# Public Sector Supplier Value Characteristics

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## Abstract

Post the global financial crisis there is a need for organisations to extract more value and productivity gains through innovation, supplier availability and efficiency. Key supplier value characteristics and associated supplier relationship management are important parts of supply chain management. In fact effective supplier relationship management, improving qualitative and quantitative levels of supplier measurement can provide competitive advantage (Cusumano, 1991). Understanding the value contribution from key suppliers is similar to the customer of choice (Bew, 2007), both challenge traditional supplier management viewpoints (Ming-Huei & Wen-Chiung, 2011). In order to further this new perspective the research focuses on determining value priorities for public sector procurement.

**Keywords:** Public Sector, Supplier Value, Supplier Relationship Management

**Introduction**

This research was prompted by the need to understand if there is a common set of value characteristics chosen by organisations when they determine key supplier status. The study will also seek to uncover if there is any correlation between countries, tenure within procurement and determine the importance of these characteristics when entering into key supplier relationships. The determination of value could be influenced by culture, the market dynamics, the economic environment, individual's drivers and motivations or the organisations objectives.

Past research has focused on developing qualitative and quantitative measures to determine practically useful frameworks for supplier relationship management (Che et al., 2011), key account management (Masell & Rangone, 2000) and customer relationship management (Svensson, 2004). Supplier relationship management can be considered a competitive advantage (Cusumano, 1991) and (Heizer & Render, 2001) thus highlighting the importance of integration between buyers and suppliers in order to deliver profitable outcomes and thus the potential significance of the study to both the academic field and practice. The current paper aims to study key supplier status by determining a consistent set of common value characteristics and thus develop a simple model that can be utilised by organisations when evaluating supply options.

**Supplier Value**

From a purely financial perspective the CFO and financial departments of most organisations use standard accounting financial instruments to determine value. These can range from return on capital employed to net present value or internal rate of return. Another financial method commonly used in procurement is the total cost of ownership (TCO) (Ellram, 1995). This methodology is used throughout the purchasing community to determine the lifecycle cost of a particular purchase and is the summation of purchase price, cost of acquisition, cost to operate and cost of disposal. This clearly does not measure the other value and benefits (outside financial instruments) that the purchase or acquisition delivers to an organisation.

Zsidisin et al. (2003) reviewed cost management and resourced based views focusing on exploiting environmental opportunities, knowledge and the development of human capital to gain value and thus competitive advantage as a part of evaluating total cost of ownership (TCO). Previous TCO philosophy overlooked mutual sharing of information both from the purchasing function and supplier, however openness and trust requires significant commitment from both organisations. The perceptions of purchasing supply management are highlighted in prior studies (Degraeve & Roodhooft, 1999) that demonstrates the importance of commitment and communication of TCO across both parties.

Arguably a firm's ability to capture value depends on the extent of its added value because, from a resource based view, competition directly impacts value capture (Chatain, 2011). Competition among stakeholders, for example shapes the distribution of value captured by a firm (Blyler & Coff, 2003). Buyer-supplier relationship can be viewed as a mechanism for the coordination and development of capabilities on both sides of a dyad. The reinforcement of vertical disintegration increases reliance on purchasing and supply management to extract value from the supplier-buyer relationship. Increasingly a great proportion of value is now being created outside the boundaries of the firm by suppliers (Roseira and Brito, 2009).

Businesses are becoming more reliant on suppliers for the provision of key processes, activities, products and services that support their strategic goals (Wicks, 2013). With the growth in business process outsourcing there is an increasing potential for suppliers to damage a company's reputation, productivity, compliance and financial performance and therefore a need to have a standardised process for identifying key suppliers. Wicks (2013) takes a risk based approach to identify key suppliers with a focus on understanding business and revenue impact of supplier failure rather than the traditional approach of prioritizing simply by total spend. Due to the importance of suppliers within the delivery of business continuity for organisations and the ability to build and deliver effective response plans to critical events; it is important to include supplier capabilities in supplier evaluation processes.

