

## Did the shopper rethink organic food during Covid? A case study in North Karnataka

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### Abstract

This preliminary study tries to evaluate the effect of COVID-19 on the opinions and behaviour of people towards organic food. For this purpose, a quantitative study was conducted to examine the constructs of the theory of planned behaviour (TPB; Ajzen, 1991) on the consumption intention of organic food. The COVID-19 factor was introduced as an extension to the TPB framework, to check if there was any change in the constructs of the theory. 594 respondents were administered through a structured questionnaire in the North Karnataka region. The items were grouped under the constructs and a CFA analysis was conducted. The validity, reliability, goodness of fit index of the constructs and model were calculated and found to be good. Through mediation analysis, the relationships were examined and found that there was a change in the attitude construct. Thus, concluded as the COVID-19 situation has surely made people to positively look at organic food. The shopper is indeed are rethinking organic food during Covid-19.

**Keywords:** theory of planned behaviour, COVID-19, organic food, structural equation modelling, mediation

**JEL code:** M00, M30, M31, Y10

### Introduction

On December 12, 2019, the world came across the novel coronavirus disease (COVID-19). COVID19 is an infectious disease that causes severe acute respiratory syndrome coronavirus 2. (SARS-CoV-2). The first known case in the world was confirmed in Wuhan, China. Within no time of the outbreak, the virus rapidly swept across the globe. The World Health Organisation (WHO) on March 11, 2020, announced this outbreak was a pandemic. In India, COVID-19 infection first was reported on January 27, 2020. A 20-year female in Kerala (Andrews, et al., 2020). Since then, the India Government and other organisations had taken appropriate measures to control the spread of coronavirus. These measures comprised of closing schools and places where people gather, such as bars, shopping malls, cinemas, gymnasiums and other sports facilities (Satici, Saricali, Satici, & Griffiths, 2020). The Government of India asked its citizens to voluntary quarantine themselves to reduce the spread of infections, which was termed as "Lockdown".

Lockdowns in India was imposed in phases, Phase 1 (25<sup>th</sup> March – 14<sup>th</sup> April, 2020), Phase 2 (15<sup>th</sup> April – 3<sup>rd</sup> May), Phase 3 (4<sup>th</sup> May – 17<sup>th</sup> May), Phase 4 (18<sup>th</sup> May – 31<sup>st</sup> May). To resume the commercial activities, Unlock 1 (1<sup>st</sup> June – 30<sup>th</sup> June), Unlock 2 (1<sup>st</sup> July – 31<sup>st</sup> July), Unlock 3 (1<sup>st</sup> August – 31<sup>st</sup> August), Unlock 4 (1<sup>st</sup> September – 30<sup>th</sup> September), Unlock 5 (1<sup>st</sup> October – 31<sup>st</sup> October), Unlock 6 (1<sup>st</sup> November – 30<sup>th</sup> November, 2020).

The virus has been mutating from COVID-19 strain to Delta strain to Omicron strain presently. Due to the occurrence of the COVID19 pandemic, many people were infected. The confirmed cases from 27 January 2020 to the beginning of December 2021 were 3,47,46,838 and 4,77,554 people had lost their lives (WHO, 2020). Doctors have been advising people to eat the right foods in the right amounts, to stay healthy and improve their immune system. During the COVID-19 pandemic times, people have changed a lot in their daily diet.

Dietitians are advising people to avoid highly processed and packaged foods, high-fat foods, and saturated fat-rich foods, as they not only weaken immunity but also impair the body's ability to fight infections. Foods such as fresh seasonal fruits and vegetables, along with protein-rich dals, pulses or lean meats, and whole grains were recommended during the pandemic.

