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Analyzing the effect of COVID-19 in the financial behavior of consumers and investors

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Abstract---COVID-19's impact on GDP and consumption has already been recognized by top economic analysts. Some experts even anticipate the globe will be hit by the worst downturn since the Great Depression. Unprecedented effects on the economies of all countries are being caused by a newly discovered coronavirus. Considering that the COVID-19 pandemic isn't your typical catastrophe, several efforts have been made to try to rein in the disease's spread. Economic instability in the country has emerged as a foreshadowing of shifting market dynamics as a consequence of the deep relationship between public health initiatives and the lockdown. Retail investors' financial attitudes have a direct impact on their investment decisions. The competitiveness, expansion, and economic integration of any market is driven by consumers. However, how much of the economic instability-induced change in consumer behaviour will last is a question that has to be answered. Research has recognized and explored this link, but the measures of financial attitude and behaviour still vary greatly and are often provided in the form of questions rather than declarative statements, which is problematic. As a result, nothing is known about how retail investors react to health crises, such as the present epidemic of COVID-19. To fill these gaps, this research examines the impact of six financial attitudes, namely, worry and optimism about the economy as well as deliberative thinking, interest in financial matters, and the desire for preemptive savings, on the trading behaviour of retail investors during the pandemic. Covid-19's Immediate Effect on Consumption Behavior is also examined in this research.

Keywords---COVID-19, Consumption Behavior, Financial Behavior, Retail Investors, GDP, Economy, etc.

Introduction

To begin with, domestic income and foreign flows to poor countries were already regarded inadequate to meet the Sustainable Development Goals before the COVID-19 emergency (SDG). Many low- and middle-income nations may find it difficult to respond to COVID-19 in terms of public health, social policy, or economics due to the burden of public debt and extra demands imposed by the epidemic.

- ✚ COVID-19 might have a significant impact on finance for sustainable development if it continues. Reduced economic activity will have a negative impact on the mobilization of domestic resources. "External private finance inflows are expected to fall by USD 700 billion from 2019 levels, outpacing the effect of the 2008 Global Financial Crisis by 60%." Rising domestic expenditure and currency fluctuations against the US are expected to further reduce fiscal headroom.
- ✚ COVID-19 is wreaking havoc on emerging market economies at a vital time. Financing for the SDGs had already been insufficient before the financial crisis, and fiscal headroom was constrained by growing public debt levels and the expense of paying it.
- ✚ 'Building back better' for a more equal, sustainable, and hence resilient world requires strong collaboration between players in development finance and beyond. Building back better will need effort from all financial sources to support national sustainable development objectives, even if domestic resource mobilization remains the only long-term feasible source of revenue for many public goods and services. There is a need to reinvigorate commerce and establish a sustainable maritime economy in small island developing governments outside of development funding.
- ✚ There is a short-term need to rely on official development aid to counteract the decline in other financial sources. Developing countries may be unable to afford sufficient public health, social, and economic solutions to the problem because of their limited resources. The COVID-19 funding deficit can't be filled by relying on just one source of revenue.

Immediate Impact of COVID-19 on Consumer Behavior

Everything we buy and do has a place and a time associated with it. More than 75% of women who have children at home are now employed full-time. "This has resulted in a lack of time in the family and a change in the utilization of time by individuals." Between the hours of 8 a.m. and 5 p.m., no one is home on weekdays, making it difficult for service personnel to do installations, maintenance, and repairs on appliances and heating and cooling systems. "To guarantee that someone will be home to open the door, the provider must establish appointments with the household." There is also a time crunch since the homemaker's discretionary time is suddenly non-discretionary owing to her job. To save time, more people are purchasing things online and having them delivered to their homes. Minivacations around major holidays like Easter, Christmas, Thanksgiving and Memorial Day have replaced traditional vacations of two or three weeks in length.

