International Journal of Current Research and Modern Education (IJCRME)
International Peer Reviewed - Refereed Research Journal, Website: www.rdmodernresearch.com
Impact Factor: 6.925, ISSN (Online): 2455 - 5428, Volume 10, Issue 1, January - June, 2025

ASSESSING THE IMPACT OF COVID-19 ON SERVICE INDUSTRIES IN NORTH SHEWA ZONE, ETHIOPIA: A FOCUS ON TOURISM, TRANSPORTATION, AND HOTEL BUSINESSES

Dr. A. R. Muralidharan
Assistant Professor, Department of Community Medicine, BGS MCH, Nagarur, Karnataka

Cite This Article: Dr. A. R. Muralidharan, "Assessing the Impact of Covid-19 on Service Industries in North Shewa Zone, Ethiopia: A Focus on Tourism, Transportation, and Hotel Businesses", International Journal of Current Research and Modern Education, Volume 10, Issue 1, January - June, Page Number 70-82, 2025.

Abstract:

The pastimes have been significantly affected by the COVID-19 pandemic, which was declared a Public Health International Emergency Concern (PHIEC). People across the world faced disruptions in various aspects of life, including social, psychological, economic, employment, education, and services. The global outbreak created an ordeal, spreading rapidly and leading many countries to enforce nationwide lockdowns and border closures. Service industries, including retail, tourism, transport, distribution, and food services, were among the hardest hit during these challenging pastimes. These industries not only faced financial strain but also experienced psychological and physical challenges. This study aims to assess the impact of COVID-19 on service industries, particularly tourism, in the North Shewa Zone, Ethiopia. A survey was conducted using a questionnaire, collecting data from service industry professionals in the tourism transport sector within selected woredas of the zone. Respondents included managerial-level and senior personnel. The analysis involved frequency tables, graphs, chi-square tests of association, and regression analysis. The findings indicate that the type and scale of service industries, awareness of COVID-19, social distancing practices, operational adjustments, mutual support, and business shutdowns significantly influenced the level of impact on service industries. As a result, it is recommended that the government continue to raise awareness about safe business operations during crises. Similarly, service industries should adapt their business models to align with the ongoing challenges posed by the COVID-19 pandemic.

Key Words: COVID-19, Tourism, North Shewa zone, Service industries, Transportation

Introduction:

Background of the Study:

The coronavirus disease (COVID-19) outbreak, classified as a Public Health Emergency of International Concern (PHEIC), has rapidly spread across the globe. Although much about the virus remains uncertain, it is known to be transmitted primarily through respiratory droplets from infected individuals via coughing or sneezing. Infection may also occur through contact with contaminated surfaces followed by touching the face (mouth, nose, or eyes). As the virus continues to spread, communities must implement preventive measures to minimize transmission, mitigate the outbreak's impact, and reinforce control strategies. COVID-19 is caused by a newly identified strain of coronavirus. The term "COVID-19" is derived from "CO" (corona), "VI" (virus), and "D" (disease), with "19" referencing the year it emerged (2019). Previously known as "2019 novel coronavirus" or "2019-nCoV," this virus belongs to the same family as those responsible for SARS and some common colds.

Globalization has influenced all sectors of the economy, especially services, which represent the largest share of employment and economic output in most countries. However, only recently have researchers and policymakers begun examining its impact on the services sector. Developing economies rely heavily on advanced services for sustainable growth and employment generation. Service industries also play a critical supporting role for manufacturing and global value chain integration. As service markets open up, countries with strengths in business services can create high-quality jobs, while manufacturing-focused countries benefit from improved service inputs to climb the value chain. The advent of cheaper air travel, declining telecommunications costs, widespread internet access, and broadband connectivity has enabled the internationalization of many service-based activities.

Despite the sector's growing importance, comparative data on service trade is limited, making it difficult to analyze the link between trade and employment directly. This study aims to fill that gap by exploring how services tradability affects job patterns and earnings. Traditionally, service industry competition was restricted to national boundaries due to the localized nature and demand of such services. However, recent industry restructuring has led to more centralized, global, and capital-intensive service models. Standardized global strategies now allow firms to replicate operations, systems, and methods across multiple locations. The more back-office functions that can be decoupled from customer interaction, the greater the benefits globalization offers to service multinational corporations (MNCs).

Access to timely and accurate information is vital during pandemics, especially in developing nations like Ethiopia where limited internet penetration, low literacy, and linguistic diversity create barriers. COVID-19 has disrupted global trade, travel, and services. Without sufficient financial stimulus or monetary interventions, widespread business closures and economic crises could unfold, affecting both individual nations and the global economy. The pandemic has particularly impacted service sectors at both national and international levels, with developing nations facing greater challenges in managing losses. As the pandemic nears its decline, there is cautious optimism about gradual global economic recovery. According to the World Bank, tourism alone contributed 33% of export earnings in 2012 but remains vulnerable due to ongoing conflicts and instability.

On April 15, 2020, the Economic Commission for Africa emphasized the importance of considering the economic vulnerabilities of African cities while formulating COVID-19 policy responses. Urban economies-dominated by manufacturing and services (64% of Africa's GDP)-are expected to experience sharp employment losses. Roughly 250 million individuals in Africa's informal urban sector are at risk, especially small and medium-sized enterprises (SMEs), which make up 80% of urban

employment. Reports also indicate steep price hikes in essential goods, further straining urban living costs. Urban consumption-which fuels rural value chains-will likely decline due to lockdowns and movement restrictions, significantly impacting economic activity. As per Ms. Ruzvidzo, the consumption spending in Africa's large cities is typically 80% higher than national averages. A drop in urban demand could, therefore, have cascading effects on domestic production and employment.

Study Focus:

This research aims to examine the impact of COVID-19 on service industries in the North Shewa Zone of Ethiopia. Data were gathered from selected districts using structured surveys by trained field investigators and supervisors. The findings aim to address several key research questions that guide this investigation.

Objectives of the Study:

General Objective:

- To evaluate the overall impact of COVID-19 on service industries within the North Shewa Zone.

Specific Objectives:

- To assess the level of awareness regarding COVID-19 among service sector enterprises.
- To identify demographic and pandemic-related factors affecting service industries.
- To examine associations between COVID-19-related factors and business performance in the service sector.
- To evaluate preventive measures adopted by service industry businesses.
- To analyze the effects of COVID-19 on service industry workers.

Operational Definitions:

- Service Industries: This study focuses specifically on hotel tourism, public transportation, and retail shopping, though service industries broadly include healthcare, telecom, media, and other social services.
- Scale of Service Industries: Hotels and Retail Businesses: Categorized (A, B, and C) according to the Ethiopian Revenue Authority's tax classification.
- Transportation: Classified by the Transport Office into levels 1, 2, and 3 based on operational scale.

