Journal of Contemporary Issues in Business and Government Vol. 29, No. 01, 2023
https://cibgp.com/

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2023.29.01.020

Leadership of Covid-19 in the Transaction of Vegetables at Kathmandu Valley in Nepal

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Abstract

The Covid-19 has affected the global community to a large extent and more precisely the consumable sector. The primary goal of this study is to determine how the Covid 19 pandemic has affected the sales and consumption of vegetables in the Kalimati Fruits and Vegetable Market in Kathmandu, Nepal. Also, it intends to determine how many kinds of green vegetables are supplied to residents of the Kathmandu Valley and what substitutions they have made in their kitchens to make up for the shortage. The study included 102 gate visitors to central fruit and vegetable market as respondents for data collection. The analysis revealed that during the hours of vegetable pick-up, only 20-40% of the whole regular supply is available, and vegetable prices have increased by 11-66%. Most of the locals replaced the green vegetables in their houses with locally preserved veggies instead of pulses, grains, dals, paneer, and dry beans. Moreover, majority of the respondents recommended preserving eatable veggies during bumper crop times for replenishment at times of crisis like Corona and even during periods of natural scarcity. The present study emphasizes on providing a learning towards sustaining in a crisis situation.

1. Introduction

Green vegetables and fruits are everyday consumables that end consumers eat in their kitchens. The market's most popular fruits and vegetables include: ginger, pomegranate, mangoes (different varieties), Red potato, Indian red potato, Mude red potato, white potato, Cauliflower(local) , cucumber hybrid, lemon , asparagus, banana, green chilli (varieties) , dried chilli, carrot, turnip, tomato, knolkhol (gangilodes), bean local and hybrid ,snake guard, sugar beet, mushrooms (Varieties), lettuce, Indianbig tomato, water melon , muskmelon, fresh fish , bitter guard, green leafy mustard, parsley, spinach, pudina, Red Nasik Onion, onion green, pumpkin ripen, cabbage, broccoli, green legume soybean, aubergine (bringel), okra (gumbo, lady's finger) ,jackfruit, capsicum(sweet chilli), radish, Indian papaya, orange, mandarin, apple, red cabbage, green leaf rayo, dried and green garlic , litchi, bottle guards, sweet potato etc. (Kalimati Market, n.d.)

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The main fruit and vegetable markets in the country are located in Kalimati, Kathmandu, and are run by the Kalimati Fruits and Vegetables Market Development Board (KFVMDB), a government organisation. Following a partnership between the United Nations Capital Development Fund and the then-Kalimati Wholesale Market project, it was established (UNCDF). For the construction and furnishing of market facilities in Kalimati, a budget of Rs. 4.6 million was allocated. According to the Development Board Act of 1957, the project was transformed into an independent entity in 1955 under the name Kalimati Fruit and Vegetable Wholesale Market Development Board (KFVWMDB). The KFVWMDB was renamed Kalimati Fruit and Vegetable Market Development Board by the founding order (KFVMDB).

A fruit and flower market is being built on the board's own property, which is around 4 acres large, at Naubishe and Dhading. It has 11 locations, located in Kalimati, Baphal, Swayambhu, Banasthali, Gongabu, Bashundhara, Tinkune, Gopikrishna, Lainchaur, Ratnapark, and Koteshwor, among other areas of Kathmandu. n.d. (Kalimati Market)

The population of Kathmandu City alone, according to the 2011 Census, is 1,744,240. However, it is thought that the unofficial estimate may be much higher (more than 25, 00,000) than the statistics from the census. As a result, vegetables must be imported from nearby and faraway countries, like India, in order to satisfy local demand. Additionally, there is a retail market where small business owners may offer their goods.

In the market, there are 425 wholesale, 65 retail, and 27 fish businesses. According to the Vegetable Crops Survey of Nepal 2009–10 published by the Nepal Government Central Bureau of Statistics (2011), the total market import in 2070 was 220600.268 metric tonnes, made up of 80.46% vegetable products, 12.76% fruit products, 4.63% masala (spices) products, 1.85% dry fruit products, and 29% other agro products. n.d. (Kalimati Market) Imports are typically delivered at night. While the main market trading time is said to be between 3 and 4 am and 10 to 11 am. Compared to other types of trade, wholesale trading dominates the market. Markets typically provide both seasonal and off-season agricultural products. The farmer himself, intermediaries, traders, and their agents are typically involved in the market importation process. Farmers, suppliers, and dealers often negotiate to set the price of product; the Board is not engaged in setting the price of produce. Vegetable market demand and supply, quality, source of supply, customer desire, context, and time element all have a significant impact on pricing. The majority of the produce is domestically produced, although 24.37% of it is imported from India and 1.67% from China. Vegetable sellers and marketplaces in Kathmandu Metropolitan City were mapped in 2017. The Kalimati vegetable mart, which supplies fresh food to houses throughout Kathmandu, has taken down its shutters in compliance with social segregation orders issued by the Kathmandu Valley Forum of DAOs (District Administrative Officer) in an effort to contain the Corona Pandemic in Nepal.

