

Offshore IT outsourcing between India and New Zealand: A Qualitative System Dynamics Model

Arun A. Elias¹ and Saji K. Mathew²

¹Victoria Management School, Victoria University of Wellington, Wellington, New Zealand

²Department of Management Studies, Indian Institute of Technology Madras, India

Phone: ¹+64-4-4635736; ²+91-44-2257 4573

Email: arun.elias@vuw.ac.nz; saji@iitm.ac.in

Abstract

Although both India and New Zealand recognise trade between the two countries as important for their respective economies, the current and past trade in information technology between the two nations has been very low. This research seeks to study this problem situation systemically by analysing the complex interactions of factors responsible for this situation. While most of the literature on IT offshore outsourcing is based on client perspectives, this study takes a service provider perspective. A causal loop model is developed to explain the underlying structure related to this problem situation. Finally, strategies to improve the problem situation are discussed using an analysis of the feedback loops captured in the model.

Keywords: offshoring, outsourcing, problem structuring, qualitative systems model

1. Introduction

International trade in services exhibited significant growth during the recent past in India and New Zealand. India's import of services grew from US\$ 16,392 million during 2000-2001 to US\$ 37,523 million during 2005-2006. During the same period, export of services grew from US\$ 18,870 million to US\$ 61,404 million (CECA, 2009). A similar growth trend is visible in services trade in New Zealand, where import of services grew from US\$ 4,409 million in 2002 to US \$8,281 million in 2007 and that in exports grew from US\$ 4,777 million to US\$ 8,655 million during the same period (CECA, 2009). New-Zealand's developed economy has about 71% contribution from services. As a developing economy, India's services contributed about 69% of the overall average of its growth in the GDP during the five years from 2002-2003 to 2006-2007 (Statistics New Zealand, 2011). The intent of both the nations in enhancing cross border trade is evident in the initiation of New Zealand-India free trade negotiations during 2010-2011.

Although both India and New Zealand recognize trade between the two countries as important for their respective economies, the current and past trade in IT services between the two nations has been surprisingly low. New Zealand's import of computer and information services from India in the financial year ending in June 2010 was US\$ 5.52 million which accounts for just 2% of New Zealand's total import of the same service. During the fiscal year ending in March 2010, Indian IT industry's total export was about US\$ 49 billion (Figure 1) which points to the very low level of trade in IT services between the two countries. In this context, the report of the Joint Study Group (JSG) constituted by the Ministry of Commerce in India and the Ministry of Trade in New Zealand has recognised information technology and telecommunications as important sectors for trade. This argument is based on India's competence in IT and New Zealand's competence in telecom which also matches well with India's large telecom market.

India's growing IT and IT enabled Services (ITeS) industry has received international recognition over the past one and a half decades (Bhattacharya and Vickery, 2010). India's IT industry provides services to a large number of Fortune 500 companies with a portfolio of service lines covering application development, system integration, infrastructure management and IT consulting (Arora *et al.* 2001; Bhattacharya and Vickery, 2010). Offshore IT outsourcing contributes 66% of the industry's revenues.

Indian IT industry has also been characterised by an uneven profile with respect to its industry focus and geographic concentration (Heeks, 1998; CRISINFAC, 2009). A major part of the revenues flows from a few industry sectors such as Banking, Financial Services and Insurance (BFSI), Telecom and Manufacturing (NASSCOM, 2009). In addition, the US contributes about 60% of the revenues followed by Europe 31% (CRISINFAC, 2009) resulting in a geographical concentration of client organizations.



Figure 1: India's IT export in the New Zealand context

Although several studies by government and industry bodies have reported low concentration of trade in IT services between India and New Zealand, academic research examining the reasons for such low engagement has been scarce. A large body of literature in IT outsourcing addresses firm levels issues pertaining to clients (Aundhe and Mathew, 2009; Dibbern *et al.*, 2004). A previous review of research literature in the area has reported major issues addressed by various scholars as outsourcing motivation, scope, performance, in-sourcing or outsourcing, contract and partnership (Lee *et al.*, 2000). However scholarly attention on outsourcing issues pertaining to service providers has been less, and much less systemic studies have focused on IT service provider's issues pertaining to geographical concentration. In this context, this research project seeks to understand the factors that affect the Indian IT service providers to choose or not to choose clients based in New Zealand. It also aims at understanding how systems modelling (e.g. Davies, 2002) help in understanding the complex inter-firm relationships in offshore IT outsourcing between India and New Zealand and how such a systems model can support IT service providers in the formulation of a service strategy.