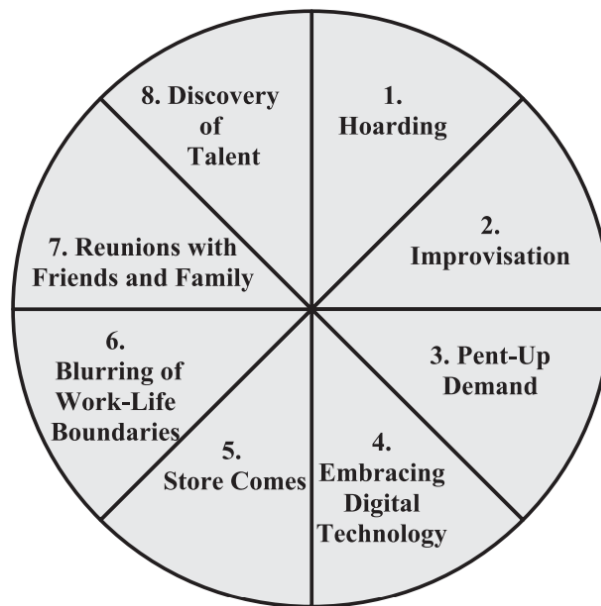


Figure 1: Summarizes eight immediate effects of Covid-19 pandemic on consumption and consumer behavior

✚ **Improvisation:** When faced with limits, consumers learn to improvise. Existing habits are broken and new forms of consumption are created as a result. As a result of the coronavirus, people participating in otherwise customary ceremonies like weddings and funerals were able to express their ingenuity and resiliency. Traditional location-based events such as weddings and funerals may be replaced with sidewalk weddings and Zoom services. For Easter Sunday services, this was likewise the case. Another topic of future study is improvising to deal with shortages of items or services. It typically leads to alternate options to location-centric consumption such as telemedicine and online education, as well as new practises. No systematic empirical or scientific study has been done on improvisation, yet another time I'm sorry. Jugaad in India is the closest research on improvisation. Means coming up with ideas that work despite societal conventions and government policies. Jugaad also refers to making the most out of what you have, looking for opportunities in the midst of hardship, and adapting your mindset and actions accordingly.

✚ **Hoarding:** Stockouts and shortages are occurring because consumers are accumulating vital supplies for everyday use. Disinfectants and cleaning supplies are all included in this category. A frequent approach to controlling the uncertainty of future supplies of fundamental necessities is hoarding. The behaviour of hoarding is frequent when a nation experiences hyperinflation, as Venezuela now does. In addition to hoarding, the grey market has emerged where unlicensed intermediaries hoard the commodity and raise costs. Medical personnel' N95 masks are one example of tainted PPE (personal protective equipment). Finally, hoarding creates a short-term increase in demand, which in turn supports the sale of counterfeit goods. Research on hoarding in consumer behaviour has not been done adequately empirically.

- ✚ **Embracing Digital Technology:** Several new technologies and their applications have been accepted by customers out of need. Zoom video services are an obvious example. "Most internet-connected homes have learnt how to engage in Zoom meetings in order to stay in touch with family and friends." Remote courses for schools and colleges and telehealth consultations with doctors and other health care professionals have been added to the list of possibilities. Facebook, WhatsApp, YouTube, WeChat, LinkedIn, and a slew of other platforms are popular among users. As a medium, the internet is both expansive and diverse. "China and India are no longer the two most populous countries in the world." They are, respectively, Facebook, YouTube, and WhatsApp. More than a billion people utilize each one. Word-of-mouth advice and recommendations, as well as information exchange, have undergone a drastic shift as a result of this. Influencer marketing is a rapidly expanding field. Many of them have tens of millions of people following them on Instagram. There is a huge impact on consumer behaviour from digital technology in general, and social media in particular, and this impact is widespread in everyday life for consumers. Whether or whether technological adoption can change old patterns will be an intriguing thing to watch! We've studied the dissemination of new technologies like telephones, televisions, and the internet, but we haven't seen social media's rapid worldwide growth.
- ✚ **Pent-up Demand:** Discretionary purchases and consumption are often put off during times of crisis and uncertainty. Most often this is connected with big priced items such as autos and mansions. Concerts, sports, pubs, and restaurants are also included in this category. There is a change in demand from now to the future because of this A well-known side effect of temporarily restricting access to the market for some services, such as parks and leisure or movies and entertainment, is a spike in pent-up demand. Consumer behaviour research on pent-up demand has been sparse, but economists have researched the influence of pent-up demand on GDP growth.
- ✚ **Blurring of Work-Life Boundaries:** Customers are confined to their homes due to a restricted amount of space and a multitude of separate activities, such as working, studying and shopping. This is akin to having a plethora of desires and needs but not enough money to meet them all. This results in a blurring of the work-home divide, as well the task-chat divide. To maximize productivity at home, you'll need a timetable and some type of compartmentalization.
- ✚ **Store Comes Home:** Consumers in countries such as India, South Korea, China, Italy, and other nations are unable to go to the grocery store or shopping malls because of the entire lockdown. As an alternative, the shop comes to you. Work and education also have a role. A new direction is being established for employment, training, healthcare, and general spending and consumption. It's no longer necessary to travel to a brick-and-mortar store for anything, even streaming services like Netflix and Amazon Prime. Convenience and customization are also on the rise as a result of this trend. We need to investigate how 'In-home everything' affects consumers' impulsive purchases and the difference between planned and unexpected purchases.
- ✚ **Discovery of Talent:** With more time to themselves at home, people are experimenting with new recipes, honing their skills, and finding new methods to play music, teach others, and purchase online. Consumers are now

