

## **IMPACT OF THE COVID-19 PANDEMIC ON SMALL-SCALE FOOD PROCESSING FIRMS**

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### **INTRODUCTION**

The novel Coronavirus (COVID-19), which originated in the Wuhan province of China in December 2019, spread rapidly to all parts of the world (Erandi et al., 2020). Countries tried to manage the pandemic by imposing various health guidelines, such as regional and national lockdowns, travel restrictions, and keeping people in quarantine. Like many countries worldwide, with the onset of the crisis, economic growth rates in many South Asian developing countries showed a negative value (Raihan et al., 2020).

The real impact of the COVID-19 pandemic started in Sri Lanka around mid-March 2020. The food processing sector was hit hard by the threat of COVID-19, as they lost their income opportunity during the festive season of 2020 and 2021. The main problem faced by these enterprises was the breakdown of their supply chain due to the lockdown, curfew, and isolation of areas. Rising raw materials prices due to shortages have also affected some facing a financial crisis. In addition, delivery delays, unforeseen travel disruptions, and labor shortage problems were also reported (Raj et al., 2022). The severe spread of the virus has led to social relationship reduction, rising unemployment, income inequality, and declining remittances. The government enforced travel bans and regional lockdowns that blocked the movement of products and labour. The production and supply of raw materials had to be suspended due to challenges in dealing with COVID-19. Small businesses suffer most in times of crisis and are the least prepared of all types of business structures. Marketing innovations through promotion or pricing, alternative distribution channels, product redesign and the creation of new products, finding alternative suppliers, and business diversification are the most commonly adopted strategies (Raj et al., 2022). Due to its inherent small-scale nature and resource limitations, small businesses are at high risk for permanent closure after large-scale disasters partially because they cannot pay for their expenses while being shut down. Consumer consumption patterns have changed due to the lockdown and the nature of the Coronavirus.

With the spread of the Coronavirus, there is still a lack of research studies in Sri Lanka on the impact of the COVID-19 pandemic and its possible survival strategies. It is essential to identify the impacts and adopt effective survival strategies during times of crisis to demonstrate strong resilience. Therefore, this study aims to identify the heavily impacted areas of business by the pandemic and to explore the effective survival strategies adopted by small-scale food processing firms during the COVID-19 pandemic in Sri Lanka. Therefore, this study aims to identify the heavily impacted areas of business by the pandemic and to explore the effective survival strategies adopted by small-scale food processing firms during the COVID-19 pandemic in Sri Lanka.

## METHODOLOGY

Data were collected by conducting face-to-face and telephone surveys from small-scale food processing firms in the Galle district. A simple random sampling technique was used to select the respondent firms. The survey was conducted from January to February 2022 using 100 small-scale food processing firms. Fifty-four responses were taken from face-to-face administration of the questionnaire, and 46 responses were obtained from telephone surveys. A self-designed questionnaire was used to collect data on the impact of COVID-19 and the survival strategies adopted. Five key areas were identified (supply-related, production-related, distribution-related, demand-related, and policy and regulatory-related). For each impact, a five-point Likert Scale ranged from “Strongly at all affected” to “Strongly affected,” giving a 1 to 5 value range to identify the impact level on the entrepreneur. The latter part of the questionnaire consisted of twenty-two survival strategies. For each survival strategy, a five-point Likert Scale was given to evaluate the agreement level for each strategy ranging from “Strongly disagree” to “Strongly agree,” giving a 1 to 5 value range to identify the agreement level for each strategy.

Data analyses were done using IBM SPSS statistical software version 25.0. Mean values were calculated to explore the gravity of five areas of impact; supply, production, distribution, demand, and policy and regulation changes. A T-test was done to examine the significant difference indicators related to COVID-19 impacts concerning the existence of primary income sources, several employees, and monthly income in before and after situations of COVID-19. Principal Component Analysis (PCA) with varimax rotation was used to summarize the survival strategies adopted by these small food processing firms into new categories. These categories were later assigned specific names.

## RESULTS AND DISCUSSION

Most of the respondents were female (58%), and the majority of the sample was represented in the over 50 age group. Seventy-eight percent of respondents completed schooling up to Advanced Level (A/L). Most of the respondents had more than 15 years of experience in the food processing sector. The majority of the sample (55%) has not been infected with COVID-19, and 45% of entrepreneurs have been infected with COVID-19. Regarding the distribution of different firm types within the sample, the majority were represented by processed food manufacturing firms (66%) (Table 1).

Table 1 Sample profile

Parameter	Variable	Percentage (%)
Gender	Female	58.0
	Male	42.0
Age	20 – 30	3.0
	31-40	17.0
	41-50	31.0
	>50	49.0
Education Level	Primary Education	2.0
	Up to O/L	12.0
	Up to A/L	78.0

	Degree/Diploma	8.0
Experience (Years)	1-5	15.0
	6-10	29.0
	11-15	7.0
	>15	49.0
COVID-19 infection of the sample	Infected	45.0
	Not infected	55.0
Firm type	Processed food	66.0
	Spices	13.0
	Dairy Products	8.0
	Oil Products	5.0
	Fish Products	4.0
	Beverages	4.0

Out of the five main areas affected, changes in consumer demand recorded the highest overall mean scores indicating that changes in consumer demand are the most affected area of business for these food processing firms (Table 2). Out of all these impacts, the firms were affected mainly by the changes in the consumption pattern of their consumers (mean score of 4.49).

