Geoff Cockfield
Faculty of Business, University of Southern Queensland
Queensland, Australia, 4350

Latif Al-Hakim
Faculty of Business, University of Southern Queensland
Queensland, Australia, 4350

Abstract

This research explores the factors with impact on the level of trust within the Australian beef cattle supply chain. These factors are investigated in order to gauge the present expected importance and perceived performance rating of trust. The research presents results of a survey comprising 79 organisations and identifies the critical gap using three types of test; the paired-samples t-test, the weighted mean gap analysis method and the unweighted IPA method. The research recognises eight factors. These are; "Level of responsiveness", "Products/services customization", "Products/services as per agreement", "Timely products/services", "Predictable behaviour", "Reliability of advice", "Safety and quality standards" and "Standards and performance levels".

Keywords: Beef supply chain, importance, performance, trust.

1. INTRODUCTION

The red meat industry is Australia's largest agricultural export earner; approximately 65 percent of its total meat production is exported. The nation also has the tenth highest red meat consumption level in the world (DPI&F 2006). This study focuses solely on the beef cattle industry in Australia because Australia is better known for its reputation as a global supplier of quality beef (Australian Beef 2006).

Changes in the status of major beef exporters due to animal diseases, such as bovine spongiform encephalopathy (BSE) and foot-and-mouth disease (FMD), have shifted beef trading patterns in the last few years (Morris and Buller 2003). Due to bans on American and Canadian beef, Australia becomes the primary beef supplier to many major import markets in Asia (Lester 2004). High prices in these markets make exporting beef appealing. In recent years, the markets of Japan, Korea, Taiwan and South East Asia, which require beef that meets exact specifications, have become increasingly important. Japan remains as Australia's most important beef market (ABS 2006).

Previously, organizations had no consideration of the potential for their suppliers or customers to become trading partners. Instead, there have been many who may have competed with their suppliers and customers, fearing they would be taken advantage of by them (Frendendall and Hill 2001). In today's competitive business environment, companies are advised to develop ever more efficient and responsive supply chains because it will no longer be company competing with company, but rather supply chain competing against supply chain (Lambert and Cooper 2000).

An effective coordination of the supply chain is built on a foundation of trust and commitment (Simatupang et al. 2004). The consensus is that trust can contribute significantly to the long-term stability of an organization (Heide and John 1990). However, building trust

relies on the parties' willingness to relinquish some independence and developing mutual dependence means both parties must play the game (O'Keeffe 1998). This study raises the importance of information sharing within the Australian beef cattle supply chain and points to the trust as a main issues hindering the flow of information across the supply chain. In this research, the importance of information sharing within the Australian beef cattle supply chain is investigated and factors with direct impact on the level of trust within the supply chain are explored. The importance-performance analysis is used to identify critical factors affecting trust between Australian beef industry.

2. THEORETICAL FRAMEWORK

Information sharing and trust between and among members is an essential element for any successful supply chain. Information sharing can sometimes require the release of financial and other strategic information to members who might have been and/or will be their competitors and effective information sharing is heavily dependent on trust beginning within the firm and ultimately extending to the supply chain members (Bowersox et al. 2000). Issues of trust and risk can be significantly more important in supply chain relationships because it often involves a higher degree of interdependency between companies (La Londe 2002). The release and sharing of information can prove to be a rather challenging task, requiring a high degree of trust among and between the members. If information is available but cannot be shared by the supply chain members most able to react to a given situation, its value degrades exponentially (Kwon and Suh 2005). Morgan and Hunt (1994) argue that when both commitment and trust are present, they produce outcomes that promote efficiency, productivity and effectiveness. While it is likely that many stakeholders will collaborate or form strategic alliances to better their competitive position (Monczka et al., 1998; Hoyt and Huq, 2000), it has been reported that the biggest stumbling block to the success of strategic alliance formation is the lack of trust (Sherman 1992), and subsequently trust is perceived as a cornerstone of strategic partnership (Spekman 1988).

Trust can also been seen as an expression of confidence in organizational "exchange", which leads to cooperative behaviour among individuals and groups within and between organizations (Jones and George 1998). If trust is absent, no one will risk moving first and all members will sacrifice the gains from collaboration and cooperation in increasing effectiveness (Sabel 1993). A high degree of trust not only stimulates and meets consumers' high expectations of satisfying transactions, but also eliminates uncertainty, perceived risks, and interdependence (Pavlou 2003). In addition, the higher the degree of consumers' trust, the higher the degree of purchase intentions of consumers, and the easier it is for companies to retain consumers (Gefen and Straub 2004).

