



## Performance of micro and small foodpreneurs in Manipur during COVID-19 pandemic

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### ABSTRACT

To critically assess the performance of micro and small foodpreneurs during COVID-19 pandemic in Manipur state of India, an online survey was conducted during the year 2020. The survey data was subjected to non-parametric statistical analysis using PROC NPAR1WAY and Dwass, Steel, Critchlow-Fligner multiple comparison analysis. The findings suggested that during COVID-19 pandemic, the micro and small foodpreneurs faced multifaceted challenges with respect to the number of employees, working hours, supply of raw material, selling mode, production, sale, turnover and the extent of loss, etc. The performance of different categories of foodpreneurs was compared based on the change in various performance indicators between pre-pandemic and pandemic period. The study also highlights the major problems faced by the foodpreneurs and remedial measures. This is the first report on the impact of COVID-19 pandemic on foodpreneurs from North East India.

**Keywords:** COVID-19 pandemic, Food processing, Foodpreneurs, SMEs, Manipur

The entire world is facing an extreme health crisis due to the COVID-19 pandemic. The disease adversely impacted the global economy. India is facing the worst recession since the great depression in the 1930s (Goyal 2020). To contain the spread of COVID-19, Government of India had imposed nationwide lockdown from 25<sup>th</sup> March, 2020 to 31<sup>st</sup> May, 2020. During this pandemic period, the single most essential commodity people looked for was food.

Manipur is a small Himalayan state of India located in the North-eastern part of the country bordering Myanmar. Despite topographical disadvantages and transportation bottlenecks, the food processing sector has come up as the sunrise sector in Manipur during the recent past. Many micro, small and medium enterprises (MSMEs) have geared up to tap the potential of food processing enterprises (FPEs) in the state. The majority of the FPEs in the state are run by women foodpreneurs.

However, COVID-19 pandemic posed a significant threat to the millions of small and medium enterprises across the world (Nayanga and Zirima 2020) and it seems to be highly difficult for them to sustain their business operations (ILO 2020). Like the rest of the world, the food processing sector in Manipur also faced several challenges during the COVID-19 pandemic. Many enterprises had been temporarily closed during the pandemic period.

Presently, the Government of India is making dedicated efforts to bring the national economy back in track. Major emphasis is being given on the revival of the manufacturing sector with a dedicated focus on MSMEs. When it comes to revitalizing the food processing enterprise to its full potential during the post-pandemic period, it is of utmost importance to understand the nature and magnitude of hardship the enterprises have faced during pandemic period and the factors that affected their operation and business. Primary data collected on these aspects at grass root level would greatly help in formulating post-COVID road map at the local level to foster the entrepreneurial ecosystem and redesign the small business landscape. Keeping this in view, the study was undertaken for critically assessing the performance of FPEs during COVID-19 pandemic in Manipur state.

### MATERIALS AND METHODS

*Questionnaire preparation and online survey:* The study was undertaken by Agri-business Incubation Centre, ICAR

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Research Complex for NEH Region, Manipur Centre, Imphal after the lockdown phase in year 2020. After a preliminary telephonic discussion with selected foodpreneurs, a questionnaire comprising 36 questions was prepared. Of these, 12 questions were general queries. Responses of the remaining 24 questions were used to prepare the data matrix. Data was collected through an online survey (<https://forms.gle/UPmqSbFbeuLmYTXy6>). Total 44 micro and small FPEs operating in Manipur submitted their responses. The responses were verified on case to case basis and additional information was collected from the respondents through telephonic discussion.

*Preparation of data matrix:* Data matrix was prepared with 44 respondents (rows) and 24 variables (columns), out of which 7 were classificatory variables (gender, experience level, age group, location, number of processing ventures, number of funding sources and size of FPEs) and 17 were response variables. Using these 17 response variables, 11 performance indicators were finalized (change in the number of employees, average working days in a week, average working hours in a day, production of solid/semi-solid products, production of beverages, sale of solid/semi-solid products, sale of beverages, number of products manufactured, monthly turnover, sale and extent of loss). Differences were obtained by deducting the pre-pandemic values (before 1<sup>st</sup> April, 2020) from the during-pandemic lockdown values (1<sup>st</sup> April, 2020 to 31<sup>st</sup> May, 2020) for selected parameters.

*Statistical analysis:* To analyze general questions, frequency distribution was used. To assess the performance indicators, non-parametric tests, viz. Mann-Whitney-Wilcoxon test (two-sample) and Kruskal-Wallis test (> two samples, one-way ANOVA) were performed using PROC NPAR1WAY to test the difference of measures of central tendencies for different classificatory variables. Significant classificatory variables (>two levels) were subjected to Dwass, Steel, Critchlow-Fligner (DSCF) multiple comparison analysis for pairwise ranking. All classificatory variables were further subjected to Wilcoxon signed rank test using PROC UNIVARIATE procedure to find whether COVID-19 pandemic significantly affected the enterprises within the level of classificatory variables (e.g. gender, age group, location, etc.). P-value at 5% level of significance was used for each test of significance. The major problems were identified by calculating Rank Based Quotient (RBQ) of the individual problem based on the ranking done by 44 FPEs. Statistical procedures were performed using MS Excel and SAS 9.3.

