Industrial Clustering in Papua New Guinea

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Setting the Context

Regional development in the South Pacific could be promoted through the innovative strategy of clustering. Clustering has already been adopted in the region particularly in Fiji and Australia.

In particular, the Australian government developed a policy intervention program – the Business Network Program – supported by the AusIndustry to oversee the development of business networks amongst Small Medium Enterprises (SMEs) directly as a result of some pioneering studies including those of Buttery (1992).
In Papua New Guinea there are areas that may be amenable to such strategic clustering and need to be explored as a strategy for overcoming current bottlenecks to regional development. This research endeavours to provide a theoretical basis for clustering as well as pointers for in-depth research to be undertaken within Oceania drawing on an earlier work (Kavanamur and Toledo 1993, Kavanamur 2006).

Similar signs of clustering could also be observed in the primary commodity value chains such as that for coconut and cocoa. The Bogia Cooperative Society in Madang is a case in point which is showing up signs of cooperative efforts in the area of joint marketing, joint extension service provision, and cooperative accounting service provision for many of its affiliated local producers. It has been observed that because of past problems that plagued cooperative societies in PNG in the 1960s and 1970s it would be better for such clusters to initially cooperate in the area of marketing/accounting services, logistics, and microfinance provision in order to allow for a thickening of inter-relationships amongst relatively standalone producers.
What is clustering?

Theoretically clustering owes its origins to the European concept of ‘industrial districts’ (hereafter ID). The term ‘industrial district’ dates back to the 19th century when Alfred Marshall, in challenging the conventional view that efficiency in production can only be reaped by large firms due to economies of scale, rightly argued that greater efficiency could accrue from a division of labour not by individuals in a single integrated factory but by different highly specialised firms which compete with and yet complement each other (Bellandi 1989).

Marshall’s views were based on early industrial districts in Britain where he noticed that the clustering of firms enabled them to reap benefits akin to what Schmitz (1990, 1997) has termed ‘collective efficiency’, defined as the competitive advantage derived from local external economies and joint action. Marshall introduced the notion of external economies to represent advantages arising from the “concentration of many small business of a similar character in particular localities” (Marshall 1920:211).
Marshallian Views on external economies

- Although such externalities have often been seen as signs of market failure, Marshall saw them as serving an enabling function. Nadvi (1997:6) summarises Marshall’s view of external economies as arising from sector specialised clusters via:

  - the benefits of a local specialised labour market, lowering search costs for employers and labour.

  - a division of labour in production, allowing firms to concentrate on core competence while also accessing highly specialised machinery and other technical skills collectively, thereby exploiting economies of scale and scope which individually they would not have been able to.

  - the presence of numerous allied and subsidiary sectors, providing firms with a cheap, readily available local supply of specialised raw materials, machinery transport, and service.

  - easy access to industry specific trade and technical knowledge, allowing firms to access market intelligence absorb new idea and learn, via demonstration effects, from others.
The Four Key Elements of the ID Model

- **Key research question**
  - What products/services are these clusters dealing with? Do these clusters also comprise firms providing raw materials, second-hand tools; services and other essential inputs?

  K1 denotes close geographic proximity and are sectorally organised in a family of products.

- **Key research questions**
  - What is the nature of inter-firm relation with respect to vertical/horizontal linkages, formal/informal linkages – the modus operandi prescribing the dos and don’ts?
  - What are these inter-firm relations based on considering non-market and market exchanges of goods, information and people (transfers, transactions etc)?

  K2 denotes be strong and durable set of inter-firm relations: e.g. based on market and non-market exchanges.

- **Key research questions**
  - Are the clusters based on common culture, similar past experience, kinship and ideology?
  - How are rewards and sanctions provided to those participating in the clusters?
The Four Key Elements of the ID Model

- K3 denotes the social milieu / social embeddedness based on common culture, similar past experience, kinship and ideology.

- **Key research questions**
  - Is the legal and regulatory framework in the industry conducive to a particular cluster’s growth?
  - What is the level of support from self-help organization in regard to the following important matters: (1) export promotion, (2) holding trade fairs and exhibitions, (3) conduct sales missions to foreign markets, (4) lobby different levels of governments, (5) conduct market research and training, and (6) assist in credit provision?