Ndregjoni & Gega (2012) explored the concept of value and its dimensions, customer and loyal customer, behavioural approach of loyalty and customer loyalty and how key value dimensions interact within organisations. They identified five key value dimensions;
1. Functional - economic view
2. Social - product used by friends and other counter parts a peer relationship
3. Sensitive - sentimental and psychological outcome and the feeling it provokes
4. Recognition - novelty and newness
5. Conditional - set of conditions at the decision to purchase

**Research Design**

As part of the drive for sustainability after the global financial crisis public sector reform was initiated in New Zealand (NZ) and the Australian state of New South Wales (NSW). These governments, as with many others have been borrowing money to fund public programs and the new focus is to reduce government debt. The NZ public sector comprises approximately 288 organisations. It spends approximately $30 billion per year on the goods, services and works needed to deliver its commitments to the public. The NSW public sector has approximately 220 organisations which are grouped into departments and agencies. The NSW government spend in goods and services (exclusive of construction and major projects) are approximately $20 billion per year.

The need to understand if there is a common set of value characteristics chosen by organisations when they determine and classify a supplier as a key Supplier has prompted the research. The intention was to focus on a defined group within NZ and NSW that can be accessed with a breadth and scale to ensure statistical significance. The study also sought to uncover any correlation between countries, tenure within procurement and determine the importance of these characteristics when entering into key supplier relationships.

The overall research approach is depicted as a descriptive correlation research framework in figure 1. The Inductive processes (Pilots/Workshop) were designed to determine and select a control set of value characteristics that were used to populate the research questionnaire through a qualitative research methodology. Three pilots were conducted and the outcomes tabulated and all the suggested criteria were subsequently used in the questionnaire.
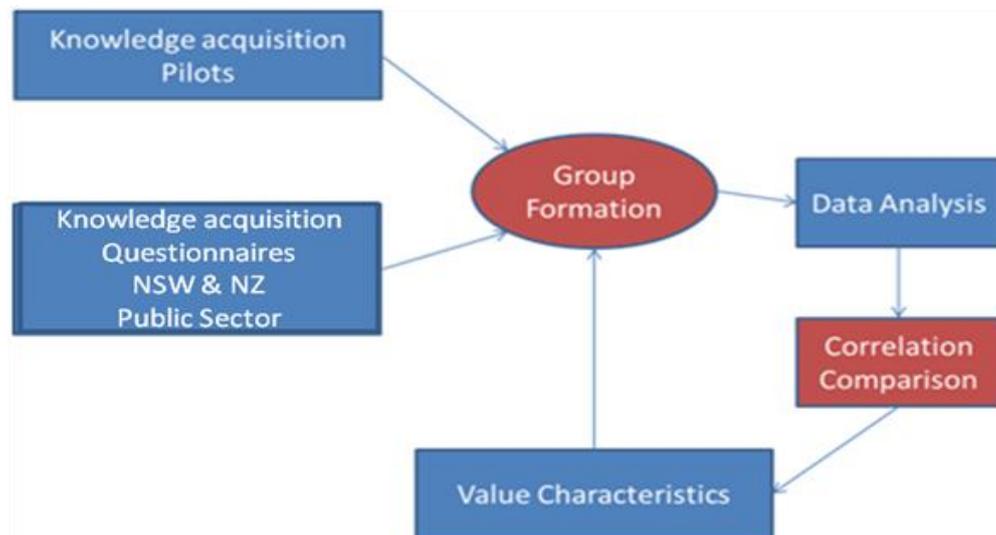


*Figure 1 – Description Correlation Research (DCR) Framework*

The second stage of the research was conducted using a formal questionnaire and the data extracted from the survey was analysed in a quantitative methodology using standard statistical techniques. This study could be considered as a mixed method study due to the staged approach using qualitative data gathering in the inductive workshops and quantitative analysis of questionnaire responses. However due to the analysis and questions being examined post questionnaire the final outcome is based primarily on quantitative statistical analysis.