The Nepalese Fruits and Vegetables Market typically uses wholesale, semi-wholesale, retailers, and street vendors as its marketing middlemen. Over 247 vegetable cultivars are

P-ISSN: 2204-1990; E-ISSN: 1323-6903
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thought to exist, and Nepal is home to over 50 popular crops. Almost any sort of vegetable may be grown in the nation due to the vast range of climatic conditions (from alpine to tropical, moderate to alkaline). According to total area farmed, Nepal produces the following vegetable crops: cauliflower (33,172 ha), tomato (19,724ha), cabbage (14,306 ha), pumpkin (9,757ha), cucumber (8,634ha), eggplant (8,172ha), okra (7,473ha) hot pepper/chilly (7,007ha) and bitter gourd (4,250 ha). In Nepal, there are 33 market centres for fruits and vegetables, 21 collection centres, 8 wholesale markets and 4 retail markets constructed in the initiation of government, while some are managed by the private sector (Awasthi, 2007).

The developed areas of Kathmandu are encroaching on the horticulturally productive terrains, supplying food, and increasing the need for refuge; as a result, Kathmandu is not autonomous in terms of vegetable production. The production of vegetables in unbalanced regions (Kavre, Dhading, Bhaktapur, Lalitpur, Makwanpur, Kathmandu, Nuwakot, Sindhupalchok, Gorkha, Dolakha, Rasuwa, and so on) is estimated to satisfy between 50 and 60 percent of all vegetable demand in Kathmandu, with the remaining requests coming from the Terai district and outside imports from India and China. As a result, these significant vegetable imports and demands led to the emergence of the foundational vegetable business sectors, such as haat-bazars, side-of-the-road vendors, and flexible merchants. Additionally, rooftop kitchen nurseries of solidified homes are used to grow vegetables.

The Kalimati Fruits and Produce Market's deputy director, Binaya Shrestha, claimed that the market receives 300–450 tonnes of vegetables per day. Due to the lockout, the supply has fallen by 25.33%, and the market just got 280 tonnes of vegetables. The second-largest vegetable market in the valley is located in Balkhu, which is a part of the Kalimati market in the southwest. This market receives 200–250 tonnes of vegetables every day, with shipments getting less lately. 2020 (Prasain)

The purpose of the study is to determine how and by how much the volume of fruits and vegetables in the Kathmandu market is lowered during the pick-up period of the Corona Pandemic lockdown. Consequently, the study's goals are as follows:

• To determine the consumer's vegetable spending before and during the Covid 19 impacted days and determine the causes of any variations in these vegetable spending.

• To learn which kitchen veggies the customer substituted during the Pick Covid hit time.

2. Review of Literature

In his study of the strategy system for methodical functioning and expansion of foods produced from the ground marketplaces, White (1999) cited that the vegetable market framework needs an arrangement structure for precise and productive working and its improvement. Permanent markets are frequently open all day. These marketplaces provide a

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wide variety of produce. Small vendors that buy produce and fruits for their businesses from these markets use them as a wholesale market. These permanent marketplaces are often where the general population buys food for larger dinners made around feast and holiday periods. (Vegetable sellers and marketplaces in Kathmandu Metropolitan City were mapped in 2017)

Over 247 vegetable cultivars are thought to exist, and Nepal is home to over 50 popular crops. Almost any sort of vegetable may be grown in the country due to the vast range of climatic conditions (from alpine temperate to tropical) (Awasthi, 2007). Vegetable and Fruit Wastes: Waste management, particularly in wholesale markets, is one of the key problems. As a preventative measure, waste reduction should be taken in order to lessen the burden on waste management. Due to inadequate post-harvest facilities at the wholesale markets for fruits and vegetables, a substantial amount of fruit and vegetable waste is created every day.

According to a survey conducted at three significant market locations—Narayangadh, Pokhara, and the Kalimati Fruit and Vegetable Wholesale Market—the main reasons for produce losses were inadequate cold storage (67% of respondents' opinions), inappropriate packaging and poor handling (22%), and subpar produce (11%). (2014) (Devkota et al.)

