

A

Study Report On

"Value chain analysis and the study of the market intervention potential of corn products in Kathmandu Valley"



Submitted to

Prime Minister Agriculture Modernization Project

Project Implementation Unit

Sindhupalchowk, Nepal

Submitted by

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Executive summary

Value chain analysis has been carried out focusing mainly the three sections individually; sweet Corn, Chyakhlaa and Green whole corn for roasting purpose. Individually all the three segments have been presented with conclusion and recommendations.

Objectives:

1. To study the corn demand and consumption of corn products inside the Kathmandu Valley
2. To study the possibilities of fulfillment of the corn products demand from Sindhupalchowk district.
3. Study to find the numbers of the corn roasting street entrepreneurs inside the Kathmandu Valley and their daily sales, source of green whole corn and supply chain of the corn.
4. To study the market intervention of imported corn products and possibility of their replacement with products from Sindhupalchowk.
5. To study about the market outlet of sweet corn and their products.
6. To study about established suppliers of and importers of the corn.
7. To recommend the strategies and work planning needed to be carried out by the corn zone.

Methodology

The methodology of the study was derived as per the objectives provided in Term of References. The primary approach used was:

- a. Literature review of existing documents of Roasted corn, Corn Grit and Sweet Corn
- b. Actors Mapping carried out with in depth interaction with client initially
- c. Enriching actors mapping from the interaction with end market buyers (Wholesalers, Department Store, Mills, Online and Retail Shops)
- d. Questionnaire prepared and information compilation
- e. Survey was carried out with Sample products of Sindhupalchowk (Corn husk, Frozen Sweet Corn). This enabled actors to relate existing products in market with Sindhupalchowk
- f. Analysis tools identified and specific product mix analysis in relation to Sindhupalchowk upcoming products was carried out
- g. Report writing

The specific methodology for each of the product mix is given as:

Roasted Corn:

1. Identifying sourcing cluster in Kathmandu based on neighboring districts flow of products
2. Selection of two sourcing cluster viz Koteshwore for possibility of sourcing products from Sindhupalchowk and Baneshwore for understanding other sourcing cluster dynamics

3. Prioritizing wholesale suppliers and interacting with Three suppliers. Tinkune: Sourcing of products from neighboring districts, Kalimati: Sourcing of products from different parts of Nepal, Jadibuti: Sourcing of products from neighboring districts
4. Production node actors/ Farmers: 4 district based farmers were interacted. Kavrepalanchwok: 1, Chitwan: 2, Bhaktapur: 1
5. Roasted Corn Sellers: 25
6. Consumers: 25

The identification of actors was based on information from wholesalers regarding suppliers, production node actors and roasted corn sellers. The consumers were interacted as real time at the sport of roasted corn selling.

Sweet Corn:

1. Visit to Department stores to identify Sweet Corn products suppliers and consumer preferences (5 Department Stores visited)
2. 4 Importers identified and interacted
3. Shortlisting of major online sellers in Kathmandu (5 online sellers identified)
4. 25 consumers base were received from online sellers to carry out consumer survey

Corn Grit:

1. Identifying Mills at different market cluster: Baneshwore:2 , Bhanimandal-1, Gyaneshwore: 1, Hattiban:1 based on random sampling f
2. Identifying retail shops selling Corn Grit through Online sellers database (14 retail outlets)
3. 25 consumers base information were received from same online sellers to carry out consumer survey

Detailed analysis and interpretation

Sweet Corn

Background:

Sweet Corn market analysis in Kathmandu was carried out as per the objectives of the study given in Terms of Reference. The study principally focused on how Sweet Corn produced in Sindhupalchok can enter to Kathmandu market. For this the pertinent issue was to identify

- Consumers behavior on willingness to pay and ongoing buying habits: 20 consumers were surveyed to understand deeper consumer behavior
- End market profitability margins in relation to other competitive products: 5 department stores were analyzed to understand the how best sweet corn from Sindhupalchowk can enter through end market actors (Department store) along with 3 online platforms.
- Importers: Three importers were contacted for understanding pricing dynamics of products when it reaches to consumers.

Product Mix analyzed:

The product analyzed in sweet corn were

- Whole Sweet Corn Kernel: 425 gm pack Can from Thailand, India and China
- Frozen Sweet Corn: 1kg pack from Thailand, India and China

Sindhupalchowk Sweet Corn positioning was identified after analyzing competitive advantages in relation to the above products.

Market analysis was carried out by showing sample of Frozen Sweet Corn as provided by the Sindhupalchowk team which made it realistic comparison with other available sweet corn products in the market. Also, fresh sweet corn (*ghoga*¹/ ear of corn/ husk of corn) was also provided to few consumers for the knowing the taste and the feedback.



Figure 1 : Typical sweet corn packaged in Can

Findings

A. Consumer behavior

Twenty numbers of consumers insights were taken through checklist for understand the consumer behavior in different attributes regarding sweet corn products which are provided as:

Part 1: Consumer perception of accessibility, type of packaging, preferred brand and major key attributes required in product

Concise analysis in a nut shell

- Consumers buy sweet corn from the departmental store. There are minimal orders from online regarding both whole kernel and frozen sweet corn (Graph 1)
- Consumers (household) prefer to buy Frozen sweet corn (which are 1 kg packed) in comparison with whole kernel pack Can (425gm) (Graph 2)
- The most preferred brand of product is from Thailand given its high quality taste and correspondingly high retail prices (Graph 3)