Trust is a part of life, and exactly what it means will be determined by the context in which it is being used. For the purpose of this research, trust refers to the reliance by one person, group of firm upon a voluntarily accepted duty on the part of another person, group or firm to recognize and protect the rights and interests of all others engaged in a joint endeavour or economic exchange (Hosmer 1995). The early findings of Parasuraman et al. (1988) show that the second most important service attribute in terms of creating perceptions of service quality, is the firm's ability to nurture trust and confidence, second only to reliability. Trust, when viewed from this perspective, leads to cumulative perceptions of service quality.

2.1 Dimensions of Trust

Following Sako (1992), this research distinguishes three types of trust, namely contractual trust, competence trust and goodwill trust. In addition, this research also considers benevolence, as there is a marked psychological difference between goodwill and benevolence, which for some is also a dimension of trust. Contractual trust is the belief that both parties in a relationship will adhere to universalistic ethical standards (Martin 2002), such as honouring contracts (Walker 2004), being honest, keeping promises made (PMMS Asia Pacific 2004), and carrying out their duties as agreed (Ryan et al. 2004).

Competence trust refers to faith in the abilities of the other partner to perform their role in the project (Ryan et al. 2004; Martin, 2002). It addresses the question of whether the other

party is seen to be capable of doing what it says it will do (Sako and Helper 1998). Competence trust requires a shared understanding of standards of professional conduct and technical and managerial standards (PMMS Asia Pacific 2004).

Goodwill trust embodies the belief that both parties in a relationship will consider the interests of the other, regardless of formal agreements, and will avoid opportunism; the threat of moral hazard is minimized (Martin 2002; Ryan et al. 2004). Goodwill trust requires consensus on what is 'fair' between the parties (PMMS Asia Pacific 2004).

Benevolence is the extent to which a trustee is believed to want to do good to the trustor, aside from an egocentric profit motive (Mayer et al. 1995). Tomlinson and Lewicki (2003) state that benevolence is the assessment that the trusted individual is concerned enough about the trustor's welfare to either advance interests, or at the minimum not to impede them. It is understood to be of a more inter-personal nature in terms of a specific attachment between the trustor and the trustee (Ryan et al. 2004).

3. RESEARCH METHODOLOGY

The research employs a quantitative methodology which requires designing a questionnaire and selecting sample organisation to answer the questions of the questionnaire. The questionnaire was designed using the approach of Watson and Frolick (1992) to measure the expected importance and perceived performance of trust factors. This research adopted the seven-point Likert scale to measure performance gaps. There are a couple of reasons why a seven-point scale was chosen instead of the normal five-point scale: (a) it provides a more accurate comparison between respondents; and (b) it provides the respondents with a choice for selecting an impartial answer should they become dubious of the "right" or appropriate answer. The questionnaire consists of four sections (general and demographic, importance-performance analysis of technology diffusion, importance-performance analysis of trust, general questions and comments) totalling 37 questions. The survey questionnaire was sent to the sample population by way of mail, facsimile and electronic mail.

4. DATA ANALYSIS

Of the 79 participants surveyed, approximately 65 percent of organizations are located in urban areas of Queensland, 22 percent are located in rural areas (population cluster of between 200 to 999 people), and 13 percent of surveyed organisations have branches located in both urban and rural areas. Only 11.4 percent of organizations had been established under 5 years, compared to 40.5 percent being well established for more than 20 years. Data analysis indicates that 41.8 percent of the total number of participants employed fewer than 50 staff members within their organization. This was followed closely with 38 percent of organizations with more than 200 employees and 16.5% with member between 50 to 100 employees. Only a small percentage (3.8 percent) had between 100 and 200 staff members currently in active employment with the organization.

Table 1 identifies the mean importance and performance rating of trust factors, which shows the total importance rating was higher than its performance rating (EI = 6.194, PP = 5.417). The "Timely products/services" and "Products/services as per agreement" shared the highest importance rating (EI = 6.593). The factor "Skills and expertise knowledge" had the highest performance rating (PP = 6.136). The table also indicates "Need for monitoring" with the lowest importance and performance rating (EI = 2.695, PP = 3.169).

Table 1: Mean importance and performance rating of trust factors.