## RESULTS AND DISCUSSION

*Discontinuance of employee in FPEs:* In our survey, 52.3% of respondents admitted that they temporarily discontinued full-time employees, whereas, one FPE permanently discontinued their full-time employees in COVID-19. However, no employee lost their job in 36.4% of FPEs. Discontinuance of employee is the most common way for businesses to cope with the crisis. According to a

survey carried out by International Trade Centre on 4217 businesses located in 129 countries during April-June, 2020 the micro, small, medium and large enterprises reduced their employment temporarily by 34%, 42%, 40% and 58%, respectively (ITC 2020).

*Sources of raw material and factors affecting the supply of raw material during COVID-19 pandemic:* For the procurement of raw material from the local market, the markets located outside the state, contract suppliers within the state, contract suppliers of other states and contract farmers within the state, the extent of decrease was 32.5%, 80%, 55.56%, 75% and 38.46%, respectively. Only 4 FPEs had enough stock of raw material to run their enterprise. Regarding factors affecting the supply of raw material during the pandemic, 52.3% respondents stated that high price of raw material in the market was the most important factor followed by non-availability of raw material in the market (45.5%) and transportation problem (40.9%).

*Change in cost of production and mode of selling during COVID-19 pandemic:* The cost of production increased in case of 22.7% FPEs. The high cost of raw material, increased transportation cost and reduced production efficiency were the probable causes for the increased production cost. In a survey conducted in Poland, more than 30% respondents reported an increased cost of production (OECD 2020). However, 45.5% FPEs who managed the business with locally available resources and own vehicles did not experience a significant cost increase.

The sale at its own sales outlet was dropped by 21.74% during pandemic over the pre-pandemic period. Similarly, there was a 61.29% drop in delivery to local shops and departmental stores. The shops and departmental stores were not allowed to open during the lockdown. From lockdown 3.0, partial relaxation was provided by the Government or the local authorities, however, there was a drop-in delivery to local shops probably due to restriction in movement and decreased sale. Consequently, dealers and distributors were also not operational and sale of products through dealers/distributors was reduced by 50%. However, there was a 40% increase in sales through home delivery agents.

*Change in performance of respondent FPEs during COVID-19 pandemic:* A significant reduction in all performance indicators was observed during the pandemic as compared to the pre-pandemic period (Table 1) except the extent of loss, where a significant increase was observed. As compared to pre-pandemic period, the number of FPEs with less than 5 employees increased by 42.86% during the pandemic period. Similarly, the number of FPEs with 6–15 and more than 25 employees has declined by 54.55% and 25%, respectively. The results clearly revealed an increase in unemployment during the pandemic period (Rathore and Khanna 2020, Suryawanshi and More 2020).

In terms of average working days in a week, the number of FPEs working all 7 days in a week dropped by 71.43% during pandemic period. The extent of decrease in the number of FPEs working 6 days, 5 days and 4 days in a week was 77.27%, 33.33% and 50%, respectively,