- K4 denotes role of the State and sectoral associations in supporting economic actors: e.g. based on market-friendly policies and strategies with social and economic inclusion activities.

- **Key Research Question**
  - How do state and sectoral associations provide support to clusters within an industry?
Clustering as a Business Networking Strategy

Developments relating to clustering have however not been matched in PNG, thereby missing out on the potential benefits. Nevertheless, an increasing number of firms are entering into strategic alliances or business networks both in the form of kingdom and republic networks.

More recently, the Pacific Economic Development Facility (PEDF) of the World Bank was in the process of replicating its efforts in the promotion of clustering in the region within PNG, particularly in the areas of ecotourism, urban business promotion, microfinance, spice and horticulture exports.

The experience of Export Processing Zones (EPZ) and industrial centres in PNG such as the Malahang Industrial Centre (one of the case study used in the study), which is currently half-full, shows that clustering of firms along a ‘family of products’ better promotes strong inter-firm cooperation than through the conglomereration of unrelated disparate firms. The lack of organization of the informal sector in PNG will ensure that street sellers will find it difficult to graduate beyond the current ‘buai-simuk’ sub-sector into an export-oriented small business cluster.
The bottlenecks to development in Papua New Guinea are somewhat perplexing, given the nature of socio-cultural settings, in which developing business networks has been left wanting, albeit existence of *wantokism*, which is quite similar to *renqing* practiced in China.

Viewed in this context, clustering can be used as an innovative strategy to promote regional development in the South Pacific. In Papua New Guinea (PNG) there are areas that may be amenable to such strategic clustering and need to be explored as a strategy for overcoming current bottlenecks to development.
**Social Networking**

- **Wantokism**: refers to a social network comprising people from the same location or clan who speak the same language or at a much broader level those who are brought together because of proximity, familiarisation and regular contact. Such networks are held together by exchange obligations (Hess 2001; de Renzio and Kavanamur 1999).

- In the People’s Republic of China *renqing*, or the performing of favours, is a necessary component of *guanxi*, which is really the building of relationships with a network of business people through which influence is brokered (Buttery and Wong 1999).
Early Development Signs of Clustering

Early signs of the development of clustering can now be observed in the tourism industry in PNG revolving around market segments such as eco-tourism, backpacker packages, and so on.

Institutional intervention through the PNG Tourism Promotion Authority (TPA) is showing up some early positive results of business networking amongst tourism service and products providers, villagers, hotel owners and tour operators.

A final area where clustering potential exists is in the area of small businesses operating out of the informal sector. The current *Informal Sector Development and Control Act 2004* has given rise to an increase in entrepreneurial activities in the urban locations of PNG. However, this development has not been carefully thought out so as to allow for land allocation for specialized activities such as furniture making, bakery, tool making, metal fabrication, automotive repair, and so on. It would be desirable for clusters to be established early with municipal support facilities such as land allocation, partitioned building blocks for rent, water supply, electricity, and other locational amenities that the local municipalities in Italy initially provided for the incubation of its industrial clusters.
Case Study Approach

Case Study on Crocodile Skins Clusters in Middle Fly area – Western Province

- Two methods were employed here. Firstly, in-depth interviews were conducted between October and December 2006 in Port Moresby between an official from the Department of Environment & Conservation (DEC); a Port Moresby-based crocodile skins exporting firm and some hunters who flew into Port Moresby during the period in question. Secondly, a focus group of interviewing 10 village-based buyers and 2 local businessmen who buy from the hunters was undertaken from 18-20 May 2007 in Kiunga, Western Province. The village-based buyers had travelled almost a day by outboard powered outrigger canoe to meet with the researcher in Kiunga for the interviews then.