Sector-Specific Summaries:

Tourism and Hotels:

Tourism encompasses multiple areas, but this study concentrates on hotels and travel-related services. By August 2020, over 20 million global COVID-19 cases and nearly 746,000 deaths were reported. Rising unemployment has severely affected the tourism industry. Tourism, which inherently involves movement and interaction, has facilitated pathogen transmission. It also indirectly contributes to pandemics through industrial food systems and deforestation-factors linked to zoonotic diseases. Climate change, driven in part by emissions from tourism, compounds these risks.

The pandemic challenges the long-held growth-centric model of tourism. While growth remains the metric of success for global tourism bodies like UNWTO and ICAO, a sustainable, risk-aware approach is needed, particularly in the wake of health crises and environmental concerns. Hotels are among the hardest-hit sectors due to travel restrictions and reduced bookings. Despite the challenges, recovery is possible through revised business strategies and government support. In Ethiopia, over 400 star-rated hotels face revenue loss. The Job Creation Commission estimated that over 2 million people could lose their jobs due to the pandemic's effects.

Transportation Services:

Ethiopia faces challenges in road safety due to poor infrastructure, inadequate vehicle maintenance, and unsafe driving behaviors. Public transport options are limited and often unsafe. Ride-sharing services are uncommon due to weak internet infrastructure. Reliable transport providers like Skybus and Selam connect Addis Ababa to major cities, but urban minibusses remain unsafe, especially at night. Global travel restrictions and quarantine measures-such as mandatory 14-day stays for international arrivals in Ethiopian hotels-have significantly affected both domestic and international mobility. This has in turn disrupted logistics, supply chains, and public transit-dependent businesses.

Methodology:

Research Design:

A research design serves as a structured plan that guides a study, encompassing decisions from broad conceptual frameworks to specific data collection techniques (Creswell, 2009). It ensures validity, objectivity, accuracy, and efficiency in research. This study adopts a mixed-methods research design, as the nature of the COVID-19 impact assessment necessitates both qualitative and quantitative analyses.

Data Sources:

The study primarily relies on primary data sources collected from key service industries, specifically hotels, retail shopping, and public transportation services in North Shewa Zone. The study population consists of all service businesses within these categories, while the research focuses on four purposively selected woredas: Debre Berhan, Chacha, Debresina, Shewarobit. These woredas were chosen based on their proximity to Debre Berhan, a region significantly affected by COVID-19. A random sample of businesses from each woreda, categorized by size (small, medium, and large), was selected. Data collection was conducted using a structured and pre-tested questionnaire distributed among the sampled businesses across the selected woredas.

Sampling Design:

The sampling frame consists of all specified service industries within the selected woredas. A probabilistic sampling approach, specifically stratified random sampling, was employed to ensure a representative sample. Each woreda was treated as a separate stratum, from which businesses were randomly selected. To determine the sample size, several factors were considered, including the study objectives, resource availability, and the required precision level. The initial sample size was calculated using the following formula:

$$n_0 = \frac{Z_{\alpha/2}{}^2 pq}{d^2}$$

Where n_0 = initial sample size

$Z_{\alpha/2}$ = 1.96 = confidence level of normal distribution, which is read from Z- table
p = the proportion of COVID-19 affected service industries, since there is no prior information, it can take the value of 0.5.
q = 1-p = 0.5 = the proportion of non-COVID-19 affected service industries.
d = 5.4% = margin of error (maximum allowable error which is determined by the researcher)
Based on the above formula $n_0 = 329$
Since n_0 > 0.05*N (i.e. 329 > 0.05*2950 = 148) the final sample size was calculated using the following formula;

$$n = \frac{n_0}{(1+n_0/N)} = \frac{329}{(1+329/2950)} = 295$$

Therefore, the final sample size of the research is 295 from the total of 2950 service industries in four selected woredas of North Shewa zone.
Once the sample size has been determined it has been allocated for each 4 purposely selected woredas of the zone proportional to size of service industries in the woredas by;
$n_h = \frac{N_h}{N} * n$, where n_h is sample taken from woreda h, N_h is total number of service industries in woreda h, n is total samples taken from the zone and the value h = 1, 2, 3, 4
Accordingly;

$$n_1 = \frac{N_1}{N} * n = \frac{1020}{2950} * 295 = 102 \text{ for Debre Berhan}$$
$$n_2 = \frac{N_2}{N} * n = \frac{550}{2950} * 295 = 55 \text{ for Chacha}$$
$$n_3 = \frac{N_3}{N} * n = \frac{790}{2950} * 950 = 79 \text{ for Debresina}$$
$$n_4 = \frac{N_4}{N} * n = \frac{590}{2950} * 295 = 59 \text{ for Shewarobit}$$

The population and sample size of selected woredas of the zone is given below:

Table 1: Proportional samples taken from each selected woredas of North Shewa zone

No	Names of the Woredas	Number of Service Industries in Each Woreda (N_H)	Number of Samples From Each Woreda (N_H)
1	Debre Berhan	1020	102
2	Chacha	550	55
3	Debresina	790	79
4	Shewarobit	590	59
	Total	N = 2950	N = 295

N.B: The proportionally allocated sample also further proportionally allocated for hotel, shopping and public transportation in each woreda. Accordingly, the allocation of service industries across woredas is given by:

Table 2: The distribution of type of service industries across the selected woredas

Woreda Versus Service Industries		Types of Service Industries			Total
		Hotel	Shopping	Transportation	
Name of the Worada	Debre Berhan	20	40	42	102
	Chacha	13	18	24	55
	Debresina	18	30	31	79
	Shewarobit	14	19	26	59
Total		67	106	122	295

Variables under the Study:

The response variable in this study is impact level of COVID-19 on service industries, measured in terms of revenue and order of customers.

Table 3: Variable description with coding of categories (independent variables)

No	Variable Name	Description of Variables	Codes
1	Gender	Sex of the Respondents	0 = Male ,1 = female
2	Sector	Category of the service industry	0 = Hotel, 1=Travel, 2 = Retail shops
3	Age	Age of respondent	Continuous
4	Marital Status	Marital status of the respondent	0 = Single, 1= Married and 2 = Others
5	Educational Status	Educational status of respondents	0 = Not educated, 1= Primary, 2= high school, 3= diploma / certificate 4 = degree and above
6	Income	Average daily income of the respondent	Continuous
7	Location	Location of service industry	0 = Debre Berhan, 1 = Shewarobit, 2 = Debresina, 3 = Chacha
8	Scale	Scale of service industries	0 = small, 1 = middle, 2 = large
9	Size of Employees	Number of employees in the sector	Continuous
10	Awareness	Awareness on COVID-19	0 = no, 1 = yes
11	Social Distance	Following social distance	0 = no, 1 = yes
12	Operating Differently	Operating business differently in response to COVID-19	0 = no, 1 = yes
13	Helping Others	Helping others during the pandemic	0 = no, 1 = yes
14	Stopped Operation	Stopped operation due to COVID-19	0 = no, 1 = yes

