

A study on economic impact of natural disasters on MSME tourism establishment with special reference to Wayanad landslide of Kerala

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Abstract

Tourism is a vital activity that contributes generously to the economy. For ecologically rich but vulnerable areas like Wayand, tourism is the major breadwinner for the majority of the population. Any disruption in ecology can have a devastating impact on the tourism supply. This study examines the impact of natural disasters on MSME ventures in the Wayand district, Kerala, India, with special focus on the 2024 Meppadi landslide that caused 420 deaths and massive disruption. The disaster marked an 80% loss in revenue for the MSME sectors in the region. Using a questionnaire, the researcher was able to collect data from 850 tourism related establishments.

Findings show tour operators, homestays, and handicraft industry witness a sharp decline in the income. Over 48% of the businesses are still recovering phase. The government initiative such as 'Revisit Wayand' camping was launched to revive tourism in the region. Only a handful of entrepreneurs were able to get direct support from the government. The study highlights the need for proactive disaster preparedness, financial aid, and government led branding campaigns to reinstate tourism-based economies in disaster prone region.

Keywords: MSME – natural disaster – enterprises – government initiatives

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I. INTRODUCTION

Tourism is considered as one of the biggest industries that contribute considerable economic benefit to a country. Latest data suggest that the tourism activities around the globe have shown considerable growth. In India alone, the industry contributed nearly 5% of the GDP according to the ministry of tourism annual report (2024-2025). Although the industry is known as highly dynamic, even a slight interruption in the supply chain or negative news has a significant impact on tourism arrivals.

Wayand is located in the northeast region of the state of Kerala. The district is known for its lush green forest with the blessing of Western Ghat. The district is considered a premier destination in Kerala filled with adventure and ecotourism activities. The district recorded approximately 675,195 domestic tourism arrivals and 2308 foreign tourist arrivals in the year 2023 (Kerala tourism statistics, 2023). The tourism industry provides considerable economic benefit to the district, especially through job creation.

Wayanad is ecologically vulnerable, particularly to deforestation, landslides, and habitat fragmentation. According to the climate vulnerability (2013-2020) published by the government of India, the Wayanad district of Kerala is moderately vulnerable with a Vulnerability Index between 0.559 and 0.629 (Saha et, al. 2022). As per the report of the Western Ghats Ecology Expert Panel submitted to the Ministry of Environment and Forests, Government of India, the entire area of Wayand is recommended to be included in Ecologically Sensitive Zone 1, which highlights the vulnerability of the region (Western Ghats Ecology Expert Panel, 2011). The district has seen several natural calamities over the past decades. The 2018 Kerala flood, the 2019 Puthumala landslide, the 2020 flood, and the 2022 landslide and flash flood are some of the examples. The biggest of its kind, the Wayand landslide occurred on July 30, 2024, in the Meppadi Panchayat of the Wayand district which reported 420 confirmed deaths and 119 people missing (Institute of Land and Disaster Management, 2025). The event leads to widespread panic and disruption in tourist arrivals. The area affected by the landslide was famous for tourism activities. The tourism supply diminished after the event due to security concerns, and the whole district was affected. The economy witnessed a 30% drop and an 80% decline in revenue (Nair, 2024).

Following the event Kerala tourism launched 'Revisit Wayand' campaign to boost the tourism in the district (Kerala Tourism, 2024). The tourism department collaborated with social media influencers from southern state

to promote the district. Although the recovery seemed gentle, and the smes tourism establishment in the district is most affected by the disaster.

AIM AND OBJECTIVE

- To assess the economic impact of natural disasters on micro tourism establishments.
- To identify the coping mechanism of micro tourism establishments during and after the disaster.
- To assess the effectiveness of government in repromotion and rebranding the destination after the disaster.

SIGNIFICANCE OF THE STUDY

Tourism is a dynamic industry that affect significantly to even small changes. It was one of the hardest industries that was hit by the Covid 19. The areas that are more dependent on tourism become very weak after such events. In the case of the Wayand, the economy is greatly dependent upon the tourism sector. Most of the establishments in the region are micro in nature and produce jobs and revenue for the economy. It is important to understand at what scale the industry were hit and how much time it took to revive. Assessing the government's role in repromotion the area is also under study. This will show the effectiveness of government mechanisms in promoting tourism in a destination after such natural calamities.

