

# Translating the Voice of Customer into Specification- A Study on Domino's India Delivery System During Covid19

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## Abstract

*COVID 19 is an infectious disease caused by a newly discovered Corona virus which causes respiratory illness (SARS). People can catch COVID-19 from others who have the virus. The disease can spread from person to person through small droplets from the nose or mouth which are spread when a person with COVID-19 coughs or exhales. Because of the spreading nature of this virus the world will be working under new norms of SOCIAL DISTANCING and CONTACTLESS ACTIVITY. This new system of working calls for a new and advanced Operational procedure of working to achieve the same effectiveness in our business without getting affected by the virus and to work with lesser close human interaction.*

*Design/methodology/approach: Development of any Product or Process, starts with the customer requirement. Understanding customer requirement for food delivery process and to convert it into product specification is the main objective of this research. This can be done by implementation of House of quality to find the requirement and improve the Product quality, Process capability and Customer satisfaction.*

*Findings: From this research we can conclude that An effective contactless delivery process will retain sales of pizza and other products from Domino's India during COVID19, our customer are willing to have our food product and enjoy during this time of uncertainty, only if all the hygienic and health requirement of the customers are taken care the company will able to retain the customers during this situation.*

*Paper Type: Conceptual paper*

**Keywords:** QFD, House of quality, Food delivery process, COVID-19.

## 1. INTRODUCTION

According to World Health Organisation "COVID-19 is the infectious disease caused by the most recently discovered corona virus. This new virus and disease were unknown before the outbreak began in Wuhan, China, in December 2019. COVID-19 is now a pandemic affecting many countries globally. Corona viruses are a large family of viruses which may cause illness in animals or humans. In humans, several corona viruses are known to cause respiratory infections ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). The most recently discovered corona virus causes corona virus disease COVID-19."

The corona virus has been spread on over 213 countries and has effected approximately 14 million people across the globe, in India it has crossed effecting 1 million population. The Corona virus outbreak has left no sector untouched by its wave of impacts. While the number of people being affected by Covid-19 still continues to climb, it is needless to comprehend the pandemics grave impacts on every corner of the nation's economy. With almost all the segments having fallen prey to the uncertain impacts of Covid-19, even the food and beverage industry in India is responding to the ongoing crisis by bracing itself for Corona virus impacts. The food delivery business by cloud kitchens and restaurants continues to exist, although there is a drastic drop in sales. This is just the silver lining for F&B outlets in the wake of this pandemic. To cope with this situation we need effective operational processes which follows public safety concern and also keep the operations going.

**Domino's Pizza, Inc.** branded as **Domino's**, is an American multinational pizza restaurant chain founded in 1960. The corporation is headquartered at the Domino's Farms Office Park in Ann Arbor, Michigan. The Domino's menu varies by region, Pizza is the primary focus, with traditional, specialty, and custom pizzas available in a variety of crust styles and toppings. Additional entrees include pasta, bread bowls, and oven-baked sandwiches. The menu offers chicken and bread sides, as well as beverages and desserts.

In India **Jubilant Food Works Limited** holds the master franchise for Domino's Pizza in India. India being Domino's 2nd largest market. Domino's Pizza operates approx. 1,325 stores in 282 Indian cities, is the leading pizza

restaurant chain in India. In light of the global outbreak, food and hospitality companies have been forced to make challenging decisions like transitory cessations of F&B operations to abide by the LOCKDOWN and SOCIAL DISTANCING norms. After relaxation in lockdown given in some states and the operations started there has been a drastic drop in sales. This is because the customer are afraid of getting infected by the food or the delivery personnel. This calls for redesigning of the delivery process by adding activities which ensures that the delivery Process, Product and delivery personnel is safe from contamination of virus and to make pizza delivered at home to be a safe option.

In this Research we will be implementing the methodology of “Quality Improvement and Planning” given by Dr Joseph M Juran. Which describes NEW PRODUCT DEVELOPMENT/NEW PROCESS DEVELOPMENT. Development of any Product or Process, starts with the customer requirement. Understanding customer requirement for food delivery process and to convert it into product specification is the main objective of this research. This can be done by implementation of House of quality to find the requirement and improve the Product quality, Process capability and Customer satisfaction.