15	Handling Workers	Handling of workers responding to COVID-19	Extended
16	Hotel Reaction	Hotel specific reaction to COVID-19	Extended
17	Transportation Reaction	Transportation specific reaction to COVID-19	Extended
18	Shopping Reaction	Shopping specific reaction to COVID-19	Extended
19	Government Support	Type of support by government	Extended

Multiple Linear Regression Analysis:

A regression model that involves more than one independent variable is called a multiple regression model. It is statistical tool that allows examining how multiple independent variables are related to a dependent variable. Basically this model has been used to predict the effect of demographic and COVID-19 related factors on the level of impact of COVID-19 on service industries. In a regression analysis the relationship, called the regression function, between one variable y, called the dependent variable, and several others xi, called the independent variables. Regression function also involves a set of unknown parameters. The model is given by;

$$Y_i = \beta_O + \beta_1 X_2 + \beta_2 X_2 + \beta_3 X_3 + \ldots\ldots\ldots\ldots + \beta p X_P + \mu_i$$

Where,

Yi - dependent variable (impact level of COVID-19 on service industries)

X'S - independent variables (COVID-19 related factors)

β_o - is constant parameter

β's - are coefficient parameters

μ_i - Residual due to measurement error

The regression coefficients are interpreted as the change in the expected value of Y associated with a one-unit increase in an independent variable, with the other independent variables held constant.

Assumptions of Multiple Linear Regressions:

- Var (μi) = δ2, the error term should have constant variance (homoscedasticity)
- The error term is independently and identically distributed random variable having normal distributed with mean 0 and variance δ2 i.e it distribute N (0, δ2)
- X 's -are independent (no Multicolinearity) each other.
- Explanatory variables and error term are uncorrelated.
- There is no autocorrelation between error terms.

Assumption Checking of Multiple Linear Regressions:

- Linearity can be checked by drawing the scatter plot of response variable versus fitted value. To attain linearity the pattern of the plot must be approximately linear.
- Normality can be checked by drawing histogram and pp-plot, if the distribution of error terms under histogram is approximately normal (bell shaped), and the distribution of points in pp- plot lays around the straight line normality is attained otherwise it is violated
- Constant variance can be checked drawing the scatter plot of standardize residual versus fitted value the scatteredness of points in the plot must be random, it shouldn't show any pattern.
- Absence of Multicolinearity can be checked by using bivariate correlation analysis and variance inflation factor (VIF), the value of Pearson correlation in bivariate correlation analysis is less than 0.5 and the value of VIF is less than 10 the assumption of absence of Multicolinearity is satisfied otherwise it is violated.

Result and Discussion:

Descriptive Analysis:

For any statistical analysis, to get an idea about the data it needs some descriptive measures of that data; this was achieved by descriptive analysis. It is important to analysis the data at the first and very basic stage, in order to get an idea about the distribution of variables involving in the study, detect outliers and typos and enable to identify the association among the variables. This leads to making one be ready to conduct further statistical analysis. Descriptive analysis of data helps to describe the pattern or trend occurred in the data. Thus the main purpose of the descriptive analysis is to provide a brief summary of the sample and the measures done on a given study. Descriptive data analysis is appropriate choice when the research aim is to identify the pattern and scenario of the data.

Social Characteristics of the Respondents:

The social characteristics of respondents such as weradas, gender, age, experience, type of service industries, scale of industry, following social media, awareness about COVID-19, keeping social distance, impact of COVID-19, managing business, providing help to others and so on. In this study there were four weradas involved and the respondent were investigated by using the survey questionnaire, the response of the respondents were presented in the following tables.

Table 4: Social characteristics of the respondents

Number	Social Characteristics	Number of Respondent	Percent
1.1	Name of Worada		
	Chacha	55	18.6
	Debre Berhan	102	34.6
	Debresina	79	26.8
	Shewarobit	59	20.0
1.2	Gender		
	Male	221	74.9
	Female	74	25.1
1.3	Age		

	Less Than 25 Years	87	29.5
	26 -35 Years	138	46.8
	36-45 Years	52	17.6
	More Than 46 Years	18	6.1
1.4	Experience		
	less than 5 years	37	12.5
	6 -10 years	170	57.6
	11 -15 years	76	25.8
	more than 16 years	12	4.1
1.5	Type of service industries		
	Hotel	67	22.7
	Retail shopping	106	35.9
	Transportation	122	41.4
1.6	Scale of industry		
	Small	154	52.2
	Medium	99	33.6
	Large	42	14.2
1.7	Following social media		
	Yes	257	87.1
	No	38	12.9

Table 4 is the representation of Social characteristics of the respondents and number 1.1 and figure 1 shows the distribution of respondents across Weradas in the COVID-19 project. The result depicted that out of 295 respondents the maximum respondent covered in the Debre Berhan town as 102 respondents (34.6%) and the minimum respondent were investigated in Chacha town as 55 respondents (18.6%). The other two weradasDebresina and Shewarobit involved with 26.8% and 20.0% of the sample.

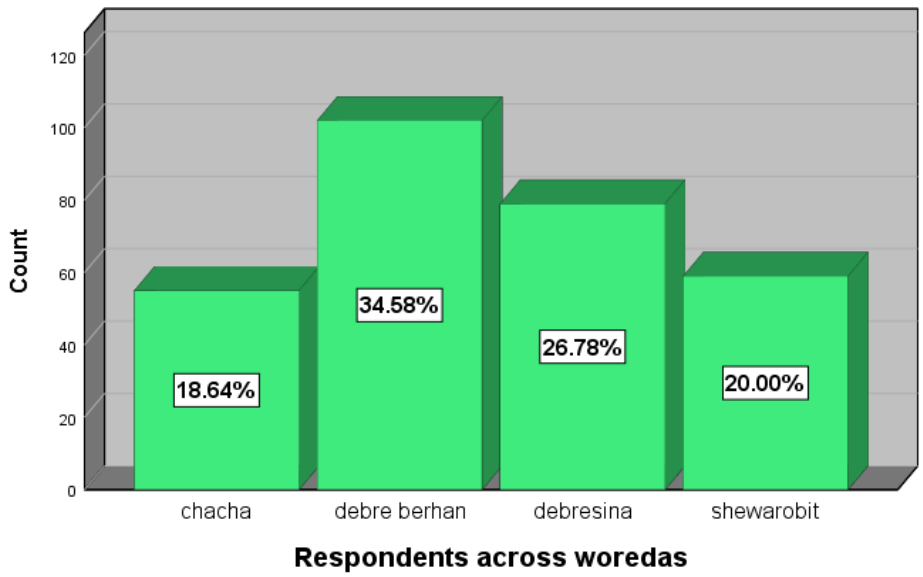


Figure 1: Distribution of Respondent across Worada

Number 1.6 and figure 2 shows the distribution of scale of service industries, there are three categories of service industries; small, medium and large scale of service industry with respect to their investment on their business. Out of 295 respondents these three categories were distributed, the maximum number of respondents in this study was occupied by small scale industry as 154 respondents with nearly 52% and as the minimum respondent taken over with the category of large scale of 42 respondents nearly 14%.

