Original Research

Peoples Income and Consumption Pattern during & before COVID-19 Pandemic: A Study in the Northern Areas of Bangladesh

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Abstract

The SARS COV2 pandemic hits the life and livelihoods of millions and consequently slows down the world economy. The pandemic hits hard the specific social groups due to travel restrictions/bans and other regulations that affect their income and consumption patterns. The goal of this paper is to find out whether the pandemic has any effect on consumption and income patterns among consumers in rural settings. To implement this study, structured questionnaires were sent to respondents and collect data from 180 samples living in rural areas of four different administrative districts in Bangladesh such as Rajshahi, Bogura, Naogaon, and Natore. Using paired sample T-test (parametric) and Wilcoxon signed ranked test (nonparametric) test found that pandemics had a significant effect on the pattern of consumption and income in the northern area of Bangladesh. While the Keynesian method of income determination shows that the MPC before the COVID-19 pandemic was 0.31 and during it was 0.37. This shows that consumers would like to consume at a higher level compared to them before the COVID-19 pandemic. Overall, the study revealed that though the pandemic significantly affect consumers' income to reduce, consumption levels inclines fuelled by the fear of panic buying during the pandemic. Government should have preparedness to provide essential goods during any natural disasters or pandemic-like events.

Keywords: Pandemics, COVID-19, Consumption habits, MPC, Northern Bangladesh.

JEL classification: D1, D11, D12

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Introduction

The global civilization confronted one of its greatest problems in historical remembrance at the commencement of the year 2020: a pandemic of widely identified coronavirus. This disease which produces a severe respiratory illness (COVID-19), expanded quickly over the planet, culminating in a worldwide catastrophe that compelled governments to take drastic steps to halt its proliferation (Liu et al., 2020). As a result, social distance remained a primary goal, resulting in the closing of schools, industries, offices, and markets, as well as border acceptance emergency markets and hospitals. So that this pandemic exacerbated the global supply disruptions (Ranney et al., 2020). However, in Bangladesh like in other countries, the manufacturing firms such as garments, agricultural goods, fast-moving consumer goods, and some other manufacturing industries were continuing their production to activate the wheel of the national economy (Better Work, 2020). However, due to (COVID-19), this is one of the worst times ever for all countries, and the world is facing serious difficulties.

The forced partial or complete lockdown of the nations is having a severe economic impact.In addition to the deaths caused by COVID-19, there have been closures of factories, a halt in production, essentially normal business operations, millions of job losses, and financial crises in several countries. Every economy, whether in wealthy, developing, or underdeveloped countries, is struggling to combat COVID-19. Every day, a large number of people get COVID-19, and this pandemic is to blame for thousands of daily fatalities. The main cause of this high mortality toll is COVID-19's untreatable medical condition. Currently, there is no known cure for COVID-19 patients that has been approved by science. The world economy has faced a substantial economic problem as a result of the COVID-19 epidemic. Governments have used social isolation and enacted lockdowns in order to stop the spread of COVID-19 in their respective nations. Governments incur expenses when they enforce lockdowns since no business is conducted.

There is proof from all across the world that pandemics and epidemics cause economic problems. The effects of diseases and pandemics on the global economy have also been assessed by a number of economists. For instance, Garret (2007) looks into how the 1918 influenza pandemic affected the US economy; Bloom and Canning (2006) look into the links between infectious disease epidemics and income around the world and how these links are impacted by shifting global conditions; Karlsson et al. (2013) look into the effects of the 1918 influenza pandemic on Sweden; Dixon et al. (2002) look into the effects of HIV AIDS on African economic development, and McKibbin and Sidore (2006) look into the effects of These studies show that pandemics and epidemics have an impact on the economy. In their study, Dixon et al. (2002) found that the HIV AIDS pandemic slowed Africa's growth rate by 2-4 percent a year.

Numerous scholars and economists have even forewarned the world about the financial effects of diseases and pandemics, such as Jonas (2013) and Fan et al. (2016). According to Fan et al. (2016), even a moderately severe pandemic might cause 2 million or more fatalities globally. The cost of fighting the pandemic influenza was estimated by the authors to be around 0.2-2 percent of world income, however on the low side.

Although they would not have endured as much suffering as was shown in the wake of the COVID-19 epidemic, it appears that governments have not learnt anything from earlier pandemics. According to estimates, COVID-19 will cost the world economy $8.8 trillion in the 2020–2021 fiscal year. The World Economic Forum forecasts that in the fiscal year 2020–2021, global GDP growth will fall to about 2 percent, the lowest level since the 2008–2009 global financial crisis. The magnitude of the COVID-19-related economic catastrophe can be understood by considering that various nations are anticipated to see economic growth of between 5% and 10% in the fiscal year 2020–2021. This article's goal is to investigate how the COVID-19 outbreak has affected purchasing decisions and consumption patterns in northern Bangladesh. Numerous research on pandemics and epidemics that concentrate on their economic repercussions served as the inspiration for this study.

