Developing floricultural supply-chain strategies—Papua New Guinea case study

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Abstract

This paper argues that for some developing countries, including PNG, enterprises such as floriculture can potentially be harnessed as a means of socioeconomic development. However, floriculture as a discipline, career and industry has not been fully explored to this end. Nevertheless, interest in the industry has been growing—not only among major players, but also among small-to-medium growers. The objective of this PNG case study was to develop a framework of supply-chain strategies for small-to-medium-scale floricultural businesses to consider. Data collection consisted of interviews and group discussions with industry stakeholders, and of supply-chain mapping conducted in Lae, Huon, Goroka and Port Moresby. Different supply dimensions were examined, including product lines, local versus cross-regional channels, chain professionalism and market segments of the chains surveyed. Depending on market segments, different levels of combinations of supply-chain push strategies, emphasising efficiency, and pull strategies, emphasising responsiveness to customer needs, were proposed. Since many individuals are involved in more than one chain, synergies exist for growers involved in different chains in terms of procurement, transport arrangement and cross-fertilisation of knowledge and skills. The research findings offer opportunities for existing floricultural businesses and supply chains to re-evaluate their match between core competencies and the way they conduct business. Also, research findings allow individual players to locate synergies in their businesses and chains. The lessons learned for academics, businesses and relevant government bodies are discussed.

Introduction

For some developing countries with conducive climates, floriculture can potentially be a means of socioeconomic development. At operational and management levels, there are some general supply-chain management issues shared among many developing countries. Nevertheless, supply-chain management strategies can be engineered to align chain capabilities with market requirements. The strategic points are discussed below.

Floriculture for socioeconomic development

From many perspectives, floricultural industry building can be desirable for a country’s socioeconomic development. At an individual level, many growers, florists and intermediaries alike start out in floriculture as a part-time engagement in their spare time and/or on their spare land. Consequently, there is less opportunity cost, sacrifice and/or lost benefit involved to venture into the business. More significantly in a socioeconomic realm, these players, often women, gain individual advantage. The substantive freedoms that these players enjoy allow them to better attain self-satisfaction (Sen 1999; Schischka 2006). At an industry level, growth in floriculture spurs derived demand in allied industries, such as supply and marketing of pots, vases and various ornamental arrangement accessories. At a macro level, for developing economies that import floricultural products that they can potentially produce,
as is the case in PNG, there is an added potential benefit of developing the domestic floricultural support sector. Furthermore, when an economy moves from an ordinary economy to an experience economy, there is an increasing role for floriculture. Ordinary economy refers to the situation whereby goods and services are offered to customers in order to help them manage their everyday life (Korkman 2006). In contrast, in an experience economy, people are looking for experiences through goods and services in a context. They are generally prepared to pay substantially more for experience services (Pine and Gilmore 1999; Gronroos 2007).

Supply-chain management in developing countries

A supply chain refers to a range of coordinated value-adding activities required to bring a product or service from conception, through the different phases of production and distribution, to end users (van Duren and Sparling 1998; Woods 2004; Fearne 2009). Interest in supply-chain management for food and fibre products among developing countries has risen as they aim to meet international standards with a view to exporting. Supply-chain management in floriculture in developing countries is relatively new, given its short history and the comparatively modest individual and collective learning experiences of most players in the industry. In a general context, there are Western supply-chain management models that may be revisited for their suitability to explain, predict and apply in developing countries, even where the social infrastructure is quite different.

In a recent study in Solomon Islands, for example, it was argued that a demand-driven approach of supply-chain management does not aptly explain how poor households sell their products, such as potato and yam. Rather, a production-driven model better accounted for what was happening in the marketplace because the producers grow mainly for own consumption and then sell the leftover produce. A hybrid model of supply-chain management was considered more useful in explaining current food supply chains in Solomon Islands (Bryceson and Dowd 2010; A. Ross, pers. comm. 2012).

In another study to explain the Chinese agroindustrialisation process, it was argued that the application of Western concepts of supply-chain management is contingent upon certain conditions of social infrastructure. The study determined that the conditions of social infrastructure necessary for Western-style supply-chain management were yet to be developed. Consequently, some successful Chinese agro-corporations are vertically integrated, such that coordination among supply-chain partners becomes superfluous (Wei and Zhang 2004).