	Trust Factor	Importance (EI)	Performance (PP)
V1	Well-detailed agreements	6.203	5.559
V2	Timely products/services	6.593	5.576
V3	Standards and performance levels	6.525	5.593
V4	Skills and expertise knowledge	6.542	6.136
V5	Products/services as per agreement	6.593	5.458
V6	Safety and quality standards	6.576	5.644
V7	Need for monitoring	2.695	3.169
V8	Inform of any potential problems	6.186	4.949
V9	Reliability of advice	6.356	5.373
V10	Satisfy needs and expectations	6.508	5.932
V11	Actions beyond the norms	5.966	5.492
V12	Business relationship development	6.220	5.729
V13	Products/services customization	6.407	5.220
V14	Dedicated resources	6.119	5.136
V15	Sincerity and honesty	6.576	5.915
V16	Uphold formal/informal agreements	6.288	5.729
V17	Truthful exchange of needs/facts	6.271	5.746
V18	Predictable behaviour	6.475	5.441
V19	Level of responsiveness	6.576	5.136
	Total Mean	*6.194*	*5.417*

4.1 Gap Analysis

The paired-samples t-test was applied for each individual trust factor.

Table 2: Paired-samples t-test for trust factors

	Trust Factor	Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
V1	Well-detailed agreements	-.644	1.627	.212	-1.068	-.220	-3.041	58	.004
V2	Timely products/services	-1.017	1.182	.154	-1.325	-.709	-6.611	58	.000
V3	Standards and performance levels	-.932	1.324	.172	-1.277	-.587	-5.407	58	.000
V4	Skills and expertise knowledge	-.407	1.161	.151	-.709	-.104	-2.690	58	.009
V5	Products/services as per agreement	-1.136	1.137	.148	-1.432	-.839	-7.675	58	.000
V6	Safety and quality standards	-.932	1.127	.147	-1.226	-.638	-6.351	58	.000
V7	Need for monitoring	.475	1.382	.180	.115	.835	2.638	58	.011
V8	Inform of any potential problems	-1.237	1.633	.213	-1.663	-.812	-5.820	58	.000
V9	Reliability of advice	-.983	1.514	.197	-1.378	-.588	-4.987	58	.000
V10	Satisfy needs and expectations	-.576	1.117	.145	-.867	-.285	-3.962	58	.000
V11	Actions beyond the norms	-.475	1.535	.200	-.875	-.074	-2.374	58	.021
V12	Business relationship development	-.492	1.104	.144	-.779	-.204	-3.419	58	.001
V13	Products/services customization	-1.186	1.306	.170	-1.527	-.846	-6.977	58	.000
V14	Dedicated resources	-.983	1.358	.177	-1.337	-.629	-5.560	58	.000
V15	Sincerity and honesty	-.661	1.169	.152	-.966	-.356	-4.344	58	.000
V16	Uphold formal/informal agreements	-.559	1.193	.155	-.870	-.248	-3.601	58	.001
V17	Truthful exchange of needs/facts	-.525	1.194	.155	-.837	-.214	-3.380	58	.001
V18	Predictable behaviour	-1.034	1.033	.135	-1.303	-.765	-7.685	58	.000
V19	Level of responsiveness	-1.441	1.134	.148	-1.736	-1.145	-9.761	58	.000

Table 2 presents the outcome of the t-test for trust factors by industry and results indicated significance level ranged from 0.000 to 0.021. All of the factors observed had obtained values less than the required significance level, which signified the factors had significant differences between their importance and performance ratings. Two gap theories, namely weighted mean gap analysis theory and unweighted importance-performance analysis

(IPA) theory, were applied as part of the data analysis process to help identify trust factors with critical gaps.

Table 3: Weighted mean gap for trust factors.

	Trust Factor	Importance (EI)	Mean Gap	Weighted Gap
V19	Level of responsiveness	6.576	1.440	9.469
V8	Inform of any potential problems	6.186	1.237	7.652
V13	Products/services customization	6.407	1.187	7.605
V5	Products/services as per agreement	6.593	1.135	7.483
V2	Timely products/services	6.593	1.017	6.705
V18	Predictable behaviour	6.475	1.034	6.695
V9	Reliability of advice	6.356	0.983	6.248
V6	Safety and quality standards	6.576	0.932	6.129
V3	Standards and performance levels	6.525	0.932	6.081
V14	Dedicated resources	6.119	0.983	6.015
V15	Sincerity and honesty	6.576	0.661	4.347
V1	Well-detailed agreements	6.203	0.644	3.995
V10	Satisfy needs and expectations	6.508	0.576	3.749
V16	Uphold formal/informal agreements	6.288	0.559	3.515
V17	Truthful exchange of needs/facts	6.271	0.525	3.292
V12	Business relationship development	6.220	0.491	3.054
V11	Actions beyond the norms	5.966	0.474	2.828
V4	Skills and expertise knowledge	6.542	0.406	2.656
V7	Need for monitoring	2.695	-0.474	-1.277