Table 1 Change in performance (before and during lockdown) of respondent FPEs

Performance Indicator	Wilcoxon Signed Rank Statistic										
	Overall	Gender		Experience level			Age-group of entrepreneurs				
		Male	Female	Less	Medium	More	Young	Mid-aged	Elder		
Number of employees	-150.0**	-18.0**	-68.0**	-22.5**	-18.0**	-14.0*	-52.5**	-18.0**	-1.5		
Average working days in a week	-333.0**	-60.0**	-115.5**	-85.5**	-18.0**	-27.5**	-85.5**	-60.0**	-3.0		
Average working hours in a day	-370.5**	-52.5**	-150.0**	-76.5**	-27.5**	-33.0**	-85.5**	-68.0**	-5.0		
Production of solid / semi-solid products	-430.5**	-68.0**	-162.5**	-85.5**	-33.0**	-39.0**	-105.0**	-68.0**	-7.5		
Production of beverages	-68.0**	-5.0	-39.0**	-7.5	-7.5	-10.5*	-10.5*	-18.0**	-1.5		
Sale of solid / semi-solid products	-430.5**	-68.0**	-162.5**	-85.5**	-33.0**	-39.0**	-105.0**	-68.0**	-7.5		
Sale of beverages	-60.0**	-5.0	-33.0**	-7.5	-5.0	-10.5*	-10.5*	-14.0*	-1.5		
Number of products manufactured	-337.5**	-39.0**	-152.5**	-57.0**	-27.5**	-33.0**	-75.5**	-60.0**	-5.0		
Monthly turnover	-280.5**	-45.5**	-105.0**	-39.0**	-27.5**	-33.0**	-85.5**	-39.0**	-3.0		
Sale	-460.0**	-77.5**	-165.5**	-98.0**	-33.0**	-39.0**	-118.0**	-69.5**	-7.5		
Extent of Loss	495.0**	85.5**	175.5**	105.0**	33.0**	45.5**	126.5**	76.5**	7.5		
N	44	18	26	20	11	13	22	17	5		
Criteria of grouping	--	As declared	As declared	≤ 3 years	3 - 5 years	> 5 years	≤ 40 years	40 - 55 years	> 55 years		
		Location		Number of processing ventures			Number of funding sources			Size of FPEs	
		Valley	Hills	1 Venture	2 Ventures	> 2 Ventures	1 Source	2 Sources	> 2 Sources	Micro	Small
Number of employees		-39.0**	-39.0**	-52.5**	-10.5*	-5.0	-39.0**	-22.5**	-3.0	-52.5**	-27.5**
Average working days in a week		-52.5**	-126.5**	-85.5**	-27.5**	-18.0*	-85.5**	-52.5**	-5.0	-203.0**	-18.0**
Average working hours in a day		-76.5**	-115.5**	-76.5**	-33.0**	-27.5*	-68.0**	-76.5**	-7.5	-189.0**	-33.0**
Production of solid / semi-solid products		-85.5**	-138.0**	-95.0**	-33.0**	-33.0*	-85.5**	-76.5**	-10.5*	-203.0**	-45.5**
Production of beverages		-5.0	-39.0**	-14.0*	-3.0	-10.5*	-10.5*	-14.0*	-3.0	-33.0**	-7.5
Sale of solid / semi-solid products		-85.5**	-138.0**	-95.0**	-33.0**	-33.0**	-85.5**	-76.5*	-10.5*	-203.0**	-45.5**
Sale of beverages		-5.0	-33.0**	-10.5*	-3.0	-10.5*	-10.5*	-14.0*	-1.5	-33.0**	-5.0
Number of products manufactured		-72.0**	-105.0**	-76.5**	-27.5**	-22.5*	-68.0**	-70.5**	-5.0	-138.5**	-45.5**
Monthly turnover		-68.0**	-76.5**	-52.5**	-22.5**	-27.5**	-45.5**	-60.0**	-7.5	-95.0**	-52.5**
Sale		-88.0**	-150.0**	-106.5**	-33.0**	-34.0**	-90.0**	-85.5**	-10.5*	-208.5**	-52.5**
Extent of Loss		105.0**	150.0**	115.5**	33.0**	39.0**	105.0**	85.5**	10.5*	232.5**	52.5**
n		20	24	22	11	13	17	21	6	30	14
Criteria of grouping / example		Near to state capital	Far from state capital	e.g. Fruit processing	e.g. Spice processing + herbal tea	e.g. Meat processing + bakery + chocolate	e.g. Self-finance	e.g. Self-finance + bank loan	e.g. Self-finance + bank loan + Funding from Govt	Monthly turnover ≤ INR 1.0 lakhs	Monthly turnover > INR 1.00 lakhs

Wilcoxon Signed Rank statistic (+ sign represents increase and – sign represents decrease). \* Significant at 5% level of significance, \*\* Significant at 1% level of significance

which shows a significant reduction in operational days. In terms of average working hours per day, a similar trend was observed. There was a 100% decrease in the number of FPEs working >10 h per day during pandemic period followed by a 75% decrease in the number of FPEs working >6–10 h per day mainly due to non-availability of raw material and a decline in the sale.

In terms of change in production volume, the average production of solid (e.g. bakery items, chocolates, etc.) and semi-solid (e.g. jam, jelly, etc.) products declined by 51.34% whereas the average production of beverages dropped by 34.08% from pre-pandemic to pandemic period. The type of processed products manufactured by different FPEs also declined by 33.84% during the COVID-19 pandemic. Similarly, the average sale of solid and semi-solid products was found to decline by 59.41% whereas 32.54% drop was reported in the sale of beverages. Among the FPEs, 77.27% of respondents declared a drop-in sale. In a survey, 84% of respondents reported decrease in the sale during lockdown in Maharashtra (Suryawanshi and More 2020). The results evidently indicate that the COVID-19 pandemic resulted in a significant monetary loss in different FPEs. In our survey, the extent of the loss was high with 45.45% FPEs, whereas, 31.82% and 15.91% FPEs experienced medium and low loss, respectively.