Efficiency versus responsiveness strategies

Profitable supply chains focus on either operational efficiency or market responsiveness. These alternative focuses are sometimes referred to as ‘push’ or ‘pull’ strategies (Simchi-Levi et al. 2013). Push and pull strategies are consistent with Michael Porter’s cost leadership and differentiated product strategies (Porter 1985, 1998; Porter and Kramer 2011). Firms using a push strategy focus on producing standard popular products in an efficient way to offer a competitive price to customers. Alternatively, firms may choose to be more responsive to individual customer requirements in order to offer specialised products and services and consequently gain a better price for employing a pull strategy. While both strategies require planning based on supply and demand, an operationally efficient strategy requires more internal planning, focusing on reducing waste and cutting cost. In floriculture, operational efficiency-related issues include planting design, fertilisation regime, field management of pests and diseases, cultivar evaluation and harvestable product yield. In contrast, a responsive strategy relies more on predictions based on market forces, consumer trends and other market intelligence. Responsiveness may involve questions such as customer preferences for product characteristics, plant cultivar evaluation, packaging requirements, typical vase life and service levels. Businesses may understand the difference between efficiency and responsiveness, but the question of how, when and to what extent to apply each strategy may not be obvious (Simchi-Levi et al. 2013). Strategically, the focus of each strategy depends on the level of competition, size and requirements of the customer segment, and competency areas of the business and the associated supply chain.

Emergence of floricultural supply chains in PNG

One the world’s largest tropical islands and with a large variation in topography (e.g. altitude), the nation of PNG is home to an enormous botanical diversity, including about 11,000 known types of plant, the most vibrant being the country’s orchids, of which there are about 3,000 native species. PNG has
a generally moderate tropical climate in the lowlands and a mostly subtropical climate in the highlands. These diverse climatic conditions have facilitated the great diversity of flora. Although PNG has this wide array of plants, the practice of planting ornamental species tended to start with people who had acquaintances with foreigners, especially early missionaries, explorers and European settlers. However, commercial activity associated with the collection and culture of ornamental plants did not happen ‘back then’. It was only about 5 years ago that PNG people started selling and buying flowers and other floricultural produce as a serious commercial activity. The emergence of floriculture as microenterprises occurred in ‘an organic manner’. In villages of the Nasuapum areas of Lae, Morobe province, the spread of flower planting material was promoted by an event called Sikan Han. This occasion involves the exchanges of food and flower materials between villages. This ongoing event led to the formation of the Morobe Floriculture Group. Today, floriculture is a small, but growing private-sector enterprise in PNG.

Among common floricultural products marketed are tropical and subtropical flowering plants, such as anthurium, heliconia, orchids and a range of flowering gingers. Subtropical and temperate flowers include agapanthus, arum lily, carnation, day lily, gerbera, hippeastrum, rose and tuberose, along with indigenous, culturally significant cordyline foliage. Most of the flower cultivars are not native. This fact notionally contradicts the possible initial presumption that PNG natives are the best initial or immediate ‘way forward’ for PNG floriculture.

Some aid agencies have come to recognise the real significance of floriculture for livelihoods. In the recent past, they have funded many training workshops in PNG. The agencies include the Asian Development Bank, the Australian Agency for International Development (AusAID), Bris Kanda of New Zealand and World Vision, among others. However, the trainings have been predominantly on floristry per se, which is actually a downstream value-adding activity and just one of many facets of floriculture. Meanwhile, both conceptual and applied understanding of floriculture as an industry and the technical knowledge and capacity required to underpin its sustained growth have remained relatively limited.

The objective of this PNG case study was to develop a framework of supply-chain strategies for small-to-medium-scale floricultural businesses to consider. It formed part of the Australian Centre for International Agricultural Research (ACIAR) Project HORT/2008/011 (Strategies for using floriculture to improve livelihoods in Indigenous Australian and Pacific island communities). The approach to meeting this objective has been to examine different supply dimensions, including product chains, local versus regional chains, chain professionalism and market segments of the chains surveyed. Supply-chain push strategies, emphasising efficiency, and pull strategies, emphasising responsiveness to customer needs, are proposed for chains targeting various different market segments. Since many individuals are involved in more than one chain, real and potential synergies exist across different chains. The findings of research to date offer existing floricultural businesses and supply chains opportunities to re-evaluate their match between core competencies and the way they conduct business. Also, they allow individual players to locate synergies in their businesses and chains.