II. LITERATURE REVIEW

Micro Small And Medium Enterprises (MSME) are a critical boost for the economy and ensure sustainable development (Purnomo & Purwandari, 2025). MSME provide valuable contributions to employment, innovation and economic growth (Bhat & Meher, 2020). The micro sector can be defined as the business with an investment of 1 crore and a turnover of 5 cr. Small sectors are defined as businesses with an investment of 10 cr and a return of 50 cr. While medium refers to the businesses with 20 crore investment and 100 crore turnover a year (Hanna & Rajkumar, 2024). They are characterized by the ability to operate flexibly and showcase incredible resilience against dynamic market conditions (Kochukalam et al., 2016). MSME enjoys a number of advantages, such as employment, fixed asset growth, and resilience against market conditions. Challenges such as timely credit issues, high credit cost, procurement challenges, storage and design issues, inadequate infrastructure, low technology advancement, and lack of skilled labor also exist in the environment (Singh et al. 2017).

MSMEs are dominant players in the service-oriented tourism sector, especially in tour operations (Thomos, 2020). Tourism opens various opportunities such as travel agencies, cab services, lodging, and food outlets. MSME offer a valuable supply of good and services that cater to the needs of the tourism industry (Mshenga and Richardson, 2013). Tourism and MSME have a bidirectional relationship. MSMEs provides tourism and tourism in return ensures growth and sustainability in the community (Purnomo & Purwandari, 2025). MSMEs contribute significantly to tourism development, especially in the rural region.

The tourism industry is vulnerable to various kinds of hazards (Becken et. Al, 2015). Disasters can significantly affect visitor flow into a destination (Bhat et, al. 2016). The intensity of calamities has risen in recent years due to the combination of climate change, industrialization, and urbanization. These factors accelerated the magnitude of natural disasters around the world (Park & Reisinger, 2010). The visitors choose their desired destination based on a mix of objective and subjective factors. Destination risk perception has become an important factor in identifying desired destinations (Becken et. Al, 2016). Epidemics, conflicts, pollution, and disasters can effectively reduce the number of visitors in the affected region (Bhat et, al. 2016). Man-made crises can also have an impact on tourism arrivals (Ritchie et. Al, 2013).

There are several factors that cause a rapid decline in the number of tourists after the disaster. The major reason is the damage caused in the affected region prevents tourism engagement (Kozak et. Al, 2007). Physical constraints on the tourism delivery system limit the supply of tourism services after a disaster (Shaw et, al. 2012). Depending on the extent of the disaster vital infrastructures such as airports and ports, land transport infrastructure, electricity, and telecommunication networks can be damaged. All these acts as important factors for tourist arrival to a particular region (Ghobarah et. Al, 2006).

For the recovery of a destination, it is important to have external intervention, such as government led recovery strategies. Government led repromotion campaigns, such as media partnerships and target marketing are proven to be effective in restoring destination image (Mair et. Al, 2016). "Tsunami tourism" introduced by the Indonesian government after the 2004 boxing day tsunami was great success and ensured thriving tourism-based economy (Nazruddin & Sulaiman, 2020).

III. RESEARCH METHODOLOGY

The study demands a mixed approach. The researcher has employed qualitative and quantitative techniques for the data collection. In depth interviews was conducted with the owners and workers of various establishments.

Questionnaire is the primary tool used for data collection, containing 20 questions crafted to understand the impact of natural disaster on their business venture and any impact after the government interference in.

Interview

In order to collect first hand data, it seemed that carefully crafted questionnaire will be a wise choice. The personal interview was conducted among the entrepreneurs and workers of different business ventures that belongs to MSME. The samples were taken from Wayand district of Kerala state, India, since the most recent disaster affected this region.

Sampling technique

Convenient sampling was adopted for the study. This way the researcher was able to ensure proper care in collecting primary data and avoiding sampling errors. The samples were taken from Wayand district since the study was focused on that particular region.

Sampling number

The researcher was able to identify and successfully collect responses from 850 samples spanned across different regions of Wayand district.

Tools used for analysis

ANOVA and Regression was the statistical tools used to analyze the impact of government intervention.

RESULTS OF THE STUDY

The study was successfully undertaken in the Wayand region, where the landslide occurred. A sample of 850 was chosen for the study. The major findings are listed below.

