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**HOW DOES RELATIONSHIP MANAGEMENT INFRASTRUCTURE  
INFLUENCE PERFORMANCE?**

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INFLUENCE PERFORMANCE?**

## **ABSTRACT**

The contribution of relationship management infrastructure (RMI) to positional advantage, customer, market and financial performance was tested in major, organisational customer relationships through structural equation modelling. The results support a direct, significant contribution of RMI to positional advantage, however the anticipated direct contribution of RMI to financial performance resulting from efficient and productive relationship infrastructure was not supported. The contribution of RMI to the variance in customer, market and financial performance was indirect. Explanations of these findings are proposed.

*Keywords:* relationship management, relationship marketing, organisational performance

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## **HOW DOES RELATIONSHIP MANAGEMENT INFRASTRUCTURE INFLUENCE PERFORMANCE?**

### **INTRODUCTION**

In response to the challenge of planning in an environment that is rapidly changing through technology, globalization and deregulation, Chakravarthy (1997) proposes a strategy framework which calls for, among other dimensions, building customer networks, continual innovation and investment to retain those customers, and focusing on organisational capabilities rather than distinctive competencies. Unlike competencies that integrate technology, knowledge and production skills to provide a platform for the *generation* of market offerings (Plakoyiannaki and Tzokas 2002; Plakoyiannaki 2005; Day 1994), capabilities integrate knowledge and processes, with learning and behaviour to *mobilise* these market offerings (Mahoney and Pandian 1992; Cannon, Achrol and Gundlach 2000; Plakoyiannaki and Tzokas 2002; Day 1994).

In addition to mobilising a supplier organisation's market offerings, infrastructure underpinning a relationship management capability is critical to leveraging the knowledge, skills and other assets that comprise customer stakeholder-based resources (Kelly and Amburgey 1991; Law, Wong and Mobley 1998; Gold, Malhotra and Segars 2001). At a specific point in time, relationship management infrastructure will reflect an accumulation of knowledge-embedded skills and a relationship management system comprising routines and processes re-configured as a consequence of learning and experience (Verona 1999; Gold,

Malhotra and Segars 2001). As Sawhney and Zabin (2002, p. 314) explain, an organisation's relationship management strategy "*need(s) to be enabled through well-designed and continually adapting relationship management processes*". Capability infrastructure requires on-going, firm-specific, re-investment to support the application of new capability knowledge, if an organisation is to retain or build positional advantage (Ethiraj, Kale, Krishnan and Singh 2005).

Although the link between relationship marketing activity outcomes (trust, commitment) and market performance has been established previously (for example, Jap 1999; Cannon, Achrol and Gundlach 2000), limited research has been directed towards understanding the contribution of an overarching relationship management capability or specific capability dimensions such as relationship infrastructure, to performance (Tse, Sin, Yau, Lee, and Chow 2004). Further, in studies that have sought to understand the association between relational aspects of capability infrastructure and performance (Kim, Cavusgil and Calatone 2006; Ravichandran and Lertwongsatienin 2005), only limited constructs measuring performance have been adopted (responsiveness of partnership, market performance - Kim, Cavusgil and Calatone 2006; financial performance - Ravichandran and Lertwongsatienin 2005). Narrow conceptualisations of performance are also evidenced in Customer Relationship Management (CRM) research, for example, "*above target business unit profits*" (Ryals 2006), "*customer satisfaction*" (Srinivasan and Moorman 2005), "*customer retention and satisfaction*" (Jayachandran, Sharma, Kaufman and Raman 2005) and perceptual and objective economic performance (Reinartz, Krafft and Hoyer 2004).

Although the importance of relationships to success in business-to-business contexts has been well established (Anderson and Narus 1990), and there is an implicit assumption regarding the strength of buyer-seller relationships and financial performance, in practice, executives have expressed doubts regarding the effectiveness of relationship management activities (Palmatier, Dant, Grewal and Evans 2006). Likewise, in academia, Morgan and Hunt (1999) have encouraged researchers to advance understanding of the relationship between relationship practice and competitive advantage.

The key contributions of this research are in demonstrating the impact of relationship management infrastructure investment on positional advantage, and in providing an understanding the inter-relationships between relationship management infrastructure investment and strategic (competitive position), economic (market and financial position) and operational (customer engagement) measures of organisational performance. This research provides a comprehensive approach to measuring performance outcomes of relationship management infrastructure investment, with a view to gaining insight not only into the contribution of the relationship management infrastructure investment to market based performance, but also the extent that a competitively superior infrastructure contributes cost advantages directly to financial performance.

Firstly, literature informing the infrastructure dimension of a relationship management capability is described. Secondly, alternative approaches to structuring the measurement of performance are presented, then hypotheses developed and the method of data collection described. Finally, implications of the results for theory and practice are presented.

## RELATIONSHIP MANAGEMENT INFRASTRUCTURE

Evidence supporting the importance of collaborative exchanges is plentiful, and found, for example, in:

1. Heide (2003, p. 19) who argued that “*buyers that rely exclusively on market contracting may be constrained in their ability both to evaluate supplier performance per se and to make correct attributions about the cause of performance problem*”; and
2. Cannon, Achrol and Gundlach (2000) who concluded that the performance of relationships governed by detailed contractual agreements and an agreed code of business conduct increased, particularly in the context of transactional uncertainty.

Firms can adopt a consistent or varying approach to their engagement with client organisations. The nature of that engagement is posited to lie on a continuum between repeated, discrete, market-based transactions of competitively priced, commodity goods exchanged in a timely manner, at one extreme, to collaborative exchanges that are integral to a firm's value creation process, at the other (Day 2000). All firms exhibit a range of relationships between their various customer and other stakeholders, however ‘what varies between firms is the manner in which they operationalise ‘relationship management’ (Harker and Egan 2006, p. 227).

