

The Market Development Project: A case of government failure?

by

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Abstract

The Market Development Project (MDP) was initiated by the Fresh Produce Development Company (FPDA) of Papua New Guinea (PNG) in 2006. The project involved FPDA acting as a wholesaler, buying fresh produce from farmers in the PNG Highlands and delivering it to supermarkets in Port Moresby and to a mining town, Tabubil, in the Western Province. In 2010 a review was undertaken to assess MDP's performance over the four years it had been in operation: what it had achieved and what it had not; how cost effective it was; whether and how it could have been done better; and whether a government agency should be involved in a seemingly private wholesaling business.

The MDP was set up to link farmers to markets. It aimed to provide farmers with secure markets and stable prices; generate market information which the agency could use to develop policies and strategies; provide a learning ground to educate farmers and the staff to become commercial and market-oriented; and encourage farmers to save money through the establishment of bank accounts. The study showed that some of the objectives have been achieved, for example, gaining practical experience in marketing, building capacities of farmers and staff, establishing bank accounts and encouraging savings for some farmers. However, these achievements were not significant relative to the time and substantial resources that had been invested in it. More importantly, it failed to make significant inroads into addressing known supply chain issues of poor transport, poor post-harvest handling, and inconsistent supply. Our findings suggest that more effort should have been given to staff and farmers' training, gathering information on costs of production and marketing and identifying and addressing supply chain issues. In addition, a workable monitoring and evaluation framework should have been put in place so that problems and deficiencies in the design and operation of MDP, most notably its pricing structure and quality control measures, could be identified and rectified as soon as they occurred. The case of MDP demonstrates clearly that administered pricing (as is MDP pricing) is no substitute for the free play of market forces and farmers' interests can be better served by government acting as a facilitator, rather than as an interventionist.

We would like to thank the FPDA management and staff for providing necessary data and logistic support during the review. We would also like to thank Emeritus Professor Roley Piggott for his comments on the early draft of this paper.

Introduction

The Market Development Project (MDP) was initiated by the Fresh Produce Development Agency (FPDA) of Papua New Guinea (PNG) in 2006 to provide Village Extension Workers (VEWs)¹ and their contact farmers with a secure market and stable prices by consolidating fresh produce in the Highlands and delivering it to specific buyers, mainly supermarkets in Port Moresby and in Tabubil, a mining town in the Western Province. MDP started in Goroka in 2006, which was followed by MDP-Mt Hagen in 2007.

After four years of operation, FPDA Management requested that the Project's performance be assessed. Therefore, the objective of this review was to determine what the MDP had achieved, what the key issues were, and what could have been done better or differently. Furthermore, it addressed the policy issue of whether FPDA, as a government agency, should be involved in a seemingly commercial wholesaling business.

The MDP concept came from the air-freight trial conducted in 2005 as part of an ACIAR project, "Improving marketing of fresh produce from the Highlands to the coastal markets" (Spriggs and Ehmgig 2005). The objectives of this trial, which were later maintained by the MDP, were:

- To better understand the constraints to fresh produce marketing;
- To build capacity within FPDA to facilitate the development of effective supply chains;
- To obtain hard-to-get price data; and
- To provide a vehicle for farmers training on production, post-harvest technology and marketing.

During the 13-weeks' trial, fresh produce was sent to a wholesaler in Port Moresby. Quality standards were developed and put in place along with strict time controls whereby the target was for a FPDA vehicle to pick up the produce (already graded and packed in specially designed waxed carton boxes) from the farm, deliver the produce to Goroka Airport so that it could be flown to Port Moresby. Upon arrival in Port Moresby, FPDA staff would pick up the produce from Jacksons Airport and deliver the produce to the buyer. The strict time control aimed to deliver from farm to market within 8 hours. To make it happen, farmers had to be located within 10 kilometres radius of Goroka town. Despite the strenuous effort to make it work, the air-freight trial encountered serious supply chain issues, including problems with local transport (eg FPDA vehicles or staff not being available for pickup), lack of plane cargo space and flight delays, quality requirements not being adhered to, and lack of interest from farmers and therefore supply. It seemed some of those problems persisted and some had become worse over time in part because under MDP, the produce travelled to the FPDA office by PMVs (public motor vehicles) and in conventional packaging materials (ie polyethylene flour or stock feed bags, rather than in boxes), along with all the known problems of delays and poor postharvest handling practices.

Methodology

This study reviewed the marketing operations in Mt Hagen and Goroka, concentrating on the following aspects:

- Contracts / Supply Arrangements with buyers;
- Arrangements for taking orders;
- Arrangement for filling orders;
- Post harvest handling at both the producer and buyer ends; and
- Quality / Price variations.