According to Madhav Timilsina, head of the Consumer Rights Investigation Forum, the large vegetable and fruit market will see inflated prices if only wholesale commerce is permitted. Since most customers rely on the retail market, only a select number businesses and individuals have access to the wholesale market. (Prasain, retail sales at the Kalimati fruit and vegetable market end in 2021).

3. Material and Methods

3.1 **Research Methodology**

It was decided to use a descriptive research design. The market gate customers of the Kalimati market were polled in order to get the basic data. The daily newspapers, periodicals, brochures, and research papers were used to gather secondary data. The data and outcomes were analysed and understood using statistical methods like the Chi-Square test and percentages. Population and Sample, 3.2.1

3.2. **Research Tools**

In order to gather information utilising structured questionnaires, 102 of the population's potential fruit and vegetable purchasers from the Kalimati market were chosen as responders. Their comments were noted. 3.3 Data Sources

3.3. **Sources of Data**

This study focuses mostly on gathering primary data utilising structured questionnaires through online surveys as well as secondary data for questionnaires and literature reviews. The

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questionnaire was distributed through Google Docs.

3.4 **Data Analysis Tools**

Excel was used to analyse the data. For the data analysis portion, chi-square and frequency tests were run.

4. Results and Discussion

The analysis of the information gathered from the consumer survey is presented in this section. As a result, the goals established at the start of the research are being fulfilled in this chapter.

4.1 Demographic Profile

Table 1 Demographic profile of respondents

Demographic Variable		Frequency	Percentage
Gender	Male	41	40.2
	Female	61	59.8
Age	16-25	14	12
	26-35	44	56
	36-45	27	24.8
	Above 45 years.	17	7.2
Total		102	100

According to Table 1, there were 61 respondents who were female, or 59.8 percent, and 41 respondents who were male, or 40.2 percent. It is obvious why women work mostly in the kitchen. The age class with the greatest percentage of buyers was 26–35 years, making up 56 percent, showing that this group of buyers frequently visited markets to make purchases. The next largest age class, 36–45 years, made up 24.8 percent. 14 respondents, or 12 percent, were between the ages of 16 and 25, while 17 respondents, or 7.2 percent, were beyond the age of 45.

4.2 Expenses (Before and In Covid Affected Days) in vegetables purchases (Rs.) on per day basis.

Table 2 Expenses in vegetable purchase before and in Covid affected days

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Before Affect	Affected Day	Frequency	Percentage	% increase in Expenses
50-100	101-150	38	37.25	66
101-150	151-200	45	44.12	40
151-200	201-250	11	10.78	20
200-250	Above 250	8	7.85	11
Total		102	100	

When there was a lack of veggies, the responders were asked about possible replacements. According to the above table, 56 of the respondents replaced vegetables with dried beans, Rajma and Paneer accounting for 54.90 percent of those respondents, followed by substitutions of chicken and eggs made by the same number of consumers' families, or 23 respondents, accounting for 22.55 percent of respondents. No household used lamb in its place. The price for this particular response team has gone raised by 20%. Eight respondents bought veggies for between 200 and 250 rupees and more than 250 rupees throughout the normal and Covid hit periods. While vegetable intake only climbed by 11%, they constituted up 7.85% of the respondents.

4.3 Reasons for price increase in vegetables

Table 3 Reasons for price increase

Statements	Frequency	Percentage
Vegetables were not available and customers spent more time and energy to find and purchase vegetable	49	48.03
Vegetables were expensive	42	41.18
Supplied vegetables were rotten and inadequate in supply	6	5.88
Vegetables were available in distant market and in retail sales Only	5	4.91
Total	102	100

To ascertain the reasons for the increase in the price of the vegetables, the attendees were asked to select from the possibilities in the comprehensive statement in the table above. Out of 102 responses, 49 people—representing 48.03 percent—clearly said that the shortage of vegetables was to blame for the price increase, with consumers having to expend more time and effort to find and purchase them. A second majority of 42 respondents (41.18%) said that the price of merely vegetables was too high.