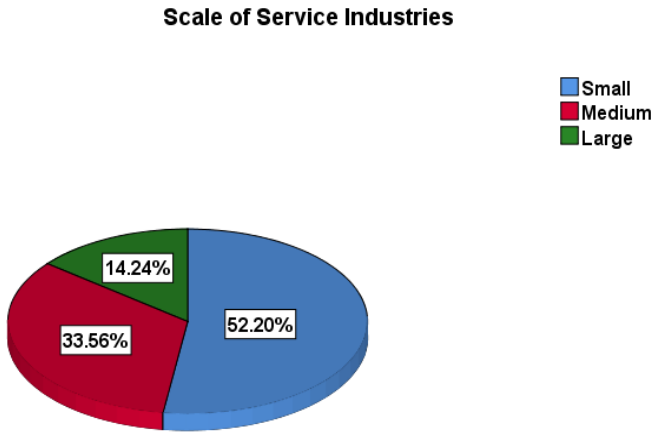


Figure 2: scale of Service Industries

Number 1.5 and figure 3, show the type of service industry of the involved respondents, there were only three industries involved in this COVID-19 study, they were Hotel industry, Retail shopping industry and the Transportation industry. The results showed that the transportation industry involved with more number of respondent that is 122 respondent (41% nearly), following to this retail shopping industry occupied with 106 respondent (36%) and finally the hotel industries with 67 respondents (23% nearly).

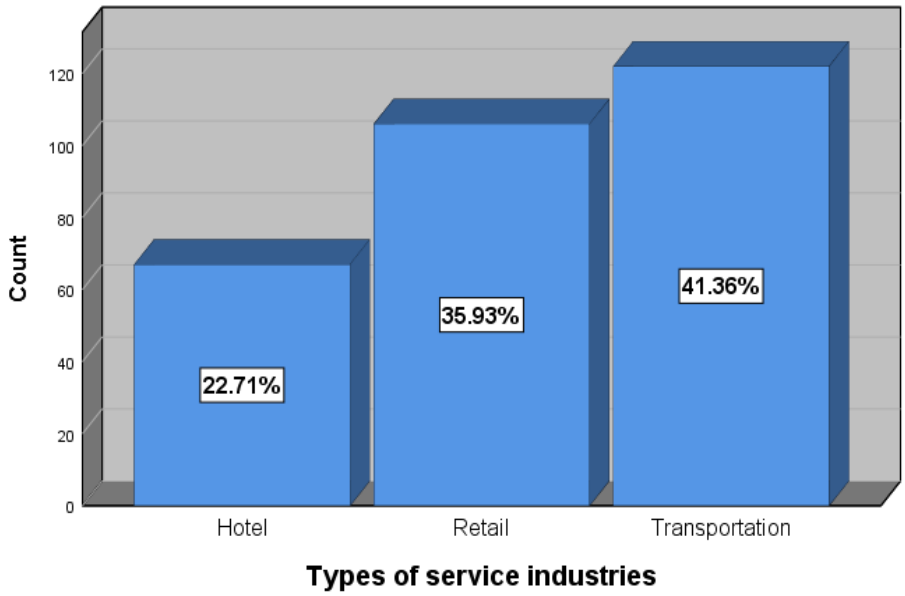


Figure 3: Type (sector) of service industries

Number 1.2 shows the classification of the respondent on Gender, it depicted that among the total respondents male respondent were 221 (74.9 %) and female respondent were 74 (25.1 %). This result shows that the male are more involved in the service sectors than female. Number 1.3, is the distribution of age of the respondent involved in COVID-19 service industries project and the range of age lies between less than 25 and more than 46 years of the respondents. Among the 295 respondents the age group between 29-35 years are more that is 138 (46.8 %) and the age group more than 46 years are participated nearly 6% that is 18 respondents are involved.

From number 1.4, the years of Experience of the respondents in service sector, this experience years range from minimum of zero and maximum of 16 years and above respondents in the service sector. Among the 295 respondents most of the respondents were lie with 6-10 years of experience and as the minimum years of experience lies in the group of more than 16 years as nearly 4%. That is more experience was less in number in the service sectors.

In number 1.7, the respondents were investigated with a question regarding following social media, to get update on COVID-19 awareness. Out of 295 involved respondents nearly 87% were following the social media and the rest of approximately 13% were not following social media. This shows that more respondent were getting update from social media.

Summary Result for COVID-19 Related Variables Impact on Service Industries:

Table 5: COVID 19 Impact Related Variables

No	COVID 19 Impact Variables	Number of Respondents	Percent
2.1	Awareness on COVD-19		
	Yes	271	91.9
	No	24	8.1
2.2	Impact of COVID-19		
	Yes	266	90.2
	No	29	9.8
2.3	Operating Business Different Due to COVID-19		
	Yes	166	56.3
	No	129	43.7
2.4	Any Help From Company to Others		
	Yes	161	54.6
	No	134	45.4

The main aim of this study is to analysis the impact level of COVID-19, for that the respondents were investigate with a question of awareness of COVID-19 pandemic and it is shown in Table 2 as COVID-19 impact variables. From number 2.1, it is evident that out of 295 involved respondents nearly 92% were aware about the pandemic and the remaining nearly 8% were not aware about these diseases. This shows that the industry people in service sectors doing business in North Shewa region were get good in aware about this COVID-19 pandemic.

Number 2.2, shows the impact of Business with respect to COVID-19 pandemic, out of the 295 respondents nearly 90% were agreed that there is an impact on their business activities with respect to the new pandemic of COVID-19 virus and also the rest around 10% were not agree on their opinion about the impact of COVID-19 on their business. It is observed that there are more entrepreneurs were affected with this new virus COVID-19 on their business activities in North Shewa region.

Number 2.3 is the result for "operating Business differently in response to COVID-19". It produces that nearly 56% of respondent handling their business in different approaches due to COVID-19, and the rest nearly 44% were doing the same approach on their business during this COVID-19 pandemic spread

Number 2.4 is the output of the question on "is there any help from the company to others who faced difficulties to survive due to COVID-19. Out of 295 respondents nearly 55% were provide help to the others and the rest of 45% of the respondents were not providing any help to the others during this COVID-19 pandemic spread.