producers with commercial potentials as a result of some of these videos going viral. Video content on YouTube and the like has the potential to be both innovative and commercially successful.

 **Reunions with Friends and Family:** Coronavirus has a significant influence on people's lives since it prompts them to come in contact with faraway relatives and friends. Reunions and marriages like to this may be seen at high schools and colleges. To remain in contact, what used to be an ad hoc occasion has evolved into regular and organized gatherings to exchange ideas and experiences. We're all sitting on our porches and chatting to our neighbours across the world in a figurative sense. Using modern media such as Zoom and WhatsApp, social gatherings have a worldwide reach. Consumption behaviours need to be examined from a social and cultural perspective. As a result of the Covid pandemic's rapid and ubiquitous acceptance of new technology, we should predict a drastic shift in consumer behaviour.

Impact Of Financial Attitude Impacted The Trading Activity Of Retail Investors During The COVID-19 Pandemic

Using retail investors' trading activity during the COVID-19 epidemic, this research examines six characteristics of financial attitude as antecedents of their financial conduct (Figure 2).

Financial attitude and trading activity of retail investors

In the literature, anxiety's influence on financial choices is well-known. "For example, according to Gambetti and Giusberti (2012), financial concern may be a factor in investment avoidance." Anxiety may also affect a person's willingness to take risks and their level of self-confidence while evaluating potential investment options.