Figure 2 : Sweet corn packaged in packet

4. The consumer preference asked provided that most pertinent issue is freshness of Sweet Corn while

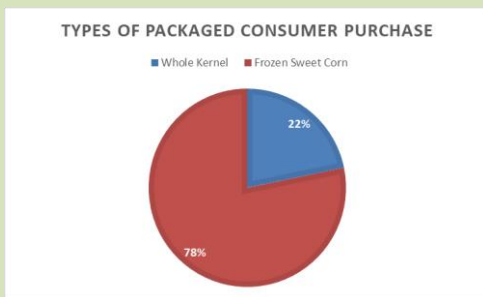


Figure 4: Types of packaged consumer purchase

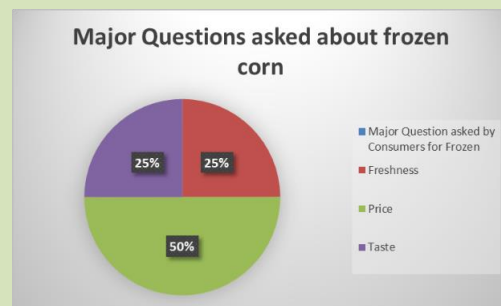


Figure 3: Major question asked about frozen corn

storing at home and other pertinent factors where price and taste. Consumers are very much inquisitive on how freshness and shelf life of Nepalese Sweet Corn will be done. Thereby, freshness to be attained for consumption is key for business growth of Nepalese sweet corn products.



Figure 5: Preferred brand of products

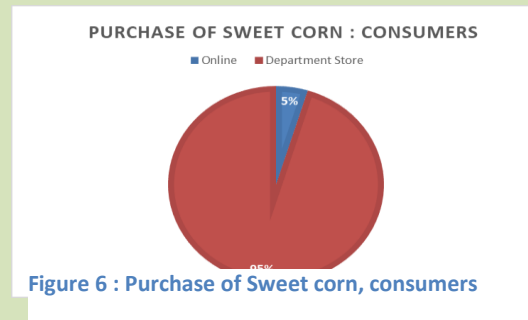


Figure 6 : Purchase of Sweet corn, consumers

Part 2: Institutional Demand, Size preference

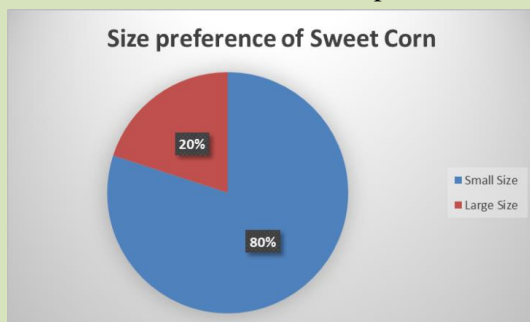


Figure 7: Size preferences of sweet corn

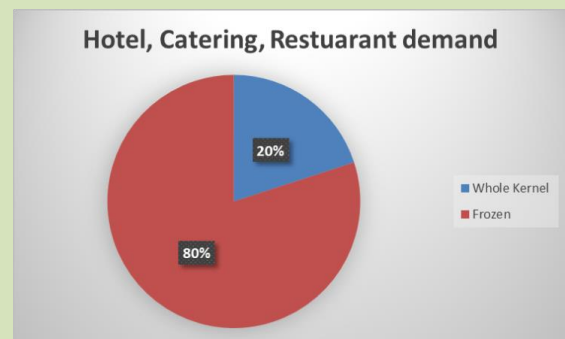


Figure 9: Demand summary of sweet corn

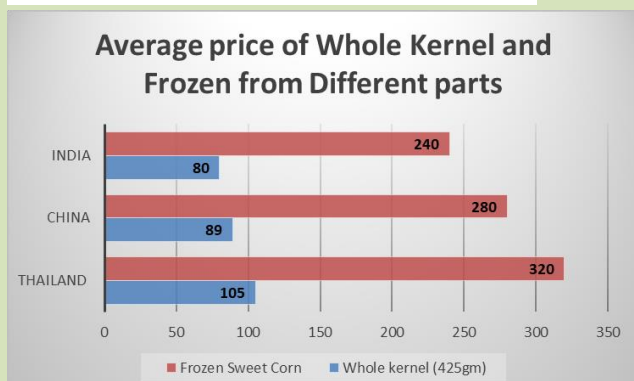


Figure 8: Average price of whole kernel and from different parts

Concise analysis in nutshell:

1. Institutional buyers (hotel, restaurant and party palace) which are present are not being fully operated in present context, the question on their demand were asked with department stores: Institutional buyers demand Frozen sweet corn the highest was the result
2. Size preference and comparison with Nepali Frozen sweet corn (sample) shows an important feedback on size of the sweet corn. At present consumers prefer small size sweet corn and marketing strategy has to be developed for relative larger size sweet corn of Sindhupalchwok.
3. The retail prices of the whole kernel and frozen varies as per the consumers preference and brand value being developed. Thailand products are of premium value.

Part 3: Marketing Agency/ Distributors Profit market suggestion

Incentive on products to importers and end market actors for sales of Sweet Corn. Interaction with importers of sweet corn was carried out to understand the best value throughout the value chain that might trigger a possibility of making Sindhupalchowk based sweet corn products reach consumers.

Table 1: Price segments details

Ideal price for importer for new products	Importers existing prices	Department store prices	Retail prices
200	220	250	320
190	210	240	300
180	200	220	280
170	180	200	260
160	170	190	240

This information speaks volume about the consumer prices and ideal price that marketing agency requires distributing the product to different end market nodes. Few of the importers showed readiness to work with Nepalese sweet corn and propose to start with Nrs. 240 as the retail price of frozen sweet corn per kg and asking for Nrs. 160 ideal amount from which they can work as distributors.