This study will take the specific context of Indo-New Zealand offshore IT outsourcing and develop a system model that explain the causes of low degree of outsourcing in IT between India and New Zealand. It will focus on India based IT service providers who are independent vendors in IT services having international clients.

2. Theoretical framework

Offshore outsourcing of information technology developed as a dominant sourcing model in IT following economic liberalisation; drop in communication costs due to major advancements in information and communication technologies, labour arbitrage and availability of skilled IT labour force in offshore nations fostered its adoption (Friedman, 2005; Carmel and Tjia, 2005). These conditions acted as enabling

factors for firms which sought to achieve cost efficiency, improve time to market, access global markets and attain benefits of offshore outsourcing (Lacity and Willcocks, 1998; Manning *et al.*, 2008). Among the manifold benefits of outsourcing of information technology services, cost efficiency has been identified as a major motivation for offshore IT outsourcing in the past ten years (Lacity and Willcocks, 1998; Manning *et al.*, 2008) and has been highlighted as the strongest factor in the decisions of most CIOs looking to shift IT work offshore (Escanlar, 2011).

From a service provider's perspective, the early history of outsourcing and offshoring of IT appears to have been dependant on outsourcing firms' IT management strategy than on any service strategy formulated by vendor firms. Loh and Venkatraman (1992) empirically analysed IT outsourcing contracts pertaining to US and identified the perceived success of Eastman Kodak's IT outsourcing in 1989 (the *Kodak effect*) as a critical event (Gurbaxani, 1990) that further triggered the early adoption of IT outsourcing by client firms. Carmel and Agarwal (2002) examined US firms outsourcing IT and reported different stages of maturity among these firms ranging from firms that did not outsource at all through offshore experimenters and proactively cost focused firms to firms with a strategic focus on outsourcing. In a similar study focusing on global IT outsourcing, Willcocks *et al.* (2007) described four levels of maturity in the outsourcing learning curve: that dominated by hype and fear, early adopters who focus only on costs, more matured firms who focus on quality and firms which have institutionalized IT outsourcing to derive more value through transformational outsourcing. Transformational IT outsourcing has been described by various scholars as outsourcing engagements characterized by high degree of maturity which requires client and service providers to work in a partnership mode (Linder, 2004; Gottfredson, 2005).

Although globalization and subsequent maturation of IT outsourcing and its worldwide adoption led to economic and strategic benefits, several firms did not choose to adopt offshore outsourcing as a way to manage their IT (Carmel and Agarwal, 2002; Frenkel, 2002; Willcocks *et al.*, 2006). Early studies have reported domestic mindset, inexperience in managing from a distance and inexperience in managing geographically dispersed projects as reasons given by a few offshore bystanders for not considering offshore IT outsourcing. However a systemic enquiry into the causes of low level of offshoring at a country level has been scarce. Barthelemy and Geyer (2005) empirically investigated the factors that influenced quasi outsourcing practice followed by firms in France and Germany and found that asset-specific IT activity, IT department size, IT internal organization, institutional environment and IT-intensive sector as having significant impact on the outsourcing vs. quasi outsourcing decision by client firms. However, to the best of our knowledge such studies have not been extended to other geographies.

Offshore outsourcing of IT services has resulted in the growth of a global IT services industry. IT service providers also moved from periphery to the core in terms of the value of services they offered to client firms (Gottfredson, 2005). Following value chain principles proposed by Porter (1985), Khan *et al.* (2002) classified the level of value offered by Indian IT services providers to UK firms into 5 tiers of body shopping, offshore development and body shopping, establishing standards, consultancy and designing the IT architecture and design and product development. However, studies addressing service provider strategy formulation, factors that influence the choice of geography, service line and industry sectors have not received due attention in outsourcing research. Several scholars have examined the issue of country selection for client firms intending to outsource and suggested selection process and criteria that suits clients' desired objectives (Graf and Mudami, 2005; Palvia ,2004; Carmel and Tjia, 2005). On the other hand, studies addressing service provider firms' country strategy formulation process has been much less in extant literature.