**Analysis**

The membership of the workshop groups comprised of senior procurement leaders from the public sector in both NZ and NSW. Workshops were held with the NSW Procurement Working Group, the NZ Procurement Functional Leadership Group and the NZ State Owned Enterprise Procurement Team. Each workshop was conducted using a replicated methodology based upon a qualitative (inductive) approach with consensus outcomes. First each participant was asked to describe value characteristics from a key supplier and write them on "post it" adhesive notes (one value for each note). A white board or wall was used for the next phase. Each individual was asked to place their post-it notes onto the wall and as a consensus started to form each characteristic was given a name. Finally the participants were asked to rank the characteristics as a group, the results of which are displayed in table 1. Output from the workshops was synthesised into 26 unique value characteristics thus providing a basis for the wider quantitative survey.

*Table 1 – Expert Supplier Value Rankings, NSW and NZ*

| Rank | NSW Procurement Working Group | NZ Procurement Functional Leadership Group | NZ State Owned Enterprise Procurement Team |
|---|---|---|---|
| 1 | Service Excellence | Value for Money | Relationship Trust |
| 2 | Value for Money | Relationship Trust | Quality |
| 3 | Capable & Competent | Quality | DIFOT |
| 4 | Quality | Effective service / Delivery | Value for Money |
| 5 | Financial Stability | Culture & Business Alignment | Good Planning |
| 6 | Innovation | Innovation | Specialist Resources |
| 7 | Safety | Process Improvement | Culture & Business Alignment |
| 8 | Trust | Stability | Process Improvement |
| 9 | Value Adding | Specialist Resources | Innovation |
| 10 | CSR | Market Intelligence | |
| 11 | Information Quality | | |

The questionnaire was delivered through a Cloud application called Free on Line Survey to the entire population of public sector procurement professionals based on the All of Government Agency website in NZ and the Government Agency database in NSW. The respondents were given a link incorporated in a letter sent out via email. The respondent's exact profile was anonymous however the questionnaire did collect generic statistics such as organisation name and length of time in years as a procurement practitioner. In total 1828 practitioners were invited to participate and 185 complete responses were received. The data gathered from the questionnaires was first coded, analysed and grouped into various sample populations by country and by length of time working within procurement. The statistical analysis used independent-test; ANOVA, Kruskal Wallis Test, MANOVA and Principle Component Analysis.

The relative importance placed of the 26 value characteristics by the respondents are graphically displayed in figure 2. The overall ranking of the characteristics is statistically significant at the 95% level, thus is can be seen that Value for Money, Service Quality and Product Quality are the top supplier value determinants. ANOVA of the two country scores are also statistically significant at the 95% level, in particular Financial Stability, Information Quality, Relationship Trust, National Distribution and Proactive differ between the two jurisdictions. To further test the homogeneity of variance between these groups both a Kruskal Wallis H test and a MANOVA was performed, both provided confirmatory results.
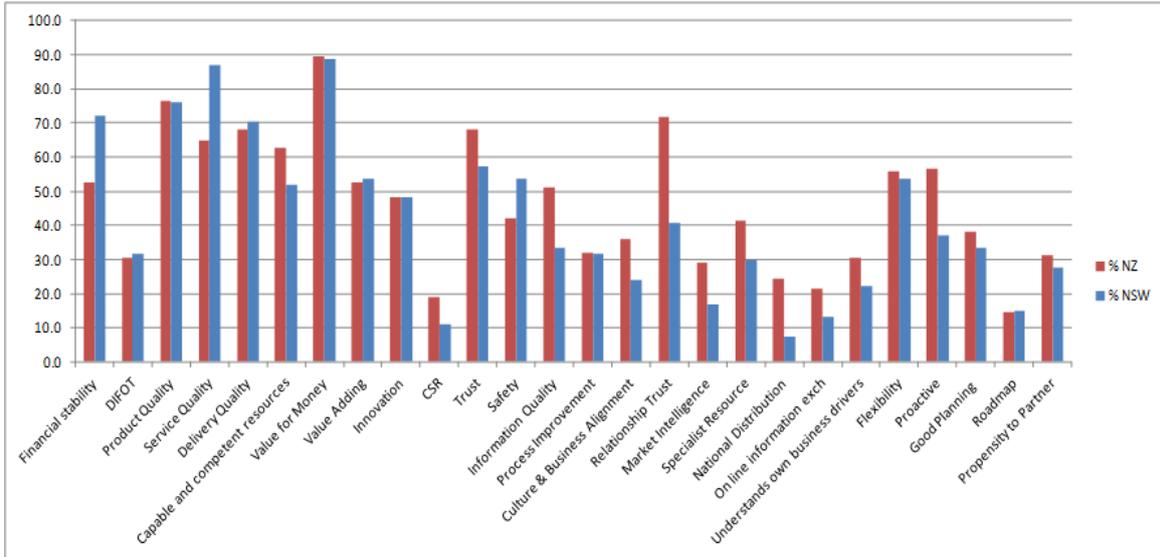
*Figure 2 – Ranked Supplier Value Characteristics, NSW and NZ Comparison*