## 2. Research problem

Spreading nature of CORONA virus is a threat to the world and like every industry in food industry also. This demands for a NEW PROCESS which is effective as well as accepted by the customer and follows new norms of SOCIAL DISTANCING and CONTACTLESS ACTIVITY.

## 3. Research objective

The objective of this research is to convert customer requirement into product specification and to prioritize the product specifications. The research will also focus on to create an efficient operational process to achieve high level of consumer satisfaction by obtaining vital few requirements of customers and will also look into getting insight on where improvement is needed.

## 4. Literature Review

Vincent P. Barabb, E.D. Market Research and Planning General Motors Corporation Detroit, Michigan (1988), *HOUSE OF QUALITY: JUST A FIRST STEP*. In 1988 the article was published in *Harvard business review* about house of quality explains how QFD provides a tool for communicating market knowledge to our internal GM customers in terms that designers, engineers, finance personnel, manufacturers, and marketers find useful and acceptable.

Hauser, J.R. and Clausing, D. (1998), “The House of Quality”, *Harvard Business Review*. The house of quality is a kind of conceptual map that provides the means for inter-functional planning and communications. People with different problems and responsibilities can thrash out design priorities while referring to patterns of evidence on the house’s grid.

Michael, H. *et al.* (2010), “Course Design Using the House of Quality”. The article discuss on Designing of an MBA course through House of Quality and explaining how it can be used.

Hauser, J.R. (1993), “How PURITAN-Bennett used the House of Quality”, *Sloan Management Review*, Spring, Vol. 34 No.3. The case explains how one company successfully used House of Quality and QFD to enhance sales and profit while satisfying customers and reducing cycle time of new product development.

Shahbazi, M. *et al.* (2020). “Food Safety and COVID-19: Precautionary Measures to Limit the Spread of Coronavirus at Food Service and Retail Sector”, *Journal of Pure and Applied Microbiology*. To ensure food safety and limit the spread of coronavirus at food services and retail sector and to ensure delicate and fresh food items are served and delivered to the customers.

Qian, M. and Jiang, J. (), “COVID-19 and social distancing”, *Journal of Public Health: From Theory to Practice*. Paper explaining how social distancing help preventing the spread of Covid 19.

Christian N. Madu, *House of quality QFD in a minute*. Book on House of Quality.

Joseph M Juran, *Juran on Quality by design: The new steps of planning quality into goods and services*. This book explains Juran’s work on Quality planning and the steps of Quality planning, Quality control, Quality improvement.

## 5. Hypothesis generation

### Null Hypothesis

(H0): An effective contactless delivery process will retain number of orders/day during COVID19.