In summary, most studies in IT outsourcing literature address client issues in outsourcing. Country selection, which is a very important issue in the context offshore outsourcing has been addressed from client firms' perspective and suggested country selection process and criteria that suits clients' desired objectives. However research studies addressing service provider's country strategy has been much less in extant literature. Although the geographic concentration of IT outsourcing in North America and Europe has been widely reported, a systemic enquiry into the causes of low level of offshoring at a country level has been scarce. There have been some studies which sought to understand the determinants

of quasi vs. full outsourcing in France and Germany. However, to the best of our knowledge a study to understand factors that influence the choice of offshore outsourcing in the New Zealand-India context is not found in literature.

3. Methodological framework

The methodology used in this study is based on systems thinking (e.g. Senge, 1990). According to management literature systems thinking approaches can be characterised as hard (e.g. Forrester, 1961), soft (e.g. Checkland, 1981), critical (e.g. Ulrich, 1987), and multi-methodology (e.g. Brocklesby, 1993). In hard systems approaches models are considered as abstractions of reality, while soft systems approaches uses models for generating debate and insight about the real world. Critical systems approach tries to reveal the normative content of actual and proposed systems designs by critiquing the boundary judgements. Multi methodology involves combining different systems methodologies within hard, soft and critical approaches (Davies *et al.*, 2005). This study used a hard systems approach based on the system dynamics methodology (Sterman, 2000).

System dynamics was developed in the second half of the 1950s by Jay Forrester and his seminal book, *Industrial Dynamics*, continues to be a significant statement of philosophy and methodology in this field. System dynamics is a methodology for studying and managing complex systems involving multiple relationships, interdependencies and feedback, such as one finds in business and other social systems, through the development of representational models that can be used to reflect aspects of reality. System dynamics has been applied to issues ranging from corporate strategy to the dynamics of diabetes, from the cold war arms race between USSR and US, to the “combat” between HIV and the human immune system (Sterman, 2000). This study was limited to qualitative modelling based on systems dynamics (Cavana and Mares, 2004).

The methodological framework used in this study consists of two phases. First, an attempt was made to structure the problem systemically. Second, a causal loop model was developed to capture the underlying feedback loops so as to explain the behaviour of the system. The two phases used in this study, and the associated steps are shown in Table 1.

Phases	Steps
Problem Structuring	Collection of preliminary information and data Behaviour over time chart development Collection of detailed information
Causal Loop Modelling	Development of the causal loop diagram Analysis of loop behaviour over time Development of intervention strategies

Table 1: Methodological Framework

Interviews were used as the primary method for collecting data. Twenty interviews with an approximate duration of forty five minutes were conducted in total during September 2010 –March 2011. A combination of structured and open ended questions was used during our interviews with service provider executives. A typical interview structure with service provider executives involved enquiries such as elements of the company’s strategy on geography and service lines, factors that determine the choice of a country in strategy and reasons for having or not having clients in New Zealand. These questions triggered more elaborations on the company’s experience with clients in New Zealand and other parts of the world. We used both face to face and telephonic interviews in data collection. Extensive notes were taken during the interview process which were finally summarised and read to the respondent for verification.

Data sources

Table 2 exhibits the characteristics of the organisations and respondents chosen for conducting interviews. We adopted the following criteria in the selection of sites: (i) the organisation has been in IT outsourcing

relations with a foreign partner for at least 5 years; (ii) the organisation has clients in New Zealand/Australia or is actively considering New Zealand as a country to do business (iii) the organisation was willing to give access to one or more key informants in their senior management.

Sl no	Firm and its business	Clients in New Zealand	Geographical focus	Respondents
1	Small Indian IT services company	No	USA	CEO (1)
2	Small Indian IT company, specializing in R&D	No	USA	CEO (1)
3	Medium sized French IT services firm with major presence in India	No	Europe	Principal Delivery Manager (1)
4	Large French IT services firm with major presence in India	No	Europe, USA	Director (1)
5	Large US IT services firm with major presence in India	Yes	USA/UK	Chief-Corporate Affairs (1), Senior VP (1)
6	Medium sized Indian IT services provider specializing in financial services sector	Yes	USA, Europe, Asia-Pacific	Partner Head (1), Head -Australia, New Zealand (1)
7	Large Indian IT services firm with office in New Zealand	Yes	USA, Europe	VP (1), Associate VP (1)
8	Medium sized Indian IT services firm specializing in travel, tourism and logistics sector	Yes	USA, Europe, Asia-pacific	Senior Manager (1), VP-Commercial operations (1), Head – Service Delivery (1)
9	Large Indian IT services firm	Yes	USA, Europe	Quality assurance executive in New Zealand (1), Manager (1)
10	Internal IT department of a large bank in New Zealand	Yes	-	Manager/Consultant (1)
11	Small IT Service provider specializing in Billing software	Yes	Asia-pacific, Europe, USA	Head-Consulting (1), GM-Corporate Resources (1)
12	Large Indian IT services firm	Yes	USA, Europe	Head-BPO (1)
13	Large Indian IT services firm	Yes	USA, Europe, Asia pacific	Manager (1)