Strategic direction

The strategic direction is provided by comparing existing products in the market, feedback of sample products of Sindhupalchwok and desired level that need to be attained by the products of Sindhupalchwok. The analysis is based for frozen corn as 425 gm can pack deliberation in Sindhupalchowk at present was not deemed as immediate possibility. This is shown in terms of spiderogram. The scale of 1-5 for each parameter is of ascending values of importance (1 being least importance and 5 being high degree of importance). Three importers were asked to provide their insights on this comparison along with 5 consumers separately asked to provide numerics to paramters individually. The compilation of numeric values was then after carried out by the study team taking an average.



Figure 10: Strategy for frozen corn market management

Key points explained

- a. Price Sensitivity: Price sensitivity is here defined as consumers' willingness to buy given the quality of the products. The products from Thailand have higher price sensitivity as consumers are willing to buy in

- given price due to high quality of the products. The Nepalese products to be introduced need to be provided in optimum prices so that consumer initially can test the product and simultaneously the product pricing at retail can be increased from the principle of demand and supply.
- b. Freshness is key for quality of the product. The cold chain to be maintained till end market and practices of consumers defines how fresh the frozen corn can remain. This also requires high standards (international) to be maintained while packaging of the products at production node to transport to market.
 - c. Size Factor: The corn size of Nepalese one is larger compared to imported one. Thereby, positioning larger ones with taste requires initial promotional activities. Consumer taste for larger and small were not explicitly defined, yet, existing perception on smaller is tastier has to be changed by branding Sindhupalchowk sweet corn in the market.
 - d. Branding: Government partnership including logo provides assurance to consumers and can position Sindhupalchowk sweet corn strongly in the market.
 - e. Willingness to Purchase: Consumers' willingness to preferred Nepalese products should be backed by optimum price, quality and accessible to consumers.

Recommendation

1. Work on retail pricing of Frozen Sweet Corn at the range of Nrs. 180 to Nrs. 200 per kg. Provision of margins at distributors and department store. Key channel for distribution are: Distributors dealing with Department Store, Direct Supply to Department Store, Online market
2. Work on small quantity of packaging (250gm, 500gm etc.) This initiative can position strongly regarding consumers perception on freshness of the products. Also, those packaging sizes will differ Nepalese products from existing imported products
3. Freshness is key with cold chain management not only till end market node but also at consumer's kitchen. Thereby, Standard Operating Procedure (SOP) that is of global standard has to be practiced. Further for authenticity and credibility production node must acquire some certification process like Nepal GAP, Good Manufacturing Practices (GMP) etc.
4. Direct sales of Sweet Corn husk is always possibility fetching good wholesale price (Nrs. 18-25 per husk in Kathmandu). This though can be a part of market segmentation
5. Market promotion campaign in different location for direct testing of sweet corn for the consumers of Kathmandu valley.

Maize Grit (*Chyakhla*)

Background:

Maize Grit market analysis in Kathmandu was carried out as per the objectives of the study given in Terms of Reference. The study principally focused on how Maize Grit produced in Sindhupalchowk can enter to Kathmandu market. For this the pertinent issue was to identify

- d. Consumers behavior on willingness to pay and ongoing buying habits: 20 consumers were surveyed through checklist to understand deeper consumer behavior.
- e. End market profitability margins in relation to other competitive products: 3 Mills were analyzed to understand the how best Maize Grit from Sindhupalchowk can enter through end market actors (retail stores) along with 3 online platforms.
- f. Department stores: 5 Department stores were visited to find out any other brands of Maize Grit available

Product Mix analyzed

The product analyzed in Maize Grit were

- c. Maize Grit from Hilly regions mainly Jumla and Karnali brand

d. Maize Grit from Mid Hills

e. Maize Grit from Terai

There were presences of White and Red maize Grit. The customer demand for both is found to be increasing and choices differ as per knowledge and consumption of white and Red maize grit.

Further, Maize Grit was studied that available at Mills, retails, department stores and online platform.



Figure 13: Standard packaged gyan chyakhla

Figure 13: typical chyakhla retail shop

Figure 13: Packaged local chyakhla

Findings

B. Consumer behavior

Twenty numbers of consumers insights were taken through checklist for understand the consumer behavior in different attributes regarding Maize Grit products which are provided as:

Part 1: Weekly Inclusion in food menu, Consumers preferences, Location to buy, Geographical preferences.