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4.4 Substitution for vegetables when vegetables were not available

Table 4 Substitution for vegetables

Item	Frequency	Percentage
Chicken	23	22.55
Mutton	0	0
Eggs	23	22.55
Dried beans, Rajma and Paneer	56	54.90
Total	102	100

The respondents were questioned about potential substitutions when there weren't enough vegetables available. According to the aforementioned table, chicken and eggs were substituted for vegetables by the same number of consumer families, or 23 respondents, accounting for 22.55 percent of respondents. Rajma and paneer were also frequently substituted for vegetables, accounting for 54.90 percent of respondents. No family substituted lamb for it.4.5 Solution for future crisis. The respondents were questioned about potential substitutions when there weren't enough vegetables available. According to the aforementioned table, chicken and eggs were substituted for vegetables by the same number of consumer families, or 23 respondents, accounting for 22.55 percent of respondents. Rajma and paneer were also frequently substituted for vegetables, accounting for 54.90 percent of respondents. No family substituted lamb for it.

Table 5 vegetable shortages for Kathmandu based customers in the possible futurecrisis

Statements	Frequency	Percentage
Vegetable Preservation	48	47.06
Vegetable Storage	10	9.80
Roof Kitchen in urban areas	35	34.32
Kitchen garden in rural areas	9	8.82
Total	102	100

In order to collect consumer feedback, we offered Kathmandu valley-based families the aforementioned options for resolving any potential future vegetable shortages, and their comments were noted above. In response to this question, the above table clearly demonstrates that 48 respondents, who made up 47.06 percentage of the total, believed that preserving vegetables would alleviate any shortages in such circumstances. This was followed by 35 respondents, who made up 34.32 percentage, who believed that maintaining roof kitchens in urban areas would be beneficial. In order to solve the situation, 10 of the respondents, or 9.80

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percent of the respondents, also underlined the need for vegetable storage. 9 respondents, or 8.82 percent, highlighted the importance of kitchen gardens in rural regions as a crisis management tool.

4.6 Chi-square Test

Table 6 Observed and Expected import of vegetables from different points to theKalimati Market

Days	O=Observed supply(Tonnes)	E=Expected supply (Tones)	O-E	(O-E)^2	((O-E)^2)/E
1	523	725	-202	40804	56.28
2	660	725	-65	4225	5.83
3	582	725	-143	20449	28.21
4	584	725	-141	19881	27.42
5	703	725	-22	484	0.67
6	732	725	7	49	0.067
7	761	725	36	1296	1.79
8	668	725	-57	3249	4.48
9	470	725	-255	65025	89.69
10	294	725	-431	185761	256.22
Total =10 days	5977	7250	-------	-----	470.657

(Source: Kalimati Fruits and Vegetable Market Board dated 2021-07-14)

In order to determine if there was a statistically significant limitation in supply or whether it was only a rumour, the researcher sought out the veggies provided for 10 Covid hit days and the regular supplied quantity in normal days. For this, the board-provided 10-day supply record and the necessary supply were recorded, and the Chi-square test was used.

The outcome shown that the calculated (critical) Chi-square value of 470.657 at 9 degrees of freedom and 5% level of significance is larger than the tabulated (critical) Chi-square value of 16.919 at 5% level of significance and 9 degrees of freedom. Therefore, it may be concluded that during the active infection period, the supply of vegetables to the Kalimati market was severely reduced. hence, customers' complaints about the lack of veggies.

5. Future Scope of the Study

In Kathmandu, the population is growing at an exponential rate. Internal migration from various regions of the nation in quest of employment, higher education, healthcare services, and security protection has also refuelled for population growth. In Kathmandu, not just produce but all goods are becoming scarce. Therefore, the study will assist in identifying and meeting the

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requirements, desires, and demands of the residents of Kathmandu Metropolitan City, as well as assist in the formulation of policies and the management of any future product shortages by the relevant authorities.

The Kalimati Fruits and Vegetables Market, which is situated in Kathmandu's western region, imports fruits and vegetables from India and nearly every other country in the world. After the restoration of democracy in Nepal in 1990, residents from all across the country now reside in Kathmandu. They shop at this market, which is a government-run endeavour, for edible fruits and vegetables. Major consignment purchases are also made from this market by other large vendors. As a result, this market is chosen as a research location since it accurately depicts the entire nation. Future researchers can investigate fruit sales and consumption in a market experiencing a similar situation as Covid 19.

6. Limitation of the study

A sample size of 100 respondents has been employed, which is convenient sampling. Because of the limited time available for the investigation, the sample size is modest. Therefore, generalisation is impossible. The results, however, can be used as a guide when designing policies and programmes for the future and for understanding the impact on vegetable sales and consumption during times of crisis.

Conflicts of Interest-

In performing this research in its whole and in the research's conclusions, the author has no conflicts of interest. The researcher utilised his or her own money. No one put any pressure on the researchers before, during, or after the study.

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P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2023.29.01.020

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