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Price-quality relationships in the fresh produce industry in Bali

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Abstract

As the number of tourist arrivals in Bali (Indonesia) continues to increase, a greater number of opportunities are emerging for local farmers to expand production to meet the increasing demand for food. While there are various production and marketing constraints which limit the ability of small farmers to individually meet the hotels quality specifications, this paper demonstrates how collector agents and distributors are able to assemble sufficient produce to meet the quality specifications imposed by the high class hotels. Intense competition between the many distributors for a share of the hotels patronage has resulted in a significant reduction in price, so much so, that the second grade produce which fails to meet the specifications of the high class hotels, often achieves a higher price in the wet market. Consequently, the small, lower class hotels, who purchase the majority of fresh produce they require from the wet market, experience much greater problems with both variable product quality and price. Not unexpectedly, under the current system of marketing, there are no financial incentives to encourage local farmers to improve product quality.

1. Introduction

In Indonesia, tourism is the fourth largest earner of foreign exchange (McCarthy, 1994). Since 1994, the number of tourist arrivals has increased from 3,950,000 to exceed 5,034,470 in 1996 (Hutabarat, 1998; Luthfie et al., 1995). As the main tourist destination in Indonesia,

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the number of tourist arrivals in Bali has increased from 436,360 in 1989 to 1,110,990 in 1996 (Diparta Tingkat I Bali, 1995). The increase in tourist numbers has increased the demand for food including meat, fish, fresh fruit and vegetables.

Schneider (1993) suggests that tourism creates incentives for local farmers to diversify and to expand production to meet the increased food demand. However, in many developing countries, farmers are unable to satisfy the additional demand for food created by the tourism industry, resulting in an increase in imported food products (Mathieson & Wall, 1990). In particular, the high class tourist hotels often purchase greater quantities of fresh produce from outside sources (Bachmann, 1988). This is believed to be because local farmers are unable to adequately supply the needs of the tourist hotels who want continuity of supply, high quality produce and other value-added services. As stated by Tadesse (1991), the higher the consumer's social and financial position, the better the quality of the produce they demand.

Hutt and Speh (1995) suggest that when industrial buyers purchase a product, they are not only purchasing a package of benefits derived from the physical product features, but also a bundle of services attached to it. This might include such variables as product quality, price competitiveness, dependable delivery and customized product offering. Monczka, Trent and Handfield (1998) add financial capability and stability as key decision variables.

Most industrial buyers prefer to buy from local sources (Hakansson & Wootz, 1975). Local suppliers are generally less expensive and offer more dependable service than those located at a distance. Delivery may be more prompt because distance is shorter and there is less likelihood of transportation delays. More importantly, local suppliers may gain greater knowledge of their customers needs and become more flexible in satisfying those requirements (Leenders & Fearon, 1993).

In most developing countries, local farmers find it difficult to satisfy customers requirements, due to the seasonal nature of production, small landholdings, traditional methods of cultivation, insufficient capital and lack of knowledge (Aksoy & Kaynak, 1993). Furthermore, in most developing countries, insufficient attention is given to the postharvest handling of fresh produce. Inappropriate infrastructure and facilities, the lack of product knowledge and inadequate attention to product maturity may accentuate the loss of product quality (Tadesse, 1991).

Based on these constraints, this research project sought to determine if the vegetables produced by the small farmers in Bali (Indonesia) were able to satisfy the requirements of the tourist hotels.

2. Methodology

Data collection was undertaken using three prepared survey instruments. Tourist hotels, fresh vegetable wholesalers and distributors and vegetable growers were interviewed. To improve the quality of the data, personal interviews were chosen. Personal interviews were undertaken because the illiteracy rate is high, particularly when gathering data from the farmers; the communication system (mail and telephone) is poorly developed in Bali; the community generally distrusts surveys; and, the survey instrument itself was quite comprehensive and without personal involvement, it would, in all probability, have been discarded.

Table 1
Source of procuring fresh vegetables in Bali by class of hotel. Balinese vegetable industry study. 1997/98.