However, there hasn't been any significant research done to evaluate consumer attitudes during a pandemic. This feature of consumer behavior during an epidemic or pandemic was overlooked by the researchers. We are trying to close this research gap as a result. As follows is the organization of our research. The topic is introduced, given a brief synopsis in Section 1, and the article's basic structure is explained. In order to pinpoint the research gap, we review the pertinent literature in Section 2 of the paper. Our research aims are listed in Section 3. The research methodology utilized for the project is covered in detail in Section 4, along with the steps involved in data collecting. The data analysis and presentation are found in Section 5. The findings of the paper are further summarized in Section 5. The conclusion and findings are summarized in Section 6 and in section 7 recommendations for reaching markets during an epidemic or pandemic are included. The references used in the study are listed in Part 8. Section 9 adds an appendix.

Consumption Patterns before and during the COVID-19 Pandemic

Primary, secondary, and tertiary wants are satisfied in different ways. The most important condition is to be able to survive well the basic requirements that must be met. The three basic necessities are clothing, food, and shelter. Primary needs including those for education, health care, and leisure are supported by secondary needs. While tertiary demands are those that are produced in the context of lifestyle and status concerns. In general, the public's consuming behavior prior to the COVID-19 epidemic may be characterized as the ability of the impoverished to merely meet their most basic necessities. Primary needs will be addressed to the greatest extent possible through consumption habits, whereas secondary needs are occasionally unmet. The tertiary demands consumption pattern of the lower class is not satisfied. Primary needs will be given priority by the community in meeting its demands, followed by secondary and tertiary needs. Figure 1. displays the consumption patterns of the world and Bangladeshi citizens.
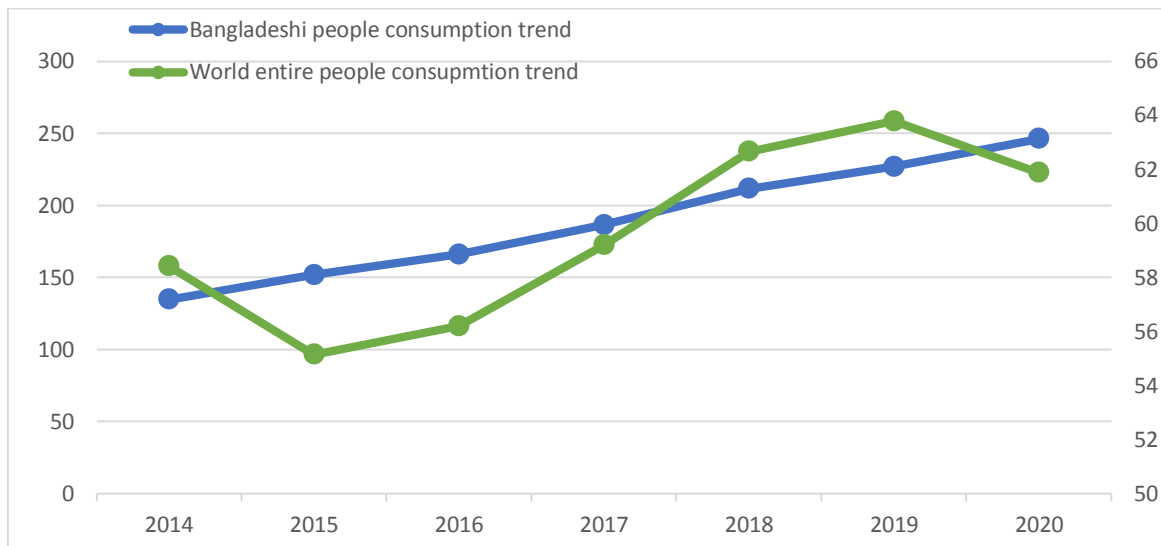
Figure 1: consumption pattern trend Source: World Bank

Literature review

As a direct result of the spreading of COVID-19, people are communicating differently, greeting one another differently, working differently, and purchasing various goods and services. Everything has undergone a substantial change. The use of community isolation and quarantine has resulted in a decline the COVID-19 cases; however, it is also causing people considerable distress. Due to plagues and diseases, economies throughout the world have suffered enormous losses. Jonas (2013) did research on the impact of pandemics on national development. The author concludes that the effects of a pandemic is so enormous that a sole severe pandemic can cost up to three trillion dollars. The author makes comparisons between the destruction produced by a pandemic and a natural disaster. The fact that a severe pandemic is recognized as one of the main global catastrophic threats Jonas (2013) demonstrates how concerned people are about the potential of a pandemic occurring. The author arrived to the conclusion that a pandemic bring agony, economic loss, and societal upheavals on a worldwide scale, but will have little effect on already destitute and fragile states.