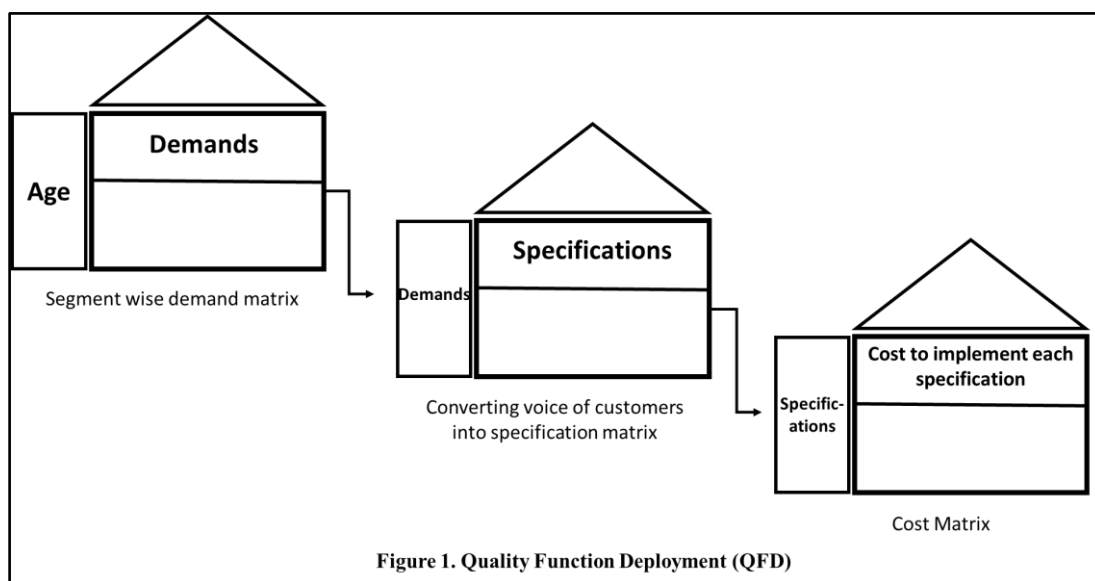
Alternate Hypothesis

(H1):Covid19 will impact the no. of orders/ day and hence reduce the no. of order/day.

**6. Methodology**Quality function deployment (QFD)

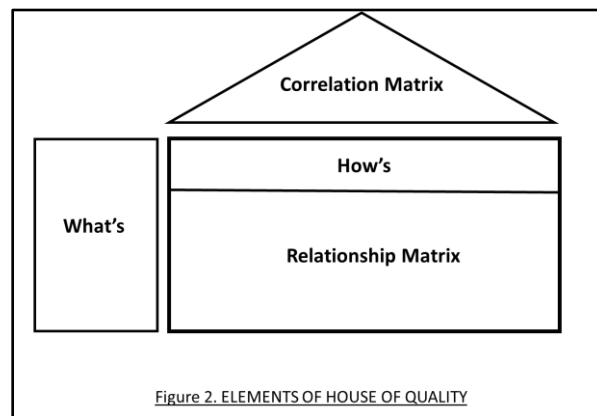
Quality function deployment (QFD) is a method developed in Japan beginning in 1966 by Yoji Akao to help transform the voice of the customer into engineering characteristics/Specifications for a product/process. Yoji Akao, described QFD as a "*method to transform qualitative user demands into quantitative parameters*, to deploy the functions forming quality, and to deploy methods for achieving the design quality into subsystems and component parts, and ultimately to specific elements of the manufacturing process." The author combined his work in quality assurance and quality control points with function deployment used in value engineering.

The process of quality function deployment (QFD) is described in ISO 16355-1:2015.

The house of quality

The house of quality, a part of QFD, is the basic design tool of quality function deployment. It identifies and classifies customer desires (*What's*), identifies the importance of those desires, identifies engineering characteristics which may be relevant to those desires (*How's*), correlates the two, allows for verification of those correlations, and then assigns objectives and priorities for the system requirements. This process can be applied at any system composition level in the design of a product, and can allow for assessment of different abstractions of a system. It is intensely progressed through a number of hierarchical levels of "What's" and How's and analyse each stage of product growth (service enhancement), and production (service delivery)

The output of the house of quality is generally a matrix with customer desires on one dimension and correlated specifications on the other dimension. The cells of matrix table are filled with the weights assigned to the stakeholder characteristics where those characteristics are affected by the system parameters across the top of the matrix. At the bottom of the matrix, the column is summed, which allows for the system characteristics to be weighted according to the stakeholder characteristics. The house of quality appeared in 1972 in the design of an oil tanker by Mitsubishi Heavy Industries.



### Building House of Quality

The house of quality begins with the customer, “*What do customers want?*” These requirements are called customer attributes (CAs). To collect Customer attribute some Japanese companies simply place their products in public areas and encourage potential customers to examine them, while design team members listen and note what people say. However, more formal market research is done via focus groups, in-depth qualitative interviews, survey and other techniques. To bring the customer’s voice to such deliberations, house of quality measures the relative importance to the customer of all CAs. Weightings are based on team members’ direct experience with customers or on surveys. Weightings are displayed in the house next to each CA—usually in terms of percentages, a complete list totalling 100%.

**Table 1. Descriptive Statistics of “What’s”**

	Mean	Std. Deviation	N
Hygiene	9.2810	1.27461	105
Health	9.0905	1.24089	105
Protection	9.4825	1.06817	105
Add-On	8.4619	1.72328	105

From *Table 1* we get the importance of the customer requirement. The rank from 1 to 4 is Protection factor, Hygiene factor, Health factor & Add-on actor and the weight is assigned as 7,5,3,1 respectively.