Data collection and methods

The observations and analysis presented in this paper are based on interviews, group discussions and supply-chain mappings conducted in 2011, 2012 and early 2013 with floricultural industry stakeholders, including growers, consolidators, florists, material suppliers and government officers. The areas ‘surveyed’ included the Lae and Huon districts of Morobe province, the Goroka district of Eastern Highlands province, Port Moresby (POM) and Central Province. In all, 23 growers or florists were surveyed from the Huon and Lae districts, 10 from POM/Central Province and 3 from Goroka district. The players interviewed encompassed subsistence growers through to medium-scale entrepreneurs. Some players were doing consistently well as either growers or florists, but others had variable profit outcomes.

Research findings

Socioeconomic aspects

Most floricultural growers in PNG have small blocks of land and grow only limited quantities of floricultural products. Florists typically seek to obtain products from individual growers through a personal alliance. This predisposition is somewhat at odds with horizontal integration as it is generally
required to bulk up quantity at the grower level to reliably and adequately supply commercial florists. In this scenario, growers ideally need to come together in support of the common goal. In this paper, the term florist does not usually refer to those who own a florist shop, as is common in developed countries. Rather, and for the most part, they are individuals who add value to cut flowers and foliage by making ornamental arrangements, including leis, corsages and hairpins. Many such players started floriculture by attending workshops, especially in floristry.

The industry participants surveyed often had simultaneous, overlapping roles as growers and florists. Some were growers turned florists. Others were florists turned growers. In the survey, ‘100% grower’ was the case for only in 2 of the 23 interviewed players in the Huon and Lae districts, and 1 of the 10 in POM/Central Province. It can be asserted that most florists are also growers, but not as many growers are florists. This scenario means that there is little supply-chain functional differentiation. A positive aspect of this is that the players are generally very dynamic and highly motivated, looking to more than one supply-chain angle to enter into the burgeoning domestic floricultural trade. The downside can be reluctance in fixed cost investment, limited longer term planning, and generalisation rather than specialisation, which can lengthen the time to develop an industry per se. In turn, this situation encourages the players, often women, to continually assume multiple roles of growing, floristry and selling in their individual supply chains.

Women are known for their social network inclinations and abilities, which facilitate exchange of resources among them (Rosener 1990; Renzulli and Aldrich 2000). One important such resource is information. Not surprisingly, PNG women in floriculture have a positive networking experience. Nearly all women growers belong to one or more groups and each district surveyed had many informal floricultural groups. The overall most ‘encompassing group’ for floriculture is Papua New Guinea Women in Agriculture Development Foundation, which has branches at provincial and district levels. They run workshops when funding is available. Most group members know each other fairly well, including some being in extended family subgroupings. Relatively closer group ties are generally instrumental for players to get into floriculture quickly and to continue informed engagement in the industry through efficient information dissemination. One possible disadvantage for closer ties is that people with similar socioeconomic backgrounds can obtain circular (less useful) knowledge. The sociological theory of weak ties suggests that people who are less well known to each other are more likely to divulge needed information (Kirkbride et al. 1991; Lawler and Yoon 1993). Somewhat ironically, it was mentioned that one constraint of working together among group members or between supply-chain partners is relationships and trust. While there is a good basis of extension from the personal relationship to the business relationship, the nature of the relationships is different.

During periods of high demand, florists cannot meet this demand and have minor groups within which they seek support. Sometimes, broken trust resulted in a broken supply chain. Broken friendships are often the result of jealousy and gossiping. Petty issues can become nagging problems. To avoid or overcome this, there is a need for conscious effort among supply-chain partners to recognise and appreciate the benefits of collective good, such as consistency in supply and quality for their supply chain as a whole.

Industry overview

The floriculture industry in PNG is highly decentralised and characterised by numerous growers and florists, with few consolidators and wholesalers. Many growers are casual growers because they have outside or main jobs and/or other cash crops or livestock. The backgrounds of the growers and groups vary widely. The Bubia group in Lae, for example, is made up of teachers from Bubia Primary School and nearby growers. The Bubia NARI (National Agricultural Research Institute) group in Lae is made up of the wives of NARI staff. They have a competitive edge in terms of technical and market information gathering.