Fan et al. (2016) determined the effects of a pandemic that must be incurred in order to combat the pandemic, in accordance with the findings of Jonas (2013). The authors arrived at the conclusion that pandemic costs are comparable to environment alteration charges. It suggests that the global cost of preventing and treating a pandemic would be equal to the worldwide cost of averting and handling climate change. Additionally, the scientists anticipated that the world would face a pandemic equivalent to the 1918 influenza epidemic. This is because the world has not learned from its past failures and has not shown any interest in preparing for a pandemic. This study concurs with the conclusions of Bloom and Canning (2006), who advised that the United States had failed to learn from previous pandemics and was on the verge of another calamity. This discovery is compatible with those discoveries. When expressed as a percentage of GDP, estimates place the worldwide mortality toll anywhere from 0.3% in high-income countries to 1.6% in low- and middle-income countries (Fan et al., 2016). In their study

of the monetary effects of infectious disease outbreaks, Sands et al. (2016) uncovered several risk factors that suggest a new pandemic is on the horizon. According to the findings of the authors, the underestimating of the threat that infectious disease crises provide to human lives and the livelihoods on which these people rely is the primary reason for less investment in infectious disease awareness and reaction. The authors concluded that infectious disease outbreaks had significant cost consequences. The annual effects of a pandemic influenza epidemic is similar to that of climate change, according to a report issued by the World Economic Forum in 2018. It is vital to stress that the majority of economic losses are often generated by reasonably anticipated consumer reactions, labour shortages, and cascading failures in both the economic and financial sectors, and not by the illness itself.

Orset (2018) investigates people's perceptions of house quarantine during a pandemic influenza outbreak, as well as the strategy's cost-effectiveness. According to the author, home confinement cannot be successfully applied if individuals refuse to cooperate freely. (Illustration :) Whether or whether a sick person must stay home depends on factors such as age, income, household spending, career, and contact with an infectious person, and access to medical care. According to the findings of the study, persons are less possible to fulfil with the rules of house confinement if they have a greater chance of becoming polluted or contaminating others. According to study by Baker et al. (2020), there is a negative association between the degree of social alienation and the amount of money spent, and pandemics do effect consumption arrays and, by extension, consumer behavior.

The research of Chen et al. (2020) investigates how the COVID-19 outbreak has affected Chinese consumption. The study obtained daily transaction data from 214 different cities. China's average consumption of offline goods and services decreased by 32% between the end of January and the beginning of April 2020, according to the poll's findings. In comparison to the previous year, spending on goods and services reduced by 33 percent and 34 percent, respectively. The industries durable damaged by the recession were those involving dining out, entertainment, and travel, which each experienced a 59 percent decline. The greatest decrease in consumption, up to 70 percent, was recorded in Wuhan, the place where COVID-19 initially debuted. According to the study's findings, there was a negative response from consumption to daily fluctuations in the severity of the pandemic, resulting in a 1,2% decrease in offline consumption in China in 2019.

During COVID-19 in France, Bounie et al. (2020) investigate the changes in customer behaviour from before to after the event. According to the findings of the study, when customers were surprised, they turned to online shopping, which mitigated the overall impact. Surico et al. (2020) analyze how people in the United Kingdom spend their money based on the financial transaction data of individuals. When the lockdown was initially enacted, individuals stocked up on necessities such as food, according to the findings of the study. In addition, they kept 15 percent more cash on hand than before the lockdown measures were introduced. This pattern remained until April, when it hit 20%. There have been considerable changes in the total amounts individuals spend on services, according to the findings of the poll. After the first week of March, consumer spending on apparel, footwear, accessories, children's books, and games decreased. The price of travel was significantly influenced, although the price of leisure activities declined in March and