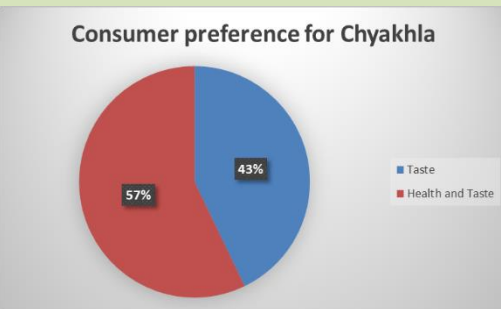


Figure 17: Consumer preference for chyakhla

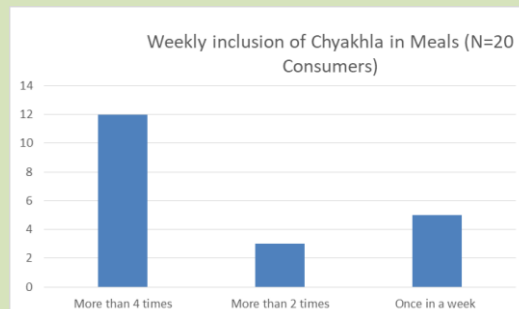


Figure 17: Weekly inclusion of Chyakhla

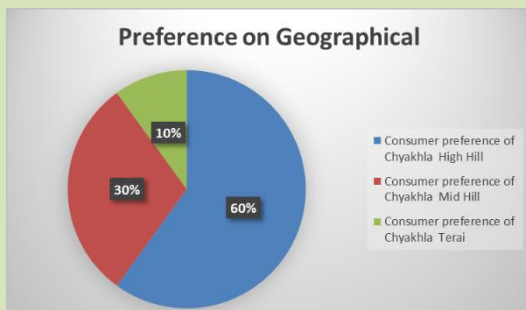


Figure 17: Geographical preference on buying chyakhla

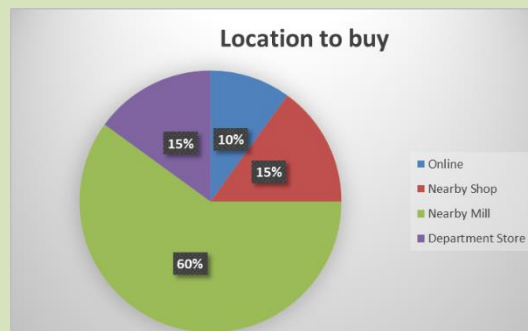


Figure 17 : Location to buy chyakhla

Concise analysis in a nut shell

5. Health is a prime factor for the purchase of Maize Grit. The enormous increase in consumption along with making it regular part of meals has shown increasing trend of Maize Grit consumption in the household. (Graph 1 and Graph 2)
6. Consumers buy Maize Grit mainly from nearby Mills as they have more trust on them. This also has the issue of adulteration if any solved due to high level of trust between the mills and nearby consumers. (Graph 3)

7. The preferred Maize Grit is from high hilly district. Jumla based Maize grit is very popular amongst customer. Mills nearby also have started bringing maize from high hill districts and serving increasing consumer demand.
8. The average sales at end market for local mills, retail shops and department stores are in increasing order. (Graph 5)

Part 2: Pricing, Costing and Sales at end market Pricing:

The price of Maize Grit

Table 2: The price of maize grit

Types of Maize Grit	Wholesale	Retail
Hilly Chyakhla	70	80-120
High Hill Chyakhla	90	130
Gyan Brand	75-80	95

Maize Grit from High Hills like Jumla are fetching higher prices and also repeated orders are being provided by consumers. These are available in retail outlets that are partnering with online platforms. Maize Grit from Terai were not found to be asked by the consumers as much as most of maize from Terai goes to feed industries.

Average Sales of Maize Grit per month

The interaction with end market actors revealed increasing sales of Maize Grit including a small retail outlet selling more than 100 kgs per month. Department stores in one location selling more than 200 kgs per month and for nearby mills the sales are much higher – more than 500 kgs per month.

Costing for making 1 kg Maize Grit

Interaction was carried out to analyze tentative costing of making Maize Grit with local mills. The detailed structured pricing need to be analyzed further.

Table 3: Costing to make 1 kg of maize grit

Costing to make 1 kg Maize Grit	
2 kg of Maize (@28 per kg)	56
Processing cost 10% (thumb rule by mills)	6.72
Less Flour 1.5 kg	30
Total	32.72
Profit 20%	6.544
Minimum Sales price	39.264
Sales Price	NRs. 70-100

The Maize Grit is very profitable business if a. High quality Maize Grit is sold with consumers going for repeated orders, b. Sale flour to feed industries/ livestock farmers.

Part 3: Marketing Agency/ Distributors Profit market suggestion

Every mills are only willing to sale their own products rather than Maize Grit from others, whereas mills and retail stores are connected. Thereby, positioning Maize Grit in conventional channel has lots of barrier to entry. The online platform are able to serve better at initial stage and again transaction cost being high makes it difficult for positioning of Sindhupalchowk in Kathmandu market. Thereby, maximum promotional strategy is required so that end market buyers can demand for sales of Sindhupalchowk branded Maize Grit.

Strategic Direction

The strategic direction is provided by comparing existing products in the market, feedback of sample products of Sindhupalchowk and desired level that need to be attained by the products of Sindhupalchowk. The analysis is based for Maize Grit of Sindhupalchowk. This is shown in terms of spiderogram. The scale of 1-5 for each parameter is of ascending values of importance (1 being least importance and 5 being high degree of

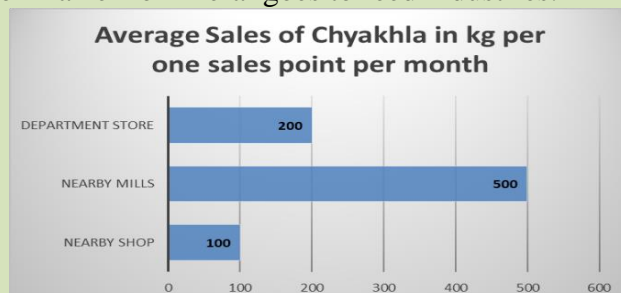


Figure 18: Average sales of Chyakhla per kg/month

importance). Three mills were asked to provide their insights on this comparison along with 5 consumers separately asked to provide numeric to parameters individually. The compilation of numeric values was then after carried out by the study team taking an average.