The next step is, “*How can we change the product?*” The marketing domain tells us what to do, the engineering domain tells us how to do it. Now the vague customer requirement is converted into specific engineering characteristics/activities.

**Table 2. Descriptive Statistics of “How’s”**

	N	Mean
Daily disinfection(sanitize) of kitchen	105	9.57
Disinfection(sanitize) of delivery bag every 4 hour	105	8.99
Staff oxygen level check	105	8.99
Daily temperature check of staff	105	9.35
Temperature check of rider 3 times a day	105	9.20
RIDER wearing mask and face shield	105	9.48
Contact tracing app AROGYASETU installed in their phone of rider	105	8.80
STAFF wearing a mask and face shield	105	9.48
Online payment method is better than cash payment system during covid 19	105	9.50
Providing a sanitizer sachet with your food	105	7.99
Food pack come with an outer disposable bag	105	8.93

*Relationship matrix* is the main body of the HOQ and it is filled with symbols to establish the strength of these relationships. Once the relationship is established the weightage of the Specification/engineering characteristics are put in the bottom of relationship matrix.

**Table 3. Value Assigned**

Mean	7.00 - 7.99	8.00 - 8.99	9.00 -10.00
Values	▲	○	⊖
Corelation Value	1	5	9

$$\text{Absoluteimportance} = \sum (\text{Importance} \times \text{corelationvalue})$$

$$\text{Relative importance} = \frac{\sum (\text{Importance} \times \text{corelationvalue}) \times 100}{\sum (\text{Absoluteimportance})}$$

The relationship matrix is calculated referring to *Table 3* and the formulas above.

*Correlation matrix* is the roof of the HOQ which tells the relation of one specification with other and the effect one have on the other. It is calculated on the basis of Pearson's correlation value.

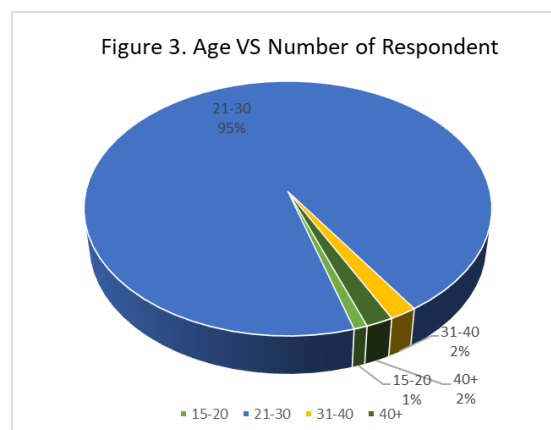
## 7. Sample

The study was conducted on customers and potential customers of Domino's India across Maharashtra and Chhattisgarh. Random sampling technique was used to gather the data. We have distributed 150 questionnaires among the customers and response rate was approximately 70%. The questionnaire was filled by the customers and requested them to fill it properly.

**Table 4. Number of respondent & Age**

Age	Number of Respondent
15-20	1
21-30	100
31-40	2
40+	2

The majority of the respondent about 95% falls under the age of 21-30 years the rest 5% is shared by respondent of age group 15-20 years 1%, 31-40% 2% and 40+ years as 2%.



The validity of the sample is 100% from *Table 5*, the reliability of the data is high i.e. there is relatively high internal consistency as the Cronbach's Alpha in *Table 6* is calculated as 0.762.

**Table-05-Case Processing Summary**

		N	%
Cases	Valid	105	100.0
	Excluded <sup>a</sup>	0	.0
	Total	105	100.0

a. Listwise deletion based on all variables in the procedure.

**Table-06-Reliability Statistics**

Cronbach's Alpha	N of Items
.762	14

## 8. Research instrument

There are four variables in this study and each of them has separate set of questions. There are 21 questions including background information of the respondent that were used to measure the variables of the above study. Questionnaire was constructed on 10 points Likert scale where 0=Less important, 5=Neutral and 10=Highly important.

## 9. Statistical tool

The tool that was used to measure the quantitative data is SPSS PASW Statistics 18. The collected data was then analysed through various descriptive statistics, Comparison of mean, Scaling tools etc.