remained lower through April. According to the findings of Chronopoulos et al. (2020), COVID-19 and community health initiatives adopted by the administration of the United Kingdom have a considerable impact on the quantity of money and types of items people in Great Britain spend their money on. The researchers noted that when COVID-19 was declared a pandemic on March 11, 2020, people in Britain spent more money on food, causing them to stock up on supplies. The data reveal that men, older individuals, and those with higher incomes spend much more money on all types of purchases than women, younger individuals, and those with lower incomes. According to Muellbauer (2020), a fall in household income will prompt individuals to cut their spending. The author argues that a sixteen percent decrease in household income will result in a twenty percent decrease in consumer spending. The author offers an explanation as to why this is occurring. This can be explained in part by the fact that fewer things are being purchased overall, which contributes to the negative shock. The second factor is that individuals are worried about their future earnings as a result of the historically high pace of jobless growth. Then, the drop in asset prices and a substantial reduction in the overall amount of available credit are further explanations (Muellbauer, 2020). Consumer spending and the U.S. economy appear to be in a considerably worse position than they were at any point during the global financial crisis of 2008–2009. (Muellbauer, 2020). According to research accompanied by IBM (2020) in April, the COVID-19 pandemic has a bigger influence on people's mobility, purchasing power, and ability to participate in activities. According to the results of the survey, the majority of respondents said that they would use public transportation less or not at all, which may raise the demand for private autos. However, due to the economic disaster caused by COVID-19, consumers will be incapable of making purchases. According to the findings of the study titled "The Impact of Epidemics and Pandemics," COVID-19 is fundamentally affecting the behaviour of US consumers, which will have long-term consequences for a range of businesses, including as retail, transportation, and travel. Accenture (2020) conducted a study that reached the same conclusion as IBM (2020): that consumers' priorities have moved to focus on their most basic needs. As a direct result, demand has increased for products in the vital categories of hygiene, cleaning, and staples, while demand has fallen for products in the non-essential categories. The outcomes of the study indicate that digital commerce is gaining popularity rapidly, and it is projected that this trend will continue after COVID-19. Customers place the most value on knowing exactly what they are getting, protecting their health and safety, supporting their local economy, and making the most of their shopping time, according to the conclusions of the study. McKinsey and Company (2020) did a study to estimate the long-term effects that COVID-19 will have on customers. Consumers who responded to the survey claimed that COVID-19 has affected not only their purchasing habits but also their everyday routines. Due to stagnant salaries, consumers are limiting their spending to necessities and other non-discretionary items and services. Customers are rapidly turning to online and digital solutions and depending on less traditional methods to obtain goods and services in person, according to the findings of the survey. Sheth (2020) examines how the COVID-19 epidemic changed human behaviour and identifies eight direct impacts. These include hoarding, improvising, and releasing pent-up desire, acceptance digital technology, blurring the barriers between work and home life, reuniting with friends and family, and discovering talent. According to the conclusions of the study, customers' routines will almost surely change, but they will not disappear entirely. Instead, they will return, allowing business owners to experiment with something unique. COVID has also considerably increased its

use of social media sites such as Facebook, Instagram, WhatsApp, Twitter, and Zoom, resulting in a substantial increase in the number of individuals discussing it. In order to appreciate how individuals think, technical innovation is required, according to the author. As a result of altering demographics, public policy, and technological advancements, the study determines that individuals are more likely to adopt new habits and less likely to abandon old ones. COVID-19 is related with a number of adverse consequences. This phenomena has had an effect on consumers and the way they purchase items, as well as the economy, society, ecology, and culture. For the purpose of determining the scope of these effects, research efforts have been made. Chakraborty and Maity (2020) investigate the global consequences of migration, society, and the environment of COVID-19 on in their study. According to the authors' predictions, the impact of COVID-19 on annual GDP growth will be about similar to a two-percentage-point monthly slowdown. Tourism has been hit the worst, losing between 50 and 70 percent of its earnings. COVID-19 has been shown to have a favorable impact on the environment. This is because the closing of enterprises, factories, and other similar institutions has resulted in a drop in trash emissions, which has been extremely helpful for global ecology. The recovery of the ecosystems has made great progress.Chakraborty and Maity's (2020) findings regarding the influence of COVID-19 on the natural world have been corroborated by a number of different research endeavors. Researchers Saeida et al. (2020) examined that when economic activity was halted during a pandemic, air value increased in several locations throughout the globe. Similar results were found by Zambrano-Monserrate et al (2020).

According to the findings of Sharma et al. (2020), COVID-19 has a positive effect on India's environment, notably in terms of the country's air quality. The study found that the O3 content in the ozone layer grew by 17 percent while the SO2 concentration remained the same. During the lockdown, the Air Quality Index (AQI) decreased by 44 percent in the north, 33 percent in the south, 29 percent in the east, 15 percent in the center region, and 32 percent in the west. This shows that air quality increased during the lockdown. Ali and Alharbi's (2020) research examines how COVID-19 spreads, how it is managed and controlled, how it is treated, and how it affects society. According to the study's conclusions, the stoppage of economic operations throughout the world has had a profoundly negative effect on the countries, with the travel and tourism industry being the most badly affected. The authors are concerned that fewer educational institutions will make it more challenging for students to acquire a decent education. Furthermore, scholars feel that a lack of high-quality education will result in major long-term losses for the world. At the conclusion of the report, the necessity of establishing specialized research centers and advancing science and technology is emphasized in order to better plan for and respond to future disasters similar to the ones that occurred here.