Both qualitative and quantitative methods were used. During the review, MDP staff, suppliers to MDP, competitors of MDP and the purchasing agent of the buyer in Port Moresby were interviewed to learn about their experiences in dealing with MDP and to form an impression of how MDP has been working for all parties involved. Observations were made regarding how fresh produce was received and handled at the MDP depots and in the store room of the buyer in Port Moresby. Price data, collected mainly from Urban Market Surveys (UMS) and Retail Store Surveys (RSS) conducted weekly by FPDA, were used to calculate price differentials and markups at different markets and at various marketing levels. Sales and cost data were also analysed to identify issues of demand and supply imbalances and to assess financial viability.

¹ The Village Extension Workers Program is an extension model used by FPDA whereby extension officers train lead farmers (VEWs) in production techniques, who, in turn train and supervise 10-12 contact farmers.

Key Findings

MDP appears to have delivered good results in some areas while encountering serious issues in others. MDP's achievements include: providing VEWs and contact farmers with a secure market once a week; secure payments; stable prices; a bank account and improved savings by farmers; and providing a training ground for developing local entrepreneurs. However, these benefits are not significant relative to the time and tremendous human resources which FPDA has invested in the project. That is, few farmers could confidently claim that they now know what exactly the market requirements are, how to meet them satisfactorily, and how to keep records, calculate costs of production, and do a gross margin analysis. More importantly, the project fails to adequately address long-standing supply chain issues in regards to communication, transport, consistency of supply, and quality control. It also fails to gain support from the majority of VEWs and contact farmers because of project design flaws, notably in its pricing and marketing arrangements. The details are discussed below.

1 The role of government in agricultural marketing

Direct government involvement in agricultural marketing has become a thing of the past except in special cases. Governments which used to support the agricultural sector through parastatal² or statutory marketing boards, input and credit subsidies, price support, tariffs and import quotas etc have learned that these direct government interventions are costly and they tend to distort the allocation of resources, breed inefficiency, and result in industries becoming less competitive internationally. Some of these measures are also no longer inadmissible under WTO (World Trade Organisation) agreements which are against various forms of government assistance to the farm sector.

The main economic argument for government intervention is in the case of market failures where either a market does not exist or the market is not producing the desirable output from society's point of view. Market failures arise because of imperfect information (eg prices unknown or unavailable); imperfect markets (eg monopoly, high transaction costs, immobility of factors of production); public goods (eg defense and national security); or externalities (eg environmental damages due to deforestation or land clearing, spillovers due to research and development) (Deardorff 2000). Furthermore, even when market failures exist, government intervention is justified only if it passes further scrutiny. That is, does it produce net public benefits? Does it restrict competition? Can policy goals be achieved through other means?

Direct government intervention in agricultural marketing often does not pass these tests, except in the case of imperfect information. Even in cases where there is imperfect information, government intervention should still be restricted to research and development and provision of market information and extension services that satisfy public goods requirements. In countries such as the United States, Australia and those in Europe, most support services traditionally provided by the government are now either entirely in the hands of the private sector or in partnership with the public sector simply because together they complement each other and can deliver better results.

Another issue is motivation and performance in government-operated enterprises. The question is: In the absence of close supervision, necessary skills or proper remuneration, how strong an incentive is there for government employees to make a concerted effort to ensure customers' requirements are met or a reasonable return on investment is achieved? Would they voluntarily work inconvenient or extra long hours to make things happen?

The MDP, acting as a wholesaler of fresh produce, is a case of direct government involvement in agricultural marketing (although on a small scale). Its operation is in direct competition with the private sector. This is certainly the case in Hagen. Not only does it compete with other buyers for the supplies of produce, but also it might not compete fairly on commercial terms because it can afford to subsidize its operations in various ways (eg free pickup, buying at higher price, selling at lower price, etc). Over time, it may also discourage private investments into the wholesaling business. It seems the time has come for FPDA to redefine its strategic role in fresh produce marketing and move away from an interventionist approach to one that is facilitative (Abbott 1984).

2 Changes in market conditions

The Hagen market has changed over the last few years, from having a lack of market outlets for VEWs and their contact farmers when the project was initiated in 2007 to a situation of demand outstripping supply. Currently, there are close to a dozen wholesalers operating in Hagen, plus numerous black marketers buying at the Hagen Urban Market. The biggest wholesaler, Sigma Holdings which started in August 2009, is now making seven shipments a week to Port Moresby with its own cargo planes, averaging 1.2 tonnes per day.

² Parastatals are business entities which are owned or controlled wholly or partly by the government.