The Government, with the WHO and Health and Safety Administration in India, issues certain best actions to take to slow COVID19 transmission include:

- Social distancing (6 feet between people)
- Stay home,

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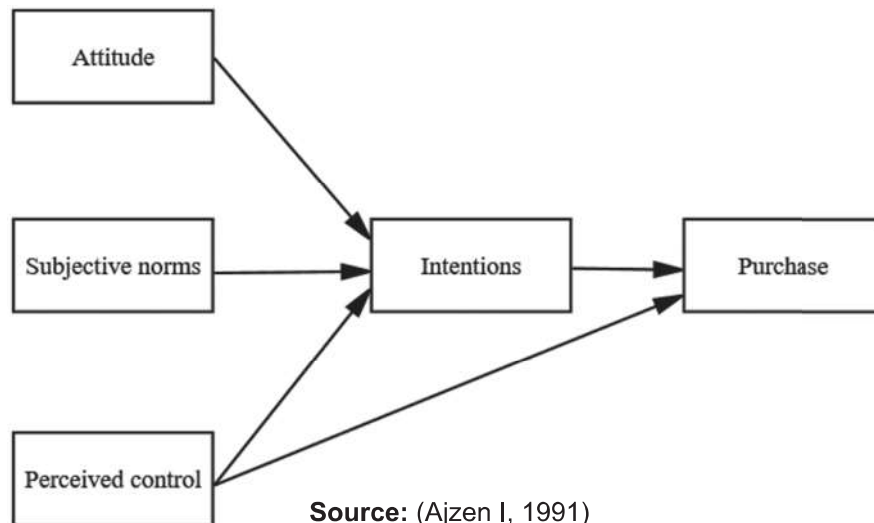
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- Avoid touching your face,
- Wash your hands often with soap for 20 seconds each time,
- Wear a cloth mask,
- Eat healthy meals on a regular basis.

## Literature Review

The framework of this study is based on TPB (Ajzen, 1991). This theory links attitudes and other motivational factors with behavioural intentions with actual behaviour. In a particular situation, an individual's intention to engage in a behaviour is well predicted by the TPB theory. TPB is effective in predicting and explaining a variety of health-related behaviours and intentions. (Mohan J. & Dutta-Bergman, K, 2005; Sniehotta, 2009). The composition of TPB theory includes attitudes towards organic food, subjective norms, and perceived behavioural control. The intent to do/do not (buy) something is the attitude towards it, the perceived social impact/pressure (subjective norms) of doing it, and the perceived control (perceived behaviour) of an individual's specific behaviour. It depends on control). Perceived behavioural control has a direct impact on purchasing intent.

**Figure 1. Theory of planned behaviour**



The TPB model has been used to study different behaviours, much is food-related research. The reports emphasised on a healthy diet (Paisley, Lloyd, H., Sparks, P, & Mela, D.J., 1995; Paisley & Sparks, P., 1998), organic food consumption (Sparks & Shepherd, R, 1992; Ajzen & Timko, C., 1991) and health-related eating behaviour (Conner & Sparks, P, 1996).

## Attitude towards the Behaviour

Development and growth of beliefs are the resultant of attitudes, based on the expectancy-value theory (Fishbein M., 1967; Fishbein & Ajzen, I., 1975) Ajzen and Fishbein (2008), attitudes were estimated. A study by Saba and Messina (2003) found that consumers were willing to consume organic fruits and vegetables using attitude composition. For Italians, the attitude was an important indicator of their intention to eat organic fruits and vegetables. Similarly, the Danish community, (Thøgersen, 2009) found that the consequences of consumption of organic food influenced attitudes.

## Subjective Norm or Social Norms

Humans are social beings and long to belong. Hence tend to live and work in groups. Subjective norm is a construct that studies the pressure imparted by societal forces on a person's engagement or non-engagement in a particular behaviour. The determination of subjective norms is assumed to be the whole of important caregiver normative beliefs (Ajzen, 2006). In their study, (Vermeir & Verbeke, W., 2006) even though people had displayed weak personal attitudes towards organic dairy products, the desire to stay in the group showed a strong will to buy organic dairy products. In their research,

(Thøgersen, 2007; Chen, 2007; Dean, Raats, M.M., & Shepherd, R., 2008) subjective norms had a significant positive relationship with an intention to buy organic food.

### Perceived Control

Perceived control over behaviour explains the gap between attitudes towards behaviour and the behaviour itself (Ajzen I., 2005). People recognize that the ability to perform or not perform an action is determined by believing in the existence of factors that can help or block the execution of the action (Ajzen I., 2006; Dean, Raats, M.M., & Shepherd, R., 2008) in their research found a significant positive effect of perceived control on the intention to buy organic apples.