*Classificatory variables wise change in performance of FPEs during COVID-19 pandemic:* The change in performance between pre-pandemic and pandemic period (Table 1) was found to vary within different categories of FPEs (classificatory variables). In case of both male and female foodpreneurs, significant variations were observed in all performance indicators except the production and sale of beverages by male foodpreneurs. The results have shown that COVID-19 pandemic affected the foodpreneurs irrespective of their experience level. In terms of varying number of processing ventures, the changes in performance

indicators were found to be significant for all performance indicators with FPEs having only one venture.

*Comparison of levels of classificatory variables on performance indicators:* We statistically compared the levels of classificatory variables on change in 11 performance indicators. Wilcoxon signed rank test was performed for classificatory variables with two levels (e.g. gender with two levels, viz. male and female), whereas, the Kruskal-Wallis H test was used to compare the classificatory variables with three levels (Table 2). Between valley and hill foodpreneurs, significant differences were found in the sale of solid/semi-solid products and monthly turnover, which might be due to comparatively higher sale of bakery items in valley areas. Significant variation also exists between micro and small enterprise for production and sale of solid/semi-solid products, monthly turnover and extent of loss. The analysis explained that the COVID-19 pandemic has unanimously affected all categories of FPEs in Manipur.

*Problems faced by the FPEs during the COVID-19 pandemic:* Regarding overall problems, non-availability of raw material emerged as most important problem faced by the FPEs (RBQ value 92.42) followed by marketing problem (82.07), non-availability of packaging material (68.43), transportation problem (60.86) and drastic drop in consumer demand (50.00). Dev and Sengupta (2020) stated that MSME businesses have been adversely affected by the disruption of supply chain, exodus of migrant workers, non-availability of raw materials, widespread travel bans, closure of malls, hotels, theatres and educational institutions, etc.

Among the marketing problems, FPEs ranked the closure of stores (RBQ value 88.96) as the major constraint followed by lack of transportation for delivery (82.47), drop in consumer demand (71.43) and high transportation cost (55.19). The enterprises involved in food supply chain faced an unprecedented challenge during pandemic due to restrictions on vehicle movement (Narayanan and Saha

Table 2 Comparison of levels of classificatory variables on change in performance indicators

Performance Indicator	Wilcoxon Statistic, Standardized			Kruskal-Wallis Statistic			
	Gender	Location	Size of FPEs	Experience level	Age-group of entrepreneurs	Number of processing venture	Number of funding source
Number of employees	1.47	-0.48	-0.88	0.21	2.05	2.89	1.14
Average working days in a week	-0.12	0.59	0.85	0.09	1.21	0.53	1.01
Average working hours in a day	1.16	0.70	0.41	1.53	2.58	3.89	0.06
Production of solid / semi-solid products	1.16	-1.36	-3.13**	5.53	1.11	1.19	1.99
Production of beverages	0.97	1.50	-0.28	2.30	2.69	0.97	0.66
Sale of solid / semi-solid products	0.48	-2.06*	-3.06**	4.17	0.69	1.15	1.72
Sale of beverages	0.79	1.23	0.24	1.72	1.41	1.44	0.12
Number of products manufactured	1.06	-0.96	-2.18	11.61*	6.88*	2.81	1.03
Monthly turnover	0.56	-1.77*	-4.50**	3.79	0.76	0.17	2.60
Sale	0.80	0.91	-0.23	3.04	1.00	0.47	1.12
Extent of Loss	-0.03	-1.06	1.67*	2.67	2.36	1.13	2.34

\* Significant at 5% level of significance; \*\* Significant at 1% level of significance

2020) and recurrent closure of wholesale markets (Rawal and Kumar 2020, Chew 2020).

The outcome of the survey evidently revealed the performance of micro and small FPEs in the Manipur state of India during COVID-19 pandemic. Among the 44 FPEs, 29.55% of FPEs were temporarily closed but 63.64% FPEs were partly operational and 6.82% FPEs were fully operational during the pandemic period. Hence, the financial stimulus package of Government of India needs to be implemented in a meaningful manner up to the grassroots level. For FPEs, the revival strategy for rebooting business should first include an accurate and comprehensive analysis of current financial status, assessment of financial risk, access to financial support ecosystem followed by a redefined and realistic business goal. COVID-19 pandemic crisis also showed the potential of the digital ecosystem which should be harnessed by the FPEs. This is the time to reinvent product strategy by introducing new innovations supported by various knowledge partners. Adoption of innovative technology can improve the process efficiency. There is also a scope for improving resilience by crowdsourcing the solution. Every FPEs must put their crisis management plan in place. As Government of India is trying to ensure the ease of doing business, the FPEs must be ready to accept the structural changes in their business. Most importantly, small states like Manipur import a huge volume of food products from other parts of India. However, during the pandemic period the local food supply chain has not been severely hampered due to mobilization of local resources. It showed a post-pandemic prospect to achieve self-reliance in food supply with a dedicated focus on strengthening local food basket, promoting rural foodpreneurship and efficiently utilizing state's own resources.

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