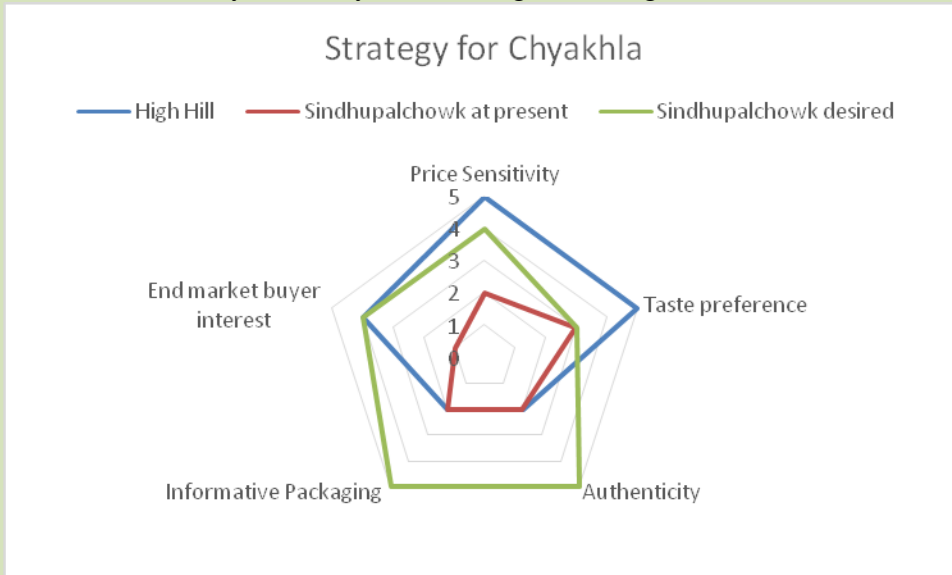


Figure 19: Strategy for the chyakhla

Key points explained

- i. Price Sensitivity: Price sensitivity is here defined as consumers' willingness to buy given the quality of the products. The products from high hill have higher price sensitivity as consumers are willing to buy in given price due to high quality of the products. The Sindhupalchowk products to be introduced need to be provided in optimum prices so that consumer initially can test the product and simultaneously the product pricing at retail can be increased from the principle of demand and supply.
- ii. Taste preference is higher for high hill Maize Grit. As Sindhupalchowk also covers high hill differentiation need to be carried out in branding as High Hill and Mid Hill and prices of the products accordingly.
- iii. Authenticity: Consumers trust local mill yet, lack of information on product (labeling, standardization) always present doubt on the consumers mind. It is highly recommended to provide authenticity of the products. Informative packaging guide customer about the product and increases reliability and exact sourcing of the product. (Parameter 3 and 4)
- iv. End Market actor's interest: This is most pertinent issue for market system management of Maize Grit of Sindhupalchowk as each of end market actors are pushing their own products. This might be high margin of profit in Maize Grit. This barrier to entry to new market requires additional efforts on market promotion.

Recommendation

1. Differential product Mix with High Hill Maize Grit and Mid Hill Maize Grit from Sindhupalchowk as retail pricing of both products differ
2. Option 1: Lower wholesale value of Maize Grit at initial level (Nrs. 60 around) so that end market buyers can show more interest on distribution or sales of product
Option 2: Promote High Hill Maize Grit of Sindhupalchowk in existing retail outlets that are willing sale high hill products and along that introduce Mid Hill Maize Grit as combo package
3. Authentication and branding is key: Establish credibility and standardization like Nepal GAP, Good Manufacturing Practices (GMP) along with product labelling and endorsement of Government of Nepal acts as key feature for consumers to trust

- Promotion strategy at different locations of Kathmandu for taste and product making of Maize Grit to increase consumer demands at end market node

Corn for roasting

Background

The terms of reference guided to carry out a value chain analysis of corn products in Kathmandu valley. A significant volume of the corn consumption is found as the whole corn and as the roasted corn, selling through the street entrepreneurs in Kathmandu. More than 25 street entrepreneurs were taken into the sample size to conduct the research with following objectives.

- To find average selling of corn by a street entrepreneurs
- To find value chain distribution model of corn for roasted form of consumption.
- To find value chain cost structure.
- To find the storage model of the corn.
- To suggest the works needed to conduct by the corn zone in future to ensure better connectivity from farmers to markets.

Corn roasting techniques

One can roast the corn in basically in 3 ways; via electrical heater, via stoves and in the firewood/coal. Roasting of the corn in electrical heater is also found in other region of world, but here in Nepal it is not in practice usually. The reason might be the taste of roasted corn in the electrical heater is not as good as it is roasted in the coal.

We can find the corn roasted in firewood/coal in almost everywhere in the streets. The roasted corn that are seen selling in the streets and corners of Nepali cities tend to preserve the original taste of the roasted corn, which almost all we Nepalese grown up eating. The roasting process includes 2 steps; cooking of corn and roasting. Roasted corn selling entrepreneurs use small fire woods; they burn it first and roast the corn on the coal produced by burning fire woods. These fire woods they collect basically from the furniture industries, timber processing industries and directly purchasing fire woods. Thus, when entrepreneurs burn the fire woods, they cook the corn (with some green husk) placing above the burning flame. The corn gets cooked and softer from inside. Then it is placed directly on the coal, with little air blown with, manual fan/blowing tools, the corn gets roasted.



Figure 20: Female street entrepreneur in Sankhamool

Roasted corn entrepreneurs data summary

The one of the objectives of the analysis and research was finding the corn supply from Sindhupalchowk and corn selling entrepreneurs from the Sindhupalchowk. Thus, The primary focal points were Baneshwor and Koteshwor. 25 street entrepreneurs were taken into the consideration during research.