The contributions of relational trust and commitment to performance have been well documented, with for example, Morgan and Hunt (1994), Jap and Ganesan (2000), Doney and Cannon (1997) presenting alternative views on the relative importance of each of these dimensions to building relationship strength and longevity. The contribution of relationship management investment by a supplier organisation, however, has been less prominent in the literature (Ganesan 1994; Palmatier, Dant, Grewal and Evans 2006). Where investment has been the focus, comparing findings across studies is confounded by relationship investment being variously defined as time, financial, effort and/or resource investments.

Infrastructure as a resource investment is central to an organisation's relationship management capability. Thus, definitions and constructs representing infrastructure contained in the body of literature on organisational capabilities were consulted to establish a relevant approach to address the resource investment 'relationship management infrastructure' for this research. Consistent with a higher-order capability architecture proposed by Verona (1999), empirical work by Gold, Malhotra and Segars (2001) on an organisational information technology capability, and with relationship management dimensions that emerged from qualitative research by Day (2000), a relationship management capability is posited to comprise three supporting capability structures: a functional capability (infrastructure) and two integrative capabilities (Jarratt 2004). The functional capability contains the infrastructure of relationship management routines and processes, expertise (tacit and explicit knowledge derived from experience residing in organisational memory), and past experience (Verona 1999). Day's (2000) grounded research analyzing data on business practice identified a similar relationship capability infrastructure dimension which he labelled *relationship knowledge and skills*. He identified the key components of this dimension as experience,



databases, management systems and routines, which are consistent with Verona's functional (infrastructure) capability components, reflected in the Information Technology Capability infrastructure tested by Gold, Malhotra and Segars (2001) and aligned with Palmatier, Dant, Grewal and Evans' (2006) description of sellers' knowledge, experience and overall competence. The two integrative components of a capability reflect, firstly, the capability renewal processes and, secondly, the normative behaviour that is necessary for the development, dissemination and application of new capability knowledge to support that renewal (Helfat 1997; Verona 1999; Jarratt 2004). These integrative capabilities feed renewal of the relationship management infrastructure over time.

Capability renewal processes provide the mechanism through which advances in efficiency and/or productivity are made. Hunt's (1999, 2000) Resource-advantage Theory of Competition (RA theory) explains this process of capability renewal and the link between renewal and comparative advantage. Learning, and the resultant application of that learning leading to capability renewal are endogenous to this competitive system, and form the foundation of comparative advantage. At a single point in time relationship management infrastructure will reflect routines, processes and knowledge that represent the application of an organisation's collective adaptive and generative learning about how to manage its customer relationships. The infrastructure is therefore central to that capability, and a necessary requirement for leveraging inter-firm resources, generating value and building performance.

Adaptive learning results in knowledge development and process renewal that is consistent with current approaches, whereas generative learning results in the development of knowledge, processes and behaviours that fall outside current normative practices (Baker and Sinkula 1999; Lukas, Hult and Ferrell 1996). For example, as a consequence of generative learning, relationship management infrastructure might be reconfigured with new performance criteria added, and/or new technology applied to facilitate collaborative behaviour and innovation emerging from the relationship. As a result of adaptive learning from current customer relationship interactions, 'dysfunctional' relationship management processes and behaviours will be streamlined, with efficiency and productivity aspects addressed. Thus, relationship learning facilitates the capability's renewal process, creating change in the relationship management infrastructure. It is the re-investment in capability resources, through the application of new knowledge that enhances capability efficiency and productivity, which in turn, re-enforces resource heterogeneity, and builds comparative advantage (Hunt 2000).

The objective of this research is to capture the impact of a relationship management infrastructure investment at a specific point in time on multiple measures of performance. Thus, relationship management infrastructure becomes the independent construct for this study. Consistent with Verona (1999), Day (2000) and Gold, Malhotra and Segars (2001), Relationship Management Infrastructure is conceptualized as:

- the relationship management system,
- relationship management expertise (knowledge residing in organisational memory)
- and
- relationship management experience.

## **RELATIONSHIP PERFORMANCE**

Relationship performance has been evaluated through a broad range of options including relevant activity ratings of the partner (Dahlstrom, McNeilly and Speh 1996), financial performance of the responding partner (Johnson, 1999), profitability of the relationship (Wiley, Wilkinson and Young 2005), broader notions of partnership value outputs (Song, Xie and Dyer and Nobeoka 2000) and capacity building, competitiveness and innovativeness performance measures versus expectations (Jarratt and O'Neill 2002). These measures of performance are consistent with the purposes frequently stated for entering major relationships (Jarratt and Fayed 2001). The cost efficiency perspective (supported through transaction cost analysis foundations, (Williamson 1989) and the focus on building comparative advantage (Jap 1999), highlight the value outcomes sought from the multiple and complex exchanges that occur within major relationships (Wilson 1995). A relationship management capability is argued to decrease transaction costs resulting from bargaining and monitoring behaviour, and stimulate innovation, thus contributing directly to both positional advantage and performance (Barney and Hansen 1994; Sawhney and Zabin 2002).

A growing number of authors have encouraged the adoption of multiple measures of performance (Morgan, Kaleka and Katsikeas 2004; Katsikeas, Leonidou and Morgan 2000; Homburg and Pflesser 2000; Jap 2001, 1999). Quinn and Rohbraugh's (1983) spatial model provides a framework for determining the combination of performance constructs to be included in assessing effectiveness (Kumar, Stern and Achrol 1992; Nygaard and Dahlstrom