Sigma Holdings is also in direct competition with MDP for the use of the chiller at the Highlands Agricultural College and for supplies of fresh produce. MDP does not have a marketing advantage against its competitors because it operates only once a week and the prices it offers are inflexible and uncompetitive. By contrast, the Sigma Holdings and other buyers buy nearly every day and pay the market price based on demand and supply. The choice for the suppliers is quite clear.

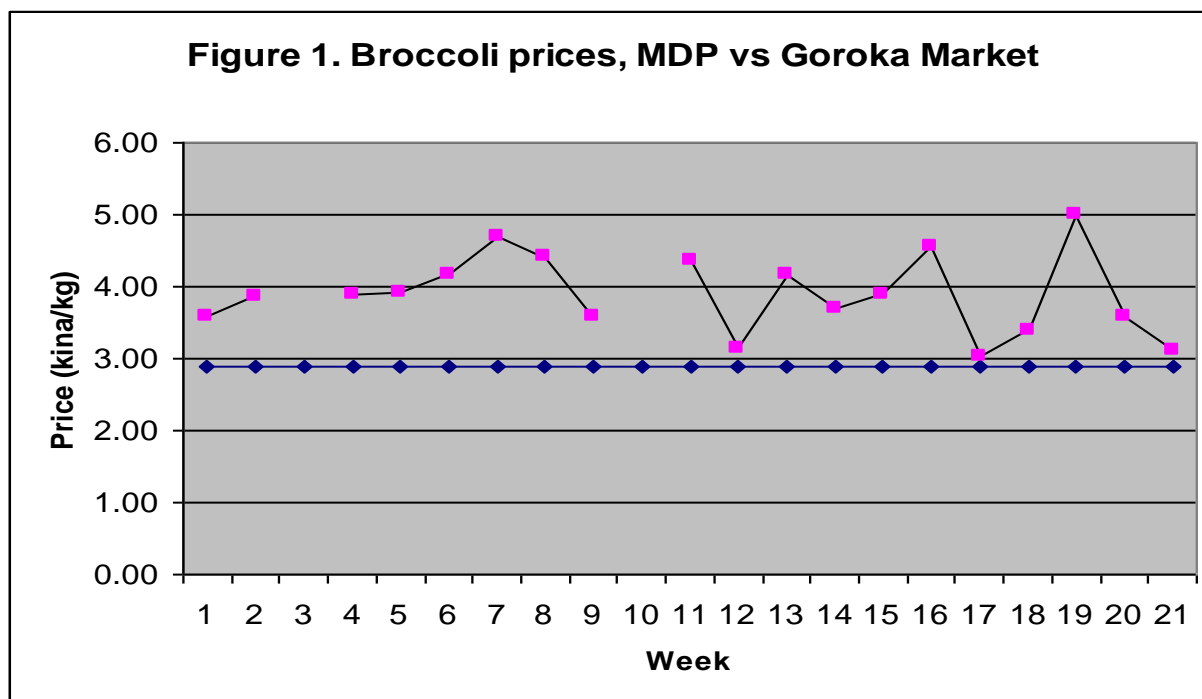
3 Procurement prices

Procurement prices paid to farmers are fixed and set by MDP and they do not reflect prevailing demand and supply conditions. Since the project started in Goroka in 2006, only two price adjustments have been made (in November 2008 and April 2009). Although a secure market is always appreciated by farmers, the same cannot be said for stable prices. A fixed price regime will work better when both parties are obliged by strict contract terms to deal with each other on a long-term basis, thus smoothing out the highs and lows of price fluctuations. This is not the case with MDP, as farmers are not obliged to supply to MDP. Therefore, it is understandable that a majority of farmers would try to sell to the highest bidders at any one time -- delivering to MDP only when its (fixed) prices are higher than other offers.

Even though MDP is set up to benefit farmers, such a service will be appreciated and utilized only when it meets the needs of farmers, be it a secure market, an opportunity to open a bank account, forced savings, stable prices and incomes, price transparency, etc. At the end of the day, however, price seems to be the determining factor as to where farmers sell their produce.