Case study on Malahang Industrial Centre (MIC) – Morobe Province

- Survey method was employed by the Uni Consulting Group, of which the research group used this as a secondary data source for its case study analysis on MIC. UCG used a questionnaire to collect data from the MIC tenants in 2006. There were 27 MIC respondents and the data collection method can best be described as a ‘perception survey’, as it covered perceptions of MIC tenants in regards to how they conducted business there.

Case Study on Artisanal Fisheries Clusters on Fisherman Island – Central Province

- A total of 22 fishermen from Fishermen Island were interviewed with an average age of 32 years old and this case study attempted to examine how fishermen networks are sustained over a period of time. The Fishermen Island is a five minute dinghy ride from Port Moresby. The interviews were conducted over a two-week period in January 2008 to complement the other two case studies as presented earlier.
Specific Objective of the Research

Using the central tenets of European clustering, the primary objective of the study is to empirically establish how potential areas of clustering can be strategically aligned in Papua New Guinea with a view to pointing up key managerial-, public policy-, theoretical- and future research-implications for Oceania.
Three case studies used

Case Study A
- Middle Fly
- Crocodile Skins Industry

Case Study B
- Lae
- Malahang Industrial Centre (MIC)

Case Study C
- Central Province
- Fisheries Clusters
<table>
<thead>
<tr>
<th>Resident PNG Exporting Firms</th>
<th>Share of the market (%)</th>
<th>Location of Harvesting</th>
<th>Importers (Japan)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainland Holdings Ltd</td>
<td>60</td>
<td>Farmed</td>
<td>HTC</td>
</tr>
<tr>
<td>Bush Development Pty Ltd</td>
<td>20</td>
<td>Wildlife</td>
<td>HTC</td>
</tr>
<tr>
<td>Northern Trading Pty Ltd</td>
<td>15</td>
<td>Wildlife</td>
<td>HTC</td>
</tr>
<tr>
<td>Pacific International Pty Ltd</td>
<td>5.0</td>
<td>Wildlife</td>
<td>Stock Kojima/Inoue</td>
</tr>
</tbody>
</table>
Table 2 Showing Clustering Trends 2004-2007 in the Crocodile Skins Industry

<table>
<thead>
<tr>
<th>Village</th>
<th>River system</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obo</td>
<td>Fly</td>
<td>8</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Kasa</td>
<td>Strickland</td>
<td>19</td>
<td>8</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Levame</td>
<td>Strickland</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Kavenanga</td>
<td>Fly</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Komovai</td>
<td>Fly</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
Findings from the Malahang Industrial Centre (MIC)

- According to UCG’s findings, only 12 percent of the respondents from the total 27 tenants from the MIC were from the manufacturing sub-sector with the majority (27 percent) being from the services sub-sector as service providers. 23 percent were retail-based, which was indicative of the fact that the incentive to be at MIC was merely for office space rather than for any incentive toward making any substantial contribution to the overall GDP.

- Another explanation provided was that the bulk of the tenants are not exporters (89 percent); only 11 percent are exporters. Majority of the tenants (71 percent) knew MIC through their business associates and this reveals a situation that marketing effort of ICDC in relation to MIC is negligible. The UCG (2006) argues that with this level of marketing effort manufacturers and exporters will not be able to make it into the MIC in the foreseeable future.
What can be gleaned from the Fisheries Survey

- The following concluding points will greatly assist and improve the fisherman’s current state of affairs:
  - Better transportation is required to transport fish from point of catch to selling point;
  - Better cool storage facilities and systems at market locations around the city for fish preservation and quality;
  - Better and easy access to credit facilities (to assist in equipment repair, replacement of equipment, rising fuel prices etc);
  - Better information on fish markets and support from National Fisheries Authority; and
  - Better security for sellers in the major market outlets such as: Gordon, Malaoro and Koki in Port Moresby city.
What can be gleaned from the three case studies?

**Triangulation approach**

- To better appreciate and understand the situational trends of industrial development in PNG with special reference being made to clusters as a pathway for business development and growth, we use the triangulation approach to compare and contrast the three case studies.