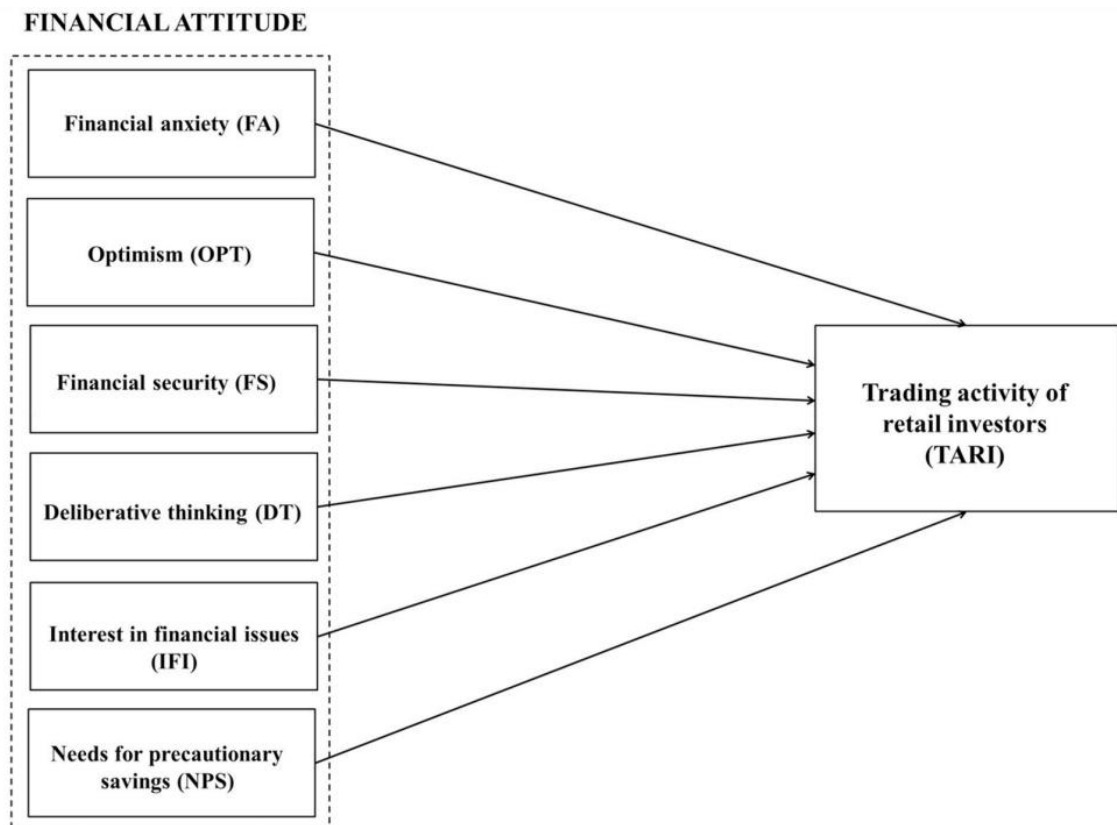


Figure 2: Research model

We collected cross-sectional data from retail investors by conducting a primary survey. Indian retail investors who have been engaged in the stock markets since the COVID-19 outbreak were tapped for the poll. The data was collected in India because of the growth in retail trade in Indian marketplaces during the worldwide epidemic. With the lockdown in place, many retail investors, especially the country's younger investors, have been trading for the first time in order to take advantage of this market downturn. Stock market prices have also attracted new investors due to low interest rates given by banks.

The COVID-19 pandemic is expected to peak in June 2020; thus, we performed the poll at that time. Following a snowball sampling method in which participants were initially contacted by financial advisors, they were then asked to recommend additional people who may participate in the poll. "These two screening questions ensured that the participants were between 25 and 40 years of age and had invested in financial markets throughout this epidemic." The online survey was completed by 404 of the 849 people contacted. In order to avoid self-response bias, the survey participants were not explicitly told that their financial views were being assessed but were ensured of their anonymity throughout the procedure, as advised by Saunders et al. (2009). Table 1 provides an overview of the respondents' demographics.

Table 1: Respondent profile

Particulars	Percentage
Gender	
Male	69.31
Female	30.69
Age group	
36-40 years	46.04
25-30 years	20.79
31-35 years	33.17
Income level	
Half million to Million	18.32
Less than half a million INR	0.00
More than 2 million	26.24
More than 1.5 million to 2 million	26.98
More than million to 1.5 million	28.46
Educational background	
Graduate (pursuing/completed)	13.12
Completed schooling	2.48
Ph.D. or equivalent (pursuing/completed)	10.15
Post-graduate (pursuing/completed)	74.25

Input, hidden, and output neurons are dispersed over various layers of an ANN to perform calculations. "Using a multi-fold cross-validation procedure, the data is separated into training and testing sets." An alternative model was generated by using six input neurons, two hidden ones, and one output one. 70% of the data were also trained on to prevent over-fitting. An ANN model's prediction accuracy may be assessed by its Root Mean Square Error (RMSE) value, as advocated by Hew and colleagues in 2019. Additionally, the ANN algorithm's multilayer perceptron yielded the normalized relative relevance of each antecedent, in line with previous research (e.g., Leong et al., 2020).

Analysis and Interpretations

Testing of multivariate assumptions

The Kolmogorov-Smirnov (K-S) test was employed in this research to examine the distribution of the data. The null hypothesis of normality was rejected because the asymptotic significance (2-tailed) of the test statistic was less than 0.05. Accordingly, the results of this investigation did not conform to a normal distribution, and this lends credence to the validity of using ANN as an analytical tool. "Using tolerance and variance inflation factor (VIF) values, as utilized in previous research, we studied multicollinearity." Tolerances were calculated to be more than 0.1, and VIFs were less than the suggested cut-off of 5, indicating that the data obtained did not have a multicollinearity problem. Table 2 shows these values. Inter-construct correlations were smaller than 0.80, indicating that multicollinearity was not present (Table 3).

We used ANOVA, which is in line with other recent research, to determine if the variables had a linear or non-linear relationship. A non-linear association was

found between the dependent variable, retail investors' trading behaviour, and four of the independent variables: financial security, purposeful thinking about money, interest in money, and the need for precautionary savings, according to the findings of the study. Therefore, the occurrence of non-linear interactions further supports the applicability of ANN for data analysis in the current research. For the fourth multivariate assumption, homoscedasticity, we plotted standard regression residual and dependent variable scatter plots (Fig. 3). Since the residuals were uniformly distributed along the fitted line, the data were proven to be homoscedastic.