In order to explore if professional experience had any effect on determining supplier value the length of time working in procurement was collected from respondents. Four categories were provided; less than 1 year, 1-3 years, 4-10 years and great than 10 years. More than half, 95 of the respondents indicated they had been working in procurement for more than 10 years, whilst only 7 were in their first year. MANOVA and Levene's test of Equality were used to test these relationships and with the exception on one value characteristics, National Distribution no significant difference was identified.

Principle Components Analysis (factor analysis) was performed on the data set in order to explore the independence and inter-correlation of the 26 value characteristics. Figure 3 displays the Scree Plot for the alternative numbers of factors and associated Eigenvalues. The points of inflection inform the researcher of point where reduction can occur (Formula n-1, where n= point of inflection). Orthogonal rotation is used via the Varimax technique. The orthogonal rotation used allows the component to be uncorrelated whilst still achieving a result. And rotation is only applied when two or more Components (factors) are retained.
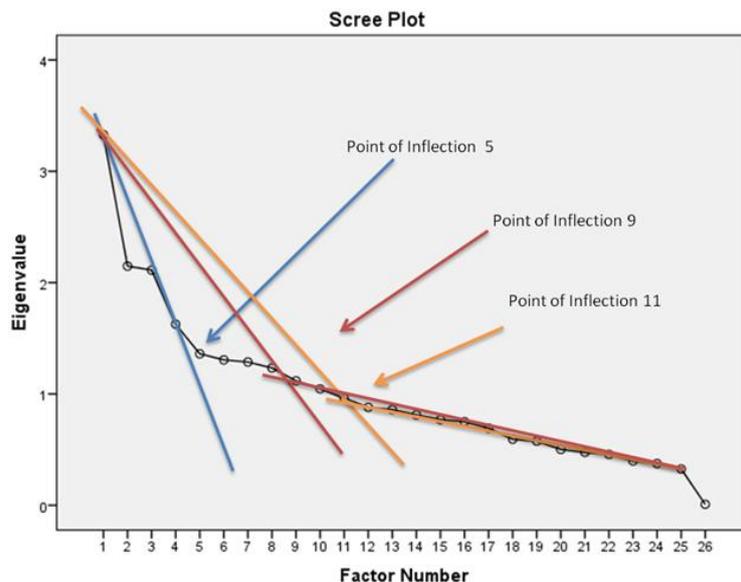


*Figure 3 – Value Characteristics Scree Plot and Points of Inflection*

5

Examination of the explanatory value of alternative number of factors together with the original expert evaluations (table 1) lead to the identification of the six Principle Components displayed in figure 4. The majority of the value characteristics are placed into a single component thus enabling clear demarcation of respondent's perspectives.