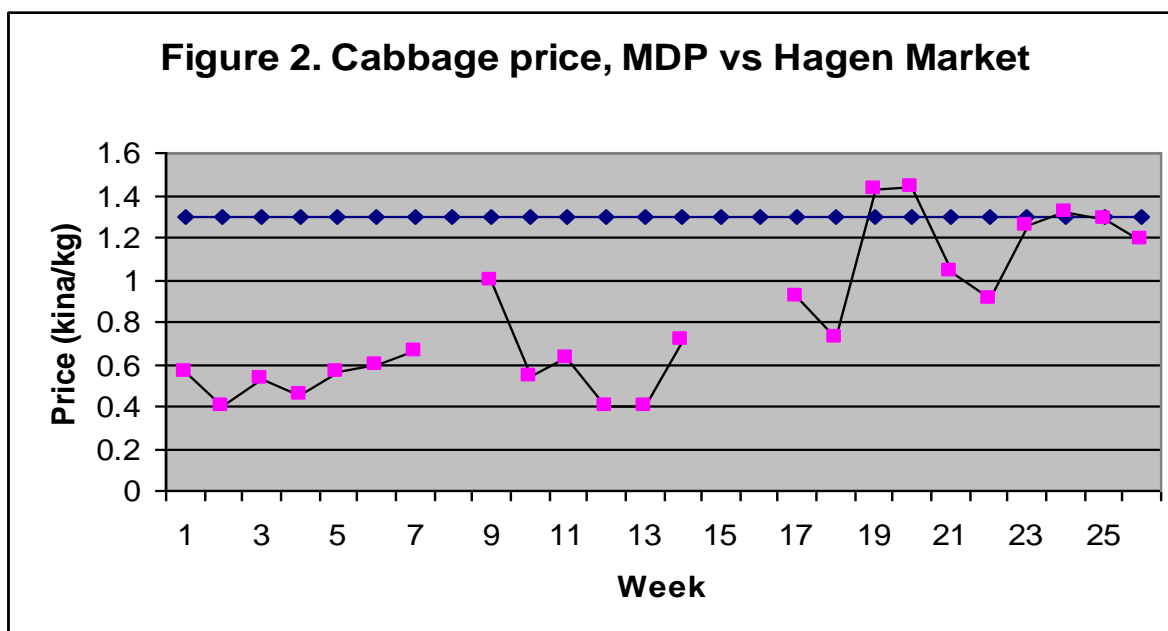
Consultation with the Bird of Paradise Hotel (BoP) in Goroka found that its prices are also fixed (for the last 6 months) and are not competitive with the open market prices at Goroka, Lae or Madang, especially during the dry periods. BoP has three regular suppliers, but also buys from the Goroka open market twice a week to make up any shortfalls. With a limited budget, it is hard for the hotel to get quality supplies, despite being located in the Highlands where supplies are relatively more abundant than in other urban centres. The price list for BoP also shows that BoP's prices are lower than FPDA's prices for most produce.

To illustrate MDP's price competitiveness, MDP's prices were compared with urban market prices for broccoli in the Goroka market and for English cabbage in the Hagen market. As can be seen from Figure 1, during the six months from January to June 2010, MDP prices for broccoli were in all cases below those at the urban market.



Source: FPDA Urban Market Survey database.

Another example is the cabbage prices in Hagen, where the story was quite different. As demonstrated in Figure 2, the urban market price was consistently lower than that of MDP, with only two exceptions. This means that the MDP was effectively outbidding its competitors in the private sector in Hagen.



Source: FPDA Urban Market Survey database.

There are several points to note when interpreting the results: First, the MDP price and the urban market price are not really comparable. For a start, the former is a wholesale price while the latter is a retail price. In most cases, the retail price can be expected to be higher because it should include the “rewards” and additional marketing costs for sitting at the market for long hours under very poor conditions. However, this might not be how farmers see it. This is another area that farmers need to be better educated about. Second, the two prices may be different because of quality differentials. One would expect MDP quality is generally higher than what is available at the urban market, but it is not something that the data can confirm. Note also that there is some concern about the reliability of the urban market price series. However, the deficiency is not expected to alter the picture of the significant price distortion caused by the artificial pricing schemes employed by MDP. Third, and more importantly, administered pricing (as is MDP’s wholesale pricing), which could be consistently lower or higher the market price, is no substitute for the free play of market forces.

4 Supply shortfalls

There were substantial shortfalls in filling the purchasing orders for MDP-Goroka. As shown in Table 1, from January to June 2010, MDP-Goroka undersupplied the buyer in Port Moresby by 41%. That is, only about 60% of orders were filled. In the Hagen market, supply more or less matched demand (undersupplied only by 2% overall) (Table 2). Data in Tables 1 and 2 also show that there are significant variations in supply status for individual produce. That is, some produce is undersupplied while others are oversupplied. For example, in the Hagen market there is an oversupply of avocado (69%), carrots (60%) and spring onions (75%) while no supply at all for leek, green peas and Rhubarb. In the Goroka market, most produce was undersupplied with the exception of saladeer, lemon and avocado.

There are several possible explanations for undersupply, including:

- Procurement prices were fixed regardless of market conditions and often were not competitive;
- Procurement was only done once a week;
- Supply sources were limited to VEWs and contact farmers;
- No standing orders from the buyer exist;
- Each order given to a farmer was fixed (which could be higher or lower than what the farmer had to offer);
- Farmers preferred to be paid cash on the spot due to urgent cash needs; and
- Farmers preferred selling by bags without sorting/grading.