Class of hotel	Import	Local distributors	Wet markets	Super markets	Others	TOTAL
High	7	21	10	7	0	45
Middle	0	29	26	10	1	66
Low	0	22	71	4	3	100
TOTAL	7	72	107	21	4	211

The sampling frame for the hotels was drawn from Bappeda Tingkat I Bali (1995) which lists the names of all hotels in Bali. All hotels were stratified into one of six classes: five, four, three, two, one and nonstar hotels. This classification, made by the Government, is based on the facilities offered by the hotel (Setiada, 1996). There are 86 star hotels and 1,016 nonstar hotels in Bali. The sample selected was 75% of star hotels (65) and 7% of those nonstar hotels who have restaurants (71), making a total of 136. The sample frame was further subdivided into three categories; (1) high class hotels were the five and four star hotels (21); (2) middle class hotels were three star and two star hotels (38); and (3) the low class hotels were one star hotels and nonstar hotels (77). The respondent interviewed was the executive chef, purchasing manager, or the food and beverage manager.

The number of distributors in the research sample depended upon the number of suppliers serving the hotels. From information collected from the hotels, there were 75 distributors located in Bali, of which 40 (53%) were randomly selected for interview.

Vegetable farmers comprise the majority of the farm population in Bali, for vegetables generally provide a higher return to the farmers than paddy rice and secondary crops (Direktorat Jenderal Tanaman Pangan dan Hortikultura, 1996). The major areas of vegetable production in Bali are found in the Baturiti and Kintamani districts (Departemen Pertanian Propinsi Bali, 1997; Bappeda Tingkat II Bangli, 1997). From each of these production areas, 20 farmers were selected were interview. According to Antara and Susrusa (1991), tomatoes, potatoes, cucumbers, carrots, cabbage and lettuce are the major vegetable crops required by the tourist hotels. Only those farmers cultivating one or more of these crops participated in the survey.

3. Results

3.1. The place of purchase for fresh vegetables in Bali

The majority of hotels in Bali (79%) purchased fresh vegetables from the wet market. Other sources for procuring fresh vegetables included local distributors (53%), supermarkets (15%) and importers (5%) (Table 1).

The main reasons for buying fresh vegetables from the wet market were because of the low price (54%), the continuity of supply (37%), good quality (36%) and the range of fresh vegetables available (32%). However, the main reasons for the high class hotels to purchase

Table 2
Advantages in purchasing local vegetables by class of hotel. Balinese vegetable industry study. 1997/98.

Advantages	Class of hotel			Total
	High	Middle	Low	
Freshness	20	36	75	131
Always available	16	35	76	127
Inexpensive	18	33	61	112
Ease of purchase	16	26	68	110
Good quality	9	12	6	27
Total number of responses	79	142	286	507

from the wet market were because their stocks of fresh vegetables had become depleted (43%) and proximity (29%).

Whereas the majority of the low class hotels (70%) purchased more than 80% of their fresh vegetable requirements from the wet market, the high class hotels generally purchased less than 10% of their daily requirements from the wet market. Conversely, the majority of high class hotels (86%) purchased 80% or more of the fresh vegetables they required from local distributors. The most important reasons for the high class hotels to purchase from local distributors were the improved continuity of supply (100%), the availability of credit (85%), superior quality (71%), low price (57%) and proximity (33%).

The quantity of fresh vegetables imported from sources outside Bali was generally less than 10%. Only the high class hotels imported fresh vegetables; no middle class or low class hotels imported fresh vegetables. The main reasons for importing were that during the wet season, the quality of imported produce was superior than local vegetables or that the produce was not available in Bali. Cauliflower and potatoes, capsicum and lettuce, Bombay onions, mushrooms and zucchini were the major vegetables imported.

Even so, the high class hotels preferred to purchase local vegetables rather than to import. Freshness was the major benefit in purchasing local vegetables (95%), although lower prices (86%), greater availability (76%) and ease of purchase (76%) were also considered important (Table 2).

While only 20% of respondents gave good quality as a reason for their preference to purchase locally grown vegetables, a greater proportion of high class hotels (42%) indicated they were satisfied with the quality of local vegetables.

3.2. The quality of fresh Balinese vegetables

Cleanliness was found to be the major problem for hotels in purchasing local vegetable crops (82%), followed by poor grading (51%), variable quality (51%) and poor packing (38%) (Table 3).