### Interaction between Intention and Behaviour

The authors Tarkiainen and (Tarkiainen & Sundqvist, S., 2005; Thøgersen, 2007; Saba & Messina, F., 2003), and many other studies have learnt the interaction between intention and behaviour is positive and significant.

### Explaining the Relationship in TPB

There are five configurations:

1. Attitude toward action
2. Subjective norms
3. Perceived control
4. Intention to purchase
5. Purchase behaviour
  - Attitude towards the behaviour affects the behaviour. If the person, when having a favourable appraisal, would intend to perform, and if unfavourable he would not act.
  - Subjective norm due to social pressure a person is performing or not performing a given behaviour. When the person feels that his social group would consider when a particular behaviour is performed then he would intend to perform, and if the group would not consider he would not act.
  - Perceived behavioural control is based on the basic nature of a human being. It is based on how the person perceives a particular behaviour. If he feels at ease then he would intend to perform, and if difficult, he would not act.
  - Intention to purchase (behavioural intention), which is the total of the motivational factors that influence behaviour. Positive attitudes, positive viewpoints from the social group, and ease of action will arouse a positive intent to act. As the intention strengthens in engaging in a given behaviour, the performance of that behaviour is more expected.

During the COVID-19 times, people have increased their intake of organic food (Eckles, 2020; Askew, 2020; Singh, 2021; Guest, 2021). The COVID-19 construct has been introduced in the TPB model as a mediator between the constructs. The change in the relationship between the constructs is studied. A mediating variable (COVID-19) explains the process, of how the various constructs are related in times of COVID.

### Research Methodology

The purpose of this study is to investigate the effect of COVID 19 on the composition of the TPB model concerning the purchase of organic foods. Previous studies have observed that attitudes, subjective norms, and perceived behavioural control have a significant positive impact on intent to purchase organic products. This gives us a positive outlook on the actual purchase. To this end, we surveyed a sample of 594 respondents from the Northern Karnataka region to investigate the causal relationships between the components in the context of COVID 19. Primary data was collected from respondents over the age of 18 using a simple random sampling method. The questionnaire items were designed on a five-level Likert scale where 1 is "strongly disagree" and 5 is "strongly agree", along with demographic questions. Based on previous research, in consultation with industry experts, the questions were created about the individual constructs.

The data collected was imported into SPSS software. The data that was collected was checked for any missing values. Further on, the data were directly subjected to confirmatory factor analysis (CFA) using AMOS software. The criteria for

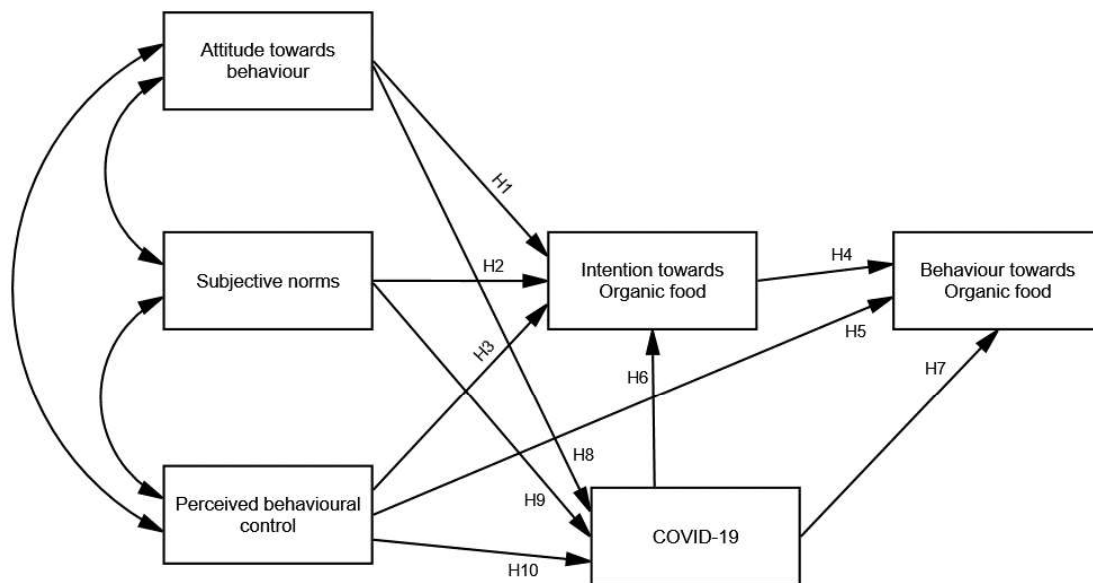
the goodness of fit, validity and reliability were checked. These constructs were rearranged to form the theoretical model of the study (the extended theory of planned behaviour. To measure the effect of COVID-19 on the constructs; COVID-19 was considered as a mediator between the constructs. Using a bootstrap with 2000 samples at a 95% bias-corrected confidence interval, the direct and indirect effects were calculated and interpreted.