| | Compon | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Value for Money | .557 | | | | | |
| Propensity to | -.536 | | | | | |
| Partner Product | .521 | | .519 | | | |
| Quality Financial | .520 | | | | | |
| Stability CSR | .517 | | | | | .465 |
| Understands own business drivers | -.432 | | | | | .367 |
| Good Planning | -.427 | | | -.345 | | |
| On line information exchange | | .754 | | | | |
| Information Quality | | .729 | | | | |
| Market Intelligence | | .545 | -.366 | | | |
| Roadmap | | -.475 | | | -.355 | |
| Service | | | .745 | | | |
| Quality | | | .723 | | | |
| Delivery | | | -.432 | | | |
| Quality Trust | | | | .712 | | |
| Value Adding | | | | .670 | | |
| Innovation | -.355 | | | .374 | | |
| Culture & Business Alignment | | | | | .770 | |
| Capable and competent resources | | | | | .718 | |
| Specialist Resources | | | | | | -.756 |
| Flexibility | | | | | | .486 |

*Figure 4 –Value Characteristics Rotated Component Matrix for Six Factors*

**Discussion**

Our research set out to investigate if it was possible to identify a definitive set of value characteristics for supplier value. Based on expert opinion from three workshops a broad set of characteristics were successfully developed. Then via a wider survey these were prioritised by NZ and NSW public sector procurement professionals. Some interesting variations between the jurisdictions are evident form the statistical analysis.

National Distribution and Information Quality are more important in New Zealand. This could be explained by the research subjects being geographically dispersed across two islands and their need to have a greater focus on these values. Another concept could be the importance of quality information when managing an organisation that potentially has multiple presences, offices throughout the country.

The difference in Relationship Trust could be argued that the potential bias form each jurisdiction could be aligned to the culture of the respective countries. Transparency (2015) publish an interesting corruption perception index each year. New Zealand often tops the international rankings for openness and a lack of corruption, whilst Australia is typically ranked less favourably.

Financial Stability has a counter intuitive response with NSW respondents highlighting an increased importance than their counterparts in New Zealand. This could be potentially explained due to the research parties focus on differing types of organisation. In NSW there is a focal lens within the public sector to contract with SME's and local subsidiaries of multinational companies. In New Zealand there could be fewer subsidiaries of multinational companies due to size of population and target market. Therefore potentially more contracts with off shore head offices rather than small companies that potentially could have greater stability and less cash flow issues.

Proactive is a more difficult value to explain the variance between jurisdictions. One view is that it could be similar to National Distribution and Information Quality in that the nature of the geographical spread of New Zealand Government Agencies. Another could be the tyranny of distance and the size the market requiring organisations to deliver a more proactive approach to the provision of goods and services. Alignment to a cultural and maturity of the procurement profession with the NZ jurisdiction could be another factor for the difference. NSW is still focused on reform through cost savings (cost out) while NZ is focusing on developing economic growth through shared value in the supplier – customer dyadic relationship.

There was sufficient sample size and data to achieve the overall research goal of determining a common set of value characteristics when the NZ and NSW jurisdictions were combined. Principal component analyses lead to the developed of a hierarchical supplier value characteristic model, figure 5. Six broad value categories were identified:

- *Sustainable Partnership Value* components are the group of value characteristics highlighted in the workshops primarily in NSW and NZ and align to the outcomes of previous studies (Wicks, 2013, and Lendrum, 2004). The exception being good planning derived from the State owner enterprise team workshop and evident in the research studies of (Lambert & Knemeyer, 2004).

- *Shared Vision with Intelligent Information* have component value that were predominately derived from the NZ Workshops and comfirm the previous research of Joshi and Chebbiyyam (2011) and Ulga & Eggart (2006) who from their studies highlighted that knowledge and know how were important vale characteristics.

- *Trusted Relationship and Quality* are the value components that are at the core of the majority of prior studies. All of these elements were highlighted as important value characteristics in both the inductive workshops and the subsequent survey results.

- *Aligned Value Innovation and Culture* once more confirm a great deal of prevision research into value with as numerous authors have identified innovation and made reference to culture, business alignment and frequently with the term professional used as the descriptor.

- *Skilled and Specialist Resources* components were prevalent in both the workshops and referenced highlighted by Chatain (2011) as expertise and Wicks (2013) in their previous studies.