Table 6: Stopping operations due to this COVID-19

Stopping operation due to COVID-19	Number of Respondent	Percent
No _Still Running	128	43.4
Yes Temporarily Stopped _ COVID-19	10	3.4
Yes Temporarily Stopped_ Reduced Order	10	3.4
Yes Temporarily Stopped _ Instruction From Authorities	2	.7
Yes Stopped Operations Provisory But Now Running	143	48.5
Yes_ Permanently Stopped	2	.7
Total	295	100.0

The respondents involved in this COVID-19 impact study, table 3 shows the result of "Stopping operation of business due to COVID-19 impact, the table shows that 43% of the respondents did not stopped their business operation in this pandemic spread and the rest 57% were stopped their business operation due to COVID-19 pandemic spread, with various strategies of their business among this stopped operation for various reason the high percent of response depict on the "Stopped operations provisory but now running" is nearly 50% and the other reasons were not influence their operations stopping strategies of their business. This is possible to say that the stopping operations due to this COVID-19 are equally influence on their business activities.

Table 7: Impact level of COVID-19 on Revenues and Orders of service industries

No	Impact level of COVID-19 on Business	Number of Respondent	Percent
4.1	Revenues		
	None	23	7.8
	25%	56	19.0
	25-50%	81	27.5
	50-100%	135	45.8
4.2	Orders		
	None	93	31.5
	25%	71	24.1
	25-50%	59	20.0
	50-100%	72	24.4
	Total	295	100.0

Table 7, shows the impact level of COVID-19 on their business activities with respect to their revenues and orders, from number 4.1 with respect to revenues the question were categorized into four classes out of that the respondents agreed that there is an impact in their business between 50 -100 percent as 135 respondent and it is nearly 46% of them. As the lowest response occupied in the category of "NONE" as 23 respondent and it is nearly 8 % of the respondents

Again from number 4.2, the questions based on their order were asked to find the impact level of COVID-19 on their business activities with respect to their orders, the question were categorized into four classes out of that the respondents agreed that there is no impact in their business as 93 respondent and it is nearly 32% of them. As the lowest response occupied in the category of "25-50" of impact on their business as59 respondent and it is nearly 20 % of the respondents

Table 8: Difficulties faced due to COVID 19 (supplies and Cash flow)

No	Difficulties Faced Due to COVID 19	Number of Respondent	Percent
5.1	Shortage of Supplies/Input Materials		
	Yes	101	67.5
	No	94	32.5
5.2	Shortage of Cash Flow		
	Yes	252	85.4
	No	43	14.6
	Total	295	100.0

Table 8 is the result of the investigated question in the survey questionnaire as "difficulties faced due to COVID 19" with respect to their supplies and materials availability and Cash flow in their business, from number 5.1, their supplies and materials availability out of 295 respondent 101(67.5%) of them accept that they faced difficulties on this issues, and the rest of them were not faced any difficulties due to this COVID-19 spread and it is nearly 32.5% as 94 respondent not facing any difficulties in their business activities with respect supplies and materials availability. Number 5.2 is the result of the investigated question in the survey questionnaire as "Faced difficulties due to COVID 19" in respect of their Cash flow availability, out of 295 respondent 252 (85.4%) of them accept that they faced difficulties on this issues and the rest 43 respondent (14.6%) of them were not faced any difficulties due to this COVID-19 spread in their business activities with respect supplies and materials availability.

Hotel Specific Impact of COVID-19:

Table 9: Number of Employees in hotels before and after COVID-19

Number of Employees in Hotels Before and After COVID-19	Before COVID-19		After COVID-19	
	Number of Respondent	Percent	Number of Respondent	Percent
Less than 5	25	37	32	48
6-10	28	42	23	34
11-15	10	15	8	12
Above 16	4	6	4	6
Total	67	100	67	100

From table 6, the table is related to the Hotel service sector as their Number of employees before and after COVID-19, as observed from the table the number of employees categorized into four categories as "Less than 5", "6-10", "11-15", and "Above 16" . In the time of Before COVID-19 the employees were more in the size of "6-10" as 42% and the "Above 16" Category occupies as 6% as a low percent among 67 hotel employees. And the same in after COVID-19 there is a slight change in their employees size as the category of size "Less than 5" the employees are at 48% and there is no change in the size of "Above 16" category as 6%. Hence the COVID-19 pandemic affects the employees in Hotel service sector.

Transportation Specific Impact of COVID-19:

There were five questions in yes or no type attached in the survey question and it's related to travelers and their awareness with the transportation entrepreneurs towards COVID-19. These results were presented in this section

Table 10: Awareness and reaction of transportation entrepreneurs towards COVID-19

No	Awareness and Reaction of Transportation Entrepreneurs	Number of Respondent	Percent
7.1	There is passive working environment due to COVID-19		
	Yes	95	78
	No	27	22
	Total	122	100
7.2	There is Limited transporting People due to COVID-19		
	Yes	113	93
	No	9	7
	Total	122	100
7.3	The income and expenditure of transportation cannot balanced due to limited customer		
	Yes	113	93
	No	9	7
	Total	122	100
7.4	Awareness creation and body temperature check		
	Yes	61	50
	No	61	50
	Total	122	100
7.5	Traffic police informs drives about the risk of COVID-19		
	Yes	59	48
	No	63	52
	Total	122	100

Table 10 above depicts the answers of the respondent which were related to "Awareness and reactions with the transportation entrepreneurs". This part involved with five related questions as Yes or No types. Number 7.1 shows the existence of "Passive working environment" out of 122 respondents 78% of them responded as "Yes" and the rest 22% of them were responded "NO". Number 7.2 address the "Limited People" accommodate in the Vehicle during transportation all the entrepreneurs following the rule of mentioning social distance as 93% of them reported as "Yes" and the rest 7% of the recorded "No". number 7.3 of the table 8, provide the information about expenditure and income of the transport respondents the entrepreneurs following the rule of mentioning social distance as 93% of them reported "Yes" and the rest 7% of the recorded "No". From 7.4 "Awareness creation and body temperature check" respondent were respond equally responded that 50% of them say and the rest No is also 50% responded. From number 7.5 Informing drives about the risk COVID-19 out of 122 respondents 52% says No information to drivers about the risk of COVID-19 and the rest of 48% were responded as 'Yes'.