In terms of changes in production, these firms were highly affected by the price increments of raw materials (mean score of 4.40). However, as these small firms mainly function home-based with family members as employees, they were not affected by labour shortage due to lockdowns (mean score of 2.87). These small food businesses were also severely affected by the changing requirements of product and distribution safety and hygiene (Table 2). These firms were not highly affected by the import restrictions imposed by the government as most of these firms use locally produced raw materials for their production process (Table 2). According to the mean scores, trade relationship reduction (mean score of 4.08) was highly affected. The firms are least affected by the changes in policy and regulations, especially in terms of increasing interest rates and corruption. However, during the survey, it was also revealed that firm owners are not aware of the implications of policy changes as they could not see any direct impacts on their businesses.

Table 2 Mean comparison of COVID-19 impact statements

Area of impact	Mean
Changes in supply	
Raw material suppliers permanently get away from the supply	2.73
Import restrictions	2.76
Suppliers being infected/quarantined	3.48
Supply delays	3.87
Trade relationship reductions	4.08
Changes in production	
Unavailability of raw materials	3.88
Price increment of raw materials	4.40
Employees being infected/quarantined	3.13
Labour shortage due to lockdown	2.87
Strict attention of buyers to hygiene requirements	4.15
Production premises layout	2.52
Delaying machine maintenance	2.38
Changes in distribution	

Lockdown periods	4.45
Closure of distribution channels	4.08
Distribution route/destinations changes	3.36
Need for high safety measures	4.22
Changes in demand	
Customer income	4.16
Consumer consumption patterns	4.49
Customers' attitudes toward COVID-19	4.00
Price changes in food items	4.33
Demand for home delivery methods	3.39
Changes in policy and regulations	
Inflation rate changes	3.43
Changes in interest rates	2.61
Economic policy changes	3.50
Trade/import restrictions	3.93
Increasing levels of corruption	2.82

According to the paired t-test, all outcome variables resulted in a probability value of 0.000, which is less than the 0.05 significance level. This indicates that the mean differences between these three outcome variables are statistically significant. It can be explained that in comparison to the “before” COVID-19 period, the existence of primary income sources, number of employees, and monthly income have significantly changed in the “after” COVID-19 period (Table 3).

Table 3 Results of paired t-test

Firm outcome	Mean	Probability
Existence of main income sources before COVID-19	0.63	0.000*
Existence of main income sources after COVID-19	0.44	
Number of employees before COVID-19	2.26	0.000*
Number of employees after COVID-19	1.73	
Monthly income before COVID-19	71090.0	0.000*
Monthly income after COVID-19	51850.0	

\*Significant at 0.05 level

According to the Principal Component Analysis (PCA), five strategies were extracted under component one, representing the survival strategies for “distribution and production.” Component two consisted of three strategies representing “new marketing methods.” Three strategies were loaded on component three, which represents “human resources-related” strategies, while component four was loaded with two strategies that represent the “operational changes.” Component five consisted of two strategies representing “suppliers-buyers agreements-related” strategies (Table 4). As overall survival strategies, food processing firms mainly consider the strategies for distribution and production, new marketing methods, human resource-related adaptations, operational changes, and suppliers and buyers-related adaptations.

Table 4 Rotated component matrix for survival strategies

Survival Strategy	1	2	3	4	5
Increase the safety measures of distributors	0.802				
Following the safety measures in production	0.727				
Diversification of distribution channels	0.691				
Product diversification	0.652				
Avoiding overpopulated destinations	0.474				
Adopting new online marketing systems		0.875			
Using social media to contact suppliers/new suppliers		0.844			
Using home delivery methods		0.568			
Employee reduction			0.783		
Employee salary reduction			0.710		
Provide subsidies for COVID-19 infected employees			0.607		
Implementing work from home for office staff				0.826	
Layout changes in production premises				0.777	
Finding suppliers in areas close to the production premises					0.808
Getting into agreements with buyers to maintain continuous sales					0.540
Variance (%)	14.225	10.419	9.619	7.343	7.338
Eigenvalues	3.646	2.688	1.927	1.608	1.559

Note: 1- Distribution and production, 2- New methods of marketing, 3- Human resource management, 4- Operational changes, 5- Supplier-buyer agreements

## CONCLUSIONS AND IMPLICATIONS

The final output of the analysis emphasizes that the pandemic has affected supply, production, distribution, demand, and policy-related factors. Among these areas, consumer demand is strongly affected, while the firms are least affected by the policy and regulatory changes. Most of the samples have not been infected with COVID-19 directly but were affected by the supply chain disruptions. The pandemic affected consumer behaviour and habits because of the restrictions and long periods of lockdowns that prevented people from carrying out their daily lives. Consumers tend to prepare their meals, have food at home, and avoid going outside for necessities. The COVID-19 pandemic affected the income sources, employees, and monthly income reduction of the business. With the growing demand, most small-scale food processing firms adapted to an online-based marketing system.

**Keywords:** COVID-19 pandemic, food processing firms, small businesses, survival strategies

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