The weighted mean gap analysis theory calculates the weighted mean gap value by multiplying the importance rating of a factor against its gap value. Table 3 provides the weighted gap values, ranked in a descending order according to its respective value, for trust factors by the industry. The highlighted section of the table indicates the top ten factors with the highest ranked weighted mean gap and are as follows: "Level of responsiveness" (9.469), "Inform of any potential problems" (7.652), "Products/services customization" (7.605), "Products/services as per agreement" (7.483), "Timely products/services" (6.705), "Predictable behaviour" (6.695), "Reliability of advice" (6.248), "Safety and quality standards" (6.129), "Standards and performance levels" (6.081), and "Dedicated resources" (6.015).

For the unweighted IPA theory factors with gaps fell into four equal quadrants, labelled "Critical", "Significant", "Important" and "Necessary", to categorize the critical gaps for each trust factor across the industry (Table 4). Factors designated in the "Critical" quadrant require the most improvement efforts, while those located in the "Necessary" quadrant require the least amount of attention.

As there is currently no preferred or correct method(s) of selecting factors with critical gaps, this research has chosen to combine the results collected from the three analysis methods to ensure the selection of factors with critical gaps will be less subjective. Table 6 shows the combined results from all three methods, denoted by Test 1, Test 2 and Test 3 respectively. Test 1 refers to the significance value obtained from the paired-samples t-test. Test 2 refers to the weighted mean gap analysis method and highlights the top ten factors with the highest weighted mean gap values. Finally, Test 3 refers to the unweighted IPA method and brings attention to the factors listed within the "Critical" improvement area. Determination of criticality will be based on the factor satisfying the following criteria:

- Obtain a value less than the 0.05 significance level required for Test 1;
- Falls within the top ten factors with the highest weighted mean gap values for Test 2; and
- Located within the "Critical" improvement quadrant for Test 3.

Table 4: List of trust factors in improvement areas

Significant Quadrant		Critical Quadrant	
V8	Inform of any potential problems	V19	Level of responsiveness
V14	Dedicated resources	V13	Products/services customization
		V5	Products/services as per agreement
		V18	Predictable behaviour
		V2	Timely products/services
		V9	Reliability of advice
		V3	Standards and performance levels
		V6	Safety and quality standards
Necessary Quadrant		**Important Quadrant**	
V11	Actions beyond the norms	V15	Sincerity and honesty
V7	Need for monitoring	V1	Well-detailed agreements
		V10	Satisfy needs and expectations
		V16	Uphold formal/informal agreements
		V17	Truthful exchange of needs/facts
		V12	Business relationship development
		V4	Skills and expertise knowledge

Table 5: Identification of trust factors with critical gaps

	Trust Factor	Test 1: Paired-Samples T-Test Sig. Value	Test 1: Weighted Mean Gap Analysis Method	Test 2: Unweighted IPA Method
V19	Level of responsiveness	.000	1	Critical
V8	Inform of any potential problems	.000	2	Significant
V13	Products/services customization	.000	3	Critical
V5	Products/services as per agreement	.000	4	Critical
V2	Timely products/services	.000	5	Critical
V18	Predictable behaviour	.000	6	Critical
V9	Reliability of advice	.000	7	Critical
V6	Safety and quality standards	.000	8	Critical
V3	Standards and performance levels	.000	9	Critical
V14	Dedicated resources	.000	10	Significant
V15	Sincerity and honesty	.000	11	Important
V1	Well-detailed agreements	.004	12	Important
V10	Satisfy needs and expectations	.000	13	Important
V16	Uphold formal/informal agreements	.001	14	Important
V17	Truthful exchange of needs/facts	.001	15	Important
V12	Business relationship development	.001	16	Important
V11	Actions beyond the norms	.021	17	Necessary
V4	Skills and expertise knowledge	.009	18	Important
V7	Need for monitoring	.011	19	Necessary

Based on the guidelines proposed, Table 5 shows eight trust factors with critical gaps: "Level of responsiveness", "Products/services customization", "Products/services as per agreement", "Timely products/services", "Predictable behaviour", "Reliability of advice", "Safety and quality standards" and "Standards and performance levels".