Table 2: Characteristics of respondents and their organisations

We also ensured key informant validity of those who responded to our questions on behalf of the organisations they belonged to. Following the guidelines provided by Kumar, Stern and Anderson (1993), the respondents selected for interviews were having (i) adequate experience in IT outsourcing engagements and had (ii) active involvement in strategic decision making process of offshore outsourcing (Table 2). In our sample of 13 IT companies, 12 were either Indian born companies or companies head quartered abroad but having a major presence in India. In addition, we also interviewed the executive of the Internal IT department of a major New Zealand bank. Our sample had a good mix of large (7), medium (3) and small sized companies (3). Further, 8 out of the 12 firms had clients in New Zealand, and other four firms were considering New Zealand as a prospective location in near future.

4. Problem structuring

To gain a systemic understanding of the problem situation, a problem structuring exercise was conducted in the first phase of this study. As mentioned in Table 1, three steps were used in structuring the problem situation, collection of preliminary information and data, developing a behaviour over time chart and collection of detailed information.

To gain a broad understanding about the problem, data about New Zealand's information technology imports available from year 2006 to 2010 was collected from the web site of Statistics New Zealand (Table 3). All the financial figures given in NZ\$ were converted to US\$ by using exchange rates of the corresponding year. India's IT export data was collected from the website of NASSCOM, an industry body for the promotion of Indian IT industry.

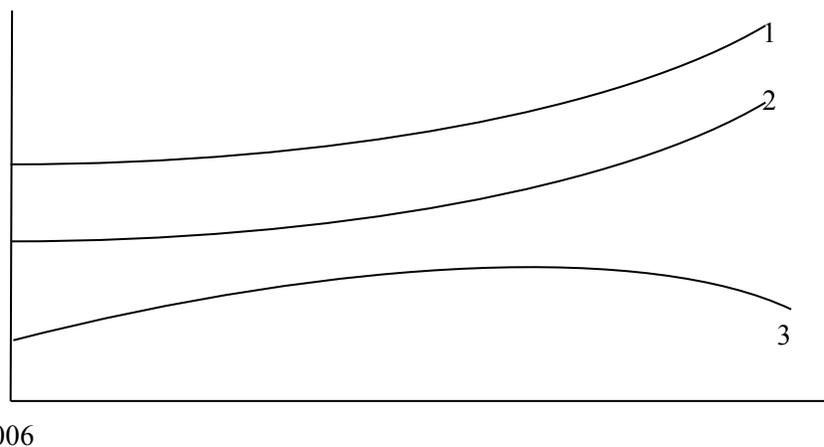
Year	2006	2007	2008	2009	2010
NZ total IT imports	242.3689	311.5194	338.6014	313.9299	290.8664
% IT imports from India	confidential	1%	2%	2%	2%

(Data source: Statistics New Zealand, <http://www.stats.govt.nz/>)

Table 3: India's contribution to New Zealand's IT

To structure the problem further a 'Behaviour over Time (BOT)' graph was developed. BOT graph or 'reference mode behaviour' is a tool used in systems thinking to show the patterns of the main variables in a system over an extended period of time, typically several months to several years. This pattern can indicate the variations and trends in the variable of interest, for example growth, decline, oscillations or a combination thereof. The important elements of a BOT are the overall directions and variations, not the numerical value of the variable. Therefore, BOT graphs are usually drawn in a rough sense without exact numerical values attached (Maani and Cavana, 2007).