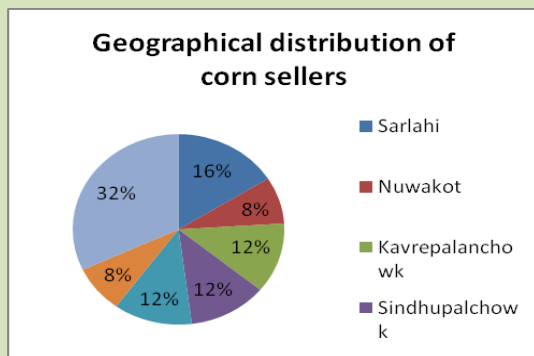


Figure 21: Corn seller in Maharajgunj

Value chain distribution channel:

From the study it is found that, there are mainly 2 groups of entrepreneurs they are working in the value chain distribution channel in Kathmandu since 20 years. In the months from Baisakh to Asoj, they collect the corn from farmers of Kavrepalanchowk, Sindhuli, Chitwan, Sarlahi, Bara and Parsa district. The distribution of the corn in these months, takes place from random suppliers too from Kathmandu, Bhaktapur, Nuwakot or closer districts to Kathmandu Valley. During off-season or from months (Kartik to Chaitra), same group of people collect the corn from the farmers of Chitwan, Parsa, Bara, Sarlahi and Makawanpur. The group of people also provides the seed and fertilizer too to the farmers in some areas.

➤ **Corn types and distribution ways**

The corn distributors encourage the farmers to plant mainly 2 classes of corn; "Shrestha Makai" and "CP 808". In the hilly region (Upto 20 degree warmer) CP 808 corn yields better.

➤ **Pricing to farmers to Street entrepreneurs**

During rainy season farmers sell the corn in Rs. 4 to Rs. 6 to corn wholesalers, whereas same corn can get Rs. 7 to Rs. 9 from the wholesalers during off season.

➤ **Off season distribution capabilities**

As per the farmers and wholesalers, if there is a market demand for green corn, they can produce and supply it to the major cities of Nepal. But, if we asked same with the street entrepreneurs, 1 week to 10 days period 3-4 times a year there is some scarcity of corn. And, in the time between Dashain and Tihar, corn distributors do not distribute the corn because of low market demand.

➤ **Wastage corn management**

The local cow form in the Kathmandu takes, wastage of corn like some seeds, husk etc.

➤ **Main junction of wholesale distribution.**

The wholesalers mainly distribute the corn from Tinkune, Kalimati, Chabahil, Jadibuti vegetable market. Distributers have 1 member of their team working field based in Terai, 1 member in the hilly region. They collect corn directly from the farmers, transport them in Kathmandu valley and sell directly to street entrepreneurs from different junctions.

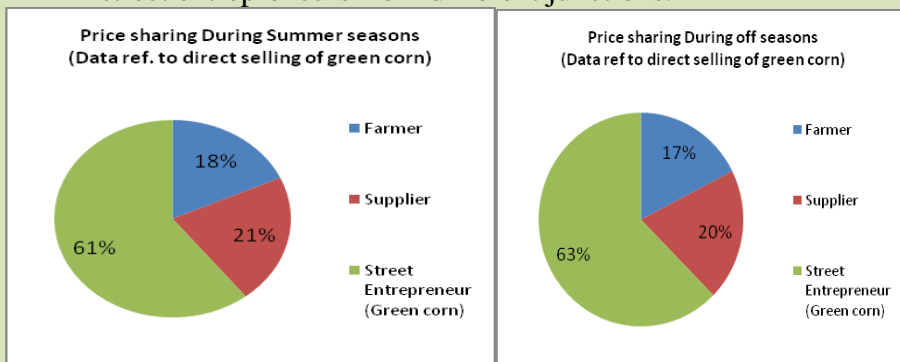


Figure 22& 24: Price sharing in the value chain during summer season

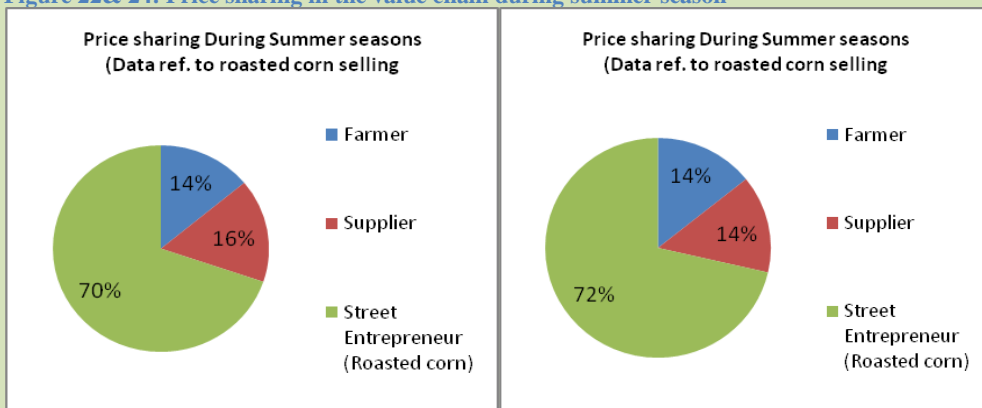


Figure 25 & 26 : Price sharing in the value chain during off season

Comparative and Competitive advantage – geographical

➤ Corn from the hilly region

Based on experiences of the corn supplier and street entrepreneurs, customers prefer corn from hilly region. The sales are also greater in those days, when corn from hilly regions is available in the markets. Inside Kathmandu valley, corn basically comes from Kavrepalanchowk, Nuwakot, Sindhuli, Bhaktapur, Lalitpur districts in the summer season.

