

Pre-Feasibility Study

Potato Flakes & Flour

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OBJECTIVE:

- To provide marketable and value added dehydrated potato products from raw potatoes for the use of food processing industry in Pakistan and abroad as well as end products for the consumer market i.e. mashed potatoes, French fries and potato snacks.

PRODUCTS:

- Major intermediary products are flakes, flour and starch.
- Potato flakes and flour are used as potato substitute in confectionery and processing industries to make potato snacks, potato chips, mashed potato and potato pie to name just a few.
- Potato starch is widely used in paper and textile industries.
- Starch is also used as stabilizer, binder, filler, texture and gelling agent.
- Potato dehydrated products are lightweight, easy to transport and require less storage space.
- Maximum shelf-life is around 18-24 months.

Note: This feasibility report is only for potato flour and flakes.

PROCESS:

- Production process involves washing, peeling, cutting, blanching, cooling, cooking and drying of raw potatoes.
- Yield ratio of raw potatoes to flakes or flour is approximately 5.7:1.
- Higher recovery ratio of flakes and flour is from fresh potatoes and lower recovery ratio from stored potatoes
- Re-hydration ratio of flakes to mash potato is 1:5.
- Potatoes with high solid contents and low sugar are best to produce dehydrated products. These types of potatoes are widely available in Pakistan.

MARKETS:

GLOBAL EXPORT MARKETS:

- The global export of Potato flakes, flour etc was \$282.72 million in 2004, a growth of 26 percent compared to 2001 level.
- In terms of volume, world export was 272, 855 tonnes in 2004, a growth of 9 percent compared to 2001 level.
- Top five countries accounted for 82 percent of total world export.
- Netherlands is the biggest exporter and it processes over 40% of its raw potatoes as compared to India and Pakistan where only less than 5% raw potatoes are processed.

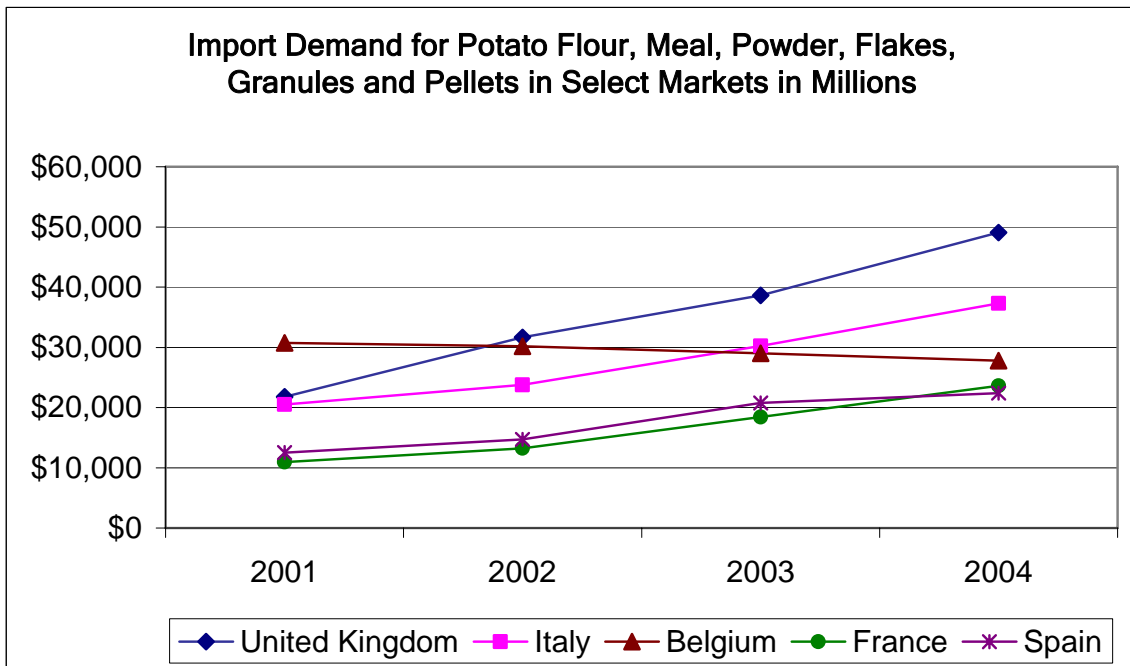
	Value: in Millions, QTY: in Tones		
	2003		
Top Exporters	Value	QTY	Avg. Price/kg
Netherlands	\$97,469	92,027	\$1.06
Germany	\$51,443	46,868	\$1.10
USA	\$41,364	48,404	\$0.85
Belgium	\$18,551	16,474	\$1.13
France	\$18,364	13,671	\$1.34
Other reporters	\$47,114	53,898	\$0.87
Total	\$274,305	271,343	\$1.01