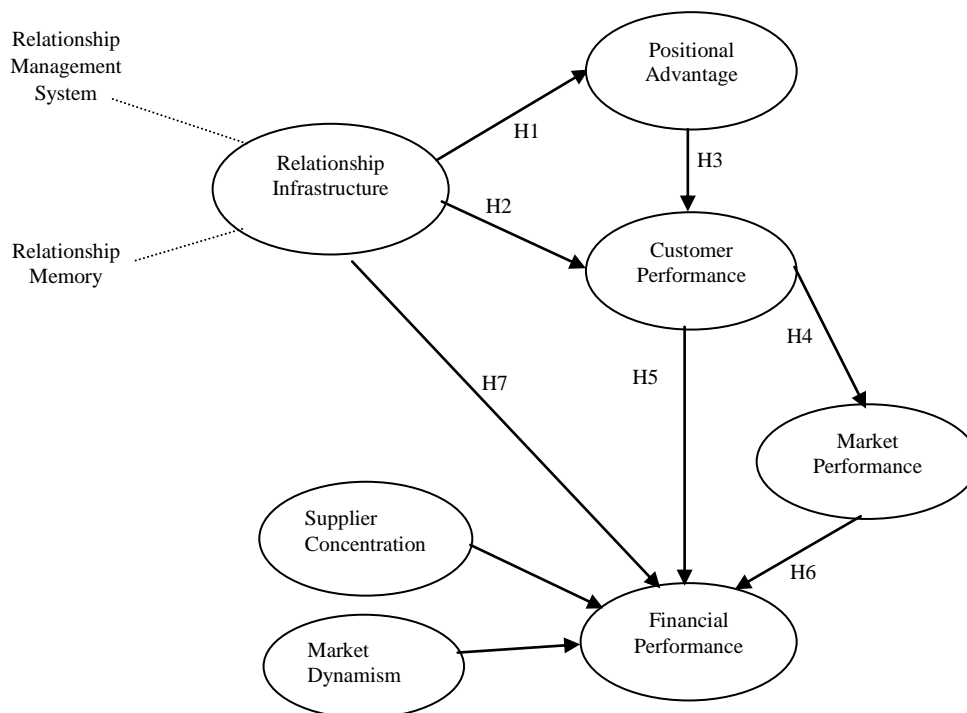
2002), and this study embraces this perspective. The spatial model integrates both rational and natural systems perspectives and reveals four mid range models which vary with respect to properties on three value dimensions (control-flexibility, internal-external focus, means-end). An organisation is argued to need equilibrium across Quinn and Rohbraugh's competing, mid range models (i.e. balancing control, an inwards perspective and resource investment with flexibility, an outwards perspective and goal attainment) (Kumar, Stern and Achrol 1992). Following Kumar, Stern and Achrol's (1992) application in a reseller context, Quinn and Rohbraugh's rational goal model is depicted through achievement of sales, profit, and new business goals (financial performance). The open systems perspective, with its system expansion objective, is captured through market growth (market performance) which results from attracting new customers and retaining current customers (customer performance) and customer satisfaction, while the human relations model is represented through competing more effectively (positional advantage). The internal process model, reflecting system integration and control, is represented through efficiency gains (direct contribution to profit) and productivity gains (direct contribution to sales) resulting from coordination and integration of the relationship management system (Kumar, Stern and Achrol 1992). Quinn and Rohbraugh note the closeness of the rational and internal process models, with both these competing models contributing to financial goals through their respective external and internal orientations. Thus, positional advantage and customer, market and financial performance provide a comprehensive, balanced representation of relationship effectiveness in this study. In the next section the causal associations between these constructs is discussed.

## HYPOTHESIZED RELATIONSHIPS

Figure 1 depicts the hypothesized relationships to be tested through this research. The RA theory (Hunt 1999, 2000), posits the expectation that superior rewards will flow from a position of comparative advantage. These rewards are created through efficiency and productivity advances in capabilities through both proactive and reactive innovation. Capabilities integrate skills, knowledge, processes and learning, are inimitable and therefore provide a platform for competitive advantage (Anand and Khanna 2000; Day 2000).

**FIGURE 1**

### The Impact of Relationship Management Infrastructure on Performance Outcomes



The direct link between organisational capabilities and competitive advantage has been described previously (Hurley and Hult 1998; Jaworski and Kohli 1993). A firm that possesses a capability that has the capacity for renewal has learnt to perform a function distinctively when compared to other firms in a similar context, and will continue to advance the standard of performance of that function (Nelson and Winter 1982). Alternatively, in a fragmented market, with customer organisations displaying distinctly different service and relationship requirements, a supplier organisation may be unable to develop efficiency gains (increased outputs for specified inputs), productivity gains (increase in outputs in a specific time period), or apply learning to the system.

A firm that has the capability to forge links with its customers (among other stakeholders) and enhance returns on stakeholder-spanning resources through investment and re-investment in dedicated systems and trust-based governance, and continues to enrich that capability through learning about new relationship approaches in different contexts, is likely to sustain a position of competitive advantage (Selnes and Sallis 2003; Heide 2003). Thus,

***Hypothesis 1 (H1):*** relationship management infrastructure will contribute directly to a firm's competitive advantage.

A key desired outcome of relationship marketing practice is enhanced customer loyalty and retention (Anderson and Narus 1990). Business-to-business relationships have been observed to expand in breadth, depth and scope over time, to incorporate joint activities in R&D, quality assurance and marketing (Jarratt and Fayed 2001; Selnes and Sallis 2003). These joint activities can expand the revenue base, enhance customer value (von Hippel 1998), and create

cost efficiencies (Kalwani and Narayandas 1995). A high-performing relationship is one where both the supplier and the client organisation are satisfied with the relationship's effectiveness and efficiency (Selnes and Sallis 2003). Verhoef, Franses and Hoekstra (2001) provided evidence to support a positive association between relationship constructs and both customer referrals (leading to new accounts) and the number of services purchased, in a context where satisfaction, affective commitment and calculative commitment develop over time.