In this study, a BOT graph was drawn using the trends of three variables related to the problem situation. These variables were total IT exports from India, total IT imports to New Zealand, and IT exports from India to New Zealand. Figure 2 presents this behaviour, showing an increasing trend of IT exports from India. It also shows that IT imports to New Zealand is increasing, however, it shows that IT exports from India to New Zealand is not showing a corresponding increase and have not really picked up momentum.



1= Total IT exports from India, 2= Total IT imports to New Zealand, 3= IT exports from India to New Zealand.

Figure 2: Behaviour Over Time

We employed the interview method for collecting detailed information. Following the guidelines provided by Sterman (2000) the interview data was analysed to identify variables in the system. An inductive approach was predominantly followed in data collection and analysis (Strauss and Corbin, 1990). During the course of the interviews different concepts on service provider's perspective on country selection and why or why not New Zealand questions were re-framed to draw more insights on the concepts. The text of interview summaries was analysed by first listing the main statements of interview subjects and then formulating variable names that corresponded to the actual words used by the interviewee.

Category/Loop	Variable Name
US Influence	US firms interested in IT offshore outsourcing to India US client initiated service providers in India US connection and history in Indian IT offshore outsourcing Indian IT exports to US Expertise in serving US clients Quality of service to US clients Perception of job losses in US US political pressure against IT offshore outsourcing to India Indian service providers' interest in other geographies
New Zealand Opportunities	Chances of New Zealand as an option Opportunity analysis of New Zealand as a location Perceived attractiveness of language compatibility Perceived attractiveness of skill shortage Location attractiveness of New Zealand
Inherent Weaknesses of New Zealand	Risk analysis of New Zealand as a location Perception of size as a risk Perception of distance as a risk Perception of connectivity as a risk Interest of Indian companies in other geographical locations
Attitude of New Zealanders	Number of Indian service providers in New Zealand Cultural issues Success stories
Service Quality	Deployment of quality resources by Indian service providers Quality of service to New Zealand clients

Table 4: Variables and their categories

5. Causal loop modelling

The variables extracted from the interview data were used to develop a causal loop model to capture the underlying structure of the problem. Management literature has acknowledged the importance of capturing the interdependent linkages arising from common systemic factors (Dungey *et al.*, 2003), and causal loop models are developed using these linkages. Causal loop models can also be considered as visual representations of cause-effect relationships among elements of a system forming structures of feedback loops (Mohapatra *et al.*, 1994). The causal loop model developed in this study is presented in Figure 3.

[Insert Figure 3: Causal loop Model about here]

An analysis of the casual loop model was done by identifying the different feedback loops formed in the model. Systems thinking literature classifies feedback loops as reinforcing or balancing. Reinforcing loops are positive feedback systems while balancing feedback loops are negative feedback systems. Reinforcing loops represent growing or declining actions and balancing loops seek stability or return to control (Sterman, 2000).

Six main feedback loops were identified in the model. Out of this, four were reinforcing while the remaining two were balancing loops. The analysis of these six feedback loops are discussed below.

Loop 1: US Influence loop (R₁)

A possible starting point to this causal loop analysis is the variable US firms interested in IT offshore outsourcing (ITOO) to India. According to ‘US influence loop’, when US firms interested in IT offshore outsourcing increases, there will be more Indian service providers initiated by these US clients. Those service providers will bring in more US connections and their history will be connected to their US clients. These US connections in turn increase Indian IT exports to US. When Indian IT exports to US increases expertise in serving US clients and in turn the quality of service to US clients improves. Such quality of services results in an increasing number of US firms interested in IT offshore outsourcing to India, thus completing a reinforcing feedback loop (Figure 3).