Type of Support Needed From Government:

Table 11: Type of support needed from Government

S.No	Types of Support	Priority Ranking								Total (%)
		1		2		3		4		
		Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	
1	Advice on how to prevent infections while maintaining business operations	200	67.8	67	22.7	16	5.4	12	4.1	295(100)
2	More information on transmission and spread of the virus	151	51.2	95	32.2	31	10.5	16	5.4	295(100)
3	Supplies of personal protection equipment like masks, thermometers etc	189	64.1	68	23.1	30	10.2	8	2.7	295(100)
4	Legal advice on application of labor laws and regulations during crisis	84	28.5	123	41.7	49	16.6	39	13.2	295(100)
5	Training how to apply technology to sustain business	103	34.9	112	38.0	47	15.9	33	11.2	295(100)
6	Access to cash / short-term finance	146	49.5	58	19.7	70	23.7	21	7.1	295(100)
7	Price controls of critical goods	122	41.4	72	24.4	67	22.7	34	11.5	295(100)
8	Deferring payments of utilities,, social security contributions,, loans or taxes	140	47.5	77	26.1	53	18.0	25	8.5	295(100)
9	Extension of social protection for workers	129	43.7	80	27.1	54	18.3	32	10.8	295(100)

Table 11 depicts the Type of support needed from public or government and there were nine questions with four priorities of their preference. The data were collected and tabulated in the table 10. Out of 295 respondent the highest priority were presented for discussion From, the question "Advice on how to prevent infections while maintaining business operations" Priority 1 were their first and highest preference as 67.8% and the lowest preference showed on Priority 4 as 4.1% , in the second question" More information on transmission and spread of the virus", there were their first and highest preference as 51% and the lowest preference showed on Priority 4 as 5.4%, in the third question "Supplies of personal protection equipment like masks,, thermometers and so on" there were their first and highest preference as 64.1% and the lowest preference showed on Priority 4 as 2.7%. again from the fourth question is "Legal advice on application of labor laws and regulations during crisis", there were their Priority 2 is the highest preference as 41.7% and the lowest preference showed on Priority 4 as 13.2%, from the fifth question on the priority of help "Training how to apply technology to sustain business" the respondent preferred their Priority 2 is the highest preference as 38.0% and the lowest preference showed on Priority 4 as 11.2%, as a continuation of the fifth question based on the sixth question the respondents were investigated on the question as "Access to cash / short-term finance" the respondent showed their preference as Priority 1 were their first and highest preference as 49.5% and the lowest preference showed on Priority 4 as 7.1%, the seventh question is as based on the "Price controls of critical good", their preference as Priority 1 were their first and highest preference as 41.4% and the lowest preference showed on Priority 4 as 11.5%, the eighth question as "Deferring payments of utilities, social security contributions, loans or taxes" the respondents were showed there priority as Priority 1 were their first and highest preference as 47.5% and the lowest preference showed on Priority 4 as 8.5% and final and ninth question is as on "Extension of social protection for workers" as the respondent were responded as their preference as "Priority 1 were their first and highest preference as 43.7% and the lowest preference showed on Priority 4 as 10.8%"

Inferential Result of the Study:

Inferential statistics is the advanced type of statistical analysis, which shows the relationship of variables under the study. It infers or concludes the result of the study for population under the study. Basically study samples have taken from four selected woredas of north Shewa zone. Therefore the result obtained from these selected woredas can be used to infer about the whole north Shewa zone, this is what do we mean by inferential result. Accordingly chi square test of association and regression analysis have been used to examine the impact level of COVID-19 on service industries.

Chi square test of Association:

The bivariate chi square test of association table shows that type of service industries, scale of service industries and impact of the pandemic on the revenue have a significant association with the operation status (stopped or working) of service industries. The cross tabulation table below shows that about 44.8% of the hotels, 42.5% of the shopping and 75.5% of transportation were stopped their operation due to the pandemic of COVID-19. Similarly the impact of COVID-19 with respect to scale of service industries shows that about 50.6% of small scale, 61.6% of medium scale and 66.7% of large scale of service

industries were stopped their operation due to COVID-19 crises. The result also shows that the pandemic seriously affect the revenue of service industries.

Table 12: chi square test of association on the impact of COVID-19 on stopping business

Variables Considered	Categories of Variables	Was Your Business Stopped Operation Before?		Total (%)	Chi Square Value (Sig.)
		No (%)	Yes (%)		
Types of Service Industries	Hotel	37 (55.2)	30 (44.8)	67 (22.7)	30.023 (.000)
	Retail Shopping	61 (57.5)	45 (42.5)	106 (36.0)	
	Transportation	30 (24.5)	92 (75.5)	122 (41.3)	
Scale of the Industry	Small	76 (49.4)	78 (50.6)	154 (52.2)	4.967 (.043)
	Medium	38 (38.4)	61 (61.6)	99 (33.5)	
	Large	14 (33.3)	28 (66.7)	42 (14.3)	
Impact of COVID-19 on Your Business Revenues	None	17 (73.9)	6 (26.1)	23 (7.8)	10.022 (.018)
	25%	21 (37.5)	35 (62.5)	56 (19.0)	
	25-50%	32 (39.5)	49 (60.5)	81 (27.5)	
	50-100%	58 (42.9)	77 (57.1)	135 (45.7)	

Regression Analysis:

Regression analysis is an advanced method of data visualization and analysis that allows you to look at the relationship between two or more variables. There a many types of regression analysis and the one(s) a survey scientist chooses will depend on the variables he or she is examining. What all types of regression analysis have in common is that they look at the influence of one or more independent variables on a dependent variable. For our case we have used multiple linear regression. Basically it has three core outputs namely; model summary, ANOVA and coefficient tables. The result of each component of the model is given in the following successive tables.

Table 13: Model summary table

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.791	.626	.608	.40894	2.389

The model summary table is presented in the above table gives the information about the overall fit of the model. Which is basically indicated by adjusted R2 = 0.608 which implies about 60.8% of the variability in impact level of COVID-19 is explained by the set of predictor variables considered in the study.

Table 14: Analysis of Variance (ANOVA) table

Source of variation	Sum of Squares	df	Mean Square	F	Sig.
Regression	25.742	12	2.145	2.838	.001
Residual	213.159	282	.756		
Total	238.902	294			

Table 14 gives the Regression analysis of variance (ANOVA), the table indicates the overall regression model predicts the dependent variable significantly. From the table it is evident that the overall regression model is significant (sig. = 0.001) meaning that the specified model fit the data well. More specifically the cumulative effect of predictor variables towards impact level of COVID-19 is significant, but the table does not show which predictor variable make the model significant which was answered by the following individual parametric test (coefficient table).

Table 15: Coefficient Table

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	β	S.E			
(Constant)	4.421	.515		8.580	.000
Cite (woredas)	.038	.023	.066	1.653	.100
Gender of the Respondent	.122	.074	.126	1.649	.107
Age of the Respondent	.057	.095	.063	.605	.549
Experience on business	-.118	.058	-.164	-2.033	.048*
Types of service industries	.122	.074	.126	1.649	.007*
Scale of the Industry	-.408	.029	-.459	-13.847	.000*
Awareness of COVID19	-.077	.024	-.088	-3.258	.001*
Following Social distance	-.197	.070	-.237	-2.815	.006*
Operating business differently	-.186	.071	-.224	-2.605	.010*
Company doing any help	-.127	.055	-.164	-2.295	.024*
Stopping operation COVID19	.279	.053	.330	5.285	.000*