5. CONCLUSION

This study raises the importance of information sharing within the Australian beef cattle supply chain and points to the trust as a main issues hindering the flow of information across the supply chain. The research deals with four dimensions of trust, namely, contractual trust, competence trust, goodwill trust, benevolence trust. The research identifies 19 factors

affecting the level of trust within the Australian beef cattle supply chain. The research presents surveyed 79 organisations investigation the present expected importance and perceived performance rating of trust factors. The research identifies the critical gaps relating to these factors using an integrated procedure comprising three types of tests. These tests are the paired-samples t-test, the weighted mean gap analysis method and the unweighted IPA method. The research recognises eight factors with critical gaps. These factors are "Level of responsiveness", "Products/services customization", "Products/services as per agreement", "Timely products/services", "Predictable behaviour", "Reliability of advice", "Safety and quality standards" and "Standards and performance levels".

REFERENCES

ABS (2006). "Year book Australia 2006". *Australian Bureau of Statistics*. Available at: www.abs.gov.au/ausstats/abs@.nsf/bb8db737e2af84b8ca2571780015701e/73E9BB8B8 0136D72CA2570DD0080F5C7?opendocument.

Australian Beef (2006). "Why Australian beef?". *Australian Beef*. Available at: www.australian-beef.com/beef/about/index.html

Bowersox, D., Closs, D. and Stank, T. (2000). "Ten mega-trends that will revolutionize supply chain logistics". *Journal of Business Logistics*, Vol. 21 No. 2, pp. 1 – 16.

Morris, C. and Buller, H. (2003). "The local food sector: a preliminary assessment of its form and impact in Gloucestershire". *British Food Journal*, Vol. 105 No. 8, pp. 559 – 566.

DPI&F (2006a). "How are beef cattle produced". *Department of Primary Industries & Fisheries*. Available at: www2.dpi.qld.gov.au/beef/5496.html.

Fredendall, L. and Hill, E. (2001). *Basics of Supply Chain Management*. Florida: CRC Press.

Gefen, D. and Straub, D. (2004). "Consumer trust in B2C e-commerce and the importance of social presence: experiments in e-products and e-services". *Omega*, Vol. 32, pp. 407 – 424.

Heide, J. and John, G. (1990). "Alliances in industrial purchasing: determinants of joint action in buyer-supplier relationships". *Journal of Marketing Research*, Vol. 27 No. 1, pp. 24 – 36.

Hosmer, L. (1995). "Trust: the connecting link between organizational theory and philosophical ethics". *Academy of Management Review*, Vol. 20 No. 2, pp. 379 – 403.

Hoyt, J. and Huq, F. (2000). "From arm's-length to collaborative relationships in the supply chain". *International Journal of Physical Distribution & Logistics Management*, Vol. 30 No. 9, pp. 750 – 764.

Jones, G. and George, J. (1998). "The experience and evolution of trust: implications for cooperation and teamwork". *Academy of Management Review*, Vol. 23 No. 3, pp. 531 – 546.

Kwon, I. and Suh, T. (2005). "Trust, commitment and relationships in supply chain management: a path analysis". *Supply Chain Management: An International Journal*, Vol. 10 No. 1, pp. 26 – 33.

Lambert, D. and Cooper, M. (2000). "Issues in supply chain management". *Industrial Marketing Management*, Vol. 29 No. 1, pp. 65 – 83.

La Londe, B. (2002). "Who can you trust these days?". *Supply Chain Management Review*, May/June, pp. 10.

Lester, T. (2004). "US beef industry braces for mad cow backlash". *Australian Broadcasting Corporation*, January. Available at: www.abc.net.au/7.30/content/2003/s1019578.htm.

Martin, R. (2002). "Trust and technology: the limits of technological control". *Proceedings of ANZAM/IFSAM 6th World Congress*, Gold Coast City, Queensland Australia.

Monczka, R., Petersen, K., Handfield, R. and Ragatz, G. (1998). "Success factors in strategic suppliers alliances: the buying company perspective". *Decision Sciences Journal*, Vol. 29 No. 3, pp. 533 – 578.

Morgan, R. and Hunt, S. (1994). "The commitment-trust theory of relationship marketing". *Journal of Marketing*, Vol. 58, July, pp. 20 – 38.