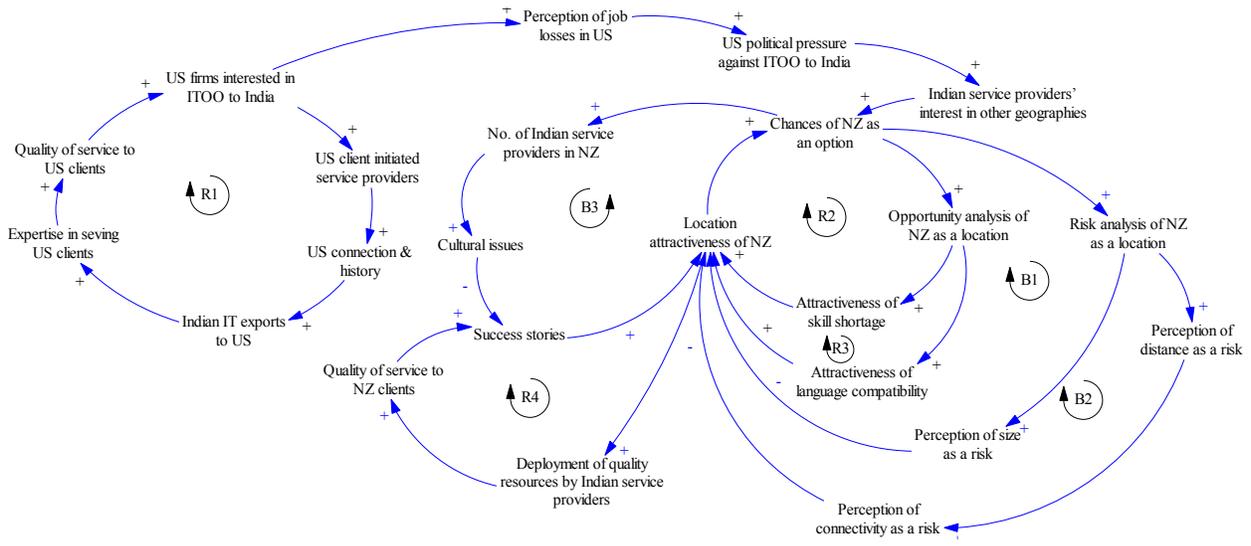


Figure 3: Causal Loop Model

Loops 2 and 3: New Zealand Opportunities loops (R₂ and R₃)

The second and third loops explain the opportunities for NZ as an IT offshore location. When IT exports from India to US increase beyond a point, the perception of job losses within US increases. Such perceptions about job losses will encourage some US politicians to fight against IT offshore outsourcing to India. This situation will force Indian service providers to look for destinations other than the US and New Zealand’s chances as one such destination increases. At this point, most professional service providers will conduct an opportunity and risk analysis for the different alternative locations available to them. Such an opportunity analysis will highlight the attractiveness of New Zealand with acute skill shortage. It will also highlight the attractiveness of English as the common language. Both these factors will increase the attractiveness of New Zealand as a location, thereby improving the chances of New Zealand as an option for Indian service providers to engage in IT offshore outsourcing. Technically, both these loops (R₂ and R₃) are reinforcing feedback loops.

Loops 4 and 5: Inherent Weaknesses of New Zealand loop (B₁ and B₂)

As explained in the previous section, when Indian service providers consider New Zealand as a destination for IT offshore outsourcing, they will conduct both opportunity and risk analyses. The loops associated with opportunity analysis were explained using loops R₂ and R₃ while the effect of risk analysis is explained using loops B₁ and B₂. A risk analysis of New Zealand as a location will highlight the perception of its small size as a risk. It will also show distance and connectivity as risks. Such perceptions will reduce the attractiveness of New Zealand as a location for Indian service providers, thereby affecting

India's IT exports to New Zealand negatively. This situation will reduce the chances of New Zealand as an option, thus completing the two balancing loops B_1 and B_2 (Figure 3).

Loop 6: Attitude of New Zealanders loop (B_3)

This loop explains the experience of some Indian service providers who went to New Zealand. According to this loop, when the chances of New Zealand as a destination for IT offshore outsourcing improved, some Indian service providers ventured out to New Zealand. An analysis of our interviews with them showed that many of them had bad experiences due to cultural issues and differences, thereby reducing the number of success stories of Indian service providers in New Zealand. This situation reduced the attractiveness of New Zealand as a location for Indian service providers, and decreased the potential for India's IT exports to New Zealand. In turn, it reduced the chances of New Zealand as an option, completing another balancing loop (B_3).

Loop 7: Service Quality loop (R_4)

When New Zealand becomes less attractive as a location for Indian service providers, it was revealed in some of their interviews that they stopped deploying good staff to New Zealand. This reduced Indian service provider's quality of service to New Zealand clients and any possible success stories that might have been created. Such a situation will further reduce the location attractiveness of New Zealand, thus completing the fourth reinforcing loop.

Thus, the causal loop model captured some complex interconnections between the different variables related to the problem situation. It also captured the structure of the system in terms of the feedback loops operating in the system.