Sl. No	Question	Options	Responses
1	Types of establishments	Homestay	125
		Tour operators	287
		Travel agency	100
		Handicraft	138
		Restaurants	200
2	Years of establishment	Less than 1 year	198
		1-2 year	247
		2-5 year	271
		5-10 year	100
		More than 10 years	34
3	No. Of employees before the landslide	Less than 5	105
		5-10 workers	325
		10-20 works	201
		20-50 workers	183
		More than 50	36
4	No of employees after the disaster	Less than 5	253
		5-10 workers	228
		10-20 works	198
		20-50 workers	150
		More than 50	21
5	Monthly average revenue before the landslide	Less than 1 lakh	158
		1-10 lakh	326
		10-50 lakh	255
		50 lakhs to 1 crore	108
		More than 1 crore	3
6	Monthly average revenue after the landslide	Less than 1 lakh	375
		1-10 lakh	239
		10-50 lakh	160
		50 lakhs to 1 crore	75
		More than 1 crore	1
7	Estimated cost of damage to infrastructure	No damage	744
		<1 lakh rupees	56
		1 to 5 lakh rupees	20
		5- 10 lakh rupees	30
		> 10 lakh rupees	0
8	What immediate steps taken to cope with the situation	Temporary closure	126
		Relocation	91
		Cost cutting	301
		Laid off	298

		Local community/ NGO help	34
9	Received any financial assistance	Yes	658
		No	192
10	Access to bank credit facility	Yes	433
		No	417
11	Activities done to enhance sale after the landslide	Discount & promotions	457
		Online marketing	154
		Offered new service	86
		Enhanced safety	51
		Business diversification	102
12	Time took to become operational again	< 1 month	12
		1-2 months	47
		4-6 months	255
		> 6 months	125
		Still recovering	411
13	Awareness regarding government relief packages	Yes	191
		No	659
14	Aid received from government	Didn't receive any	659
		Financial	38
		Infrastructure	47
		Training or workshop	56
		Marketing assistance	50
15	Satisfaction on government efforts for reprompting the destination.	Very satisfied	94
		Satisfied	245
		Neutral	365
		Dissatisfied	103
		Very dissatisfied	43
16	Opinion regarding marketing and branding efforts from government.	Very satisfied	54
		Satisfied	181
		Neutral	299
		Dissatisfied	65
		Very dissatisfied	251
17	Expected additional policies from the government.	Financial grants	358
		Infrastructure rebuilding	200
		Marketing and branding campaigns	158
		Training programs for disaster preparedness and digital skills	63
		Simplified procedures for insurance claims and relief fund access	71

- Out of the 850 respondents most of the participants are tour operators. This indicates the flourishing Wayand tourism market.
- Most of the ventures were established in a time span of 5-10 years. The tourism eco system in Wayand was so bustling the entrepreneur in the area saw the opportunity and successfully incorporated businesses, and that contributed to the economy generously.
- Most of the enterprises belonged to micro establishments, were the number of employees around 10 workers before the landslide.
- As a response to coping with the change in tourist supply post-landslide many choose to reduce their workforce into less than 5 workers.
- The monthly average revenue pre-landslide time showcased how flourishing the tourist-based economy was in Wayand. Despite the establishment's size, the majority were able to mark a return of 1 to 10 lakh rupees. 10-50 lakh was chosen by another 255 respondents, signifying tourism economy role in the district.
- Drastic change can be witnessed after the landslide, marking less than 1 lakh income for the majority. 375 respondents were affected by this change. Almost all of the respondents reported a decrease in their average monthly income.
- The landslide did not affect the infrastructure of most of the establishment. Reduced tourism demand was the challenge they faced more.
- Booking cancellation was faced by 94% of the respondents after the landslide.
- Majority of the businesses were not covered under any insurance schemes.
- The step taken by the businesses after the calamity was interesting. The majority, with 301 respondents introduced cost-cutting measures. Laid off was the option chosen by 298 people, which explains job reduction in the field after the landslide. 126 chose temporary closure, signifies how badly they were affected. Only 91 choose relocation.
- Although the majority did not receive any financial aid from NGOs or government organizations.