	Value: in Millions, QTY: in Tones		
	2004		
Top Exporters	Value	QTY	Avg. Price/kg
Netherlands	\$100,430	88,583	\$1.13
USA	\$46,106	61,526	\$0.75
Germany	\$38,763	33,398	\$1.16
Belgium	\$23,996	19,747	\$1.22
France	\$21,296	13,988	\$1.52
Other reporters	\$52,103	55,613	\$0.94
Total	\$282,695	272,855	\$1.04

Source: United Nations Statistics Division - Commodity Trade Statistics Database

GLOBAL IMPORT MARKETS:

- In 2004, the biggest importer was United Kingdom, followed by Italy, Belgium, France and Spain and these countries accounted for 50 percent of total world imports.
- Major markets show upward trend in their imports for the last four years except for Belgium, whose import of potato flour and flakes is decreasing.



Source: United Nations Statistics Division - Commodity Trade Statistics Database

LOCAL MARKET:

- Production of dehydrated potato products in Pakistan is almost zero and 100% of local demand is met through imports.
- The imported one kilo flakes costs approximately 90 rupees after adding duties and taxes. The cost breakdown is as under:

	Duty Structure	Value	Running Total
C & F (Rs.)			55.50
Insurance	1.00%	0.56	56.06
Handling Charge	1.00%	0.56	56.62
Custom Duty	25.00%	14.15	70.77
Sales Tax	15.00%	10.62	81.38
Income Tax	6.00%	4.88	86.27
Miscellaneous	5.00%	4.31	90.58

- Current market of potato flakes and flour is around 2,500 tonnes and is expected to reach 5,000 tonnes in 2007.
- Major importers and users of potato flakes and flour in Pakistan are:
 - Kolson
 - Tripple-EM (Pvt.) Ltd
 - Kohinoor Smith (Pvt.) Ltd
 - Local cottage industry

TARGET MARKETS:

- Potato flakes and flour are used as ingredients in different food industries to make bake goods, ready to eat meal and soups. The following table highlights some of their usages in different food industries.

Usage	Snack Manufacturers	General Food Manufacturers	Bakeries	Institutions	Restaurants
Use as binder to hold meat together		•		•	•
Mix with other flour to create breading for fish, meat or vegetables.		•		•	•
Added to breads and cakes to improve crust colors		•	•	•	•
Use to decorate casseroles and other food items		•		•	•
Use as extender and added to burgers or cookies before cooking to reduce meat requirement		•		•	•
Mix with different food snacks to produce potato flavor and improve their texture	•	•	•	•	•
Use as anti-stalling agent to slow the drying affect in bakery products			•		
Utilize as thickening agent in gravies, soups and sauces stews		•		•	•
Use in fabricated chips to produce uniform shape	•	•		•	•

Source: <http://www.asiafoodjournal.com/print.asp?id=2770> (Asia Food Journal)

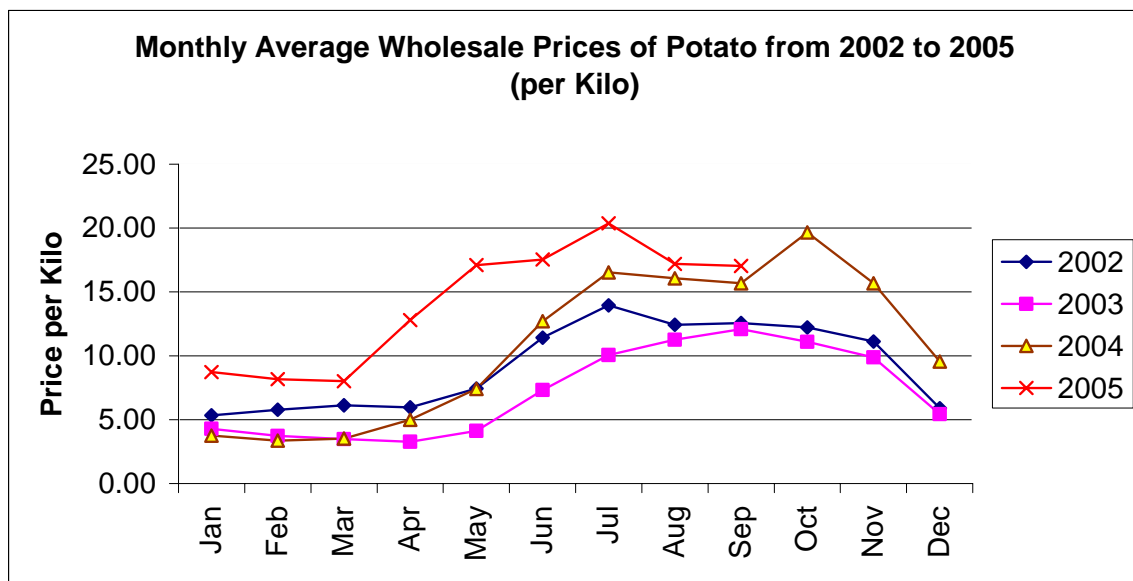
RAW MATERIAL:

WORLD:

- World potato production reached 328 million tonnes in 2004.
- The biggest producers are China, Russian Federation, India, Ukraine and United States.

PAKISTAN:

- Pakistan produced 1.85 million tonnes potatoes in 2004.
- It produces three potato crops per year and major crop is harvested in Punjab from November through January.
- Punjab produces 80% of total national production and Okara is the biggest producing district in Punjab.
- Wholesale prices of potatoes are lowest from December through April and during these months; the average wholesale price for raw potato is approximately 5 rupees/kilo.



Source: <http://punjabagmarket.info/>

PLANT AND EQUIPMENTS:

OPTION A:

Chinese Technology:

Machinery & Equipments:

Description	Price (USD)	Price (Rs)
Equipments cost	747,500	44,850,00

Note: 1 US\$ = 60 Rs

Capacity:

Hourly output	500kg/hr
Daily output (18 hour operation)	9 tonnes
6 month output (180 days)	1,620 tonnes
12 month output (360 days)	3,240 tonnes

OPTION B:

European Technology:

Machinery & Equipments:

Description	Price (EURO)	Price (Rs)
Equipments cost	2,677,950	187,456,500

Note: 1 EURO = 70 Rs

Capacity:

Line input	6,814 kg/hr (Raw potatoes)
Line output	1,200 kg/hr (Flakes or flour)
Line yield	18%
Recovery Ratio (Potatoes to flakes)	5.7:1
Daily output (18 hour operation)	21.6 tonnes
6 month output (180 days)	3,888 tonnes
12 month output (360 days)	7,776 tonnes

NOTE: The project cost will vary depending upon the selection of machinery and its mix between locally produced plant, European plant and other sources like China.

CONCLUSION:

- To produce one kilo flakes or flour, the raw potatoes will cost approximately Rs. 28.50 (5 x 5.7) and the cost for one kilo imported flakes is Rs. 90. Therefore, a local manufacturer will have a margin of 68.33% to cover its other costs and make a handsome profit.
- The by-products of this process peel and cutting losses can be sold to cattle farmers to generate additional revenue and off-set the input cost of raw material.
- The demand of potato snacks in Pakistan is rising due to increasing urbanization, growing per capita income, and increasing two-income families. Some of these snacks can only be made using potato dehydrated products because of their shape, texture and flavor requirements. Many companies are importing potato flakes and flour to meet this demand because of zero local production.
- It is very convenient and cost saving for restaurants and bakeries to use potato dehydrated products to make mashed potatoes and other products. They save labor hours and it is quicker to make and deliver end products.
- Potato flakes or flour can directly be marketed to housewives under brand names as a convenience food for homes as such products are gaining popularity and food habits of individuals are also changing.
- A local company will enjoy first mover advantage and it will be awarded with near-monopoly status and high margins.
- A local manufacturer will have a great potential to export its products due to the abundance of inexpensive raw material and availability of cheap labor.
- A potential investor will not be alone while establishing this project. He will have full support from PAMCO on each step of this project. PAMCO can help him to conduct a complete feasibility report, arrange funds for this project and market the products to likely customers.

ROLE OF PAMCO:

PAMCO is willing to assist private sector in line with its engagement policy for the establishment of a potato dehydrated products plant and it could offer financial and non financial support to private sector investors through different products under its business engagement policy guidelines.