## 10. Result and discussion

These results clearly indicate that customer satisfaction as well as customer retention can be improved by having a hygienic and healthy delivery process. This can be improved by addition of some activities in the existing process, although it may require firms to adjust with the new systems, particularly the adoption of all the requirements by customer as well as government.

The result of this research is divided into 2 parts the first part discuss about the House of Quality and the later part discuss about the Customer retention by Dominos India during Covid 19.

### Part-I

The data collected was total of 105 responses the data is thoroughly analysed and the first thing is to understand the “what?” i.e. the customer requirement to understand that we make Voice of customer table.

By doing brainstorming and asking respondent about their need or requirement, we got some requirement and compiled it into customer attribute.

**Table 7. Voice of Customer Table**

Voice of Customer(Requirements)	Customer attribute (CA)	Mean	Relative weight
1. Disinfect corona virus at Kitchen. 2. Keeping the delivery bag safe.	Hygiene Requirement	9.37	High
1. Staff must be checked for symptoms. 2. Staff must be checked for fever. 3. Staff must be checked for oxygen level. 4. Rider must be checked for fever. 5. staff and rider must follow government guidelines.	Health Requirement	9.08	Medium
1. Use of protective gear by rider. 2. use of protective gear by staff. 3. Online payment must be used. 4. rider must follow social distancing.	Protection Requirement	9.48	Very high
1. Sanitizer must be provided wit the food or by the rider. 2. They should sent the food with extra outer packet to avoid contamination.	Add-On Requirement	8.46	Low

The four customer attribute we got from *Table 7* is:

1. Hygiene Requirement
2. Health Requirement
3. Protection Requirement
4. Add-on Requirement

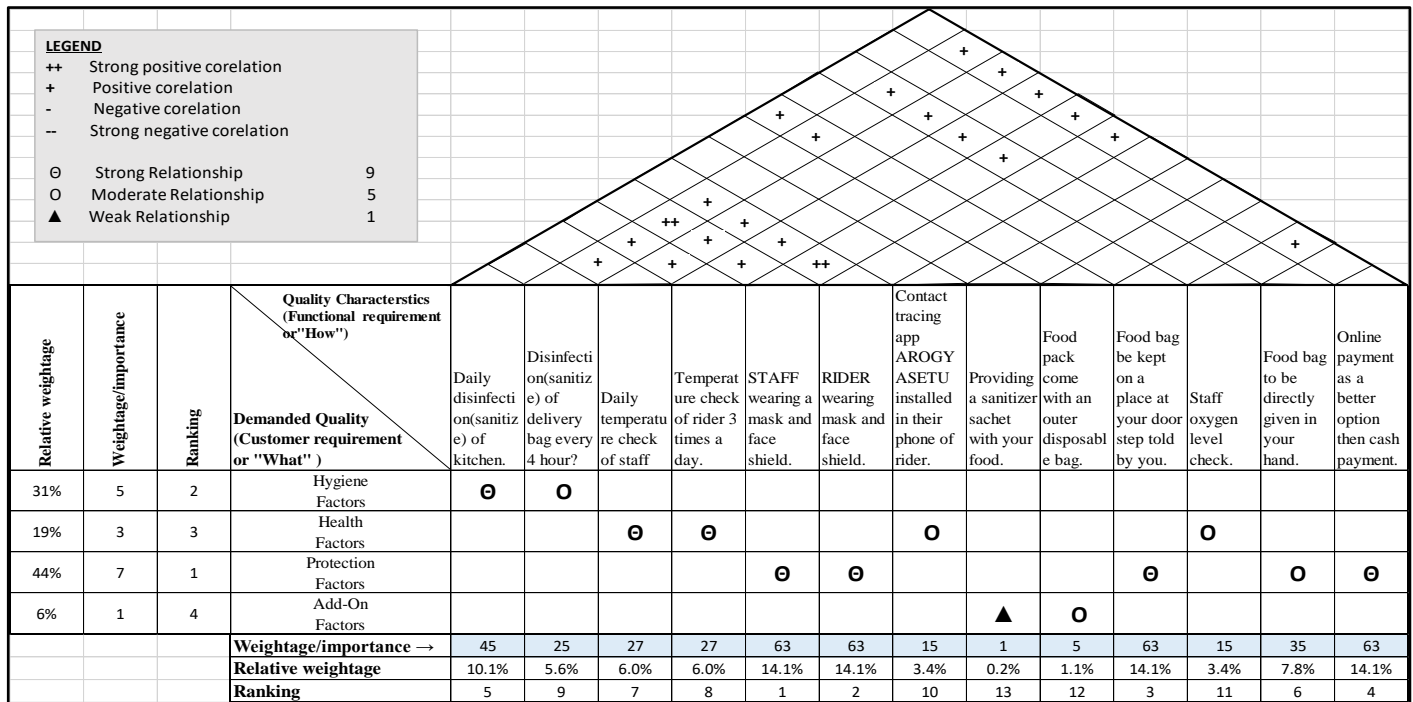
In the research survey questionnaire we have questions about all these four factors each having 2-5 questions, The respondent were asked the importance of that factor on the likert scale of 0-10 (0= least important

