

# A Study on Post-Taukte (Cyclone) Impact on Economic Recovery of People of Jafrabad City

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## Abstract

*Natural calamities have always been disastrous for the people who are affected by it. Taukte cyclone had hit Sourthern Saurashtra area of Gujarat state on 17<sup>th</sup> May 2021. Through this research paper, researchers have tried to find the loss of assets and loss of income of people of Jafrabad city, which is situated on costal area of Arabian Sea due to devastating effect of Taukte . This study focuses on recovery period of the damaged assets and normalization of income of affected people. A structured questionnaire used to collect the primary data from 433 respondents of this region. It was the challenging task for researchers to collect data from the respondents as they could not balm their wounds, however the main purpose of this study is to analyses recovery period with regard to assets and income of the people of this badly affected area. To know the association with demographic variables, the researchers have used Chi-square technique. It has been found that there is no significant association for recovery period for assets and gender and occupation of the respondents while for recovery period of income gender has association, but occupation does not have association. It has been further added that post recovery period from natural calamities are more crucial and sensitive and recovery period of loss of income is differ for gender in the present study.*

## Keywords

Taukte cyclone, damaged assets, loss of income, recovery period

## Introduction

Human lives are always influenced by nature. This could be in form of generating plethora of solar energy or irreparable loss caused by natural calamities. With the advent of science and technology, changes into the weather can be forecasted with a single click / tab on electronic devices. To put it differently, technology gives us early alarm of natural calamities. This surely enables administration to take various measures envisaged to deal with the hazard. By this way attempts are made to lessen catastrophic effect of natural calamities. The Taukte cyclone has unquestionably left its inerasable scarce in the minds of people of Jafrabad city of Amreli district of Gujarat as it had played havoc like situation on 17<sup>th</sup> May, 2021 causing uncountable miseries and loss. The life of people of Jafrabad city was thrown out of gear as there was absolute power failure caused by Taukte cyclone. Post natural calamities, it is always essential to bring lives and routines of the people to its normalcy. The recovery period of assets and income is largely attributed to the intensity and damage caused by cyclone. It takes lot of efforts on the part of people of affected area and administration to bring the normal life back to its routine because various segments have been affected by cyclone like infrastructure, electricity, telecommunications, medical requirements, and household requirements due to damage. The time period requires for repairing assets from the damage of cyclone and continuation of

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economic activities like employment, business or profession is considered as the recovery period for the present study which focuses on recovery period of assets and income of people of Jafrabad city damaged by Taukte cyclone. Recovery period for income and assets may have interconnection like availability of assets will generate income and in other case if income is available then assets will be repaired from that income, so both are interconnected and interdependent.

The Research gap for the present study can be considered as the theme of the study as recovery period for income and assets, which have not been covered by previous studies as executed in the present study, this will help to the administrative for future policy makings, like during this period government have distributed determined cash amount for those people who have affected, but in future they may reconsider distribution amount for the recovery period of income based on these type of studies and it will be significant contribution of the present study.

### Review of Literature

Verma K. and Gupta A. (2021) have conducted a study on cyclone Taukte: cyclones, their impacts and disasters risk management. Researchers have firstly mentioned about history of different cyclones and their damage in terms of deaths and monetary loss. They have also stated formation of cyclones, measuring cyclones, Taukte, its life cycle, its impact etc. Researchers have also highlighted various aspects like Taukte mitigation and preparedness, cyclone risk management system and National Cyclone Risk Mitigation Project (NCRMP).

Patnakar A. (2019) has performed a study on impacts of natural disasters on households and small businesses in India. Researcher has presented various analyzed data in different classification like geographical partition in Mumbai, Chennai and Puri district most flood and cyclone affected area and in that different category of household their impact, death etc. then after impacts on business, premises, equipment, products according to region. Researcher has concluded that devastating impact of natural calamities in the previous mentioned regions have been found on urban poor and rural people of that region and small business and farm communities.

Samantha G. (2018) has carried out a study on the impact of natural disasters on Micro, Small and Medium Enterprises (MSMEs): a case study on 2016 flood event in western Sri Lanka. Researcher has revealed that the direct as well as indirect impacts of natural disasters are devastating on business activities and its continuity. Researcher has collected 100 samples as data from flood affected area. Researcher have used relative importance index (RII) method for data analysis and concluded that damage or loss of equipment was the highest in category for short run and disrupted cash flow and loss of income was highest in the long run category.