➤ Corn from the Terai region

Corn suppliers from Kathmandu valley usually provide market security, seed and fertilizers to the farmers of Terai region. Some farmers from Chitwan, Sarlahi, Parsa, Bara, Makawanpur districts use to involve in dedicated corn farming throughout the year. Suppliers use to purchase directly from the farmers and supply it to Kathmandu valley.

➤ Local corn versus hybrid corn

In terms of taste, local corn especially local white corn is very suitable and special. But yielding of local corn is very low in compared to the hybrid corns. Thus basically farmers produce two types of corn "CP 808" and "Shrestha". These two types of corn are yellowish in color and best suitable to use as roasted form of consumption.

➤ Pricing in different seasons.

The corn suppliers use to give the price of corn per piece ranging from Rs. 4 to Rs. 6 during summer season where there is farming of corn almost everywhere in Nepal. Whereas farmers get Rs. 6 to Rs. 8 during off season from the suppliers. Street entrepreneurs buy at Rs 7-10 per piece in summer season and Rs. 12-14 during off season from suppliers. The market retail price of the good sized corn Ranges from Rs. 15 to 25 for green corn in different season while roasted corn from Rs. 25 to 35 in different seasons though out the year.



Figure 27: Storage of supplier and wholesale market of tinkune

Hygiene, health and Environmental factors

➤ Harvesting and transportation factors

Harvesting of green corn takes place on the same day supplier use to transport it to Kathmandu. Usually suppliers collect the corn in the morning or day time from farmers and transport it to Kathmandu valley. The corn gets stored 1 night and tomorrow morning street entrepreneurs buy directly from the suppliers. The street entrepreneurs sell almost all corn on the same day. So, in an average of 2 days a green corn from corn farm goes to consumer's hand.

Street entrepreneurs usually sell the green whole corn in the morning time and remaining corn as roasted/boiled form in the evening time in the Kathmandu valley. Street entrepreneurs can be found selling the roasted corn either in the "Thela" or in the corner/side of roads. Roasting in the streets, without gloves or any healthy convincing stuff seems to result in the risk of unhealthy roasted corn production.



Figure 28: packaging of the roasted corn on corn husk

➤ Selling process

Entrepreneurs use to wrap the roasted corn in some of the fresh green corn husk and sell it to customers. So, poor and unhealthy packaging seems to occur during selling process.

Technologies intervention in the corn roasting sector

Thetno makai ghar has recently did research, designed and manufactured a corn roasting machine for the commercial purpose. The machine is capable of roasting 10 corns at a time within 5-10 minutes. The machine has been manufactured as such, typical Nepali roasting techniques is used and original taste is preserved. After 3 month long research and 3 month long design and manufacturing testing works, the machine has been put in one of the outlets of Thetno Makai Ghar Pvt. Ltd. Currently the same company is doing research to manufacture the machine suitable for the street entrepreneurs.



Figure 29: Corn roasting machine manufactured by Thetno Makai ghar

Key points explained

- The marginalized group of people is involved in corn roasting/selling in which 80% of them are found to be female.
- Though there is possibility of corn farming throughout the year, the dedicated farmers only do corn farming, as supplier ensure them the markets.
- There are few groups of suppliers working dedicated in the corn for roasting. Chitwan, Bara, Parsa, Sarlahi, Kavrepalanchowk, Sindhuli are major districts for corn production during off season too.
- There are only 3 actors in the value chain mainly, farmers, suppliers and street entrepreneurs.
- One street entrepreneur sells 50 to 200 number of corn per day on an average whereas 60% they sell as whole green corn and 40% as roasted corn.
- Conventional roasting and selling process is seen to be critical in terms of health and environmental issues.
- The technology intervention in this sector seems to be very poor stage, only a corn restaurant has developed by them. All the other street entrepreneurs work with their own arrangement.

Recommendation

1. While there might be huge market possibilities of corn based products in Kathmandu but, it is found that, the whole corn, boiled corn and roasted corn is only the products people are selling.
2. As about 80% of the street entrepreneurs are woman, a detailed research for the street entrepreneurs to address their deeper problems and need to create sustainable business is highly recommended.
3. Only two varieties corns are being consumed in the market, assessment of other varieties might result in greater possibilities of corn products.
4. There is strong health and sanitation problem needed to be accessed to street entrepreneurs, as continuous dust and smoke consumption to them is inevitable in present scenario.

Conclusion and Recommendation:

Sweet corn:

The study carried out with in-depth interaction with value chain actors (as in methodology) pertinently opined towards freshness and high quality products to be brought in market. In this regard global practices including certification and standardization is a must for reaching to consumers. End market buyers showed high interest in upcoming Nepalese products along with consumers. Thereby, considering on quality aspect at optimum price enables Frozen Corn of Sindhupalchowk to position itself in Kathmandu market with less entry barriers. Definitely market promotion strategy to reaching consumers should be carried out. Further, technical analysis on product quality need to be carried out with the team of food technologist and nutritionist.

Corn Grit:

The study carried out with in depth interaction with value chain actors (as in methodology) pertinently opined towards high barrier to market entry. Already existing products mainly from local mills are covering market and end market buyers are showing less interest in promotion of Sindhupalchowk based upcoming brands. The positive point is high demand of high hill Maize Grit and Sindhupalchowk has to brand itself with high hill

maize available in the district. Retailers and online platforms are highly interested on high hill products and thereby mid hill products of Sindhupalchowk also need to be coupled together as “combo pack”. In this case market promotion has been more to increase the consumer base thereby convincing retailers easier for reaching to the consumers. Further plan on communication collateral and market strategy need to be developed for market promotion.