*significant at 5% level

Table 15, provides the necessary information on the impact level of COVID-19. The information is to predict cases from the COVID-19 and to determine the impact level of covid-19 contribute statistical significance to the given model. From the table it is clearly shown that types of service industries, scale of the industry, awareness on COVID-19, following social distance, operating business differently responding to COVID-19, company doing any help, experience on business and stopping operation due to COVID19 have significant (sig < 0.05) effect on the impact level of COVID-19. The fitted regression model is given by: Impact level of COVID-19= β0 + β1 (Experience of the Respondent) + β2(Types of service industries) + β3(Scale of the Industry) + β4(Awareness of COVID19) + β5(Following Social distance) + β6 (Doing business differently) + β7(Company doing any help) + β8(Stopping operation due to COVID19). Basically the result of individual parametric test (coefficient table) has been interpreted based on significance and coefficient values of the predictor variables under the study, those variables having less than

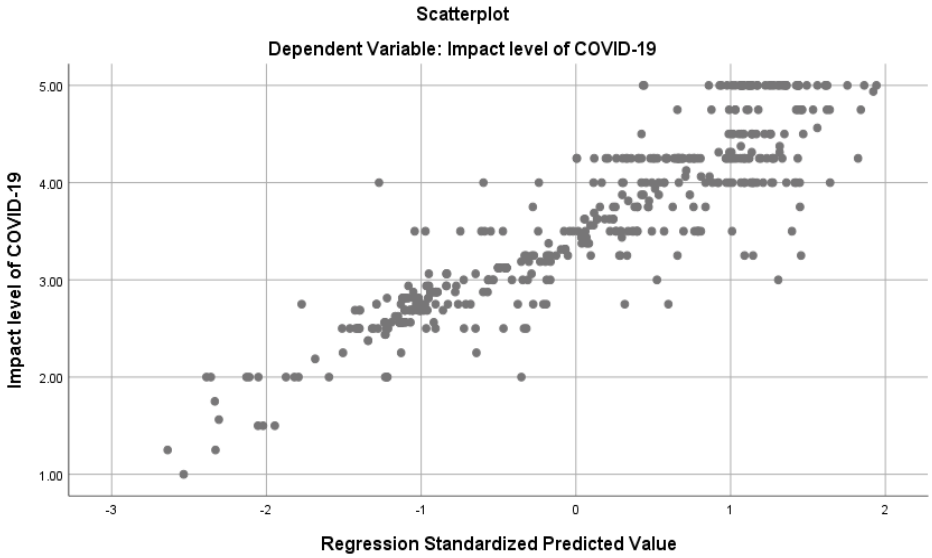
0.05 significance value indicated by asterisks (*) have significant effect on the impact level of COVID-19 on the specified service industries. The magnitude and direction of effects of each predictor variables is indicated by coefficient of the variables. The variables having negative sign have opposite effect on the impact level of COVID-19. That is when those variables get improved (increased) the impact level of COVIDp-19 will be declined (decreased).

Separate analysis on predictor of impact level of COVID-19 shows that, service industries that operate their business differently to customize the existing situation of COVID-19 have controlled (minimized) the impact level of COVID-19. Similarly service industries; that have good awareness about COVID-19, that help others who suffer to survive, that follows their social distance, do not stopped their business operation and having long experience on business have controlled (minimized) the impact level of COVID-19. From consecutive result of chi square and regression analysis it is clearly shown that public transportation is highly affected by COVID-19 whereas hotel industry is secondly affected and lastly but not leastly retail shopping industries are also affected by COVID-19. The result for scale of service industries also depicts that small scale service industries are highly affected by COVID-19 successively medium and large scale service industries also affected by the pandemic of COVID-19.

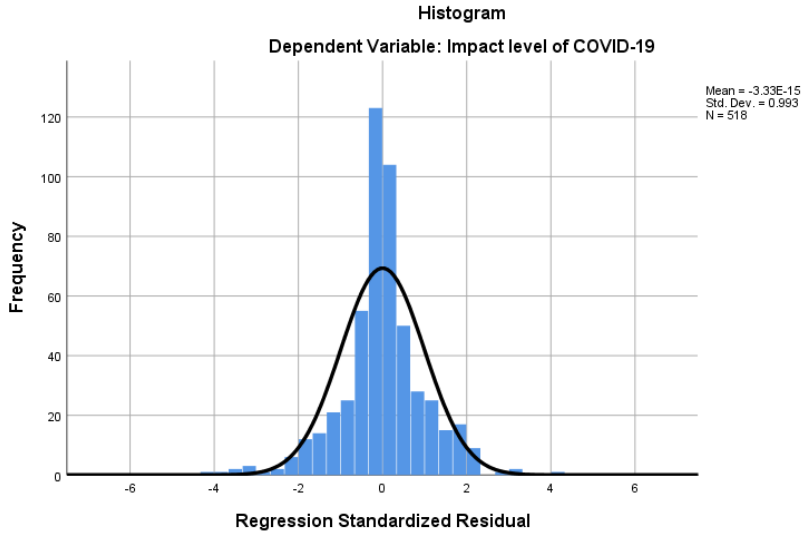
Assumption Checking of Multiple Linear Regressions:

Once the model has been fitted to the data set it is mandatory checking for goodness of fit and basic assumption of the models used for analysis. So before inference and conclusion there should be rescannable appropriateness of the model for the given data set. To assure the reliability and validity of the result assumption checking is one basic component of realistic and accepted investigation. The basic assumption of regression analysis that should be tested before generalization are; linearity of relationship of response and predictor variables, normality of error terms, constant variance of error terms and absence of linear dependency across predictor variables (absence of Multicolinearity). Each assumption has been tested and presented below.

Linearity: the relationship between the dependent and independent variable should be linear with respect to their parameter, this can be checked by the scatter plot of dependent variable versus standardize predicted. As it has indicated below, the plot shows that there is approximately linear relationship between impact level of COVID-19 and the set of predictor variables represented by standardized predicted value.

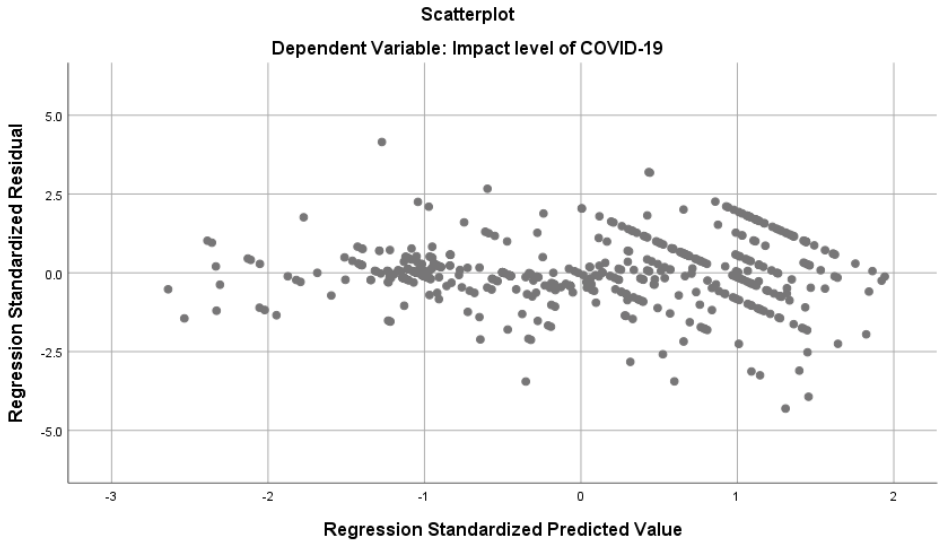


Normality: the second assumption of regression analysis is error terms must be normally distributed with mean zero and constant variance. This can be checked by histogram. To attain this assumption the histogram should be approximately normal or it must be bell shaped distribution. As it has shown below the graph of histogram attain the assumption of normality.