Economic impact of pandemics

Pandemics and epidemics can have an impact on the economy that reaches well beyond the borders of the nations where they begin. Things in the modern world, such as travel, commerce, etc., that facilitate the transmission of the disease frequently exacerbate these effects. As we are currently witnessing with COVID-19, epidemics and pandemics can also inhibit an economy from expanding by modifying people's expectations about the economy and discouraging investment and tourists. Numerous economists have

researched the potential adverse impacts of an epidemic or pandemic on the economy. For example, Dixon et al. (2002) evaluated the impact of the HIV/AIDS pandemic on Africa's economic development and found that it had a considerable influence. The epidemic affected people's desire to work and their productivity, which led to a reduction in exports from Africa and an increase in imports. Africa's annual economic growth rate decreased by 2-4 percent due to the pandemic's devastating effects. According to Bloom and Canning (2006), the emergence of SARS slowed the economies of the affected countries. They determined that foreign direct investment in Hong Kong decreased by 62% in just one quarter as a result of the SARS outbreak in China. As a result of having to shut down, sales at a number of enterprises dropped by more than 50 percent. The SARS pandemic cost the United States economy roughly $11 billion (Bloom and Canning, 2006). The cost of fighting a pandemic was estimated by Fan et al. (2016). The scientists found that the cost of a pandemic is equivalent to that of climate change. Because battling a pandemic costs so much money, the same amount could be used to battle climate change. Because no lessons from the past have been learned and little preparation has been made for pandemics in general, the authors warned that a pandemic as devastating as the one that occurred in 1918 would soon strike the world. Pandemics and epidemics can have devastating consequences on the economy, as evidenced by the paragraphs above. With the use of COVID-19, it is now possible to observe the economic damage caused by this pandemic.

General Objectives of the Project

The main objective of the study is to assess the changing pattern of income and consumption before and during the COVID-19 pandemic in the Northern region of Bangladesh.

Specific Objectives of the Project

To attain the main objective following specific objectives are as follows:

1. To assess consumer attitudes towards consumption at the time of lockdown and before lockdown in the study areas according to their income.

2. To determine the effect of a pandemic on consumer behavior

Research methodology

Sampling Procedure

The study is descriptive in nature. However, from the objective perspective, both qualitative and quantitative approaches are employed. Data and necessary information will also be gathered from primary and secondary sources. To collect primary data a close-ended and open-ended questionnaire was hired to collect first-hand information. At first, we randomly select 4 districts from the Rajshahi division namely Rajshahi, Bogra, Natore, Naogaon then we will also randomly choose 45 households from each district. In addition, we have taken those samples as only businessmen, day laborers, ers, and farmer households and excludes govt. job and other job holder households because their income

remains constant during a pandemic, finally, 180 households have been chosen for collecting data regarding consumption patterns during the pandemic and also before the pandemic. Moreover, for secondary data, we choose the source of BB, BBS, WB, WHO, etc.

Methods of Data Analysis

As this research is based on qualitative and quantitative approaches, we utilize both parametric and non-parametric tests for assessing our objectives. We investigate income and consumption patterns during pandemics and before the pandemic by using primary data to test the root level situation or original consumption and income pattern of people. Furthermore, 1. To analyze the difference between income and consumption patterns before and during a pandemic we use paired sample tests as parametric tests and Wilcoxon Signed Rank Test non-parametric test. 2. Latter we test before and during the MPC level of the targeted consumer by the Keynesian consumption function model

$$Consumption\ function: C_t = \alpha + \beta_1 Y_t + u_t \qquad 0 < \beta_1 < 1$$

The parameter β_1 is known as a marginal Propensity to Consume (MPC) formula = Change in Consumer spending / Change model.

Analysis of data and discussion of results

Table 1. Parametric test of Paired sample statistics

		Mean	N	Std. Deviation	Correlation	Paired Difference Mean	t	Sig.
Pair 1	MIBP	22900	180	14048	.73 (.05)	9320	6.63	.04
	MIDP	13580	180	6256				
Pair 2	MCBP	16048	180	9178	.62 (.03)	1058	2.52	.01
	MCDP	14990	180	8606				

A paired-samples t-test compares the average of two groups of people or cases that are the same or the average of the same group at two different times. The t-test is called a repeated measures t-test if the same group is tested again on the same measure. The average scores for People's Consumption Pattern during and before the COVID-19 Pandemic is compared with a paired samples t-test in Table: 1. the paired samples correlation shows that there is a strong link between the level of consumption before and during the pandemic. As the p-value is statistically significant, so we can conclude that the average income and consumption pattern of the people is changed before and during (covid-19) pandemic.