5 Markups

In MDP-Goroka, markups of produce purchased by the MDP range from 23% for asparagus to 245% for lettuce, with an average markup of 70% (second column, Table 1).

Table 1. Supply status and markups in MDP-Goroka, January-June 2010

	Supply shortfalls (%)	Markup (%)
Asparagus	-98	23
Avocado	9	109
Broccoli	-76	38
Capsicum	-84	33
Carrot	-45	47
Cauliflower	-80	38
Choco fruit	-16	109
Ginger	-78	67
Green Pea	-100	59
Leek	-100	65
Lemon	7	109
Lettuce	-58	245
Mandarin	-8	39
Orange	-12	39
Pak choi	-99	59
Pineapple	-55	47
Raddish, White	-55	56
Saladeer	20	71
Silver Beet	-100	14
Spring Onions	-31	59
Sugarfruits	-34	56
Tomato	-4	161
Wongbok	-32	97
Zucchini	-54	35
Average	-41	70

Source: FPDA MDP database.

In the Hagen market, markups range from -29% for sugarcane to 200% for Rhubarb, with an average markup of 82% (second column, Table 2).

Note that markups are quite different between the two markets even for the same products. There is no logical reason why this is the case. In theory, the markups should reflect the marketing costs of MDP for providing marketing services (buying and selling, sorting, packaging, storage, transport, etc) plus some profits (Tomek and Robinson 1990). Since both the buying and selling prices are set by MDP, in effect it also sets the markups. However, they don't seem to reflect marketing costs. Some markups look especially dubious.

Table 2. Supply status and markups in MDP-Mt Hagen, January-June 2010

	Supply shortfalls (%)	Markup (%)
Asparagus	-17	88
Avocado	69	216
Banana-cooking	3	20
Broccoli	-4	17
Capsicum (Green)	-67	17
Carrots	60	39
Cauliflower	-6	100
Celery	-31	50
Chokofruit	35	88
English Cabbage	22	67
French Bean	39	150
Ginger	-70	0
Kaukau	30	100
Leek	-100	135
Lemon (Local)	16	80
Lettuce	14	164
Orange (local)	33	46
Peas,Green Local	-100	140
Pakchoi	19	100
Pineapple	-1	150
Potato,English	-12	67
Saladeer	-73	37
Silverbeet	-68	145
Spring Onion	75	100
Sugarcane	-14	-29
Sugarfruit	9	25
Radish,white	-68	35
Tamarillo	-53	40
Tomato	24	67
Wongbok	-79	56
Zucchini	1	88
Rhubarb	-100	220
Average	-2	82

Source: FPDA MDP database.

A negative number for markup (eg -29% for sugarcane) means that MDP is actually making a loss from selling sugarcane while a zero markup for ginger means that MDP is providing a free service to the buyer. Another case in point is broccoli and lettuce; both of these two produce items are highly perishable. For broccoli, the markup is 17% in Hagen and 38% in Goroka while for lettuce, the markup is 164% in Hagen and 245% in Goroka. Given that the marketing costs for broccoli are much higher than lettuce because it requires first cooling with iced water and extra plastic liners and ice in the box, a markup of 17% does not seem enough to cover the extra labour and material costs.

However, it is not possible to make an informed judgment as to whether, in general terms, the MDP markups are reasonable or not. To do that, more information on costs of production and marketing costs incurred by all parties must be known. Such detailed information was not available during the review.