COVID19 is considered an intermediary between constructs because COVID19 intervenes between constructs and people have changed their way of looking at things. Therefore, the arbitration effect can be seen in the difference between the direct and indirect effects of attitudes towards the intention to purchase organic products, subjective norms, and perceived behavioural control. The moderation effect was not considered in this study because the items were based on general questions about attitudes, subjective norms, perceived behavioural control, and intent to purchase organic foods. The COVID19 construct is the only construct dealing with organic food shopping in the COVID era.

The research attempts to answer the question, are people changing their views regarding organic food during COVID19 times. Therefore, the sole purpose of this study was to investigate the effect of COVID 19 on the consumption/purchase of organic foods.

## Hypotheses and Theoretical Model of the Study

Figure 2. Theoretical model (Extended TPB)



Source: Researchers own.

### H<sub>g</sub>: General interaction of the constructs

- H<sub>g1</sub>: Attitude towards organic food has a significant effect on buying behaviour through intention (H<sub>1</sub> x H<sub>4</sub>)
- H<sub>g2</sub>: Subjective norms in relation to organic food have a significant effect on buying behaviour through intention (H<sub>2</sub> x H<sub>4</sub>)
- H<sub>g3</sub>: Perceived behavioural control in relation to organic food has a significant effect on buying behaviour through intention (H<sub>3</sub> x H<sub>4</sub>)
- H<sub>g4</sub>: Perceived behavioural control in relation to organic food has a significant effect on buying behaviour (H<sub>5</sub>)
- H<sub>g5</sub>: COVID-19 construct has a significant effect on intention towards organic food (H<sub>6</sub>)
- H<sub>g6</sub>: COVID-19 construct has a significant effect on purchase behaviour towards organic food (H<sub>7</sub>)
- H<sub>c</sub>: Interaction of the constructs during COVID-19
- H<sub>c1</sub>: During COVID-19 times, attitudes towards organic food had a significant effect on buying behaviour through intention (H<sub>8</sub> x H<sub>6</sub> x H<sub>4</sub>)

- $H_{c2}$ : During COVID-19 times, subjective norms in relation to organic food had a significant effect on buying behaviour through intention ( $H_9 \times H_6 \times H_4$ )
- $H_{c2}$ : During COVID-19 times, perceived behavioural control with relation to organic food has a significant effect on buying behaviour through intention ( $H_{10} \times H_6 \times H_4$ )
- $H_{c4}$ : Perceived behavioural control in relation to organic food has a significant effect on buying behaviour through COVID-19 ( $H_{10} \times H_7$ )

## Sample Design

Rule of 10 proposed by (Nunnally & Bernstein, I.H., 1984), states that for SEM the sample size must be ten times the indicators present in the model. Hence, this study should contain a minimum of 410 samples (41 indicators by 10 observations). The actual sample size collected was 594 observations. Therefore, the sample size is adequate.