- Many accessed credit facilities offered by the banks to cover up the losses incurred. That means lack of financial aid forced the entrepreneurs to take credit from financial institutions.
- In order to attract and reignite tourism supply to the region, 54% introduced discount and promotion tactics. 18% invested in online marketing to boost their sales.
- Despite all these efforts, a staggering 48% reported that they are still recovering from the losses. 30% responded that they took 4-6 months to recover their losses.
- 78% of participants were not aware of any kind of support from the government. This clearly indicate government fail to provide support during the crisis time.
- The minority who received support, mostly received assistance in marketing and infrastructure rebuilding. It should be kept in mind that the government itself ran a marketing drive to promote tourism in the region.
- The majority voted for a neutral stand when the question was asked regarding satisfaction with the government's effort to revive Wayand tourism.
- For the marketing initiative taken by the government, many majorities feel dissatisfied. It indicates a more proactive approach was necessary from the government's side.
- The majority asked for the introduction of financial grants for the question of what additional support policy you expect from the government. It is clear that to recover the losses incurred, financial aids is necessary.

IV. DISCUSSION AND ANALYSIS

The data indicates a drastic reduction of the workforce in various establishments after the landslide. The shift toward a smaller work force is prevalent in the majority of the businesses. All establishments went through this transition in order to cope with the change in tourism demand. Similarly, the drastic revenue drop can also be seen from the data. Less than 1 lakh rupees was the average earning of the majority of the establishments after the landslide. It was the least selected prior to the disaster. Tour operations and homestays were the hardest hit sectors. The nature of these businesses that directly depend on tourist arrival caused this dramatic change in income. Only food/ restaurant operations showed resilience against this change.

The majority of the businesses did not feel any damage in their infrastructure. But still the loss was evident. This signifies the loss was due to disruption in tourist supply rather than physical damage. Tour operations showed a longer time to recover from their losses. Although a significant number of other ventures, such as handicraft shops, restaurants and travel agencies, reported that they were still in the recovering phase. This is a clear indication of ongoing struggle.

The government fails to extend its services to the MSME sector post disaster. Only a minority were able to get direct support from the government. Although, government ran promotional activities were successful and it may have considerably placed Wayand as a safe spot for tourists. The majority are still in desperate need of any kind of financial support. They hope that this can help to cover up their accumulated losses.

Regression and Anova analysis on government intervention and related variables

Regression Statistics

Multiple R	0.931113923
R Square	0.866973138
Adjusted R Square	0.866343425
Standard Error	0.360595422
Observations	850

ANOVA

	<i>Df</i>	<i>SS</i>	<i>F</i>	<i>Significance F</i>
Regression	4	716.083093	1376.77513	0
Residual	845	109.874554		
Total	849	825.9576471		

	<i>Coefficients</i>	<i>Standard Error</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	0.139893833	0.056150274	0.01291422	0.029683458	0.250104208	0.029683458	0.250104208
X Variable 1	0.774886262	0.042684217	1.93609E-62	0.691106732	0.858665791	0.691106732	0.858665791
X Variable 2	0.149916777	0.020696659	9.84811E-13	0.109293884	0.19053967	0.109293884	0.19053967
X Variable 3	-0.001315958	0.024661241	0.957456575	-0.049720435	0.047088519	-0.049720435	0.047088519
X Variable 4	0.445416397	0.029780205	4.79139E-45	0.386964544	0.503868251	0.386964544	0.503868251

- In order to identify the impact of government intervention, statistical analysis was conducted. For the sake of the study the satisfaction level of respondents was fixed as depended variable.
- Awareness regarding the availability of relief packages, types of aid received from the government, the opinion of respondents pertaining ongoing branding efforts from the government, and additional policies that need to be implemented were the independent variable for the study.
- R value marked strong relationship with 0.9311 indicates a strong relationship between variables.
- R square came at 0.8670, which confirms a better fit of the data.
- P- value recorded 0.0129 at 5% significance.
- The result showed F-statistics of 1376.78 with an associated P-value of zero. This approves the models as statistically significant
- The analysis shows that awareness of relief packages, aid received, and opinions regarding branding efforts are highly correlated with satisfaction level. These are key drivers of satisfaction.

V. CONCLUSION

The tourism in Wayand is undoubtedly biggest bread winner for the region's economy. The landslide has costed disruption in the tourism arrival. The effect of this disruption can be seen in the job market and economy as whole. The loss of remittance has crumbled the economy. Majority of the ventures are still recovering from the blow.

The government interruption in tackling this situation did not improve the condition of the enterprises. The direct aid such as financial aid was received by small section and that further reflected in their performance. Although government did management to organize various promotional camping, that helped to regain Wayand tourism to an extent. It is important to organization various

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