Roasted corn:

In depth interaction with the value chain actors (Farmers, suppliers and street entrepreneurs) has been carried out. As per the analysis, from the farmers to the consumers there are only 3 actors present, and with resulting the price increase by 3-5 time when reaching to the consumers. Still, farmers only get about 20% of overall price, there needs to be worked upon. There are only few groups of suppliers so, monopoly of suppliers can be easily seen which is resulting the not relatable pricing, during off season. Consumers are paying on an average of Rs. 20 for green ad Rs. 30 for the roasted corn, which is very economical in the point of view of customers. The street entrepreneurs are keeping their outlets (temporary) at the roadside, corner of shops, and mismanagement from the local ward and municipality can be seen huge during the study. Also, the underprivileged women are found 80% of the total entrepreneurs, the impact of any sort of improving the business eco-system and livelihood of the entrepreneur's projects will be highly effective. While a seller is selling 20 to 100 corns a day in which 40% of total selling from the roasted corn, major problem is seen in the health and environment of sellers and consumers too.

Annexes

Annex 1 : Raw data of Sweet corn and Chyaklaa segments consumer segments

S.N.	Consumers	Contact details	Consumer Segment Description
1	Pratima Sharma	9851177025	Hostel Entrepreneur
2	Narottam Aryal	9851075631	Entrepreneur and influencer
3	Purushottam Aryal	9841669653	Middle Class consumer
4	Rajendra Man Bajracharya	9841302023	Alternative Medicine Practitioner
5	Purna Laxmi	9841404848	Middle Class consumer
6	Bijay Shakya	9841375702	Health conscious consumer
7	Matina Joshi	9851242784	Quality and credibility conscious consumer
8	Ram Sharan Sapkota	9851069164	Youth Consumer
9	Ananda Phuyal	9841558999	Middle Class consumer
10	Sachin Shrestha	9818268006	Local product promoter
11	Ankit Shakya	9802003727	Youth consumer
12	Umesh Pokhrel	9851105946	Middle Class consumer
13	Alok Shrestha	9849757094	Quality and credibility conscious consumer
14	Bhuwan Bhatta	9841243955	Middle Class consumer
15	Sulochana Shah	9813566335	High End consumer
16	Amar Shah	9858051937	Health conscious consumer
17	Ajay Bajracharya	9851107182	Health conscious consumer
18	Sujan Shrestha	9851110641	Youth Consumer
19	Sharmila Adhikari Raut	9803622918	Middle Class consumer
20	Ruby Karki	9851148483	Entrepreneur and influencer

Annex 2: Raw data of Sweet corn and Chyaklaa segments platform segments

S.N.	Department Stores	Phone no.
1	Bhatbhateni: Kalanki	15234988
2	Bhatbhateni: Chapagoan Dobato	15151376
3	KK Mart New Baneshwore	9801800006
4	Big Mart Lazimpat	14327856
5	Likhu Department Store, Gathaghar	9841661124
S.N.	Local Mills	Phone no.
1	Bhanimandal Mill (Himali Masala Udyog)	9841485834
2	Hattiban Mill (Timilsina Masala Udyog)	9841961885
3	Gyaneshwore Mill	
4	Mainali Mill, Baneshwore	9851030088
5	New Baneshwore Mill	
S.N.	Online Platform	Phone no.
1	Kathmandu Organics	9851220642
2	Metrotarkari.com	9851098069
3	Kisan Ko Pasal	9851166574
4	Rasanpani.com	9847079398
5	Organic Online	9851242174

S.N.	Retail Shops	Phone no.
1	Krishi Fresh (12 outlets)	9841396394
2	Smart Agriculture Outlet, Bagdole	9851213688
3	Kharpan: Bhaisepati	9851177981
S.N.	Importers	Phone no.
1	Aarati Group	9849927071
2	Shreeman Group	9851031690
3	Bhumi Group	9802792062
4	Zodaic Marketing	14422428

Annex 3: Raw data on street entrepreneurs

S.N.	Name	Address	Per day sales	Phone no.
1	Devi sharma	Dolakha, Mainapokhari	30-100	
2	Laxmi Karki	Kadichaur, Sindhupalchowk	30-150	9808130584
3	Parbati Saud	Achham	30-150	9863351554
4	Chhabi Sunam	Morang, saukha	30-80	
5	Sita Acharya	Sindhupalchowk, Melamchi	50-300	9866951514
6	Subhadra Sundas	Sarlahi	20-100	
7	Dhankumari Ghale	Lamjung	20-100	
8	Kaushila Dahal	Dolakaha	20-100	9869011132
9	Hari Gautam	Nuwakot	20-150	9815811850
10	Maya sharma	Jhapa	20-100	
11	Omkumari	Sarlahi	20-100	
12	Sita Thapa	Bara	20-150	
13	Devi Yadav	Sarlahi	20-100	
14	Himadevi gharti	Dhading	20-100	
15	Devmaya shrestha	Bhaktapur	20-100	9860799785
16	Keshav thapa	Nuwakot	20-100	
17	Mina thapa	Jhapa	20-100	
18	Ram bahadur Magar	Morang	20-100	
19	Hari bahadur chhetri	Sindhupalchowk, Chaurikhola	20-100	
20	Umakala B.K.		20-100	

Glimps of Photo photographs during Survey