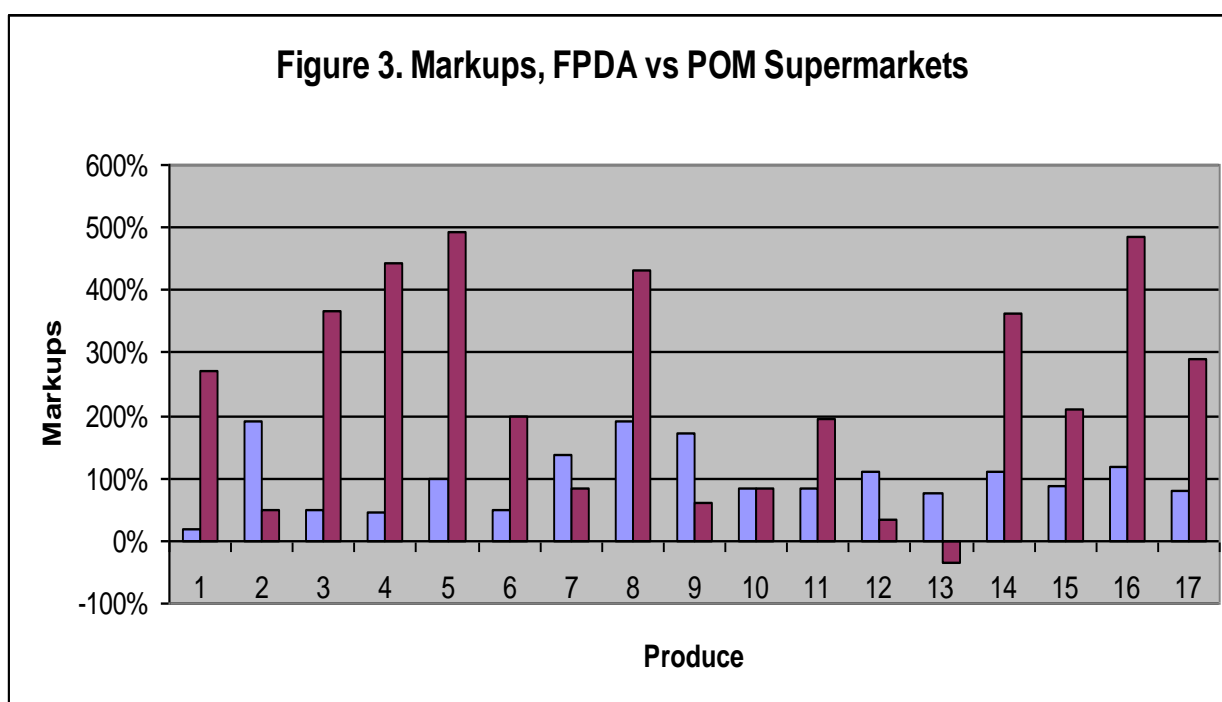
We also compare markups employed by MDP with that of supermarkets in Port Moresby. The results are presented in Table 3. It can be seen that markups employed by supermarkets are higher, ranging from 36% for pak choi to close to 500% for carrot and tomato. On average, the markup for MDP-Goroka is 100% averaged over 17 types of fresh produce, while the supermarket markup is 237%.

Table 3. Markups for MDP-Goroka and supermarkets-Port Moresby, March 2010

	MDP (%)	Supermarkets (%)
1. Asparagus	19	270
2. Avocado	190	50
3. Broccoli	48	367
4. Capsicum	44	442
5. Carrot	98	492
6. Cauliflower	48	199
7. Ginger	139	85
8. Lemon	190	432
9. Lettuce	173	60
10. Mandarine	84	84
11. Orange	84	193
12. Pak choi	109	36
13. Pineapple	78	-37
14. Spring Onions	109	364
15. Sugarfruits	86	211
16. Tomato	119	484
17. Zucchini	80	290
Average	100	237

Source: FPDA MDP database.

Note that the retail prices were obtained by averaging prices over six supermarkets and over four weeks in March 2010 while the wholesale prices used were one supermarket's buying prices plus K5/kg for air freight charges. Therefore, both prices may not be representative of the prevailing wholesale and retail prices in Port Moresby. Nevertheless, the picture presented in Figure 3 is quite telling.



Source: FPDA MDP, Urban Market Survey and Retail Store Survey database.

*The first bar (in blue colour) represents FPDA's markups and the second bar (in maroon colour) represents supermarket's markups.

Readers are again reminded of the unreliability of data and that they should exercise caution in drawing any definitive conclusion concerning the efficiency or fairness of the fresh produce marketing system or whether those markups are reasonable or not without more information. The information needed to make a full assessment includes:

- What constitutes the marketing costs at the supermarkets;
- What marketing services they provide;
- Additional marketing costs associated with spoilage and wastage; and
- What pricing and marketing strategies are being employed.

However, this is easier said than done. Both the Australian and United Kingdom governments have conducted several enquiries into supermarkets' pricing and markups in the past decades (Walsh 2006, Smith 2006, ACCC 2008, SEC 2011). In Australia, they included the Joint Select Committee on the Retailing Sector (the Baird Inquiry) in 1999, the ACCC inquiry into the pricing behaviour of the Australian grocery retailers in 2001, the Independent Review of the Trade Practices Act (the Dawson Inquiry) in 2003 and more recently the review of the Economic Structure and Performance of the Australian Retail Industry in 2011.

Unfortunately, there were no clear conclusions simply because the pricing strategies employed by the supermarkets were so complex (eg category management, global sourcing, contractual arrangements, etc) that it was almost impossible to compare one price with another despite the gut feelings on the part of some that something fishy was going on.