As mentioned, there is overlap between growers and florists. Astute entrepreneurial individuals, often women and especially teachers, have observed the unmet needs and wants in the marketplace. They engage people, also usually women, in their personal networks to help drive their individual value chains in one way or another. Collectively, these value chains are the basis for floricultural industry building in PNG. There are few consolidators and wholesalers because their roles are needed in only a few supply
chains that sell products across regions, such as the Lae/POM or Goroka/POM supply chains.

While demand for floricultural products remains erratic, it is generally sufficient to yield profits for players in this nascent industry. Although many growers and florists do well, profitability varies widely among these players. Some growers reported that they are buying land to plant more cut flowers in order to meet increased demand. Others reported suffering losses and were removing some flowers grown due to information discrepancy, a lack of needed technical and management skills, and/or insufficient foresight. Upon questioning, expressions proffered included ‘My plants did not flower at the right time!’, ‘The florist wanted other flowers!’ and ‘There were diseases in my flowers’. There are multiple challenges for many small-to-medium-scale supply-chain players hoping to realise benefits in the increasingly rapidly evolving industry.

Floricultural businesses in PNG, as in many Pacific island countries, often engage in multiple product lines. The lines include potted or poly-bagged plants of diverse species for hire and/or for sale, a wide variety of cut flowers, foliage and planting materials, and an array of value-added ornamental wreaths, bouquets and minor floricultural product arrangements, such as leis, hairpins and corsages. These various lines require differing technical and business skills and an understanding of the customer segments that the supply chain positions to target.

Dimensions of floricultural supply chains

From the perspective of growers, floricultural supply-chain strategies depend on capability to provide the product, whether to supply local and/or cross-regional markets, current and desired levels of professionalism in the supply chain and, most importantly, the market segment/s to supply and serve. In reality, these factors interact. For example, cross-regional chains tend to be more professional than local chains. However, conceptually, these four dimensions are useful to examine PNG floricultural supply chains from different angles.

Product dimension

Three major product categories of supply chains are on offer in the marketplace. They are cut flowers and foliage, potted plants and ornamental arrangements. If need be, each product category can be examined specifically—like the ginger or the cordyline supply chains—for certain purposes. Most cut flowers are sold for PNG kina (K)1–2/stem or K5–10/bunch. Recently among cut flowers, torch ginger and beehive ginger have become highly sought after.

Customers are often attracted to a variety of potted plants that look luscious, with healthy growth, and which can be maintained as an investment for future income. Potted plants for hire by hotels and business houses are also a steady, profitable floricultural business line for some players. They fetch about K4–5/pot/day. At a POM cut-flower show in May 2013, the majority of participants’ stalls were composed of potted plants rather than cut flowers. Goroka growers brought in a lot more temperate flowers, including cuttings and other planting materials, than other participants. This offering was indicative of more people in the region wishing to invest in different product lines. For ornamental arrangements, most are sold by pre-placement of orders. The price range for arrangements is wide—from K30 for a common, small one to over K500 for a special, large one.

Some stakeholders mentioned that they often know neither the common names nor scientific names for the cut flowers that they sell. For example, beehive ginger is called ‘ice cream’ by some. It can be confusing to value-chain actors and customers when players are referring to one product by different names. Thus, photo documentation of ornamental flower and leaf cultivars, such as cordylines, and of potted plant species would be useful.
Regional dimension

Local supply chains were examined in the Huon and Lae districts of Morobe province, POM, and the Goroka district of Eastern Highlands province. POM is a fast-growing city. Its population is approaching 1 million and it has high-end market segments to be serviced by the floriculture industry. Unlike Lae or Goroka, where there are no florist shops as yet, there are a few in POM. Lae has upmarket hotels, restaurants and offices, and a population base about 90,000 to be serviced by the floriculture industry. Most of the flowers in Lae are grown by women between the 10 Mile and Erap settlement areas such as Nasuapum, Wawin, Gabsongkeg and Busanim. One significant group of about 20 members, the Goroka District Floriculture Group, was formed in 2012. They grow a range of subtropical and temperate flowers serving the local market. These groups reflect increasing interest in floriculture in the region.

Even more significant were the two cross-regional Goroka/POM and Lae/POM supply chains. Both chains exploit the high-end market in POM. The potential for sending flowers from Lae to POM has been enthusiastically advocated by one potential entrepreneur ready to facilitate the undertaking. However, high airfreight costs mean that flowers must be grown and handled to achieve economies of scale that counterbalance freight costs. This is problematic for heavy flowers, like heliconia and ginger, on a per unit basis. Nevertheless, the potential for cordyline foliage, which is lighter per unit to ship, may be realised. In their individual capacity, some women surveyed in Lae took their cut flowers and foliage to POM to sell at the annual show.