In a business-to-business relationship context, a customer's decision to remain in or leave a relationship is not only a function of satisfaction, but also a function of their anticipated future involvement in a relationship (Johnson 1999; Lemon, White and Winer 2002). Business-to-business relationships will generate relationship value through both Coleman rents (knowledge generation by the social unit responsible for relationship management achieved through coordination, stability and trust) and Burt rents (redesigning processes to achieve efficiency gains) (Kogut 2000; Wathne, Biong and Heide 2001). Embedded business-to-business relationships will concurrently seek both generative (new knowledge) gains through leveraging the relationship's knowledge assets (Coleman rents) and adaptive efficiency gains (Burt rents) to generate benefits, economies of scale and scope. The relationship will continue to deepen where benefits are equitably distributed, and accrue directly to both the supplier and client organisations. Grounded in Gassenheimer, Houston and Davis' (1998) concept of relationship equity and the theory of distributive justice, the equitable distribution of benefits results in *"perceptions of fairness (that) are a consequence of each party's intent for engaging in the exchange relationship, the contribution each party brings to the relationship and the value each party receives from the relationship"* (p. 324). In such a

context, an organisation's relationship management infrastructure that has been renewed through learning how to 'do things better', is likely to build customer satisfaction and retention. Supplier organisations in these types of relationships are likely to have in place analytical processes that will identify factors that drive customer retention and identify those who are at risk of defection (Reinartz and Kumar 2003). A supplier organisation that is capable of building effective and efficient relationships is likely to have advanced knowledge of customers' needs generally, and thus understand how to attract, and subsequently, keep new customers (attract new customers - rational goal model; customer loyalty - internal process model; customer satisfaction - open systems model) (Kumar, Stern and Achrol 1992). Thus, it is posited that:

***Hypothesis 2 (H2):*** relationship management infrastructure will contribute positively to customer attraction, satisfaction and retention (customer performance).

From a relational perspective, a position of competitive advantage is achieved when an organisation's ability to build successful, embedded relationships exceeds that of its competitors. Inter-firm knowledge sharing provides a supplier organisation with key insights on new approaches to value creation that can expand customer performance (Selnes and Sallis 2003). Thus,

***Hypothesis 3 (H3):*** a position of relationship management competitive advantage will have a significant, direct effect on customer performance.

With customer satisfaction and retention metrics outperforming those of competitors, it is anticipated that an organisation would subsequently achieve a market growth rate above that



of competitors, leading to an expansion of market share and higher levels of marketing profitability (market performance) (Homburg and Pflesser 2000). This relationship is implicit in Narayandas and Rangan's (2004, p. 68) description, "GE realized significant gains in a market that (at that time) it hardly knew existed". Thus,

***Hypothesis 4 (H4):*** customer performance will have a significant, direct effect on market performance.

Customer retention economics, cooperation reducing unproductive marketing resources and customer undertaking aspects of the value creation process, (Sheth and Parvatiyar 1995) and market performance have previously been established as key indicators of financial performance (Buzzell and Gale 1987). Thus,

***Hypothesis 5 (H5):*** customer performance will have a significant, direct effect on financial performance, and

***Hypothesis 6 (H6):*** market performance will have a significant, direct effect on financial performance.

Increases in relationship management system productivity will result in lower operating cost, faster time-to-market, lower acquisition costs and high price tolerance, (Sharma, Tzokas, Saren, and Kyziridis 1999; Homburg and Pflesser 2000; Fink, Edelman and Hatten 2006). Thus,

***Hypothesis 7 (H7):*** relationship management infrastructure will have a significant, direct effect on financial performance.

Variables known to directly contribute to the variance in firm performance (supplier concentration and market dynamism), were included as control variables in the analysis (Baker and Sinkula 1999; Cannon, Achrol and Gundlach 2000).

## **RESEARCH METHOD**

The research objective, to test the contribution of relationship management infrastructure investment to the variance in multiple measures of performance in a customer stakeholder context, encouraged a quantitative investigation. A longitudinal study of a large number of corporations using multiple informants over several years would provide confidence in establishing causality. However, within successful, medium to large corporations (the sampling frame for this study) significant movement of executives, and ethical consideration regarding the marking of questionnaires to match returns over time in the presence of promised anonymity, encouraged the selection of an alternative approach. A cross-sectional design was selected to address the research objective since, at a single point in time, an organisation's relationship management infrastructure will reflect accumulated knowledge from both adaptive and generative learning that has been translated into routines and processes. In addition, respondents were selected because of their knowledge of specific performance outcomes emerging from those investments. Limitations of cross-sectional research design and self reporting are discussed later. A questionnaire was developed from the literature and contained constructs and measures previously tested with marketing or management personnel. The questionnaire was pilot tested to establish face validity with five academics who actively consult to industry and are knowledgeable in the area. Although all

measures in the questionnaire had been derived from previous research, each item was discussed with the selected industry consultants. For one item, “we have the experience to effectively implement knowledge sharing systems with our relationship partners” examples were added in parentheses (e.g. linked intranets, linked data warehouses) to enhance face validity. The questionnaire was able to be completed in the time specified and the final form retested to ensure questions were assessed as clear in meaning and appropriate. Consistent with the view that the ability to leverage stakeholder-based resources remains within each firm (Srivastava, Shervani and Fahey 1998; Sawhney and Zabin 2002), those overseeing the management of key customer relationships for their organisation were the target population for the research.

Within organisations operating in the business-to-business sector, functional boundaries are not necessarily clearly defined, with many choosing to integrate functional divisions to achieve a more cohesive approach to the development of value-laden client offerings (Jarratt and Fayed 2001). Thus, the final form of the questionnaire was mailed to the marketing director or managing director (where no marketing director was nominated) of every second top-performing 3000 manufacturing and business service firms in the UK (1500 questionnaires sent). Business services, business suppliers and manufacturing firms were included in the study, as prior qualitative research had established the importance of a relationship management capability to proactive firms in these sectors (Jarratt and Fayed 2001). It is posited that successful organisations in these sectors are more likely to place greater emphasis on the management of relationships than unsuccessful firms.

The method of data capture provides a subjective opinion of only one person involved in relationship management. However, a manager responsible for the oversight of a number of major relationships will be knowledgeable about investment in the infrastructure supporting relationship management functionality and performance outcomes of that investment. The key informant technique (Mitchell 1994; Phillips 1981) has been widely used in similar studies. Further, there was strong agreement by respondents with the statements such as: my knowledge about our major customer relationships is high (93.7%) and substantial variance was captured in the key constructs measured.

