

Identification and Development of Indicators and Tools to Measure various kinds of Impacts of Tourism

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Abstract: *Tourism activity is a worldwide phenomenon. It has experienced continued growth over the decades. It has become one of the fastest-developing economic segments. The initiatives of tourism development have an impact on people, local businesses, and the environment. Along with its innumerable positive impacts, it also poses various threats to the local communities. Impacts of tourism have been reviewed from literature and categorized into different categories in this study. Measurement of these impacts helps the planners to manage tourism optimally. It can be done with the aid of indicators. In order to measure these impacts, various tools have evolved from time to time in different parts of the world. The present study explores the potential measuring tools and techniques for different tourism developments, which will enable planners to prepare a framework for the measurement of the impacts of tourism. The purpose and applications of various tools are also identified. The research concludes that different types of tourism have different characteristics. Although it is a challenge to measure qualitative and multiple impacts, there are means to measure these impacts for its comparison. Likert scale is one of the useful tools to measure and compare qualitative as well as quantitative impacts of tourism together. A comparative result is helpful for planners and policymakers to prepare regulatory provisions to intensify tourism impacts positively on the local community.*

Keywords : *Impacts, Indicators, Measure, Tools, Tourism*

I. INTRODUCTION

Tourism has emerged as a prominent industry in many countries. As a result, a large proportion of the world's population is dependent upon the ongoing sustainability of this activity [1]. Over the last century, the tourism industry has emerged as one of the most significant and fast-developing sectors in the world in terms of employment and income generation [2]. Tourism is being encouraged as a prompt activity of growth and economic progress [3]. World Travel and Tourism Council (WTTC) acknowledged tourism as an instrument for economic advancement due to its great impact on the world economy. Over the last few years, tourism has

undergone constant progress and expansion. It is thriving with vigorous development, new activities, destinations, markets, and fast transformations. Further expansion and advancement of tourism are anticipated in the coming times with a significant role of Geographical Information System (GIS), Information and Communications Technology (ICT). It would create a radical change in tourism experiences [2].

Tourism is one of the principal service-industries in India. It engages many trained and untrained people. Modern tourism incorporates an increasing number of new destinations. Therefore it makes tourism a key driver for socio-economic progress. Tourism is a major source of revenue for many nations. Countries like Indonesia, Mauritius, Singapore, and the Philippines depend primarily on income from tourism. Undoubtedly, this rapid pace of growth of tourism would make it one of the world's utmost development segments. The tourism industry is continuously in search of the latest products, and it is always seen as a genuine tool for development as its importance has been acknowledged in the developed, developing, and less developed states [4]. Developing countries find tourism an ecologically friendly way to renew troubled rural communities and their economic development. Thus the tourism industry in developing nations like India, tending a two-third rural population, might play a substantial role in its socio-economic growth with environmental protection.

Tourism creates jobs, offers a variety of employment, offers additional trade prospects, and intensifies local markets. Besides these, tourism also plays a fundamental role in poverty alleviation and practicable human development. Moreover, it directly benefits local communities at ground level [5]. Former studies suggest that numerous benefits occurring from the social, cultural, and environmental aspects of tourism add significance for an improved quality of life. The benefits include various kinds of leisure activities, renovated recreational facilities, better preservation of historical buildings, and a cleaner community appearance [6]. Thus, the study explores the tourism potential for community development. It works on the measure for tourist activities for its planning in the way that culture, economy, and environment. Thus there is a significant research call for the study of tourism impacts with its categories, domains, indicators, and their quantitative measures generated by different tourism activities.

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II. AIM, OBJECTIVE, AND METHODOLOGY

The existing literature is insufficient to discuss tourism-related issues, difficulties, and outlooks of development for the socio-economic and environmental benefit for the community. In order to diminish this gap, exploration on the impacts of tourism has been strengthened over the last few decades. The main emphasis of research focusses on the management of various effects of tourism development, tourism data interpretation, and their analysis [7]. Therefore tourism-related research has attracted the many scholars. The dynamic role of tourism expansions has contributed to such developments [4]. The tourism research area has lagged behind other fields, especially the development and application of both theory and methodology [8]. There is also a need to fill the literature gap of the study of the impacts of tourism activity in the context of developing countries. [9].

Research on the study of tourism impacts provides planners a database. It helps the planners to develop a planning process aimed at focusing on the local concerns and issues. The measurement of this tourism impact data would avail of a spatial-temporal comparative result. Understanding the significance of tourism impacts, the present study aims to **“identify tools to measure the impacts of tourism on the development of local people.”** Identifying tourism impacts from literature would further categorize the potential positive and negative impacts of tourism. It will also determine ways for appropriate tourism developments to benefit all community residents. To identify various types of tourism impacts through a literature review, is the scope of this study. It presents different categories of tourism impacts and discusses the necessary proposals to enhance these impacts positively on the community. Identification of tourism impact measurement tools is also made. The detail reviews of these tools present its strength and limitations for the processing of different types of data set.