Common method bias (CMB)

Because we used the same self-reporting instrument to gather data for all variables, there's a chance the results are skewed due to common technique bias. After data collection, we employed Harman's single factor test to entirely rule out the potential of CMB in accordance with current research, even though we followed the procedure of anonymity and questionnaire design (e.g., Talwar et al., 2020b). Results showed that just one component explained 34.53 percent of the total variation, which falls below the 50 percent cut-off established by the researchers.

Table 2: Multicollinearity diagnostics

Model	Standardized Coefficients	Unstandardized Coefficients		t	p	Collinearity Statistics	
	β	B	Std. Error			Tolerance	VIF
(Constant)		1.494	.252	5.919	.000		
OPT	.023	.029	.072	.399	.690	.532	1.879
FA	-.048	-.059	.070	-.846	.398	.535	1.869
DT	.173	.128	.048	2.645	.008	.397	2.516
FS	.180	.136	.041	3.299	.001	.571	1.753
NPS	.147	.122	.057	2.139	.033	.361	2.770
IFI	.167	.151	.078	1.928	.055	.226	4.419

Table 3: Correlations, Cronbach's alpha, reliability values, and convergent validity statistics

	α	CR	AVE	FA	OPT	FS	DT	IF	NPS	TARI
OPT	0.73	0.80	0.60	0.68	0.78					
FA	0.83	0.82	0.55	0.74						
DT	0.93	0.93	0.87	0.12	0.12	0.59	0.93			
FS	0.90	0.91	0.77	0.11	0.14	0.88				
NPS	0.87	0.87	0.77	0.09	0.08	0.54	0.57	0.79	0.88	
IFI	0.75	0.75	0.61	0.08	0.07	0.62	0.75	0.78		
TARI	0.71	0.77	0.56	0.04	0.06	0.46	0.49	0.52	0.47	0.75

α = Cronbach's alpha; CR = Composite reliability; AVE = Average variance extracted; FA = Financial anxiety; OPT = Optimism; FS = Financial security; DT =

Deliberative thinking; IFI = Interest in financial issues; NPS = Needs for precautionary savings.

Note: "The off-diagonal values represent correlations and the diagonal values represent the square roots of AVE." All correlations are significant ($p < 0.05$).

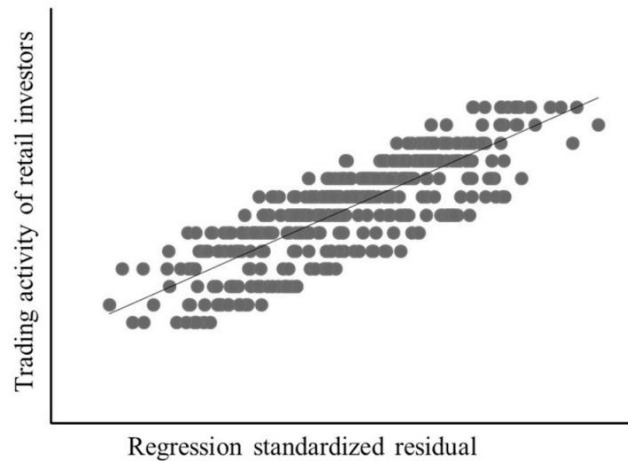


Figure 3: Scatter plot of residuals

Validity and reliability

Calculated validity and reliability measures were then compared to the suggested cut-offs provided by Lowry and Gaskin (2014) to determine if the instrument and its underlying items were both reliable enough to be used. First, we assessed Cronbach's alpha and the overall dependability of the data set (CR). "We observed that the instrument's dependability was confirmed by the fact that both parameters for each construct in the research reached or exceeded the cut-off value of 0.70. (Table 3)." The average variance retrieved from the data was used to check for convergent validity (AVE). Validity was confirmed for all constructions when their values surpassed the minimum cut-off of 0.50. Lastly, we confirmed that the AVEs' square roots were larger than their respective correlations, which supported the instrument's discriminant validity (Table 3). All the validity and reliability metrics were tested and confirmed to meet the suggested cut-off levels.

Results of ANN

With six input neurons, two hidden neurons, and one output neuron, we created a number of ANN models (Fig. 4). In accordance with previous research (e.g., Hew et al., 2019; Leong et al., 2020), we used the RMSE values to evaluate the prediction accuracy of various models. With the training and testing data's mean RMSE values of 0.2300 and 0.2595, these numbers suggest that the models had a good accuracy of prediction.