The Goroka/POM cross-regional chains trade subtropical to temperate flowers that include agapanthus, arum lily, gerbera and tuberose. Significantly, the potential for Goroka floriculture is not necessarily limited to the domestic market. Through a risk-taking Fijian expatriate who has connections in Australia, the Kerefa Women’s Association had two opportunities to send native cordyline foliage to Melbourne. While no profit was made, this outcome was due to management issues (discussed below under ‘Overseas market segment’).

To better exploit Lae/POM supply chains for cordyline foliage and Goroka/POM supply chains for cooler climate cut flowers, investment in supply and handling infrastructure should be considered. Fixed capital costs are problematic for small-or-medium-scale players individually or even jointly. However, there was talk that some foreign-owned mining companies, such as Morobe Mining Joint Venture in Lae, might be approached to assist.

Professionalism dimension

Broadly, three levels of floricultural supply chains were observed in PNG in terms of professionalism and levels of investment. At one end of the continuum, in POM, there are supply chains run by well-equipped businesses in a specialised, commercially focused manner. They capture a good share of the multiple market segments. They have vertically integrated production and distribution systems. For these established medium-scale companies, the complex and challenging task of supply-chain management is sidestepped because they perform all supply-chain functions, either under one company or within one line of command. Such corporate supply chains are poised to expand in a growing industry. However, non-corporate floricultural supply chains are more the focus of this study into floriculture to improve livelihoods.

In the middle, there are supply chains initiated by women with some knowledge and skills in growing, flower arrangement and marketing. The chain initiators are buyers of flowers who drive their individual supply chains. Growers in these chains supply to the chain drivers. To a certain extent, florists’ personal networks make supply-chain management easier in a functional context. Most of these supply chains also do well and are trying to expand within constraints, such as lack of cold storage and other supply-chain-related issues.

At the lower end of the scale continuum, there are less organised supply chains comprised mostly of women with low levels of knowledge and skills. These are the least informed in terms of market information. They generally sell directly at roadside stalls or shows. Reflecting the need for better field management, they tend to let gingers or heliconias grow in poorly managed clumps, making, for example, harvest less efficient. As this practice is somewhat related to limited land size, the costs and benefits of growing in organised, managed rows might be assessed.

Market-segment dimension

An essential aspect of supply-chain management planning is market segmentation, targeting and positioning by chain players. In PNG, floricultural market segmentation is akin to distributional
channels. Different distributional channels tend to serve unique groups of customers. They are thus a convenient proxy for growers to know where their products go and which customer segments to service. For non-corporate supply chains, four distributional channels or unique market segments can be identified. These are: local consumers, through the selling channel of shows, festivals and roadside stalls; local business customers, through supplying local florists; cross-regional business customers, through, for example, florists in POM supplied by Lae, Huon and Goroka growers; and overseas customers, through selling to an exporter in POM. Currently, growers’ customer segments are predominantly the first two segments. The third market segment, POM florists, is growing for the Goroka/POM chain. The fourth market segment, overseas customers, was tested only twice in the recent past, but it is put forward for contrast and consideration. Conceptually, the market segments entailed in the four marketing channels are unique. However, many people are involved in more than one channel serving more than the one market segment.

**Local consumer segment.** This market segment generally patronises shows, festivals and roadside stalls. For new floricultural growers, taking products to these venues is a low-cost test-market practice and an opportunity to interact with customers directly. For those who have other channels through which to sell, this channel is an outlet to make extra income. The majority of growers in all the areas surveyed sell an array of products at shows, festivals and by roadsides where there is good traffic. A few women in the one group can take turns to do the long hours of selling for a few days in a week. This is a pervasive practice in that many customers come to expect floricultural products on offer at the same spot on certain days of the week. This market segment is very diverse and the uses of the flowers vary, such as for churches, home beautification, businesses and florists to fill their orders. There are also impulse buyers who stop, watch and then decide to buy at point of sale. Despite sales fluctuations, on average, growers reported relatively good income through serving this diverse background of customers.

In terms of supply approach for this market segment, it is impractical for growers to cater for customer needs at all times, given a wide spectrum of customers in this marketing channel. A combination of moderate push and low pull strategies can be adequate. A moderate, rather than low, efficiency strategy is needed because this segment expects competitive prices. A low responsiveness strategy will be satisfactory because customer needs are divergent.