## Data Analysis and Interpretation

**Table 1. Descriptive statistics: Gender**

	Frequency	Percent
Male	313	52.70
Female	281	47.30
<b>Total</b>	<b>594</b>	<b>100.00</b>

*Source: Data analysis*

**Table 2. Descriptive statistics: Age**

	Frequency	Percent
Less than 20 years	22	3.70
21-30	103	17.30
31-40	217	36.50
41-50	185	31.10
51 and above	67	11.30
<b>Total</b>	<b>594</b>	<b>100.00</b>

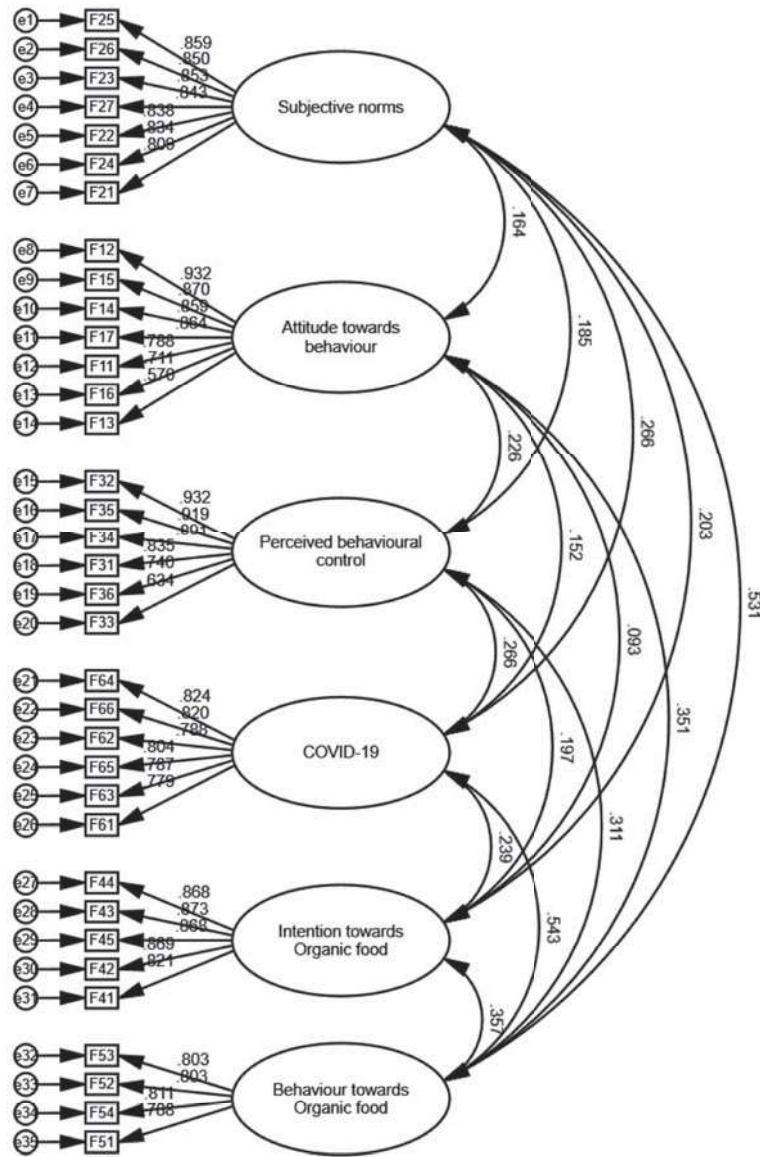
*Source: Data analysis*

**Table 3. Descriptive statistics: Education**

	Frequency	Percent
Less than SSLC	42	7.10
Up to Preuniversity	144	24.20
Graduate	194	32.70
Post Graduate	151	25.40
Others	63	10.60
<b>Total</b>	<b>594</b>	<b>100.00</b>

*Source: Data analysis*

Figure 3. Confirmatory factor analysis (Measurement Model)



Source: Data analysis

Table 4. Model identification calculation

Where;  $S = \frac{1}{2} \times Ov(Ov+1)$

Particulars	Number
Known parameters	
Number of observed (Ov)	35
Non-redundant parameter (S)	630

Source: Data analysis

Known parameters to be estimated	Number
Number of observed variables	35
Unlabeled weights	29
Latent factor	6
Covariances	15
Total (Kp)	<u>85</u>
Degrees of freedom (S – Kp)	545