Table 2. Non-parametric test of Wilcoxon Matched Pairs Signed Rank Test

		N	Mean Rank	Sum of Ranks
MIDP - MIBP	Negative Ranks	54a	23.8	1047
	Positive Ranks	31b	17	34
	Ties	5c		
	Total	90		
MCDP-MCBP	Negative Ranks	49d	25.27	657
	Positive Ranks	34e	15.38	246
	Ties	7f		
	Total	90		
	MIDP - MIBP	CCDP-CCBP		
Z	-5.541b	-2.580b		
Asymp.Sig.(2-tailed)	0	0.03		

For the above problem the null and alternative hypotheses are spelled out below:

H_{null}: There will be no difference in People's Income and Consumption Patterns during & before COVID-19 Pandemic

H_{alt}: There will be a difference in People's Income and Consumption Pattern during & before COVID-19 Pandemic

For the purpose of determining whether or not there is a distinction between income and consumption pattern, a Wilcoxon matched-pairs signed rank testing is used. Results of that analysis indicated that there was a significant difference in income and Consumption patterns during & before COVID-19 Pandemic, in the table: 2, z = -5.54 and -2.58, p < .05. These non-parametric test results also indicate that there is a significant difference between income and consumption pattern during and before the pandemic.

Keynesians consumption function and MPC (Marginal Propensity to consume) analysis,

As a result, various articles have been written about the consumption function. So many macroeconomic strategies rely on the ability to impact total economic demand without increasing government spending directly (Fama & French, 1993). John Maynard Keynes' 1936 General Theory of Employment, Interest, and Money is the most well-known (Keynes, 2006). The Marginal Propensity to Consume is the first and most crucial of Keynes' assumptions. Between zero and one dollar is an additional expenditure (Kinsey, 1983). According to his works on the "basic psychological law," men are prone to increase their spending in proportion to their income, but not by the same amount (Kimball, 1990). In other words, when someone obtains an extra dollar, they frequently spend a portion of it and save the remainder. This income component is known as marginal consumption propensity (MPC). A measure of the notion that an increase in disposable income (income after taxes and transfers) will lead to an increase in personal consumer spending (consumption) is the marginal propensity to consume (MPC), an empirical statistic (Carroll, Slacalek, & Tokuoka, 2014). To put it another way, if a family

has a marginal propensity to purchase of 0.65 and they acquire an extra dollar of disposable income, they will spend \$65 and put \$35 into savings. In mathematical notation, the marginal propensity to consume (MPC) function is defined as the disposable income derivative of the consumption (C) function (Y). MPC= $\Delta C / \Delta Y$ For any given shift in consumption (C), we may calculate its root cause (Y) as the percentage change in disposable income. A value between 0 and 1 represents the marginal propensity to spend, which is determined by dividing the percentage change in consumption by the percentage change in income. If the individual borrowed money to cover expenses in excess of their income, the MPC could surpass one. In a closed two-sector economy, one minus the MPC equals the marginal propensity to save, both of which are significant in determining the magnitude of the multiplier and are fundamental to Keynesian economics.

Table 3. MPC Results of before and after covid-19

Keynes Consumption Function		MPC	R^2	F	P	D-W	df
Model 1 Before Covid-19	C = 8946.19 + 0.31Y	.31	.78	13.96	.03	2.24	1.16
Model 2 During Covid-19	C = 9930.9 + 0.37Y	.37	.68	8.64	.05	1.89	2.21

Model 1, MPC of before pandemic

The aggregate private consumption function is represented here in its most basic form by this model. It investigates the relationship between aggregate disposable income (Y) in the past and consumer spending. In table 3, we find that the marginal propensity to consume is 0.31, which is a very significant value from a statistical perspective (P .03). The value of R^2 for the coefficient of determination is satisfactory at 0.78. This indicates that if disposable income increases by 1 million, then a total of 0.31 million takas will be spent on consumption provided that all other factors remain unchanged. The estimate provided by mpc appears to be too low. The values of the model's coefficient of determination (R^2), standard error of the regression, F-statistic, and D-W statistic, as well as its model P value, demonstrate that the model possesses the appropriate statistical features.

Model 2, MPC of during pandemic

In this model, we have thought about how the way we use things now affects us. We find it interesting that the value of MPC went up by.37 during the time of the pandemic in the table: 3. though lack of income and other crises reduce up aggregate supply, people don't stop likely to spend money. So, we can say that, when there is a crisis and income shortfall, people don't want to save money; instead, they want to spend it and remain their consumer behaviour as before. As a result, their MPC goes up.

Impact of COVID-19 on consumption pattern

More than 90% of those who responded to the study overall claimed that COVID-19 had impacted their spending patterns. The majority of them, or 60%, believe that during

COVID-19, consumption and spending patterns have changed dramatically. 24 per cent of respondents, or almost a quarter, were unconcerned about changing their spending patterns. Seven per cent of the respondents overall claimed that COVID-19 had had no impact on their purchasing patterns. During COVID-19, 73 per cent of all respondents reported spending less, indicating that their spending patterns have changed. However, 27% of respondents said they were increasing their spending on COVID-19. 81 per cent of the respondents, or the majority, are spending money on necessities during COVID-19. A total of 11% of them spend money on personal care items, 4% on EMI repayment, 2% on entertainment, and the other 2% go out to eat. COVID-19 has also compelled customers to make online purchases.