6. Conclusions

The structure of the system, as captured by the casual loop diagram (Figure 3) and the feedback loops in it, dictates the behaviour as shown in the BOT (Figure 2). To induce long term changes in this behaviour, short term quick fixes in the structure might not be helpful (Senge, 1990). Instead, long term structural changes need to be devised to change the behaviour of the system.

In this respect, some of the service providers involved in this study, discussed the implications of the model and then surfaced a few strategic initiatives to change the structure of the system. We discuss two such initiatives in this section. The first initiative suggested by a majority of service providers involved in this study related to strengthening the US influence loop (R_1). Most of the Indian service providers were interested in '*following their US clients*' if they started some activities in New Zealand. Strategic initiatives from New Zealand government to encourage such US companies to start their branches and other activities in New Zealand will bring more Indian service providers to New Zealand. This will also result in more expertise in serving clients based in New Zealand and improved quality of service to them. The second strategic initiative tries to address the Attitude of New Zealanders loop (B_2) and Service Quality loop (R_4). In June 2011 the New Zealander Prime Minister visited India to negotiate a free trade agreement between India and New Zealand. As a part of this negotiation if New Zealand government can open up some large public IT projects for open international bidding, and encourage some of the top Indian IT service providers to compete in this bidding, it will result in a strong presence of a few quality Indian companies in New Zealand. Such a presence of top Indian IT service providers will lead to success stories about them. This will encourage these service providers to continue deploying good staff in New Zealand projects, thereby improving their quality of service. It will also improve the attractiveness of New Zealand as an IT destination. In turn, this will increase IT exports from India to New Zealand.

To summarise, this study has explained how a systemic analysis could be used for understanding the complex interaction of factors related to IT offshore outsourcing between India and New Zealand. As mentioned in the systems literature, it showed how causal loop models could be used as a means of describing and facilitating the analysis of complex systems (Maani and Cavana, 2007). Finally, this study lays a platform for building a system dynamics simulation model, capable of developing and evaluating different strategic options for improving IT offshore outsourcing between India and New Zealand.

References

- Arora A, Arunachalam VS, Asundi J, Fernandes R. 2001. The Indian software services industry. *Research Policy* 30(8): 1267–1287.
- Aundhe MD, Mathew SK. 2009. Risk mitigation in offshore IT outsourcing contracts: a service provider perspective. *European Management Journal* 27(6): 418-428.
- Barthélemy J, Geyer D. 2005. An empirical investigation of IT outsourcing versus quasi-outsourcing in France and Germany. *Information & Management* 42(4): 533-542.
- Bhattacharya M, Vickery G. 2010. The information and communication technology sector in India: performance, growth and key challenges. *Working Party on the Information Economy, Directorate for science, technology and industry committee for information, computer and communications policy*, OECD.
- Brocklesby J. 1993. Methodological complementarism or separate paradigm development - examining the options for enhanced operational research. *Australian Journal of Management* 2 (18): 133–157.
- Carmel E, Tjia P. 2005. *Offshoring Information Technology, sourcing and outsourcing to a global workforce*. Cambridge University Press: Cambridge, UK.
- Cavana RY, Mares ED. 2004. Integrating critical thinking and systems thinking: From premises to causal loops. *System Dynamics Review* 20(3): 223-235
- CECA. 2009. *Comprehensive Economic Cooperation Agreement, India-New Zealand Joint Study for a Free Trade Agreement*. Available at <http://www.mfat.govt.nz/Trade-and-Economic-Relations/2-Trade-Relationships-and-Agreements/India/index.php> [June 10, 2011].
- Checkland P. 1981. *Systems Thinking, Systems Practice*. Chichester, UK: John Wiley and Sons.
- CRISINFAC. 2009) *State of the Industry*, CRISIL IT Services Annual Review.
- Davies J. 2002. Models of governance - a viable systems perspective, *The Australian Journal of Information Systems* 9(2): 57-66.
- Davies J, Mabin VJ, Balderstone SJ. 2005. The Theory of Constraints: a methodology apart? – a comparison with selected OR/MS methodologies, *OMEGA The International Journal of Management Science* 33(6): 506-524.
- Dibbern J, Goles T, Hirschheim R, Jayatilaka B. 2004. Information systems outsourcing: a survey and analysis of the literature. *The DATA BASE for Advances in Information Systems* 35(4):6-102.
- Dungey M, Fry R, Martin V. 2003. Equity transmission mechanisms from Asia to Australia: interdependence or contagion? *Australian Journal of Management* 28 (2): 157-182.
- Escanlar R. 2011. *Cost efficiency remains top factor in shifting IT work offshore*. Available at <http://www.microsourcing.com/blog/cost-efficiency-remains-top-factor-in-shifting-it-work-offshore.asp> [June 10, 2011].
- Forrester JW. 1961. *Industrial Dynamics*. Pegasus Communications: Waltham, MA.
- Frenkel S. 2002. Workplace Relations: Past, Present and Future. *Australian Journal of Management* 27(1):149-159.
- Friedman T. 2005. *The world is flat, a brief history of the globalized world in the 21st century*. Penguin Books: London.
- Graf M, Mudambi SM. 2005. The outsourcing of IT enabled business processes: a conceptual model of the location decision. *Journal of international management* 11(2): 253-268.
- Gurbaxani V. 1990. Diffusion in computing networks: the case of BITNET. *Communications of the ACM* 33(12): 65-75.