Whereas the major problems for the high class hotels were lack of cleanliness (100%) and poor packing (81%), the lower class hotels experienced greater difficulty with poor grading (75%) and variable quality (75%).

Responding to a number of closed questions, the high class hotels reiterated that the

Table 3
Problems in purchasing local vegetables by class of hotel. Balinese vegetable industry study, 1997/98.

Problems	Class of hotel			Total
	High	Middle	Low	
Not clean enough	21	37	54	112
Poor grading	2	10	58	70
Variable quality	2	9	58	69
Poor packing	17	20	14	51
Excessive chemical residue	3	5	19	27
Inconsistent supply	1	5	6	12
Total number of responses	46	86	209	341

biggest problem they had with the quality of local vegetables was the lack of cleanliness, the extent of physical injury, poor product appearance and excessive chemical residues (Table 4).

For the low class hotels, poor grading and the variation in quality remained the most significant problems. However, poor product appearance, product cleanliness and physical damage to the produce were much less of a problem for the low class hotels, suggesting that quality expectations were lower for the low class hotels.

While sufficient produce was generally available to meet daily needs, during peak times, the high class hotels experienced greater difficulties in procuring an adequate supply of fresh vegetables. The high class hotels presumably purchased larger quantities of fresh vegetables than the low class hotels, for the more stars the hotel has, the more restaurants they have and thus the greater the demand for fresh vegetables.

Given too that there was a large significant difference between the perceptions of high class hotels and low class hotels towards the grading of local produce and the variability in

Table 4
Significance of quality attributes of local fresh vegetables by class of hotel. Balinese vegetable industry study, 1997/1998.

Statements	Mean		
	High	Middle	Low
In peak time, always shortage	5.05^{a}	5.53^{ab}	5.58^{b}
Not always available	5.24^{a}	5.42^{a}	5.29^{a}
Too expensive	5.52^{a}	5.32^{a}	5.05^{a}
Poor appearance	4.43^{a}	5.08^{b}	4.88^{ab}
Clean enough	5.57^{a}	5.36^{ab}	4.66^{b}
Too much physical injury	3.71^{a}	4.79^{b}	4.58^{b}
Too much chemical residues	4.71^{a}	4.74^{a}	4.56^{a}
Quality too variable	5.05^{a}	4.48^{a}	2.60^{b}
Poorly graded	5.14^{a}	4.34^{a}	2.55^{b}
Always fresh	1.43^{a}	1.63^{a}	1.67^{a}
In daily demand, always enough	1.38^{a}	1.47^{a}	1.58^{a}

Where 1 is strongly agree and 6 is strongly disagree
Values with the same superscript are not significantly different at $P < 0.05$

Table 5
Significance of quality attributes of local fresh vegetables by high class hotels, distributors and farmers in Bali. Balinese vegetable industry study, 1997/1998.

Statements	Mean		
	Hotel	Distributor	Farmer
In peak time, always shortage	5.49[a]	5.05[a]	3.70[b]
Not always available	5.32[a]	4.90[ab]	4.50[b]
Too expensive	5.20[a]	5.83[b]	4.83[a]
Clean enough	5.00[a]	4.38[b]	3.93[b]
Poor appearance	4.87[a]	3.78[b]	3.70[b]
Too much chemical residues	4.63[a]	4.63[a]	4.18[a]
Too much physical injury	4.51[a]	4.25[ab]	3.63[b]
Quality too variable	3.49[a]	3.45[ab]	2.58[b]
Poorly graded	3.45[a]	2.60[b]	2.88[b]
Always fresh	1.63[a]	2.03[a]	1.10[b]
In daily demand, always enough	1.52[a]	1.58[a]	2.70[a]

Where 1 is strongly agree and 6 is strongly disagree
Values with the same superscripts are not significantly different at $P < 0.05$

quality, the results suggest that there was some difference in the quality of the produce at the point of purchase.

Whereas the high class hotels purchased the majority of the fresh vegetables they required from distributors, the lower class hotels purchased primarily from the wet market. It appears that distributors were performing some value-added function to regrade the local produce to meet the high class hotels specifications. That produce which the distributors were unable to sell to the high class hotels was then either sold to the lower class hotels, other food service outlets or to the wet market. Because most low class hotels purchased the majority of fresh produce they required from the wet market, they experienced much greater problems with poor grading and the variability in the quality of the fresh vegetables offered for sale.