Source: Data analysis

Degrees of freedom calculated by the formula outlined by Rigdon (1994)

**Equation 1. Calculation of degrees of freedom**

$$df = [m*(m+1)/2] - [2*m] - [X * (X-1)/2]$$

where m = number of indicators and X = number of exogeneous latent constructs

$$\backslash df = [35 \times (35+1)/2] - [2 \times 35] - [6 \times (6-1)/2]$$

$$df = 630 - 70 - 15 = 545$$

The calculated degrees of freedom (df = 545) also match the AMOS output. Hence, the model is over-identified and has more observed items than the parameters to be estimated.

### Model Reliability & Validity

It is very important to evaluate the reliability and validity of the model. The calculation of the validity of the configuration is performed. Reliability is analysed using Cronbach's alpha coefficient and convergence, discrimination, and predictive validity. We analysed the Multitrait-Multi method Matrix to evaluate the validity of the measurement and structural model configuration.

### Convergent validity

The convergent validity determines if all the indicators are properly measuring the said construct (internal consistency). The convergent validity is measured by calculating the Average Variance Extracted (AVE) which should be more than .500 (Fornell & Larcker, D.F., 1981)

### Discriminant validity

The discriminant validity determines if all the constructs differ from each other. The discriminant validity is measured by calculating the composite reliability (CR) which should be more than .800 (Hair, Black, W.C, Babin, B.J., Anderson, R.E., & Tatham, R.L., 2010).

### Predictive validity

The predictive validity determines if the constructs are predicted as planned in the model. The standardised weights between the constructs should have a probability less than .05 in the structure model.

**Table 5. Standardized Regression Weights**

			Estimate	S.E.	C.R.	P
F25	<---	SUB	0.859			
F26	<---	SUB	0.850	0.037	27.180	***
F23	<---	SUB	0.853	0.036	27.380	***
F27	<---	SUB	0.843	0.037	26.777	***
F22	<---	SUB	0.838	0.036	26.518	***
F24	<---	SUB	0.834	0.036	26.307	***
F21	<---	SUB	0.809	0.036	24.950	***
F12	<---	ATT	0.932			
F15	<---	ATT	0.870	0.027	33.729	***
F14	<---	ATT	0.859	0.026	32.619	***
F17	<---	ATT	0.864	0.027	33.106	***
F11	<---	ATT	0.788	0.027	26.807	***
F16	<---	ATT	0.711	0.030	22.125	***
F13	<---	ATT	0.570	0.032	15.810	***
F32	<---	PER	0.932			
F35	<---	PER	0.919	0.025	39.669	***

			Estimate	S.E.	C.R.	P
F34	<---	PER	0.891	0.024	36.148	***
F31	<---	PER	0.835	0.026	30.633	***
F36	<---	PER	0.740	0.028	23.837	***
F33	<---	PER	0.634	0.028	18.494	***
F64	<---	COV	0.824			
F66	<---	COV	0.820	0.042	23.229	***
F62	<---	COV	0.788	0.041	21.980	***
F65	<---	COV	0.804	0.042	22.611	***
F63	<---	COV	0.787	0.042	21.903	***
F61	<---	COV	0.779	0.040	21.623	***
F44	<---	INT	0.868			
F43	<---	INT	0.873	0.035	28.805	***
F45	<---	INT	0.868	0.035	28.470	***
F42	<---	INT	0.869	0.035	28.517	***
F41	<---	INT	0.821	0.035	25.745	***
F53	<---	BEH	0.803			
F52	<---	BEH	0.803	0.044	21.051	***
F54	<---	BEH	0.811	0.046	21.315	***
F51	<---	BEH	0.788	0.047	20.582	***

Source: Data analysis

Where;

SUB: Subjective norms

ATT: Attitude towards behaviour

PER: Perceived behavioural control

COV: COVID-19

INT: Intention towards Organic food

BEH: Behaviour towards Organic food

\*\*\*: p-value < 0.001

The Multitrait-Multimethod Matrix helps in assessing construct validity (Campbell & Fiske, 1959). The off-diagonal relate to the correlations of the constructs and the diagonal is the square route of AVE. For achieving construct validity, the diagonal values should be greater than the off-diagonal values for the particular construct.