The response rate of 12.67% was disappointing, particularly as attention was given to personally addressing envelopes, personally signing the accompanying letter, using University letterhead, offering to send an executive summary, sending a reminder mailing and phoning approximately one third of the sample population. Although the low response rate is a limiting factor of this study, it is consistent with that of other similar surveys. Hult, Hurley, Giunipero, and Nichols Jr (2000) experienced a response rate of 10.7% in collecting data from external purchasing organisations located in different multinational corporations, in comparison with an internal strategic business unit response rate of 85.3%. Other examples are: Grewal, Comer and Mehta (2001), approximately 14%, Farrell (2000) and Homburg and Pflesser (2000) approximately 15 %. Homburg and Pflesser (2000) identified the length of the questionnaire required to investigate organisational phenomena and the seniority of respondent targeted limit the response rate.

Descriptive statistics revealed that respondents represented all targeted industry categories (manufacturers of consumer and industrial goods, R&D organisations, business service providers, technology organisations, raw material providers, office supplies). The sample included 33% business service firms, 34% manufacturing firms and 30% business supply organisations (R&D, technology and office supply companies), with 3% failing to record a category of operation. Thus, even through the response rate was low, the sample is diversified, containing representation from all targeted population groups and is therefore argued to support 'robustness of the relational finding' (Blair and Zinkhan 2006 p. 6). All questionnaires were completed by a senior executive: marketing directors/managers or managing directors responsible for, amongst other business aspects, the selection and management of current and new client organisations. Blair and Zinkham's (2006) recommend testing for non-response bias through the systematic comparison on key attributes of those responding from an alternative communication mechanism. As those responses received last resulted from telephone requests to complete the survey following a second distribution of the questionnaire or from completion of a faxed survey following telephone contact, it was appropriate to employ Armstrong and Overton's (1977) test for non-response bias, comparing the first and last thirty responses on key attributes. No significant differences were found across the range of measures. The length of the questionnaire restricted the ability of the researcher to capture the data via telephone. Although some contacted by phone agreed to complete a faxed copy of the questionnaire or complete the copy already received, negative comments received during this third, telephone phase of data collection ("I have already indicated by not responding that I do not want to be involved") discouraged further attempts to encourage survey completion. The lack of significant differences on key measures between those who responded first and those who completed the survey following phone contact indicates that non-response bias was not a problem in these data.

The second order factor of relationship management infrastructure was represented by constructs depicting systems, experience and relationship knowledge (memory). Both of the accepted approaches to measuring organisational capabilities i.e. direct measurement of processes, and measurement of observable outcomes (efficiency) (Moorman and Slotegraaf 1999), are employed.

#### *Measuring Relationship Management Infrastructure*

Measures defining relationship management infrastructure were drawn from the literature. Measures describing a relationship management system were adapted from Gold, Malhotra and Segars (2001), Parikh (2001) and the substantive literature that identifies and describes processes associated with relationship marketing practice (for example, Henricks 1991- process of selecting relationship partners; Devlin and Bleackley 1988 – monitoring relationship progress; Bucklin and Sengupta 1993- coordination of activities). Measures of relationship memory (knowledge) were adapted from Hult, Hurley, Giunipero, and Nichols Jr (2000), and relationship experience measures followed those of Birkinshaw, Bresman and Hakanson (2000) and Day (1995).

#### *Measuring Performance*

Quinn and Rohbraugh's (1992) spatial model of organisational effectiveness and its implementation by Kumar, Stern and Achrol (1992) provided a framework for identifying performance outcomes consistent with four embedded mid-range orientations:

1. the rational goal model is represented by achievement of financial goals (financial performance) and reinvestment of profit.
2. the open systems perspective is captured through market growth (market performance) resulting from customer attraction, satisfaction and retention (customer performance)
3. the human relations model is represented through working together to achieve a stronger market position (positional advantage), and
4. the internal process model is represented through efficiency and productivity gains (financial performance) from coordination and integration of the relationship management system.

This combination of performance measures also captures strategic, operational and economic dimensions of effectiveness described by Katsikeas, Leonidou and Morgan (2000). Achievement of competitive advantage is a desired strategic outcome of inter-firm relationships (Jap 2001), while evaluation of customer performance provides an operational mechanism through which knowledge about both the process of relationship management and value derived through the relationship can be captured (Jap and Ganesan 2000). Measurement of economic performance has been generally associated with financial indicators of sales volume, return of investment, return on assets, return on sales, and/or profitability (Lee, Lee and Pennings 2001; Calantone, Cavusgil and Zhao 2002). Self-explicated measures, such as judgments about overall performance, market share change and new product success, have been shown to be highly correlated with the aforementioned objective financial measures (Baker and Sinkula 1999).

The measures representing competitive advantage were adapted from Jap (2001, 1999). The constructs measuring customer performance and market performance were derived from Homburg and Pflesser (2000) and Katsikeas, Leonidou and Morgan (2000), while financial performance was captured through self-explicated measures of satisfactory gross profit margin, satisfactory ROI (Calantone, Cavusgil and Zhao 2002) and funds for business growth (Kaleka 2002). A comprehensive set of measures of performance outcomes has been constructed that extends traditional measures of relationship performance to reflect a strategic perspective, establishing an association between relationship management capability, positional advantage, customer performance, market performance and financial performance, and provides empirical support for the RA theory (See Appendix A for actual items used).

## **RESULTS**

Construct validation was achieved through application of Confirmatory Factor Analysis (CFA). One construct, Relationship Experience, was found to be unreliable. Therefore, all items representing Relationship Infrastructure through the constructs relationship management system, experience and memory were subjected to exploratory factor analysis. A two factor solution (determined by examining eigen values and the scree plot) encouraged retaining relationship memory and collapsing relationship management system and experience within a single relationship management system construct. Items within this new construct with low correlations were deleted, however, taking care to retain the theoretical significance of relationship experience within the construct (Moorman, Zaltman, and Deshpandé 1992). Reliability coefficients of the remaining latent constructs reported by Cronbach's  $\alpha$  coefficients were all greater than 0.79. This approach is consistent with that adopted by



Siguaw, Simpson and Baker (1998), Hurley and Hult (1998) and Farrell (2000), who employed analyses of item and item-total inter-correlations, EFA and CFA to validate scales and to eliminate poorly performing items. Table 1 provides the results of CFA on latent constructs tested, items contributing to their measurement, the strength of each item's contribution to the construct, CFIs, and chi-square values with degrees of freedom. Goodness of Fit measures (Comparative Fit Indices CFI) indicated high levels of model fit for these constructs (Hair Jr, Black, Babin, Anderson, and Tatham 2006).