and 10= most important) taking the average of that attribute we got the mean values for Customer attributes and thus we can give ranking to this customer attribute/ Voice of customer.

The ranking or importance is calculated to see which factors are most important so that the in the New Process Development process we can start with that most important customer attributes.



Figure 4. The House of Quality



From Figure 4 "The House of Quality" we get specific activities that are the most important to the customer in the situation of COVID-19 for the delivery process of their food.

Table 8. Specification

S No.	Specifications	Relative weightage	Cumulative Weightage
1	STAFF wearing a mask and face shield.	14.1%	14.1%
2	RIDER wearing mask and face shield.	14.1%	28.2%
3	Food bag be kept on a place at your door step told by you.	14.1%	42.3%
4	Online payment as a better option than cash payment.	14.1%	56.4%
5	Daily disinfection(sanitize) of kitchen.	10.1%	66.4%
6	Food bag to be directly given in your hand.	7.8%	74.3%
7	Daily temperature check of staff	6.0%	80.3%
8	Temperature check of rider 3 times a day.	6.0%	86.4%
9	Disinfection(sanitize) of delivery bag every 4 hour?	5.6%	91.9%
10	Contact tracing app AROGYASETU installed in their phone of rider.	3.4%	95.3%
11	Staff oxygen level check.	3.4%	98.7%
12	Food pack come with an outer disposable bag.	1.1%	99.8%
13	Providing a sanitizer sachet with your food.	0.2%	100.0%



The sequence of factors can be seen on *Table 8* Which we got from house of quality. From this table we can decide which activity is most use full for the process to be an effective process from customer's point of view.

The main 80% of the factors i.e. Serial No. 1 to 7 are the critical factor and they must be fulfilled to retain the customers during COVID-19 to ensure that the main requirements of the customer are carried in the delivery process to ensure safe process free of contamination.

## PART II

**Table 9. Descriptive**

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Order Before Covid19	99	2.7727	2.47567	.24881	2.2790	3.2665	.00	15.00
Order During Covid19	94	2.7043	1.87404	.19329	2.3204	3.0881	.00	10.00
Total	193	2.7394	2.19787	.15821	2.4273	3.0514	.00	15.00

From the survey result *Table No. 9* we can see that before COVID-19 out of 105 respondent 99 responses tells that are customers of Domino's India as they have ordered from Domino's and the mean order is 2.77 orders per month. Also after the end of survey questionnaire by educating the respondent along with asking question when asked about weather if all the hygiene measures are taken will they order from dominos 94 out of 105 respondent agreed and the mean of order that they are expressing that they may do during COVID 19 is 2.70. From this result we can see that 5 of the customer refuse to order during covid 19.

Now we apply One Way ANOVA test on the response of number of order that the customer made before corona virus spread and how many times in a month will they order during COVID 19.