Constant variance (homoscedasticity): the third assumption of multiple linear regression is error assumption that is error terms should have a constant variance, if this assumption is violated there is a problem the so called 'hetroscedasticity', which is a

series problem of data should be treated before analysis. This can be checked by drawing the scatter plot of standardize residual versus standardize predicted value. To attain this assumption the distribution or the scatteredness of the point on the graph should be random and constant across the zero. As it have indicated below the distribution of points has not any pattern which is random and lies around zero mean, so the assumption of constant variance was attained.



Absence of Multicolinearity: the predictor variables in the model should not be linearly correlate with each other; if this happens there is a problem of Multicolinearity which is also a series problem of data should be treated before analysis to get a reasonable result. This can be checked by illustrating variance inflation factor (VIF); to attain this assumption the value of VIF should be less than ten. As it has been indicated in the following table, the value of VIF is much less than ten, so the assumption of absence of Multicolinearity was attained.

Table 16: Test of Multicolinearity

Variables under the study	Co linearity Statistics	
	Tolerance	VIF
Cite (woredas)	0.593	1.686
Gender of the Respondent	0.552	1.812
Age of the Respondent	0.415	2.409
Experience on business	0.402	2.489
Types of service industries	0.647	1.545
Scale of the Industry	0.872	1.147
Awareness of COVID19	0.922	1.085
Following Social distance	0.826	1.211
Operating business differently	0.746	1.34
Company doing any help	0.658	1.52
Stopping operation COVID19	0.415	2.409

Reliability Test of Data under the Study:

Table 17: Reliability Test

Variables	Cronbach's Alpha value	Number of item
Study data	0.831	41

The reliability analysis is used to establish both the consistency and solidity of the research instrument. In this study Cronbach's Alpha of reliability test was used to assess the reliability of the data for all variables under study. The acceptable value of Cronbach's alpha should exceed 0.6. The value of Cronbach's Alphas for data set is 0.831 which is more than 0.6. This indicates that the data values for all variables were found to be high in their internal consistence; questioners were tested and fulfill the consistency and reliability of the research instrument. This implies that the data of the study is more reliable.

Conclusion:

This study investigated the impact of the COVID-19 pandemic on service industries in the North Shewa Zone of Ethiopia, focusing on three key sectors: hotels, retail shopping, and public transportation. Utilizing descriptive statistics, chi-square tests, and multiple linear regression analysis, the findings reveal that the pandemic significantly disrupted business operations, particularly in the transportation sector. Among the 295 respondents, the majority were male (74.9%), and the largest proportion of responses came from Debre Berhan town (34.6%). Transportation services accounted for the highest representation (41%), followed by retail shopping (35.9%) and hotels (23%). Awareness of COVID-19 was notably high (92%), indicating widespread public health communication. The results show that 57% of businesses temporarily ceased operations, with a substantial proportion resuming activities later. Revenue losses were considerable, with 46% reporting a 50-100% decline. In contrast, order reductions were less uniformly distributed, with 32% reporting no impact.

Chi-square analysis demonstrated significant associations between operational status and variables such as service industry type, business scale, and revenue impact. Regression analysis further identified that adaptive behaviors-such as operating differently, maintaining social distancing, and business experience-contributed to mitigating the adverse effects of the pandemic.

Overall, the study concludes that the public transportation sector and small-scale service industries were most severely impacted by COVID-19. The findings emphasize the need for policy interventions and strategic support mechanisms to bolster the resilience of service industries in the face of future public health crises.

References:

1. Gössling, S., Scott, D., & Hall, C. M. (2020). Pandemics, tourism and global change: a rapid assessment of COVID-19. Journal of Sustainable Tourism, 29(1), 1-20. https://doi.org/10.1080/09669582.2020.1758708
2. Nicola, M., Alsafi, Z., Sohrabi, C., Kerwan, A., Al-Jabir, A., Iosifidis, C., ... & Agha, R. (2020). The socio-economic implications of the coronavirus pandemic (COVID-19): A review. International Journal of Surgery, 78, 185-193. https://doi.org/10.1016/j.ijsu.2020.04.018
3. UNWTO. (2020). Impact assessment of the COVID-19 outbreak on international tourism. World Tourism Organization. https://www.unwto.org/impact-assessment-of-the-covid-19-outbreak-on-international-tourism
4. Tiwari, A. K., Abakah, E. J. A., & Ji, Q. (2021). COVID-19 and energy: Influence of coronavirus disease on electricity demand in the USA. Energy, 219, 119888. https://doi.org/10.1016/j.energy.2020.119888
5. Donthu, N., & Gustafsson, A. (2020). Effects of COVID-19 on business and research. Journal of Business Research, 117, 284-289. https://doi.org/10.1016/j.jbusres.2020.06.008
6. Sharma, A., & Nicolau, J. L. (2020). An open market valuation of the effects of COVID-19 on the travel and tourism industry. Annals of Tourism Research, 83, 102990. https://doi.org/10.1016/j.annals.2020.102990
7. Ibn-Mohammed, T., Mustapha, K. B., Godsell, J., Adamu, Z., Babatunde, K. A., Akintade, D. D., ... & Koh, S. C. (2021). A critical review of the impacts of COVID-19 on the global economy and ecosystems and opportunities for circular economy strategies. Resources, Conservation and Recycling, 164, 105169. https://doi.org/10.1016/j.resconrec.2020.105169
8. Baig, A. S., Hall, J. A., Jenkins, J. P., & Ahmad, N. (2021). Impact of COVID-19 on small businesses in North America: Challenges, opportunities, and recovery strategies. Journal of Small Business & Entrepreneurship. https://doi.org/10.1080/08276331.2021.1973930
9. Liu, Y., Lee, J. M., & Lee, C. (2021). The challenges and opportunities of a global health crisis: the management and business implications of COVID-19 from an Asian perspective. Asian Business & Management, 20(4), 379-388. https://doi.org/10.1057/s41291-020-00119-x
10. Sheth, J. (2020). Impact of COVID-19 on consumer behavior: Will the old habits return or die? Journal of Business Research, 117, 280-283. https://doi.org/10.1016/j.jbusres.2020.05.059