Discriminant validity of measures was assessed through pairwise confirmatory factor analyses. Forcing items of different latent constructs into a single factor decreased model fit when compared to the two-construct solution for each pair of constructs. The chi-square difference for each pair of latent constructs was significant in each case, confirming discriminant validity (Anderson and Gerbing 1988). A second test of discriminant validity involved comparison of the average of the sum of the squared standardized loadings on constructs to the squared correlation between constructs (Hair Jr, Black, Babin, Anderson, and Tatham 2006, p. 778). The averages of the squared loadings were all found to be higher than the squared correlations except for Relationship Management System (RMS) and Relationship Memory (RM). RMS and RM form the second-order construct Relationship Infrastructure. Removal of the item representing relationship experience from the revised construct Relationship Management System addressed this limitation, however, there was marginal change in overall structural model robustness and hypothesis support. The theoretical importance of relationship experience to a relationship management capability, the significance of the chi-square difference for each RMS and RI constructs, and the marginal change in structural model robustness and hypothesis support, encouraged retaining this item.

**TABLE 1.**  
**Latent Constructs – Measurement Model**

Constructs	Variables	Contribution $\beta$ (ROBUST statistics)	CFI and Cronbach $\alpha$	Independence Chi-square
Relationship Management System	Better ability than competitors	0.50 (6.69)	CFI = 0.92 $\alpha$ = 0.85	488.191 on 15 degrees of freedom
	Experience of implementing knowledge sharing systems	0.57 (8.96)		
	Monitor relationship progress	0.82 (12.04)		
	Coordinate relationship activities	0.85 (13.10)		
	Support interaction	0.71 (11.09)		
	Enhance productivity	0.72 (11.30)		
Relationship Memory	Conversation	0.65 (8.87)	CFI = 1.00 $\alpha$ = 0.81	237.292 on 6 degrees of freedom
	Audit problems	0.69 (9.00)		
	Share lessons	0.77 (10.00)		
	Challenge assumptions	0.76 (10.15)		
Relationship Management Infrastructure	Relationship management system	0.91 (6.44)	CFI = .92 $\alpha$ = 0.87	804.682 on 36 degrees of freedom
	Relationship memory	0.85 (5.50)		
Positional Advantage	Gained strategic advantages	0.89	CFI = 0.99 $\alpha$ = 0.90	515.79 on 6 degrees of freedom
	Stronger market position	0.94 (19.85)		
	Gained a competitive edge	0.89 (16.10)		
	Partner's strategic advantage	0.61 (8.13)		
Customer Performance	Higher customer satisfaction	0.70	CFI = 1.00 $\alpha$ = 0.79	184.26 on 3 degrees of freedom
	Higher customer retention	0.92 (10.28)		
	Attracted new customers	0.63 (7.50)		
Market Performance	Stronger growth rate	0.94	CFI = 1.00 $\alpha$ = 0.86	184.26 on 3 degrees of freedom
	Improved market share	0.85 (10.71)		
	Higher market investment return	0.69 (9.99)		
Financial Performance	Satisfactory gross profit margin	0.81	CFI = 1.00 $\alpha$ = 0.89	184.26 on 3 degrees of freedom
	Satisfactory ROI	0.97 (15.97)		
	Funds for business growth	0.79 (12.31)		

Table 2 provides the standardised solution for the contribution of Relationship Management Infrastructure to the variance in each performance construct through a series of independent regression equations. It might be concluded from these independent solutions that Relationship Management Infrastructure has a direct, significant contribution to each construct of performance. For example, in an independent regression model, Relationship Management Infrastructure demonstrates a direct, significant contribution to financial performance in the presence of the control variables ‘market dynamism’ and ‘supplier concentration’. In this model, the contribution of market dynamism to performance falls below  $p = 0.05$ , however the direction of association was as anticipated (negative).

**TABLE 2**  
**Independent Regression Solutions**  
**(contribution of Relationship Management Infrastructure to independent measures of performance)**

<b>Independent Linkages</b>	<b>Standardised Solution</b>	<b>Significance t statistic</b>	<b>Model Diagnostics</b>
RMI ⇒ Positional Advantage	0.55	3.71 $p < .001$	NNFI = 0.93 CFI = 0.94
RMI ⇒ Customer Performance	0.53	2.90 $p < .001$	NNFI = 0.91 CFI = 0.93
RMI ⇒ Financial Performance*	0.26	2.34 $p < .025$	NNFI = 0.92 CFI = 0.93
<b>*tested in the presence of control variables</b>			
Supplier concentration	0.28	2.02 $p < .05$	
Market dynamism	-0.10	-0.92 $p < .1$	

**TABLE 3**  
**Structural Model – latent constructs**

Constructs	Variables	Contribution (a)	P (b)	AVE (c)
Relationship	Better ability than competitors	0.54	0.81	43%
Management	Experience of implementing	0.58		
System	knowledge sharing systems	0.81		
	Monitor progress	0.83		
	Coordinate activities	0.71		
	Support interaction	0.74		
	Enhance productivity			
Relationship	Conversation	0.62	0.75	42%
Memory	Audit problems	0.69		
	Share lessons	0.77		
	Challenge assumptions	0.77		
Positional	Gained strategic advantages	0.88	0.84	58%
Advantage	Stronger market position	0.94		
	Gained a competitive edge	0.89		
	Partner's strategic advantage	0.61		
Customer	Higher customer satisfaction	0.73	0.73	48%
Performance	Higher customer retention	0.85		
	Attracted new customers	0.71		
Market	Stronger growth rate	0.89	0.79	56%
Performance	Improved market share	0.87		
	Higher market investment return	0.71		
Financial	Satisfactory gross profit margin	0.82	0.82	60%
Performance	Satisfactory ROI	0.95		
	Funds for business growth	0.80		