Conclusion

The primary aim of the article was to evaluate changes in consumption patterns during and before to COVID-19, determine parallels and differences in consumer behaviour in a few selected regions, and recommend the most effective strategies for accessing markets through any forthcoming pandemic. Based on the arguments in the preceding section, we derive the following conclusion:

• Customers' habits shift when a pandemic hits. Our COVID-19 case study data shows this to be the case. Our research indicates that COVID-19 has made a sizable influence on buying habits in Bangladesh.

• COVID-19 has a major effect on how people in Bangladesh shop for and consume goods. The vast majority of COVID-19 shoppers concentrated simply on necessities. Customers only buy the essentials in the event of a pandemic. During an epidemic or pandemic, consumers tend to favour higher-quality goods and meals.

• Consumers' spending habits are significantly altered in the wake of pandemics like the recent COVID-19 outbreak. Among those who participated in our study, more than 70% said their spending habits had been negatively affected by COVID-19.

• Customers' first priority during pandemics is maintaining their own health. Whether used for education, entertainment, or social networking, internet platforms have a good shot at succeeding during an epidemic or pandemic. Additionally, customers are more likely to use electronic payment methods during an outbreak.

• Consumer behaviour in both rural and urban settings is similarly affected by epidemics and pandemics. However, consumers in metropolitan areas are more negatively affected by the closure of restaurants, movie theatres, and recreational facilities.

• People tend to retreat to their hometowns out of fear that the virus would spread there. Our research led us to find this behaviour. In addition, many people are eager to return to urban regions after COVID-19 in pursuit of employment.

• An extended effect on consumer behaviour from the COVID-19 epidemic is expected. The public is convinced that COVID-19 will permanently alter their discretionary spending patterns.

Recommendations

We advise marketers and policymakers to use the following strategies to reach customers during an epidemic or pandemic:

▪ According to our data, the majority of consumer expenditure is on basics such as food and prescription drugs. As a result, marketers should strive to create such business models.

▪ Several online channels are available during an outbreak. Businesses should make an effort to go digital and invest in online platforms during pandemic outbreaks. According to the findings, people like to live a healthy and fit lifestyle. Furthermore, it has been revealed that customers took immune boosters during the COVID-19 pandemic. Businesses should make an effort to incorporate products that boost immunity and support good health in their product assortment.

▪ According to authorities, people who lost their jobs due to a pandemic should try to find alternative employment.

Author Contributions

Mohammad Nazmus Sakib has made a substantial contribution to the concept or design the article; and analysis, interpretation of data for the article.

Abu Hurira helped to collect the data and involved in drafting the manuscript or revising it critically for important intellectual content.

Md Ariful Islam has given final approval of the version to be published and accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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References

Accenture. (2020). How COVID-19 will permanently change consumer behavior. Retrieved from https://www.accenture.com/_acnmedia/pdf-123/accenture-covid19-pulse-survey-research-pov.pdf

Ali, I., & Alharbi, O. M. (2020). COVID-19: Disease, management, treatment, and social impact. *Science of the total Environment, 728*, 138861.

Baker, S. R., Farrokhnia, R. A., Meyer, S., Pagel, M., & Yannelis, C. (2020). How does household spending respond to an epidemic? Consumption during the 2020 COVID-19 pandemic. *The Review of Asset Pricing Studies, 10*(4), 834-862.

Barkat, A., Osman, A., Ahamed, F., Mamun, M., Rabby, M., Begum, L., & Sarwer, M. (2020). Socio-economic assessment of COVID-19 under National Urban Poverty Reduction Programme. *Dhaka: HDRC and UNDP. https://www.hdrc-bd. com/socio-economic-assessmentof-covid-19-under-national-urban-poverty-reduction-programmeconducted-for-undp-year-2020.*

Bloom, D., & Canning, D. (2006). Epidemics and Economics. Harvard Initiative for Global Health. In: United Nations Industrial Development Organization.

Bounie, D., Camara, Y., & Galbraith, J. (2020). *The COVID-19 containment seen through French consumer transaction data: Expenditures, mobility and online substitution*. Retrieved from

Chakraborty, I., & Maity, P. (2020). COVID-19 outbreak: Migration, effects on society, global environment and prevention. *Science of the total Environment, 728*, 138882.

Chen, H., Qian, W., & Wen, Q. (2021). *The impact of the COVID-19 pandemic on consumption: Learning from high-frequency transaction data.* Paper presented at the AEA Papers and Proceedings.