Sensitivity analysis

A sensitivity study was conducted to determine the extent to which each of the six financial attitude qualities (the input neurons) influenced retail investors' trading

behaviour (i.e., the output neuron). As a result, we were able to calculate their normalized relative value as a percentage of the greatest relative importance. Table 5 shows that the most significant influences on financial decision-making were financial interest, deliberative thinking, the need for financial stability, financial optimism, and financial worry.

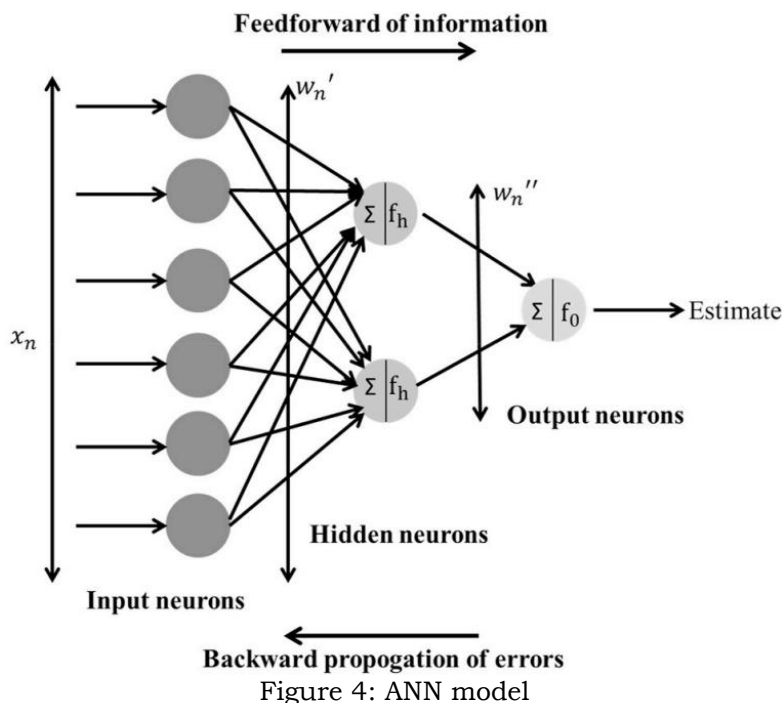


Table 4: RMSE values

Models	Random state	Training (N)	RSME	Testing (N)	RSME
10	239	282	0.2301	122	0.2578
9	25	282	0.2307	122	0.2616
8	291	282	0.2288	122	0.2596
7	185	282	0.2302	122	0.2597
6	90	282	0.2298	122	0.2589
5	201	282	0.2298	122	0.2592
4	58	282	0.2307	122	0.2580
3	270	282	0.2298	122	0.2598
2	24	282	0.2303	122	0.2606
1	281	282	0.2298	122	0.2601
	Mean		0.2300		0.2595
	SD		0.0006		0.0011

Table 5: Summary of findings

Financial Attitude	Normalized relative importance (%)	Correlation	Linear/nonlinear
Deliberative Thinking	61.72%	0.49	Non-linear
Interest in Financial Issues	100.00%	0.52	Non-linear
Financial Anxiety	6.04%	0.04	Linear
Needs for Precautionary Savings	61.53%	0.47	Non-linear
Optimism	11.68%	0.06	Linear
Financial Security	49.79%	0.46	Non-linear

Conclusion

Most financial markets fell 10–20 percent in a single day as a result of the widespread fear sparked by the COVID-19 outbreak. "Retail investors, on the other hand, saw the stock market fall as an opportunity, and as a consequence, the markets in the majority of nations saw a rise in retail involvement." Policymakers and companies who have been seeking to persuade individual investors to join in the stock markets are excited by this trend. Retail investors, on the other hand, may contribute to the instability of the markets by acting on their own prejudices and psychological reactions. As a result, it's critical to figure out what motivates regular investors to trade amid a crisis. Time and geographical constraints limit all usage. Consumers have become adept at improvising in new and inventive ways due to the freedom of choice they have in terms of when and where they spend their time. Working from home, studying from home, and relaxing from home have all become commonplace. When a customer can't make it to the shop, the business must make an effort to come to them instead. Those under house arrest are more inclined to accept new technology that make their job, education, and consuming easier. Consumers. A

shift in behaviours is almost certain if we use digital technologies. Finally, new consuming patterns will be imposed by public policy, particularly in public venues like airports, concerts, and public parkland areas.

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