\* removal of low loading measures to enhance variance extracted

a: Standardised loading.

b: Construct reliability:  $(\text{sum of standardised loadings})^2 / \{(\text{Sum of standardised loadings})^2 + \text{Sum of indicator measurement error}\}$

c: variance extracted:  $\text{sum of squared standardised loadings} / \{\text{sum of squared standardised loadings} + \text{Sum of indicator measurement error}\}$

Following analyses of the contribution of Relationship Management Infrastructure to constructs representing performance outcomes in separate regression models, the structural model as depicted in Figure 1 was analyzed. The disturbances within the second order factors were equally constrained within the structural model, and a ROBUST solution was selected to address data non-normality. Table 3 identifies composite reliability and variance extracted for constructs included in the structural model. In using the approach to estimate composite reliability noted in Table 3 footnote b, no constructs incorporated in the structural model fell short of the recommended level of 0.60 (Bagozzi and Yi 1988). In fact all were over 0.7, indicating adequate convergence (Hair Jr, Black, Babin, Anderson, and Tatham 2006).

The contribution of Relationship Management Infrastructure to hypothesized, causally linked constructs of performance in the structural model confirms that its contribution to financial performance is in fact indirect (Table 4). A CFI of .93 (with a scaled chi square of 409.86 based on 267 degrees of freedom indicating a high degree of malfit between the hypothesized model and the null model) was achieved. Both the RMSEA of 0.05 and the parsimonious fit measure  $\chi^2/(\text{df})$  at 1.54 were within acceptable limits. Table 4 specifies the significant paths observed in the solution of the structural model describing the sequential and concurrent causal paths. Hypotheses H1, H3, H4 and H6 were supported, however, the anticipated, direct associations between relationship management infrastructure and customer performance (H2), customer performance and financial performance (H5) and relationship management infrastructure and financial performance (H7) fell below significance.

**TABLE 4**  
**Structural Equation Model Solution:**  
**Impact of Relationship Management Infrastructure on Causally Linked Performance**  
**Constructs**

<b>Linkages in the Structural Model</b>	<b>Standardised Solution</b>	<b>Significance t statistic</b>	<b>Model Diagnostics (Robust)</b>
RMI ⇒ Positional Advantage (PA) (H1)	0.58	3.53 p<.001	NNFI = 0.92
RMI ⇒ Customer Performance (CP) (H2)	0.19	1.21 ns	CFI = 0.93
PA ⇒ Customer Performance (CP) (H3)	0.60	4.23 p<.001	
CP ⇒ Market Performance (MP) (H4)	0.84	9.60 p<.001	Scaled Chi Sq =
CP ⇒ Financial Performance (FP) (H5)	-0.06	-0.32 ns	409.86 on 267 df
MP ⇒ Financial Performance (FP) (H6)	0.64	3.48 p<.001	
RMI ⇒ Financial Performance (FP) (H7)	0.07	0.84 ns	RMSEA = 0.05
Market dynamism ⇒ FP*	-0.13	-1.83 p<.1	
Supplier Concentration ⇒ FP*	0.07	1.00 ns	

\* Control Variables

## DISCUSSION AND CONCLUSION

The results of the structural model linking RMI and the various performance measures provide evidence of the strength of association, and insight into the mechanism of its contribution to, strategic (competitive advantage), economic (market performance, financial

performance) and non-economic (customer performance) dimensions of performance in a business-to-business context. The structural model confirmed support for four of the hypothesized relationships tested. As anticipated, a Relationship Management Infrastructure contributes directly to positional advantage, with its contribution to customer performance flowing indirectly through positional advantage, its contribution to market performance flowing indirectly through the customer performance (Selnes and Sallis 2003; Heide 2003) and its contribution to financial performance resulting from expanded market performance.

Three of the seven tested hypotheses were unsupported. Consistent with a) the Resource-advantage Theory of Competition, b) the views that business-to-business relationships expand in breadth, depth and scope over time (Jarratt and Fayed 2001; Selnes and Sallis 2003), and c) that increases in productivity will result in lower operating cost, lower acquisition costs and high price tolerance (Sharma et al., 1999; Homburg and Pflesser 2000), RMI was anticipated to have a positive, direct contribution to both customer performance and financial performance. In the presence of two control variables (market dynamism and supplier concentration) the structural model revealed that the direct contribution of RMI to financial performance was not significant although the relationship was in the direction anticipated. One possible explanation is that process innovation resulting in productivity advances across groups of customers that lower operating and customer acquisition costs are offset by costs of introducing innovation to maintain a position of comparative advantage. In addition, infrastructure costs will be incurred as new organisational customers join and others leave the system. The cross-sectional design may also have influenced in this finding. The satisfaction accumulated over time as customers realised the potential benefits of, for example, enhanced collaboration emerging from new inter-firm routines would not be revealed through within this

research design. The direct association posited between RMI and customer performance fell below accepted levels of significance but warrants further investigation.

Previous qualitative support (Narayandas and Rangan 2004) for a positive direct effect of customer performance on financial performance was not significant and was of the opposite direction to that anticipated. One explanation of the lack of support for this anticipated directed association could be that while efficiency gains occur as individual relationship experience increases, these experience effects are offset by emerging client organisation demands on the system, with the identification and development of potential relationship opportunities offsetting, to some extent, the benefits of the experience effects. Certainly, cost efficiencies were referred to by Narayandas and Rangan (2004) in their description of the relationship between Alpha and Delta Mines. However, the cost efficiencies were assigned to Delta (the client organization) rather than Alpha to remain competitive, Alpha was required to absorb costs of both process and product innovation within the relationship. Overtime it is anticipated that the growth in share of customer business and market growth would offset the set-up and ongoing relationship management costs. This aspect would not be captured in a cross-sectional study and also warrants further investigation.