### Research Methodology

Research methodology highlights the way in which a study has been conducted. There are different methods for different fields and in a particular discipline; there is several types of study based on the nature of research.

### Demographic Profile of the Respondents

Table No. 1 Gender of the Respondents

Sr. No.	Gender	No. of Respondents	Percentage
1	Male	271	62.59%
2	Female	162	37.42%
	Total	433	100

Source: Primary Data

Table No. 2 Age of the Respondents

Sr. No.	Age	No. of Respondents	Percentage
1	18 to 30	395	91.22%
2	31 to 40	28	6.47%

3	41 to 50	8	1.85%
4	51 & above	2	0.46%
	Total	433	100

Source: Primary Data

Table No. 3 Occupation of the Respondents

Sr. No.	Occupation	No. of Respondents	Percentage
1	Business	93	21.48%
2	Job	22	5.08%
3	Agriculture	214	49.42%
4	Fishing	21	4.85%
5	Daily wages	53	12.24%
6	Other	30	6.93%
	Total	433	100

Source: Primary Data

Table No. 4 Monthly Income of the Respondents

Sr. No.	Monthly Income	No. of Respondents	Percentage
1	Upto 10,000	233	53.81%
2	10,001 to 30,000	111	25.64%
3	30,001 to 70,000	79	18.24%
4	70,001 & above	10	2.31%
	Total	433	100

Source: Primary Data

### Data collection

Data are of two types, namely primary data and secondary data. Both have their own characteristics and based on the study requirements, the data have been selected by the researchers. In the present study, the primary data have been used and for that closed ended structured questionnaire have been circulated and from those total 433 respondents have been filled the form. The data have been collected between 7/09/2021 to 15/09/2021. The secondary data have been used for theoretical framework of the study. The convenient sampling is based on non-probability sampling and it has been used for data collection. The representativeness of sample is a question in non-probability sampling method but number of samples in the present study is adequate to represent population of around 28,000 citizens, also respondents from different occupations have been covered to check the associations with occupations as per the regional economic conditions to remain more representative sample.

### Scope of the study

In case of geographical scope of the study, Jafrabad Tehsil as city and surrounding villages have been covered for the study. The rationale behind the selecting this scope is that the city is located at costal area and one of the highest affected places from Taukte. In case of functional scope of the study, recovery period of assets and income from damages due to Taukte has been covered. The reason behind this scope is to analyze the recovery period for assets and income which will be benefited to the various stakeholders like government for policy decision, people for future estimation and early normalization and society itself for future preparedness.

### Objectives of the Study

- To assess the loss of income and loss of assets of the respondents due to Taukte cyclone
- To measure the recovery period for the assets of the respondents after Taukte cyclone

- To evaluate the recovery period of income or normalcy of income of the respondents after the Taukte cyclone

### Hypotheses test and Data Analysis

Hypotheses have been assessed by using Chi-square technique. In simple terms, it is used to compare between observed results with expected results and it test independence when two categorical variables are available. The association between two factors has been assessed by applying Chi-square.

Table no. 5 Cross tabulation between Recovery period for assets and Gender of the respondents.

Recovery period/ Gender	Male	Female	Total
1 to 3 months	148	77	225
3 to 6 months	63	37	100
6 to 9 months	23	22	45
Above 9 months	37	26	63
Total	271	162	433

Source: Primary Data

	Value	DF	P
$\chi^2$	3.92	3	0.271
N	433		

Source: Jamovi

Table no. 5 shows the cross tabulation between the recovery period of assets damaged by Taukte and gender of the respondents. For that null hypothesis has been set as there is no significant association between these two. The result has been arrived as null hypothesis is accepted because the significant value is 0.271 which is higher than 0.05 at 5% level of significance. The result indicates that there is no association between recovery period for assets damaged by Taukte and gender of the respondents. In vertical percentage analysis as within column, there is no such major differences have been observed which establishes the association between both the factors. In other words, recovery period of assets do not have any relationship with gender of the respondents, generally it may happened that male and female have different set of assets with them, so variation in assets may take time to recover but such things do not happened with the present case.