Chronopoulos, D. K., Lukas, M., & Wilson, J. O. (2020). Real-time consumer spending responses to the COVID-19 crisis and government lockdown. *VoxEU. org, 6.*

Covid, F. and the Role of Local Food Production in Building more Resilient Local Food Systems; Food and Agriculture Organization of the United Nations: Rome, Itaty, 2020. In.

Data.worldbank.org. (2020). Final consumption expenditure (current US$) Data. (n.d.). Final Consumption Expenditure (Current US$) Retrieved from https://data.worldbank.org/indicator/NE.CON.TOTL.CD

data.worldbank.org., W. B., & (July 17, 2020). Final consumption expenditure (current US$) - Bangladesh. Retrieved from https://data.worldbank.org/indicator /NE.CON.TOTL.CD?locations=BD

Dixon, S., McDonald, S., & Roberts, J. (2002). The impact of HIV and AIDS on Africa's economic development. *Bmj, 324*(7331), 232-234.

Fan, V. Y., Jamison, D. T., & Summers, L. H. (2016). *The inclusive cost of pandemic influenza risk*. Retrieved from

Forum, W. E. (2018). how epidemics infect the global economy and what to do about it. Retrieved from www.weforum.org/agenda/2018/05/

Garrett, T. A. (2007). Economic effects of the 1918 influenza pandemic. *Federal Reserve Bank of St. Louis, 26*.

Hayakawa, K., & Kuwamori, H. (2021). Introduction to the Special Issue on "How Does COVID-19 Change the World Economy?". *The Developing Economies, 59*(2), 121.

Jonas, O. B., & (2013). "Pandemic risk", World Development Report. Retrieved from https://openknowledge.worldbank.org/bitstream/handle/10986/16343/WDR14

Karlsson, M., Nilsson, T., & Pichler, S. (2014). The impact of the 1918 Spanish flu epidemic on economic performance in Sweden: An investigation into the consequences of an extraordinary mortality shock. *Journal of health economics, 36*, 1-19.

Kumar, R., & Abdin, M. S. (2021). Impact of epidemics and pandemics on consumption pattern: evidence from Covid-19 pandemic in rural-urban India. *Asian Journal of Economics and Banking*.

Mehta, S., Saxena, T., & Purohit, N. (2020). The new consumer behaviour paradigm amid COVID-19: permanent or transient? *Journal of health management, 22*(2), 291-301.

Muellbauer, J. (2020). The coronavirus pandemic and US consumption. CEPR policy portal. In.

Orset, C. (2018). People's perception and cost-effectiveness of home confinement during an influenza pandemic: evidence from the French case. *The European Journal of Health Economics, 19*(9), 1335-1350.

Rahman, M. R., Sajib, E. H., Chowdhury, I. M., Banik, A., Bhattacharya, R., & Ahmed, H. (2021). Present scenario of COVID-19 in Bangladesh and government preparedness for facing challenges. *J Adv Biotechnol Exp Ther, 4*(2), 187-199.

Rahman, M. S., Karamehic-Muratovic, A., Amrin, M., Chowdhury, A. H., Mondol, M. S., Haque, U., & Ali, P. (2020). COVID-19 epidemic in Bangladesh among rural and urban residents: An online cross-sectional survey of knowledge, attitudes, and practices. *Epidemiologia, 2*(1), 1-13.

Saadat, S., Rawtani, D., & Hussain, C. M. (2020). Environmental perspective of COVID-19. *Science of the total Environment, 728*, 138870.

Samuel, J., Rahman, M., Ali, G., Samuel, Y., & Pelaez, A. (2020). Feeling like it is time to reopen now? covid-19 new normal scenarios based on reopening sentiment analytics. *arXiv preprint arXiv:2005.10961*.

Sands, P., El Turabi, A., Saynisch, P. A., & Dzau, V. J. (2016). Assessment of economic vulnerability to infectious disease crises. *The Lancet, 388*(10058), 2443-2448.

Sharma, S., Zhang, M., Gao, J., Zhang, H., & Kota, S. H. (2020). Effect of restricted emissions during COVID-19 on air quality in India. *Science of the total Environment, 728*, 138878.

Sheth, J. (2020). Impact of Covid-19 on consumer behavior: Will the old habits return or die? *Journal of business research, 117*, 280-283.

Zambrano-Monserrate, M. A., Ruano, M. A., & Sanchez-Alcalde, L. (2020). Indirect effects of COVID-19 on the environment. *Science of the total Environment, 728*, 138813.

Appendix

Abbreviations

BB = Bangladesh Bank

BBS = Bangladesh bureau of statistics

MPC = Marginal propensity to consume

MIDP = Monthly income during Pandemic

MIBP = Monthly income before pandemic

MCDP = Monthly consumption during pandemic

MCBP = Monthly consumption before pandemic

WHO = world health organization

WB = World Bank

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