6 Quality control

One of the rationales behind the MDP was to teach farmers and FPDA staff to be market-oriented and to meet market requirements. However, MDP has not achieved these objectives. Observations at the receiving points showed that neither the FPDA staff nor the farmers are conscientious about quality control or postharvest handling issues and farmers don't always deliver the quantities and quality requested. In terms of quality control, farmers still come in with oversized polyethylene stockfeed or flour bags, which are sat on, stepped on, and/or dropped onto the floor from the truck. Whether they were leafy vegetables or otherwise, they were packed and pressed down into boxes or bags.

Rejection is nearly impossible with farmers doing the packing themselves or looking on. One of the main reasons these problems occur is because there are no written quality standards and no clear guidelines for sorting and grading. In addition, there is no quality premium and therefore no incentive to produce the best quality produce.

Indeed, one serious weakness of MDP is its failures to address quality issues, which are especially complex in PNG. The contributing factors range from bad road conditions, unavailability of local transport, poor packaging by farmers and poor handling by transporters, limited cargo space, flight delays, lack of cooling facilities, etc. The questions are: Are these contributing factors totally beyond the control of FPDA? If they are not, what could MDP or FPDA do about them?

It seems that regardless of the complexity of the problems, there are things that MDP could do and could have done to resolve some of the issues. Some examples are:

- Consolidation of produce in key locations;
- Sorting and packing on-farm using proper packaging materials; and
- Determining flight schedules and days during the week that flights may not be so full to reduce the likelihood of produce being "bumped off" (similarly, for local transport), etc.

These ideas will need to be researched further and trialled if FPDA are serious about improving fresh produce supply chains. It seems FPDA could use the MDP as a vehicle for research and trialling possible options/solutions with farmers and other players in the supply chain.

Based on the feedback from the buyers, they are generally happy with the quality of the produce, with few complaints. However, this is not necessarily an indication that the MDP is doing a good job when it comes to providing quality products. Close monitoring and better communication with customers are still the key to ensure the quality on the shelf is the best possible, rather than merely "acceptable" or "tolerable"

7 Returns to investment and costing

Over the six months during January-June 2010, the gross returns (the difference between payments to farmers and receipts from one supermarket buyer) were K27, 255 and K19,877 for the operations in Hagen and Goroka, respectively. The corresponding volumes of trade were 23,695 kg and 11,579kg in Mt Hagen and Goroka, respectively. The net returns (the difference between total revenues and total project costs) were K9,782 for MDP-Goroka and K11,839 for MDP-Hagen. The details are not presented here, but are available from the authors upon request.

At the first glance, it seems that MDP is self-sustaining, meaning that it was able to cover its own costs. However, these figures are preliminary and MDP has not been fully costed. For example, the personnel costs do not include on-costs and the time allocated to the key project staff appears to be under-estimated; the costs related to vehicle use have not considered depreciation or insurance; the capital costs of operating the packing and cooling facilities in Hagen has not been factored in; the costs of spoilage may be under-estimated; non-payments by some clients other than the buyer have not been factored in, etc. It is quite possible that MDP may be around the borderline of breaking even or has been heavily subsidised by FPDA when it is fully costed and evaluated over its four-year tenure.

One observation is the spoilage from MDP-Goroka. The total losses due to spoilage over the six-month period amount to K5,000. The reasons behind the spoilage were the usual problems of the lack of cargo space, flight delays and lack of cooling facilities in Goroka (so produce was left to fend for itself in ambient temperatures). Some questions need to be asked: How do we account for the cost of spoilage? Should it be calculated in terms of the procurement cost as was applied here? Or should it be the payment which could have been received from Koki if there was no spoilage (ie the opportunity costs of not protecting the produce)? Are these problems (the lack of cargo space, flight delays, and lack of cooling facilities in Goroka) unavoidable and totally beyond the control of MDP? If MDP were a private trader, would it allow such losses to occur so frequently? What would it have done to avoid or minimise the occurrence of spoilage? Would it keep operating for four years with the status quo?

For MDP to be considered self-sustaining, the total operating costs associated with running the MDP must be recovered fully. However, is it enough just to break-even? What is a reasonable rate of return? Should we also consider the hidden (opportunity) costs of “investing” in MDP? That is, could the time and talents of FPDA marketing staff be better utilized if they were engaging in some other activities?

8 Documentation and contractual arrangements

During the review, it became clear that there was no original project design document for MDP and there were no written agreements between FPDA and its various partners, either suppliers or buyers. The lack of documentation makes it hard for monitoring and evaluation because there is no reference point or benchmark to go by. There were several occasions on which FPDA was unable to recover payments from some buyers. But because there was no written agreement, there was no legal recourse when problems occurred.