**Table 10. One Way Anova**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.226	1	.226	.047	.829
Within Groups	927.255	191	4.855		
Total	927.481	192			

With reference to Table no. 10 we can see that:

$$P_{\text{calculated}} = 0.829$$

$$P_{\text{critical}} = 0.50$$

$$P_{\text{calculated}} > P_{\text{critical}}$$

Hence we do not reject *NULL Hypothesis*.

$$\text{Also, } F_{\text{Calculated}} = 0.047$$

$$F_{\text{Critical}} = 3.89$$

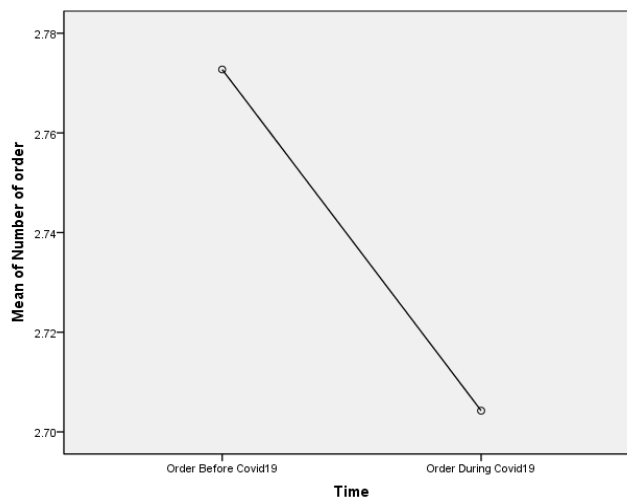
$$F_{\text{Calculated}} < F_{\text{Critical}}$$

Hence we do not reject *NULL Hypothesis*.

From this *One Way Anova* test of means we can say that we do not reject the null hypothesis.

H0: An effective contactless delivery process will retain number of orders/day during COVID19.

Which implies there is no significance difference in the mean of the orders before Covid 19 and during Covid 19 for the sample. Hence if all the hygienic and health requirement of the customers are taken care the company will able to retain the customers during this situation.



**Figure 5. Mean Plot**

The Graph shows the values of means of number of order by the respondents before and during Covid-19.

## 11. Conclusion

The food service industry has been largely affected by COVID-19 and as per the current situation it looks like we have to fight with this virus for a little longer time till the time we need to maintain our operations process.

We can see from the result of this research by implementing some changes in the process of food delivery and kitchen safety we can assure our customer that our food is safe from COVID-19 virus and also being the leader of our sector it is a responsibility of Domino's India to ensure that the food that they are serving at their customer's door step is completely hygienic and safe.

For this purpose, this research incorporates the QFD technique to overcome the problem of vagueness present in the evaluation of relative importance of the requirements of safe food by the customers. The health and objectives were considered to be the customer requirements (WHATs), and controlling & preventive techniques of covid-19 were represented as technical requirements (HOWs) in Quality Function Deployment. Statistical measures are used to determine the extent to which the customer requirements match with the specifications, identify in other words, the relationship matrix between controlling & preventive techniques of covid-19 (HOWs) and the customer requirements (WHATs).

After carrying out the analysis, the most important customer requirement was found to be the protection factors that the rider and staff must use during the process. Which means the customer are more concern about how well the staff of Domino's India are following the guidelines of government about the precautionary measures that are to be taken care during Covid-19. In HOQ we can also see which specification are to be taken care at the first place to provide customer satisfaction and which are the least required specification.

Also from this research we can conclude that An effective contactless delivery process will retain sales of pizza and other products from Domino's India during COVID19, our customer are willing to have our food product and enjoy during this time of uncertainty, only if all the hygienic and health requirement of the customers are taken care the company will able to retain the customers during this situation.

## 12. Further Scope

The research is based on a prerequisite to cope with a global pandemic and we are hoping that this situation become stable as soon as possible.

The further scope of this research is not how we prevent the spread of a virus in our delivery process, but it can be taken further to analyse how well we can convert the voice of customer into specification with the use of Quality Function Deployment and House of Quality.

House of quality is an excellent tool to analyse the vague demands of a customer, if we can effectively convert those demands into specification that increase the effectiveness of our process and in turn creates customer satisfaction and higher sales.

The further scope of this research is to take quality management in management into every department of an organisation to understand the customer, requirements and process and to lead the organisation towards continual improvement.

## 13. Limitations

1. Since the research was carried out during the global pandemic of Corona virus, the research was conducted in online format hence no personal interaction with the respondent happened.
2. More data and insight could have been collected through personal interview with customers, which was not possible during this time.
3. The time period for the research was limited, Since the topic was about safety from COVID-19 it has to be researched as soon as possible so that it could be useful for public during this time.

## 14. Reference

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