**Local business customer segment.** The customers of this market segment are generally florists or retail shop owners who buy products for commercial purposes. The customers either add value to make ornamental arrangements or sell products in their shops. Currently, only POM has a few florist shops. Other cities do not have a permanent outlet for market floriculture, although some women have been talking about starting the first florist shops in Lae and Goroka.

People rarely buy flower arrangements in open markets. Products sold through this channel are mostly made by customers placing prior orders. Such customers are business houses and government bodies. Occasionally, individuals order on special occasions, such as for weddings, office decorations, church decorations and Mother’s Day. The profitability of flower arrangements and flower products depends on the number of shared special occasions in a year and the popularity of a high-quality service that prevails. On shared special occasions, the price of flowers/plants and flower products is twice or three times the normal price. Regarding service, business may prosper and expand as a result of preferred supplier status, or favouritism, by business houses and government bodies.

In this type of supply chain, there is significant income for both growers and florists. They often receive over K500/month from ornamental arrangements and potted plants. Income from minor floricultural arrangements of leis, corsages and hairpins is often over K200/month. Supply-chain relationships can be easy, given existing personal relationships between growers and florists. However, it was also reported that personal relationships could compromise business relationships at times, resulting in broken supply.

In terms of supply-chain strategies by growers for this market segment, a high level of operational efficiency, or high push strategy, may be needed because most of their customers buy for commercial reasons. For the level of responsiveness to customer needs, a moderate pull strategy rather than a low pull strategy, as in local consumer segment, is called for. This is because florists are now regular, identifiable customers of growers.

**Cross-regional (POM) business customer segment.** This is an up-market customer segment in POM. Like the second segment above, these
customers also buy products for commercial reasons to add value or to sell at their shops. Ideally, only superior-quality flowers with few or no defects and long vase-life potential should be sent to POM. This customer segment demands relatively efficient production and a high level of responsiveness through intimate knowledge of customer requirements.

Currently, there are at least two groups or supply chains sending products from Goroka to POM. These are the Kerefa Women’s Association and the Eastern Highlands Province Women in Agriculture District Floriculture (EHPWIADF). Their chains take advantage of the relatively cool climatic conditions in Goroka to produce subtropical to temperate floricultural products for sales into high-end markets in the capital city. Marketing in these supply chains typically takes the channel of grower in Goroka – consolidator in Goroka – florist in POM – customer in POM. Retail prices for various products in POM are generally a three times mark-up from the prices that growers receive. It was reported that the Kerefa supply chain fetches higher prices in POM and that the growers involved get paid more.

Both Kerefa and EHPWIADF supply chains are driven by two very entrepreneurial florists in POM, who can be considered channel managers. Neither of the two florists is confident of the effectiveness of supply-chain management through correspondence. Rather, they make efforts to go to Goroka to train their growers on all aspects of technical production, harvesting and packaging. An integral part of the training by these supply-chain managers is on good business practices, such as reliability and delivering on time to the consolidation depot.

Supply-chain strategies for this market segment should be of high operational efficiency in order to offer high-quality products with competitive prices to cross-regional business customers. One reason is that some local chains in POM provide similar products. Hence, the business customers are more price sensitive than in the first two segments discussed above. A high level of responsiveness to customer needs is needed. Compared with the local business segment, more market research through ‘walking the chain’ activities would be beneficial for growers serving this market segment.

Overseas customer segment. This market segment is overseas business customers who are most likely wholesale distributors. The eventual customers would be overseas florists and consumers. Through an exporter, this customer segment will have specific requirements and demand high responsiveness at a reasonable price.

The theme of the 2013 Port Moresby cut-flower show was ‘grow locally and sell globally’. In the recent past, two shipments of cordyline from Kerefa Women’s Association in Goroka were sent to Melbourne through a consolidator in Goroka and an expatriate wholesaler/exporter in POM. Product-wise, there is little doubt that PNG’s indigenous cordylines have unique attributes, which include attractive, vibrant colours. However, both shipments failed for different reasons. The first shipment suffered an insect-infestation problem and the second failure was attributed to growers not delivering punctually to the consolidation depot such that the prepaid reserved flight was missed. These setbacks substantiate observations in manufacturing industries that a supply chain breaks at the weakest link (Hansen and Birkinshaw 2007). Grower-level routines and practices are seemingly the weakest link in this supply chain as far as serving overseas customers is concerned. While anyone can grow cordyline, production expertise is needed to grow impeccable product. The concept of time and daily prioritisation by growers at the village level can be very different from those in the business world. Nonetheless, such lost opportunities may form part of a learning curve for players aspiring to serve the overseas customer segment in the future.