Table no. 6 Cross tabulation between Recovery period for assets and Occupation of the respondents

Recovery period/ Occupation	Business	Job	Agriculture	Fishing	Daily wages	Other	Total
1 to 3 months	58	14	105	9	22	17	225
3 to 6 months	20	6	48	6	15	5	100
6 to 9 months	5	1	23	3	9	4	45
Above 9 months	10	1	38	3	7	4	63
Total	93	22	214	21	53	30	433

Source: Primary Data

	Value	DF	P
$\chi^2$	16	15	0.382
N	433		

Source: Jamovi

Table no. 6 explains the cross tabulation between recovery period of assets and occupation of the respondents. Damages occurred in assets due to natural calamities may affect the recovery period differently in different occupation because business people and fisher have more loss in assets than employed or daily wager, so association may occur between recovery period and occupation of the respondents but in present case where null hypothesis has been set as there is no significant association between recovery period and occupation of the respondents and null hypothesis is accepted as the significant value is 0.382 which is higher than 0.05 at 5% level of significance. The result requires further analysis and by applying percentage analysis within column majority of the categories have more or less same proportion, so any one of the categories cannot build strong association with recovery period. Different occupation has different assets of the business, so association for recovery period may arise due to variation in assets, but in the present case it is not occurred.

Table no. 7 Cross tabulation between Recovery period Income and Gender of the respondents

<b>Recovery period of Income / Gender</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
Within one week	11	2	13
Within 15 days	6	11	17
Within one month	33	18	51
More than one month	112	77	189
Not yet (up to the date of data collection i.e. 15/09/2021)	109	54	163
Total	271	162	433

Source: Primary Data

	Value	DF	P
$\chi^2$	10.4	4	0.035
N	433		

Source: Jamovi

Table no. 7 demonstrates the cross tabulation between recovery period of income disturbed due to Taukte and gender of the respondents. when any natural calamities occurred, routine work of people have been disturbed for some period and there would require some time to be normalized and specially for economic activities i.e. earning activities. In the present case null hypothesis has been set as there is no significant association between recovery period of income and gender of the respondents. the result of test of hypothesis mentions that it has association because null hypothesis is rejected, and alternate hypothesis is accepted as the significant value at 5% level of significance is lower than it as 0.035. In the precise percentage analysis, it is observed that other than ‘within 15 days’ category proportion would be the same but in the said category proportion is reversed where male respondents are less than female which mentions the association between recovery period and gender of the respondents. It can also be analyzed as the gender have variation in income due to various sources of income or different occupations, and in the present findings it has been proved that gender have differences in recovery period in income.

Table no. 8 Cross tabulation between Recovery period of Income and Occupation of the respondents

<b>Recovery period of Income / Gender</b>	<b>Business</b>	<b>Job</b>	<b>Agriculture</b>	<b>Fishing</b>	<b>Daily wages</b>	<b>Other</b>	<b>Total</b>
Within one week	5	1	4	1	1	1	13
Within 15 days	8	1	3	1	1	3	17
Within one month	10	5	24	1	8	3	51
More than one month	40	8	97	6	27	11	189

Not yet (up to the date of data collection i.e. 15/09/2021)	30	7	86	12	16	12	163
Total	93	22	214	21	53	30	433

Source: Primary Data

	Value	DF	P
$\chi^2$	29.8	20	0.074
N	433		

Source: Jamovi

Table no. 8 shows the cross tabulation between recovery period of income damaged by Taukte and occupation of the respondents. recovery period of income after natural calamities varies from occupation to occupation because of the distinctive characteristics of the occupation. Normalizing period for business differs with employment or agriculture, so association between them can be observed, but in the present case it has not happened as null hypothesis is accepted which shows there is no significant association between these two. The significant value at 5% level of significance is 0.074 which is higher than former, so association cannot be established. In percentage analysis any deviation has not been observed and the result is near to alternate hypothesis as per expectation, but it may have statistical error which shows the further scope of studies. Generally, variation is expected in different occupation and recovery period of income, but it may not happen, and any association is not established.