- *Flexible Organisation Driving Continuous Improvement* component values were highlighted during both NZ workshops and through previous research studies by Zsidisin et al (2003). Whilst flexibility and responsiveness aligns to works by Joshi & Chebbiyam (2011), Lendrum (2004) and Humphreys et al (2008).
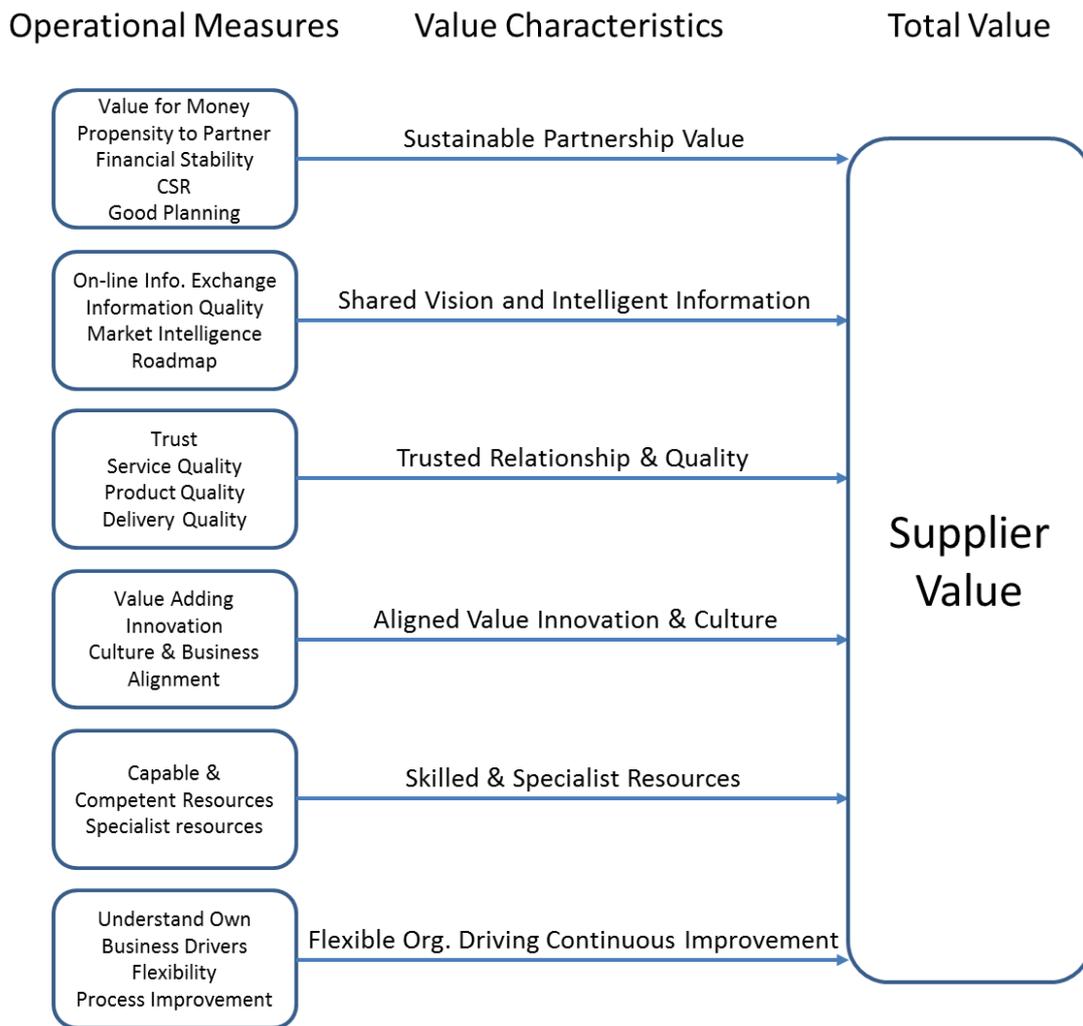
| Operational Measures | Value Characteristics | Total Value |