Conclusion and Recommendation

The MDP was set up to do great things – linking farmers to markets. It aimed to provide farmers with secure markets and stable prices; generate market information which the agency could use to develop policies and strategies; provide a learning ground to educate farmers and the staff to become commercial and market-oriented; and encourage farmers to save money through the establishment of bank accounts. Some of the objectives have been achieved, for example, gaining practical experience in marketing, building capacities of farmers and staff, establishing bank accounts and encouraging savings for some farmers. However, these achievements were not significant relative to the time and substantial resources that had been invested in the MDP. More importantly, it failed to make significant inroads into addressing known supply chain issues of poor transport, poor post-harvest handling, and supply inconsistency.

Since its inception, MDP had not been able to meet the demand from the supermarkets. The main reasons for the undersupply were: procurement prices were fixed and often not competitive with other buyers; procurement was done only once a week; supply sources were limited to farmers within its extension network; no standing orders from the buyers; each order given to a farmer was fixed (which could be higher or lower than what the farmer had to offer); payments were not made on the spot, but put into farmers' bank accounts; and most farmers preferred selling by bags without sorting/grading.

After four years of operation, it would be reasonable to expect more progress than what came to light in this review. For example, more attention could have been given to addressing long-existing supply chain issues in fresh produce marketing through MDP, rather than focusing on filling orders. More effort could have been given to staff and farmers' training and to gather information on costs of production and marketing. There should have had a monitoring and evaluation framework in place so that serious deficiencies in the design and operation of MDP, most notably its pricing structure and quality control measures, could be identified and rectified as soon as they occurred. The case of MDP demonstrates clearly that administered pricing (as is MDP pricing) is no substitute for the free play of market forces.

This review has established two potential approaches to the future of the MDP. These two approaches are outlined below:

Option 1: Shut down MDP, focus on other strategic issues

The project has been underway for four years, and the lessons that could be learnt are now exhausted. The project does not align with FPDA strategic objectives as it distorts the fresh produce market and competes with the private sector.

- Given FPDA's resources and expertise, it seems market information and extension ought to be FPDA's core business since it seems that these two areas are where FPDA can make, and have made, the most contribution to the PNG horticulture industry – doing something that no other agencies can do or do better. This should include developing quality standards so that more meaningful data can be collected and utilised. FPDA can re-allocate staff from the MDP project into collecting, analysing and disseminating market information.
- There are other ways FPDA can facilitate the process of linking farmers to markets without being directly involved in buying and selling. An obvious option is to extend the VEW Program to include marketing, with FPDA focusing on facilitating the formation and training of marketing groups based on the existing VEW structure (but perhaps with crop specialisation). Further, FPDA could assist in identifying and developing new markets for VEWs and their marketing groups (and other farmer groups), as well as coordinating and consolidating supplies for the buyers. This approach would enable FPDA to research into, and address, key supply chain issues of transport, packaging and postharvest handling, grading and inconsistency in supply. More importantly, this approach would also be in line with FPDA's strategic objective of facilitating the development of effective supply chains.

Option 2: Close down MDP-Mt Hagen and re-design MDP-Goroka

MDP-Mt Hagen should be shut down immediately. Given the market conditions in Mt Hagen, there is no justification for MDP to continue operating. However, FPDA should carefully consider how the facilities at the Highland Agricultural College could be best utilised to benefit the industry as a whole as well as using it to assist FPDA in its quest for market information and other research needs.

- If MDP-Goroka were to continue, there are a number of issues that should be resolved:
- MDP objectives should be re-prioritised, with a focus on market analysis and research into addressing known supply chain issues.
- The pricing structure must be changed so that procurement prices reflect prevailing demand and supply conditions. However, this is easier said than done. To do that, FPDA marketing staff must be abreast of demand and supply conditions in all the relevant markets and be equipped with statistical models and techniques. That, in turn, will require specialised skills in economics and statistics. Since these specialist skills cannot be obtained simply through the training of existing staff, they must come from the hiring of new staff with qualified background.
- Supply shortfalls must be reduced. This means sources of supply must be made open to all farmers, not just limited to VEWs and their contact farmers;
- More markets must be developed so MDP can benefit more farmers;
- There must be written quality standards and strict quality control along the supply chain for the MDP to be seen as a model for modernising fresh produce marketing in PNG.
- All suppliers and all relevant FPDA staff must be made "quality-conscious". This will involve more training on what is quality and quality control through better packaging and postharvest handling practices.
- There must be proper packing and cooling facilities where fresh produce can be stored and whereby industry best practices can be observed and showcased.
- FPDA should consider seeking legal advice before entering into any future partnerships or business deals with potential trading partners.
- Marketing staff need to be provided with job descriptions, training and supervision to enable effective implementation of their duties.
- Finally, there must be more regular review, closer supervision and communications within FPDA and with suppliers and buyers so problems can be identified and resolved quickly.

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