- Heeks R. 1998. The uneven profile of Indian software exports, Paper no. 3, Working Paper Series, Institute for Development Policy and Management, University of Manchester, Manchester, UK.
- Khan N, Currie LW, Weerakkody V, Desai B. 2002. Evaluating offshore IT outsourcing in India: supplier and customer scenarios, In *36th Hawaii International Conference on System Science, Hawaii, USA*.
- Kumar N, Stern LW, Anderson JC. 1993. Conducting interorganizational research using key informants. *Academy of Management Journal* 36(6): 1633-1651.
- Lacity MC, Willcocks LP. 1998. An empirical investigation of information technology sourcing practices: Lessons from experience. *MIS Quarterly* 22 (3): 363-408.
- Lee JN, Huynh MQ, Chi-wai KR, Pi SM. 2000. The evolution of outsourcing research: what is the next issue?, In *Proceedings of the 33rd Hawaii International Conference on System Science (HICSS), Hawaii, USA*.
- Linder JC. 2004. Transformational outsourcing. *MIT Sloan Management Review* 45(2): 52-58.
- Gottfredson M, Puryear R, and Philips S (2005) Strategic sourcing from periphery to the core. *Harvard Business Review* 83(2): 132-139.
- Loh L, Venkatraman N. 1992. Diffusion of Information Technology outsourcing: influence sources and the Kodak effect. *Information Systems Research* 3(4): 334-358.
- Maani KE, Cavana RY. 2007. *Systems Thinking and Modelling: Understanding Change and Complexity*. Prentice Hall: New Zealand.
- Manning S, Massini S, Lewin AY. 2008. A dynamic perspective on next-generation offshoring: the global sourcing of science and engineering talent. *Academy of Management Perspectives* 22(3): 35-54.
- Mohapatra PKJ, Mandal P, Bora MC. 1994. *Introduction to System Dynamics Modelling*. Universities Press: Hyderabad, India.
- NASSCOM. 2009. *Indian IT-BPO Industry 2009: NASSCOM Analys*. Available at www.nasscom.in/upload/5216/IT_Industry_Factsheet-Mar_2009.pdf [June 01, 2011]
- Palvia SCJ. 2004. Global outsourcing of IT and IT enabled services: a framework for choosing an (outsourcee) country. *Journal of Information Technology Cases and Applications* 6 (3): 1-20.
- Porter M. 1985. *Competitive Advantage: Creating and Sustaining superior Performance*. Free Press: New York.
- Sterman JD. 2000. *Business Dynamics: Systems Thinking and Modeling for a Complex World*. McGraw-Hill: Boston, MA.
- Statistics New Zealand. 2011. *Statistics New Zealand*. Available at <http://www.stats.govt.nz/> [June 10, 2011].
- Strauss A, Corbin J. 1990. *Basics of qualitative research: grounded theory procedures and techniques*. Sage: Newbury Park.
- Ulrich W. 1987. Critical heuristics of social systems design. *European Journal of Operational Research* 31(3): 276–283.
- Willcocks LP, Lacity M, Cullen S. 2007. Outsourcing: fifteen years of learning. In *Oxford Handbook of ICT*, Mansell, R. (ed.). Oxford University Press: UK.