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Operational Measures          Value Characteristics              Total Value

┌─────────────────────┐
│ Value for Money     │
│ Propensity to Partner│─── Sustainable Partnership Value ──────┐
│ Financial Stability │                                        │
│ CSR                 │                                        │
│ Good Planning       │                                        │
└─────────────────────┘                                        │
┌─────────────────────┐                                        │
│ On-line Info. Exchange│                                      │
│ Information Quality │── Shared Vision and Intelligent Information ─┤
│ Market Intelligence │                                        │
│ Roadmap             │                                        │
└─────────────────────┘                                        │
┌─────────────────────┐                                    ┌───────────┐
│ Trust               │                                    │           │
│ Service Quality     │── Trusted Relationship & Quality ──│ Supplier  │
│ Product Quality     │                                    │  Value    │
│ Delivery Quality    │                                    │           │
└─────────────────────┘                                    │           │
┌─────────────────────┐                                    │           │
│ Value Adding        │                                    │           │
│ Innovation          │── Aligned Value Innovation & Culture│           │
│ Culture & Business  │                                    │           │
│ Alignment           │                                    │           │
└─────────────────────┘                                    │           │
┌─────────────────────┐                                    │           │
│ Capable &           │                                    │           │
│ Competent Resources │── Skilled & Specialist Resources ──│           │
│ Specialist resources│                                    │           │
└─────────────────────┘                                    │           │
┌─────────────────────┐                                    │           │
│ Understand Own      │                                    │           │
│ Business Drivers    │── Flexible Org. Driving Continuous Improvement ─┘
│ Flexibility         │
│ Process Improvement │
└─────────────────────┘
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*Figure 5 – Hierarchical Supplier Value Characteristic*

It was not possible to perform a detailed analysis by population breakdown and enrich the overall model because of the sample sizes of the sub groups. A further limitation of note is the lack of information derived from the supplier perspective. This would have given a full 360 view point and delivered a more complete picture of the dyad. Naturally the population, both public sector and Antipodean bias has resulted in limiting the generalizability of the results.

**Conclusion**

The study explored the procurement professional (practitioner) populations of both New Zealand and New South Wales (Australia). The aim was to determine a common set of supplier value characteristics for the public sector. The research has in a large part successfully achieved its objectives. The literature review on supplier value informed the study and provided a scholarly context for the research.

Arguably the concept of value in a relationship goes beyond the traditional economic return focus (Roseira and Brito, 2009, Porter, 1985 and Kramer, 2011). Although value for money is a dominant value characteristic both the inductive workshops and the surveys of NZ and NSW identified a significantly broader set of factors. This correlates with the previous studies and therefore supports the thesis that value is not only based on economic benefit.

8

Previous authors have shown that supplier value is influenced by the ability to react during times of business continuity (Wicks, 2013) whilst value capture is influenced by the competitive nature of the relationship and market (Chatain 2011). Our study has identified re-informing evidence for these insights. Through the statistical analysis, the country of origin can be seen to influence the determination of value characteristics; DIFOT, Safety, Relationship Trust, National Distribution and Proactive being significant differences between jurisdictions. However the Length of time in the procurement profession did not influence the outcome.

This research provides a further body of evidence into the complexities of understanding and measuring supplier value. It delivers a set of value priorities for the public sector that have been synthesised into a hierarchical model. Expanding the research from a single professional disciplined population with a common experience of procurement to all stakeholders inclusive of end users could illuminate more value priorities.

The practical application of our model could be contemplated in the tender lifecycle. During the tendering process questions could be asked in line with the operational measures. On short listing where unknown suppliers are investigated further, our value model could stand alongside the traditional referencing methods to provide additional mitigation in determining if a supplier has the propensity to deliver value in your new dyadic relationship. In the drive for sustainability and the reaction to the need to become more efficient and save money post the global financial crisis, business could apply the learnings from this research to help mitigate the cost and associated risk of value not being delivered.