Local distributors reported that they had difficulty in procuring a well graded line of clean, good looking vegetables from the farmers (Table 5).

Most farmers agreed that they were offering unclean, physically damaged and poorly graded produce to the distributors and collector agents. However, this system of marketing, where the product is sourced by collector agents (tengkulak) either directly from the farmers fields or indirectly from the roadside is that preferred by most farmers. Under this system of marketing, farmers do not have to bear the costs of transportation, sorting and grading. However, farmers often have to sell the produce below the cost price because they do not have the facilities to store the product until the price improves (Menegay et al., 1993). Consequently, most farmers believe that the prices they receive for their fresh vegetables are too low.

Unlike either of the other respondents, most farmers believed that they were unable to supply sufficient produce during the peak periods of demand. The peak period of demand for fresh vegetables is during December and January, however, fewer vegetable crops are

Table 6
Prices received by hotels, distributors and farmers for fresh vegetables. Balinese vegetable industry study, 1997/98.

Price (Rp/kg)	Hotels (A)	Distributor (B)	Farmer (C)	A - B	B - C	A - C
Potato						
Average	1902	1684	1180	218	504	722
Max	2141	2009	1853	132	156	288
Min	1319	1049	800	270	249	519
Max prep	2158	2133				
Carrot						
Average	1710	1625	677	85	948	1033
Max	2020	2000	1654	20	346	366
Min	1059	884	335	175	549	724
Max prep	2030	2020				
Tomato						
Average	1145	1049	817	96	232	328
Max	1474	1456	1193	18	263	281
Min	764	608	365	156	243	399
Max prep	1494	1471				
Cucumber						
Average	906	564	473	342	91	433
Max	1053	773	707	280	66	346
Min	551	384	200	167	184	351
Max prep	1067	808				
Cabbage						
Average	906	580	513	326	67	393
Max	1053	806	765	247	41	288
Min	551	378	252	173	126	299
Max prep	1067	849				
Lettuce						
Average	2347	1405	1107	942	298	1240
Max	2857	2115	2064	742	51	793
Min	1695	1173	489	522	684	1206
Max prep	2990	2205				

planted in November and December and fewer vegetable crops are harvested during January and February because of the inclement weather during the wet season. The costs of pest and disease control are also appreciably greater during the wet season.

3.3. Prices paid for local Balinese vegetables

An examination of the prices paid at each level of the supply chain for fresh vegetables in Bali revealed some major differences between what the farmer received for their produce and the price at which the produce was purchased by the hotel (Table 6).

The price margin between what the farmers were paid for their produce and the prices paid by the hotels was greatest for lettuce (132%) and carrots (130%). When prices were at their lowest, presumably because the produce was most abundant, the price margin between what the farmers were paid for the produce and the prices paid by the hotels were greatest. At this

Table 7
Prices received by class of hotel for fresh vegetables (Rp/kg). Balinese vegetable industry study, 1997/98.

Price	High (A)	Middle (B)	Low (C)	A - B	B - C	A - C
Potato						
Average	1850	1690	2165	160	475	315
Max	2183	2009	2232	174	223	49
Min	1378	1265	1314	113	49	64
Max prep	2204	2019	2250	185	231	46
Carrot						
Average	1477	1576	2077	99	501	600
Max	1924	1995	2143	71	148	219
Min	977	1042	1157	65	115	180
Max prep	1950	1997	2147	47	150	197
Tomato						
Average	988	1116	1332	128	216	344
Max	1429	1521	1473	92	48	44
Min	719	772	799	53	27	80
Max prep	1455	1542	1485	87	57	30
Cucumber						
Average	876	1000	1053	124	53	177
Max	1171	1235	1192	64	43	21
Min	557	740	595	183	145	38
Max prep	1221	1240	1217	19	23	4
Cabbage						
Average	795	863	1060	68	197	265
Max	1029	966	1164	63	198	135
Min	529	545	579	16	34	50
Max prep	1050	968	1183	82	215	133
Lettuce						
Average	2338	2266	2437	72	171	99
Max	3167	2816	2590	351	226	577
Min	1657	1725	1703	68	22	46
Max prep	3440	2927	2601	513	326	839

time of the year, the margins often exceeded 100% and were reported as being as high as 246%. However, at those times of the year when produce was least available, the margins throughout the supply chain were generally more equitable. At this time, the margin between what the farmer received and what the hotels paid for the produce was as low as 15%. The average margin was 92%.