- The four key elements of clusters (industrial district models) are judged against the case studies in Table 3 and in Table 4 the explanation and predictions are provided, of which some policy implications can be made.
### Table 3 Showing Cross-Case Analysis of the three Case Studies

<table>
<thead>
<tr>
<th>Key element (K) of Clustering</th>
<th>Case Study (A)</th>
<th>Case Study (B)</th>
<th>Case Study (C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1 – Product Specialization</td>
<td>Crocodile skins of two types: Saltwater belly &amp; freshwater belly</td>
<td>Various types of firms with various products</td>
<td>Fish of various species</td>
</tr>
<tr>
<td>K2 – Vertical/Horizontal Integration</td>
<td>Information &amp; resource flows are considered optimal.</td>
<td>Lack of these elements and this is closely related to K3</td>
<td>Information &amp; resource flows are not as free-flowing owing to differences and lack of capacity to be more innovative.</td>
</tr>
<tr>
<td>K3 – Social embeddedness</td>
<td>Thickening of relationship over a period of time 4-25 years for both social &amp; economic reasons</td>
<td>Only social in nature owing to occupancy and security reasons. Temporary stay, resulting in indifference amongst MIC tenants.</td>
<td>There is evidence of close family kinship ties but how close they relate to other fishermen, is open to question.</td>
</tr>
<tr>
<td>K4 – Sectoral Association</td>
<td>CITES Act (1967), License is closely monitored and supervised by DEC and LLG</td>
<td>Membership to Lae CoC is limited. Hunters form their groups to deal with local buyer &amp; Pom buyer in an informal setting. This needs to be regulated to maintain cohesiveness and dynamism of the cluster.</td>
<td>NFA has to do more to establish a better dialogue with fishermen in order to make the sector more market effective and efficient, as they are bound by historical and cultural ties. Regular visits and business advice from NFA might lead to a better fishing village community that will one day manage its fish resources in a sustainable manner.</td>
</tr>
</tbody>
</table>
**Table 4 Showing what works, what doesn’t and why of Industrial Clustering in Papua New Guinea**

<table>
<thead>
<tr>
<th>Key element (K) in clustering</th>
<th>Explanation and Prediction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>K1 – Product Specialization</strong></td>
<td>A is more specialised whilst B’s is within a number of sub sectors but has the potential to form clusters in future if marketing-based incentives are provided. C is also more specialised and with appropriate level of support from authorities such as NFA and access to credit facilities such as microfinance/microcredit, will develop into a thriving fisheries industry.</td>
</tr>
<tr>
<td><strong>K2 – Vertical/Horizontal Integration</strong></td>
<td>A is more clearly visible with respect to exchange of market and non-market goods, which cuts costs and results in joint action benefits and economies of scale, determined by virtue of location within the cluster. B because of high mobility of MIC tenants, indifference is constant companion and prevents cluster formation. C has some differences between middlemen buyers and fishermen and appears to erode social capital; however from within families and amongst fishermen there are some positive signs in seeking loans to improve fishing catch etc.,</td>
</tr>
<tr>
<td><strong>K3 – Social embeddedness</strong></td>
<td>A’s cluster has thickened varying between 4-25 years and is more of market-driven incentive as opposed to social affiliation. B is more social in nature and less on market exchanges due to the same reasons provided in K2 above. Win-win situation is maintained and sustained, whilst no-win situation is rewarded with exclusion. There are different reasons for entry and exit points for economic and social actors within the cluster. C is more based on kinship ties and it is quite solid because of the mutual support and benefits considerations.</td>
</tr>
<tr>
<td><strong>K4 – Sectoral Association</strong></td>
<td>Sectoral association and role of the state are key ingredients that need to make the clusters work for mutual gains, taking into serious consideration the issues of economies of scale, scope and specialization. This demands change in managerial style, approach and establishment of institution to facilitate mutual exchanges within clusters. There is also a concern to market these activities so as to lobby for support, microfinance provision and even training for participants to be effective in their area of engagement within the cluster. A is more regulated by DEC, whilst B receives very support from Chamber of Commerce, whilst C’s situation is plagued by lack of advisory support from National Fisheries Authority (NFA).</td>
</tr>
</tbody>
</table>