The limitations highlighted in previous sections only provide the opportunity to increase the body of knowledge within these research topics. Useful insights into other jurisdictions or industry sectors such as the private sector would expand the knowledge and contribute to further insights into supplier value characteristics. Business value models are as dynamic as business transformation itself and details of supplier value will need to be updated and expanded in future studies.

## References

Bew, R. 2007, "The New Customer of choice imperative; Ensuring supply availability, Productivity and supplier Innovation", *92nd Annual International Supply Management Conference*, Las Vegas.

Cusumano, M. T. 1991, "A survey of Japanese, Japanese-transplant, and US. Auto Plants", *Strategic Management Journal,* Vol. 12, No. 8, pp. 563-588.

Ming-Huei, H., & Wen-Chiung, C. 2011, "Managing Key Account Portfolios across the process of relationship development: A value proposition-derived value alignment perspective", *Journal of Business to Business Marketing*, 18(1), pp.83-119.

Che, Z.H., Chiang, T.A. and Che, Z.G., 2012. Using analytic network process and turbo particle swarm optimization algorithm for non-balanced supply chain planning considering supplier relationship management. *Transactions of the Institute of Measurement and Control*, 34(6), pp.720-735.

Masella, C. and Rangone, A., 2000. A contingent approach to the design of vendor selection systems for different types of co-operative customer/supplier relationships. *International Journal of Operations & Production Management*, 20(1), pp.70-84.

Svensson, G., 2004. Supplier segmentation in the automotive industry: A dyadic approach of a managerial model. *International Journal of Physical Distribution & Logistics Management*, 34(1), pp.12-38.

Heizer, J., and Render, B. 2001, *Operations Management*. New Jersey: Prentice - Hall.

Ellram, L.M., 1995. Total cost of ownership: an analysis approach for purchasing. *International Journal of Physical Distribution & Logistics Management*, 25(8), pp.4-23.

Zsidisin, Ellram, & Ogden. 2003, The relationship between purchasing and supply management's perceived value and participation in strategic supplier cost management. *Journal of Business Logistics* Vol 24 , 129-154.

Degraeve, Z. and Roodhooft, F., 1999. Effectively selecting suppliers using total cost of ownership. *Journal of Supply Chain Management*, 35(4), pp.5-10.

Chatain, O., 2011. Value creation, competition, and performance in buyer-supplier relationships. *Strategic Management Journal*, 32(1), pp.76-102.

Blyler, M. and Coff, R.W., 2003. Dynamic capabilities, social capital, and rent appropriation: Ties that split pies. *Strategic Management Journal*, 24(7), pp.677-686.

Roseira, C. and Brito, C., 2009. Value Co-creation with Suppliers (No. 342). *Universidade do Porto*, Faculdade de Economia do Porto.

Wicks, S., 2013. Identifying tier one key suppliers. *Journal of business continuity & emergency planning*, 6(3), pp.210-221.

Ndregjoni, Z. and Gega, E., 2012. Customers loyalty and value key dimensions interaction in organization. *International Journal of Management Cases*, 14(2), pp.63-67.

Transparency, I., 2015, Corruption Perception index 2015. Retrieved from *www.transparency.org/country/*

Lendrum, T., 2004. *The strategic partnering pocketbook: Building strategic partnerships and alliances*. McGraw-Hill Australia.

Lambert, D.M. and Knemeyer, A.M., 2004. We're in this together. *Harvard business review*, 82(12), pp.114-124.

Joshi, K.P. and Chebbiyyam, M., 2011, Determining value co-creation opportunity in B2B services. In *SRII Global Conference* (SRII), 2011 Annual (pp. 674-684). IEEE.

Ulaga, W. and Eggert, A., 2006. Value-based differentiation in business relationships: Gaining and sustaining key supplier status. *Journal of marketing*, 70(1), pp.119-136.

Kramer, M.R., 2011. Creating shared value. *Harvard business review*, 89(1/2), pp.62-77.

Porter, M.E., 1985. *Competitive advantage: Creating and maintaining superior performance*. The Free Press.