**Table 6. Model Validity Measures**

	CR	AVE	SUB	ATT	PER	COV	INT	BEH	$\alpha$
SUB	0.944	0.707	0.841						0.926
ATT	0.928	0.652	0.164	0.807					0.944
PER	0.930	0.692	0.185	0.226	0.832				0.929
COV	0.915	0.641	0.266	0.152	0.266	0.801			0.934
INT	0.934	0.740	0.203	0.093	0.197	0.239	0.860		0.877
BEH	0.878	0.642	0.531	0.351	0.311	0.543	0.357	0.802	0.914

Source: Data analysis (Hu & Peter M. Bentler, 1999)

From the above table, all the estimates are above .700, CR values are above the threshold limit of .800, AVE > .500 and the Cronbach's alphas are greater than .700 (Nunnally & Bernstein, I.H., 1984). From the Multitrait-Multimethod Matrix, diagonal values are higher than the off-diagonal values. Hence, we conclude that all the latent constructs that are predicted by their respective indicators are valid and reliable.

**Table 7. Model Fit Measures**

Measure	Estimate	Threshold	Interpretation
CMIN	738.640	--	--
DF	545	--	--
CMIN/DF	1.355	Between 1 and 3	Excellent
CFI	0.988	>0.95	Excellent
SRMR	0.040	<0.08	Excellent
RMSEA	0.024	<0.06	Excellent
PClose	1.000	>0.05	Excellent

Source: Data analysis

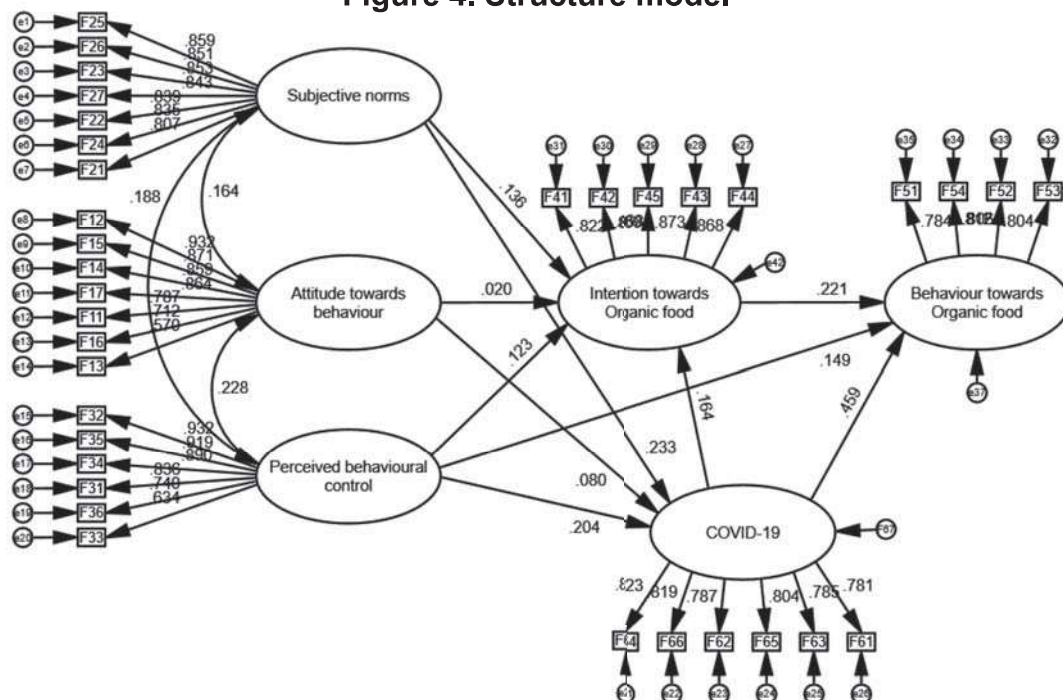
**Table 8. Cut-off Criteria**

Measure	Terrible	Acceptable	Excellent
CMIN/DF	> 5	> 3	> 1
CFI	<0.90	<0.95	>0.95
SRMR	>0.10	>0.08	<0.08
RMSEA	>0.08	>0.06	<0.06
PClose	<0.01	<0.05	>0.05

Source: Hu & Peter M. Bentler, 1999

Fit index cut-off criteria in covariance structure analysis: Traditional criteria and new alternatives recommend a combination of measurements. Therefore, all indicators of model fit are good. The measurement model has been rearranged to take the form of a theoretical (structural) model.