Supply-chain strategies for this overseas market segment demand a high level of operational efficiency coupled with a very high level of responsiveness to realise customer specification. A responsiveness requirement may be to meet precise product specifications through intimate working knowledge of the end-customers’ requirements and practices.

Overall adoption of strategies

A summary of supply-chain strategies for growers by market segment is presented in Table 1.

Other factors affecting adoption of strategies include the level of competition, size of the customer segment and strengths and weaknesses of the associated supply chain. As most players are involved in more than one supply chain, there are various areas of endeavour that can yield synergies. These include procurement of planting materials for different customer segments and supply chains, management learning across chains, technical knowledge and skills sharing across groups, and transport arrangements for order fulfilment for more than one segment and supply chain.
Table 1. Summary of PNG floricultural supply-chain strategies by market segment

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Local</th>
<th>Local business</th>
<th>Cross-regional business</th>
<th>Overseas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational efficiency</td>
<td>Moderate</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>Low</td>
<td>Moderate</td>
<td>High</td>
<td>Very high</td>
</tr>
</tbody>
</table>

Conclusion and lessons learned

In PNG, many women start floriculture from their group connections to earn good extra income. They are often players in one or more supply chains. These supply chains can be characterised on the four dimensions of product, region, professionalism and market segment. Unlike professional floricultural corporations, where supply-chain management is management under ‘one house’, small-to-medium floricultural supply-chain players need to position themselves based on the market segments they serve. Different market segments necessitate and entail different supply-chain strategies that emphasise different levels of operational efficiency and responsiveness. Supply-chain management strategies may seem to be non-urgent because, in general, there is good demand for floricultural products. However, when PNG experiences increasingly abundant supply in floriculture, as evidenced in many newly emerging grower groups, the supply chains need to adapt and manage according to market principles and modern management concepts. In the context of this case study, there are messages for academics, businesses and government bodies.

For academics

Many players obtain seemingly second-hand fragmented information and knowledge in their personal network and/or through attending workshops. Most training workshops conducted have been in floristry. While this is a major area of floriculture, it is not, and should not be seen as, a stand-alone panacea. Training workshops in cultivation and handling are not often offered and/or not generally delivered by people with expertise, partly because there are few technically expert floriculturists in PNG as yet. Consequently, growers are more or less left to themselves to piece together limited technical and management knowledge. This is one area that requires long-term strategic planning and investment to develop ‘floriculture as a discipline’ in order to uphold ‘floriculture as a career’ for serious players and to underpin ‘floriculture as an industry’ for PNG’s ongoing and sustainable economic development. For instance and in due course, research in ornamental plant breeding and selection could create new horticultural products, including new floriferous hybrids and cultivars of, for example, indigenous orchids and ‘gingers’ for expanded niche, and eventually general, markets, with associated business development flow-on.

For small-to-medium businesses

While many small-to-medium businesses are making incomes from floriculture, they would benefit economically and professionally from viewing things from a supply-chain perspective. However, this is not such an easy thing to achieve. Supply-chain learning based on information exchange at all levels can be difficult. Fostering a supply-chain perspective would enable the players or actors to see where the weakest link is and to strengthen it. Positioning with regard to push or pull supply-chain strategies should be based on customer segments that the chain is serving. Chain players develop shared understanding and one of their critical challenges is to align personal motivation with whole-of-chain functioning and performance.

For government bodies

Government plays a pivotal role in industry development. Relevant government offices/officers are well positioned to influence the agenda of aid agencies to facilitate growth of PNG’s burgeoning floriculture industry so as to realise its full socio-economic potential. Currently, there is next to no investment in supply and handling infrastructure by small-to-medium floricultural industry participants. Such facilities require land and significant capital investment and, therefore, likely need the engagement of multiple parties coordinated by government. Another tangible benefit area is for government offices to provide information and training hubs for industry players—for example, hubs providing
technical and general market information to vibrant small-to-medium businesses.

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References