Mayer, R., Davis, J. and Schoorman, F. (1995). "An integrative model of organizational trust". *Academy of Management Review*, Vol. 20 No. 3, pp. 709 – 734.

O'Keeffe, M. (1998). "Establishing supply chain partnerships: lessons from Australian agribusiness". *Supply Chain Management*, Vol. 3 No. 1, pp. 5 – 9.

Parasuraman, A., Zeithaml, V. and Berry, L. (1988). "SERVQUAL: a multiple-item scale for measuring customer perceptions of service quality". *Journal of Retailing*, Vol. 64, Spring, pp. 12 – 40.

Pavlou, P. (2003). "Consumer acceptance of electronic commerce: integrating trust and risk with the technology acceptance model". *International Journal of Electronic Commerce*, Vol. 7 No. 3, pp. 101 – 134.

Peters, J. and Hogensen, A. (1999). "New directions for the warehouse". *Supply Chain Management Review*, Global Supplement, Spring, pp. 23 – 25.

PMMS Asia Pacific (2004). "Trust: the academic's perspective, PMMS' perspective". *PMMS Asia* Pacific. Available at: http://www.pmms.com.au/whitepapers/Trust.pdf.

Ryan, P., Giblin, M. and Walshe, E. (2004). "From sub-contractual R&D to joint collaboration: the role of trust in facilitating this process". *International Journal of Innovation and Technology Management*, Vol. 1 No. 2, pp. 205 – 231.

Sabel, C. (1993). "Studied trust: building new forms of cooperation in a volatile economy". *American Psychologist*, Vol. 35, pp. 1 – 17.

Simatupang, T., Wright, A. and Sridharan, R. (2004). "Applying the theory of constraints to supply chain collaboration". *Supply Chain Management: An International Journal*, Vol. 9 No. 1, pp. 57 – 70.

Sako, M. (1992). *Prices, Quality and Trust: Inter-firm Relations in Britain and Japan*. Cambridge: Cambridge University Press.

Sako, M. and Helper, S. (1998). "Determinants of trust in supplier relations: evidence from the automotive industry in Japan and the United States". *Journal of Economic Behavior & Organization*, Vol. 34, pp. 387 – 417.

Sherman, S. (1992). "Are strategic alliance working?". *Fortune*, September, pp. 77 – 78.

Spekman, R. (1988). "Strategic supplier selection: understanding long-term buyers' relationship". *Business Horizon*, July/August, pp. 75 – 81.

Tomlinson, E. and Lewicki, R. (2003). "Trust and trust building". *Beyond Intractability*. Available at: www.beyondintractability.org/m/trust_building.jsp.

Walker, A. (2004). "Overcoming the neo-liberal legacy: the importance of trust for improved interagency collaborative working in New Zealand". *Local Partnerships & Governance*, Research Paper No. 11.

AUTHOR BIOGRAPHIES

Roberta Li Chua is a Research and planning Executive at Singapore Airport terminal services. She is also a Masters of Business Research at the University of Southern Queensland. She received her first degree, Bachelor of Business (BBus), from the University of Southern Queensland, Australia in 2000. Recently, Ms Chua has submitted her Thesis for examination. The title of the Thesis is "Critical Factors Affecting Trust and Technology Diffusion within the Australian Beef Cattle Supply Chain". Her email address is <Roberta_Chua@Singaporeeair.com.sg>.

Geoff Cockfield is Deputy Dean for Faculty of Business, University of Southern Queensland, Australia. He was awarded PhD degree in 2006 by the University of Queensland. He teaches economics and politics at the University of Southern Queensland. He has undertaken funded research on farm forestry and sustainable grazing and published research articles on rural adjustment, regional development, carbon sequestration in land use and reforestation prioritisation. His email address is <cockfield@usq.edu.au>.

Latif Al-Hakim is a senior lecturer in supply chain management lectures at the University of Southern Queensland, Australia. Latif was awarded his undergraduate degree in 1968. His Masters (1978) and PhD (1983) were awarded by the University of Wales (UK). Dr. Hakim has published extensively in information management and systems modelling. He is the author and editor of eight books, more than ten chapters in books and more than 75 papers in

various journals and conference proceedings. He is the Editor-in-Chief of International journal of Information quality and Associate Editor International journal of Networking and Virtual Orgainsations.   His email is <hakim2usq.edu.au>.