Managers within a business-to-business context should be constantly vigilant of all key customer relationships with the objective of building operational best practice across all relationships. Efficiency gains are likely to accrue to those firms that move their relationship management practice from a customer focus (meeting unique, *individual customer* needs - Cravens and Piercy 1994) to a customer orientation (meeting the needs of purposively defined



customer segments - Zhu and Nakata 2007), drawing together knowledge on the management of groups of business relationships gained through practice, and from external sources, and applying that knowledge through work practices, structures and decision support systems at each stakeholder interface (Parikh 2001; Hadcroft and Jarratt 2007). Without efficiency gains and an emphasis on operational best practice, the impact of organizational customers entering and/or leaving the relationship management system is likely to negatively influence financial performance.

To remain at the forefront of relationship infrastructure best practice, managers will need to:

- invest and re-invest in processes that support a) benchmarking of relationship management systems, b) knowledge exchange, c) relationship interaction, d) relationship monitoring and e) productivity improvements,
- re-configure system integration as experience is accumulated, and
- engagement with knowledge gained from relationship management practice and other sources.

For example, Toyota's capability to manage inter-firm knowledge sharing in its network and its ability to continually upgrade that capability, exceeded that of competing auto-manufacturing networks, and was integral to Toyota's competitive success. Toyota's capability was enriched through embedding processes within the system that motivated participation and knowledge sharing, prevented members 'taking and not giving', and created efficiencies in accessing knowledge from a variety of sources. "*Toyota...is widely recognized as a leader in continuous learning and improvement*" (Dyer and Nobeoka 2000, p. 346). The link between Toyota's investments in specialised relationship routines and processes and industry leadership is consistent with Dyer and Singh's (1998) relational view of the firm, i.e

that relationship-specific investments, inter- and intra-firm routines for knowledge-sharing, complementary resource endowments and effective governance are important sources of additional profit for the firm.

Managers should reflect on the business expansion opportunities that can accrue from Relationship Management Infrastructure investment with leading client organisations. The embeddedness of relationship ties supported through infrastructure investment can stimulate new ways of thinking about the client's business that offer new streams of revenue. Narayandas and Rangan (2004) describe how the reconfiguration of Alpha's tyre management system around the objectives of increased tyre life and reduced customer overall tire costs, resulted in an increase in Delta Mine's satisfaction and subsequent expansion of the share of Delta's business with Alpha. Knowledge of Delta's business objectives gained through knowledge processes within Alpha's RMI stimulated the reconfiguration of Alpha's value propositions, thus building its performance outcomes with Delta and its ability to attract new customers.

An important additional area for further investigation lies in understanding the extent to which Relationship Management Infrastructure is leveraged in stakeholder interactions beyond those of organisational customers, i.e. to suppliers, and other stakeholders whose resources are critical to the value creation process of the firm.

## RESEARCH LIMITATIONS

One limitation of this research is the lower than anticipated response rate. Given the scale of the model to be tested, the ratio of the parameters to be tested to the number of cases (1:3) falls below limits of (1:5) recommended by Chou and Bentler (1995). Further limitations are the cross-sectional research design and that data were collected through a self reporting questionnaire. It has been argued that self reporting may lead to overestimation of investigated linkages and that longitudinal data should be used to establish causality (Ehrenberg 1997; Verhoef 2003). Although those responsible for relationship management overtime (i.e. constantly assessing their customers' levels of satisfaction and implementing change to enhance that satisfaction, as well as monitoring market performance and profitability) are in a position to provide information on the contribution of relationship management infrastructure to performance outcomes, it is likely that their subjective opinions will overestimate their own performance in anticipating and responding to customer needs.

Further research might adopt a longitudinal, and/or dyadic perspective, capturing data from informants in both relationship partners overtime, rather than from a single informant on the supplier side. Such an approach would be important to delineate between relationship cost efficiencies such as lower operating costs, lower acquisition costs and high price tolerance, and increased costs associated with improved systems and value affecting the financial performance of both the supplier and customer organisations.

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## **APPENDIX A: Scale and Scale Items Employed**

The following items were measured on a seven point Likert scale  
(1= strongly disagree to 7= strongly agree)

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### **Measures of Relationship Management Infrastructure**

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#### **Relationship Management System**

We have the experience to implement effective knowledge sharing systems with our relationship partners (e.g. linked intranets, linked data warehouses)

Few of our competitors can match our ability to manage business-to-business relationships

We actively monitor our relationships' progress

We co-ordinate all our relationship management activities

Inter-firm routines increase electronic and/or personal interaction

Our systems are designed to enhance the productivity of our relationships, no matter what the scale or scope of transactions

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### **Relationship Memory**

Organisational conversation keeps alive the lessons learned from relationship history

We always audit unsuccessful or problematic relationship endeavours to understand how we can improve

Through discussions and/or circulating reports we share lessons learned from current and past relationships

We are willing to challenge currently held assumptions about our relationships and their management

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### **Measures of Performance**

#### **Relationship Positional Advantage**

*As a result of our approach to customer relationship management....*

We have gained strategic advantages over our competitors

Our market position has been strengthened

We have gained benefits that have enabled us to compete more effectively

Our partner organisations have generally gained strategic advantages over their competitors

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### **Customer Performance**

*In comparison to our major competitors over the last twelve months.....*



Our company delivers higher customer satisfaction

Our company has a higher customer retention rate

Our company has attracted more new customers

### **Market Performance**

*In comparison to our major competitors over the last twelve months .....*

Our company has achieved a stronger growth rate

Our company has improved market share position

Our company provides a higher return on marketing investment

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For the following scale, a seven point Likert scale was used to measure each of the scale items (1=extremely dissatisfied to 7=extremely satisfied).

### **Financial Performance**

*The level of satisfaction with our performance on the following measures has been....*

Gross Profit Margin

Return on Investment

Ability to fund business growth from profits