Although we reported earlier that there was no significant difference between the prices paid by high class hotels and the low class hotels, it was apparent that the low class hotels were paying more for the majority of fresh vegetables they purchased (Table 7).

Despite the superior quality sought by the high class hotels, such would suggest that because of the larger volumes of produce consumed by the high class hotels and the competition between distributors for the hotels patronage, the high class hotels were in a superior bargaining position and able to erode the distributors margins. Lettuce was the only vegetable crop for which the high class hotels were prepared to pay more than the lower class hotels, indicative of a stronger demand for the crop.

4. Discussion

While the statistics fail to differentiate between that product which has been imported into Bali directly from overseas and that which has been supplied from other islands, it is apparent that the majority of fresh vegetables consumed by the tourist hotels in Bali are locally produced. The tourist hotels prefer to purchase locally grown produce for it is perceived to be fresh, competitively priced, readily available and easier to purchase.

However, in several areas, the quality of locally grown vegetables presented problems for the tourist hotels in Bali. Produce was generally too dirty, produce was poorly graded and the quality of the local produce was too variable. Many of these problems can be attributed to the methods of production and marketing commonly practiced in Bali. Agonafir (1991) suggests that the poor quality of locally grown vegetables results from the lack of fertilizers, insufficient irrigation water, the lack of appropriate chemical treatments for pests and diseases and the extensive use of poor seed. Tadese (1991) suggests that while farmers are relatively close to the major market for their produce, the lack of on-farm storage, inadequate public transport, poor roads and overpacking result in considerable physical injury. However, perhaps the most significant reason for the variation in quality is because most farmers sell their produce, without grading, to collector agents and distributors who purchase the entire crop, irrespective of quality (Menegay et al., 1993).

While the lack of cleanliness, the high incidence of physical injury and poor product appearance were more of a problem for the high class hotels, the variation in the quality of the produce delivered and inconsistency in grading were less of a problem. With the high class hotels purchasing the majority of fresh vegetables they consumed from local distributors, this would suggest that the market intermediaries were performing some value-added function, regrading and repacking the fresh vegetables purchased from the farmers to the hotels specifications. That product which did not conform to the hotels specifications was sold to the wet market, low class hotels or other food service outlets. Given that most lower class hotels purchased the fresh vegetables they required from the wet market, such would, in part, explain why the lower class hotels experienced greater difficulties procuring a more consistent line of good quality produce.

It is generally accepted in industrial marketing theory that the higher the product offer quality, the higher the price. However, with reference to the Balinese vegetable industry, it is apparent that the market does not reward improved quality with increased price. Presumably because of their superior bargaining power and competition between distributors for the hotel's patronage, the high class hotels in Bali have been able to erode the distributors margins, despite their requirements for a superior quality product. In turn, the distributors are able to compensate their losses in one market by increasing prices to the low class hotels and lowering their purchase price to the farmers. However, the extent to which distributors are able to influence the price to farmers is governed by the seasonal forces of supply and demand. During those times of the year when fresh produce is most plentiful, the distributors margins are greatest, but when less produce is available, competition between the distributors for the farmers produce results in the farmers receiving a much greater proportion of the price paid by the hotel.

5. Conclusions and market implications

Individually, while most small farmers in Bali would have great difficulty in satisfying the needs of the high class hotels, collectively, through the intervening influence of collector agents and distributors, Balinese vegetable farmers are able to maintain a continuous supply of fresh, good quality vegetables which are competitively priced.

While even the high class hotels indicated a preference for locally grown produce, it is apparent that the quality of local produce could improve significantly. In the areas of product cleanliness, product appearance, physical injury, chemical residues and the variability in product quality, the quality of local produce was poor. However, under the current system of marketing where the farmers are encouraged to sell their produce ungraded to local collector agents or distributors, and where the distributors margins are eroded by the superior bargaining power of the high class hotels, there is no financial incentive for the farmers to improve product quality.

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