**Figure 4. Structure model**



Source: Data analysis

The structure model's connection from one construct to another (straight lines) represents the hypothesis. In structural equations, the acceptance and rejection of hypotheses is based on p-values. If the p-value is less than 0.05, the hypothesis is accepted and vice versa. AMOS software provides a p-value for the output along with regression estimation. To analyse the effects of COVID19 on organic food intent and organic food purchasing behaviour, researchers analysed both the direct and indirect effects of COVID19 contraction. The indirect effect is calculated by multiplying the direct effects in the particular path. Using bootstrap with 2000 samples at a 95% bias-corrected confidence interval, the direct and indirect effects with their p-values were calculated and interpreted.

**Table 9. Standardized Regression**

Path			Estimate	P
COV	<---	PER	0.204	< 0.001
COV	<---	SUB	0.233	< 0.001
COV	<---	ATT	0.080	0.064
INT	<---	COV	0.164	< 0.001
INT	<---	SUB	0.136	0.002
INT	<---	ATT	0.020	0.642
INT	<---	PER	0.123	0.006
BEH	<---	INT	0.221	< 0.001
BEH	<---	COV	0.459	< 0.001
BEH	<---	PER	0.149	< 0.001

*Source: Data analysis*

**Table 10. Testing of TPB constructs**

Sl. No.	Hypothesis	Parameters	Accept/Reject
H <sub>g1</sub>	Attitude towards organic food has a significant effect on buying behaviour through intention	0.004 (> 0.05)	Rejected
H <sub>g2</sub>	Subjective norms in relation to organic food have a significant effect on buying behaviour through intention	0.030 (< 0.05)	Accepted
H <sub>g3</sub>	Perceived behavioural control in relation to organic food has a significant effect on buying behaviour through intention	0.027 (< 0.05)	Accepted
H <sub>g4</sub>	Perceived behavioural control in relation to organic food has a significant effect on buying behaviour	0.243 (0.001)	Accepted
H <sub>g5</sub>	COVID-19 construct has a significant effect on intention towards organic food	0.164 (< 0.001)	Accepted
H <sub>g6</sub>	COVID-19 construct has a significant effect on purchase behaviour towards organic food.	0.459 (< 0.001)	Accepted

*Source: Data analysis*

**Table 11. Testing the interactions of TPB constructs during COVID-19**

Sl. No.	Hypothesis	Parameters	Accept/Reject
H <sub>C1</sub>	During COVID-19 times, attitudes towards organic food had a significant effect on buying behaviour through intention	0.009 ( $< 0.05$ )	Accepted
H <sub>C2</sub>	During COVID-19 times, subjective norms in relation to organic food had a significant effect on buying behaviour through intention	0.038 ( $< 0.001$ )	Accepted
H <sub>C3</sub>	During COVID-19 times, perceived behavioural control with relation to organic food has a significant effect on buying behaviour through intention	0.034 ( $< 0.001$ )	Accepted
H <sub>C4</sub>	Perceived behavioural control in relation to organic food has a significant effect on buying behaviour through COVID-19	0.036 ( $< 0.001$ )	Accepted

*Source: Data analysis*

## Conclusion

From the above table, except attitude, all the constructs are significant before and after COVID-19. Only attitude towards organic food constructs is insignificant when it is directly affecting perceived behavioural control through intention towards organic food. But, during the COVID-19 attitude has gained a significant effect. People believe that eating organic food will help them overcome the ill effects of COVID. Hence, we conclude that people are thinking of consuming organic food during Covid.

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