## Findings

Out of total respondents of 433 there were 271 male respondents and 162 female respondents. While testing the first hypothesis, it was found that there is no significant association between recovery period for assets and gender of the respondents. Analytically speaking, all the respondents regardless of their gender took almost same time for the recovery of their assets. In the present case, relationship between gender and assets recovery period is not established.

Respondents of this research belong to different occupation namely business, job, agriculture, fishing, daily wages and rest are other category based on the said region. It was found that there was no significant association between recovery period of assets and occupation of the respondents. In other words, out of total respondents from different occupation 51% of people took period of 1 to 3 months for the recovery of their assets. 23% of respondents have taken duration of 3 to 6 months for the recovery of their assets. It is to be stated that 51% of respondents would take period of 1 to 3 months for the recovery of their assets were from all the six categories of occupation. This also holds true for the segment of 23% of respondents would take period of 3 to 6 months for their category.

While testing the hypothesis related to association between recovery period of income and gender of the respondents, it has been found that there is significant association between both of them. Out of total 271 male respondents 4.06% people took period of one week to re-establish their regular income and out of total 162 female respondents 1.23% of total female members mentioned same duration. 2.21% of male respondents had their regular income within in span of 15 days. 6.79 female respondents have recovered their normal income within period of 15 days. 12.17% of male respondents and 11.11% of female respondents have taken one month duration of time for the recovery of their regular income. Large number of male respondents i.e. 41.32% and 47.53% of female respondents needed a period of more than one month to start earning their regular income. 40.22% of male respondents and 33.33% of female respondents have been struggling till the date of data collection to earn their regular income. The relationship has been observed due to gender-based earning options available, some have male specific occupation while other have female specific.

Hypothesis 4 of research paper tested association between recovery period of income and occupation of the respondents, it was established there is no association between recovery period of income and occupation of respondents. 43% of people belonging to different occupation have confirmed, they started their regular earning from their respective occupation from the period of one month of Taukte cyclone. Out of total respondents 37% people from different occupation were not in a position to

earn their regular income till the date of data collection. Different occupation has different recovery period after natural calamities but in present case such kind of results have not been observed.

### **Limitation of the study**

One opinion for limitation of study is that every research has an objective to give some extra in the body of knowledge and by adding some extra all the matters cannot be added, some remains left which will be treated as limitation of the study and from that it will open new door for future studies. In the present study some general and technical limitations exist like in sampling method, convenient sampling has been used which is the type of non-probable sampling method, statistical justification as probable method has not been given. Another limitation is attached with primary data; as some respondents may not give accurate answer as their perception or thinking have differ. The third limitation is related with regional area of study, the entire place where Taukte cyclone had affected have not been covered.

### **Recommendation**

The recommendations of any study may have towards various stakeholders. In the present study, the first recommendation is towards the administrators i.e. government, early prediction work is remarkable, but post recovery support specifically financial assistance required more which are the expectations of people. The next recommendations towards the NGO, although they are not administrators and not bound to support but established for social services and their support towards the affected people have observed not up to the expectation. The last recommendations towards all the people who have been affected or not, all should have some sort of savings or liquid investment, so in natural calamities, post financial crises can be overcome.

### **Suggestion for future studies**

Suggestions for future studies can be considered as the road map from where present study ends and from that new studies can be started. The first suggestion is towards the impact of natural calamities in financial terms of primary data and specifically the expectations of people towards stakeholders of the society should be collected which have not covered in this study. The next should be done from the administrators point of view, how financial burden and other costs have been suffered by them in post recovery period collectively.

### **Conclusion**

Taukte cyclone being natural calamities had affected disastrous to the people of the Gujarat state and uppermost to the coastal area of the state. Jafrabad tehsil is located at coastal place and people of the region had faced intense adverse impacts in various aspects. Normalization after Taukte was the most challenging task for all the stakeholders of the society and all have proved their best. The present study has focused on the recovery period of damaged assets and disrupted income due to Taukte. It has been found and concluded that recovery period for assets have not association with gender and occupation, so whatever be the gender or occupation of the respondents, recovery period of assets have more or less same. On the other hand, recovery period of income has association with gender but do not have association with occupation. The different recovery period for assets and income may be provided valuable inputs in future disaster management decision and remedial action. Financial assistance for loss of income is expected by the people who have suffered and also least cost of loan if assistance is not available for recovery of loss of assets.

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