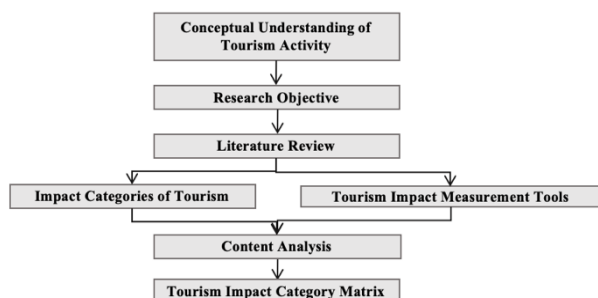


Figure 1: Methodology

The methodology covers a review of literature; performs content analysis and group discussion. Tourism impact indicators are identified and categorized into three categories. Measures of tourism impacts are also listed with their purposes and applications. Review findings present a table of tourism impacts categories and their positive and negative indicators. The methodology is shown in Figure 1. It concludes that tourism development initiatives have impacts that could be categorized into different categories. There is a

need to prepare an exhaustive list of indicators for the measurement of tourism impacts. Data validation, rectification, and scaling are required to process identified tools for tourism impact measurement. This study would be useful for a researcher, policymaker, and tourism-related authority to prepare tourism accountability and development progress related checks in the form of guidelines and devices.

III. LITERATURE REVIEW

Local communities are experiencing the impacts of the growth of tourism activity at both established and new destinations throughout the world [1]. Tourism definitions are divided into two categories: conceptual and technical. The ‘conceptual’ definition of tourism stresses on the core meaning of tourism. The ‘technical’ definition of tourism is focused on assessing the value of tourism, which is mainly different in diverse countries. Both of these definitions together describe the scope of tourism and its development. Tourism operates within the economic, social, and environmental domains [10].

Liu & Var (1986) have reviewed the status of research on the impacts of tourism on the community. They mentioned the deficiency of an inclusive tourism theory, a lack of proven methodologies for measuring impacts other than economical, and the absence of empirical foundation upon which policy decisions can be based [11]. Others have also emphasized the absence of a solid theoretical foundation as the foremost barrier to the advancement of research in this area [12]. There is a need to identify and comprehend the impacts of tourism and its measurement tools to promote optimal development results.

A. Categorization of Impacts of Tourism

The literature for the impacts of tourism on a community lacks comprehensive tourism theory, a methodology to measure tourism impacts [11]. It is experimental in the description and mainly descriptive [13]. Both these evaluations would lead to extensive understanding among those working in this field. Various theoretical concepts have been supported as a basis for analyzing the problem [1]. After finding the research gap, it was realized to study tourism impacts and their measures.

Tourism is a highly unique phenomenon. Its effects are, therefore, comparatively different in varied situations [14]. It is argued that at various stages of development of tourism, economic dis-benefits, and the environmental and socio-cultural costs-benefits of tourism are experienced. Nevertheless, adequate academic attention to these impacts is lacking [15]. Tourism poses several positive and negative impacts such as new prospects for occupation, profits, additional levies, foreign exchange, and enrichment of infrastructure, on the one hand. On the other hand, the negatives include the destruction of environmental, social, or cultural setup, insufficiency of real aids, and differences in the distribution of profits.

Prompt spontaneous development, combined with a huge population of tourists, has led to negative impacts on the local resources [16]. It also plays a vital role in generating a universal environment for the survival of the different cultures.

Despite its several advantages and merits of tourism, it has its disadvantages and limitations also. Tourism helps in making of extra incomes, new prospects for livelihood, and expansion of the local economy. However, mass tourism poses a lot of adverse effects on the local people.

In order to achieve sustainable tourism, the positive impacts need to be protected, while its adverse effects should be reduced for its improvement [8]. Various researchers have studied the impacts of tourism in different decades of the last century. Jafari (1986) has observed that during the 1960s, the researchers focused on the positive phases of tourism, while the '70s underlined the adverse impacts. After that, the researchers during the next decade, gave a stable approach [17]. Liu & Li (2018) have apportioned tourism impacts into three categories, namely economic, environmental, and socio-cultural [11]. Travis and others suggest the economic and environmental impact of tourism [16]. Lankford lists socio-cultural impacts of tourism [17] [18] [19] [20].

Kim focused on the environmental concern associated with tourism development [21]. The growth of a city should be focused on improving the needs of the native population. Physical development has a significant impact on the local community [9] [14] [20] [22]. Most of the research to date has focused on the economic or social benefits. Few scholars highlight the negative environmental impacts [15]. The main objective of tourism planners is to develop strategies to maximize the benefits of tourism and minimize their costs. To accomplish this aim, the foremost task is the identification of impacts. Next, these impacts need to be grouped in categories. The scope of impacts of the development of tourism on the inhabitants is wide [14].

The effects of tourism can also be classified into various types: Economic; Environmental; Social and Cultural; Physical; Crowding; Services; and Attitude of the local community. Hall and Zepple (1990) state that concern for the social and cultural impacts of tourism on the host community is most important. Liu & Li (2018) allocated tourism impacts into three scopes (environmental, economic, and socio-cultural) [9]. Vehbi (2012) point about the fact that the impacts of tourism vary according to countries or regions. They have organized them in three headings- socio-cultural, economic, and physical (man-built and natural and). Williams (1979) outlined three groupings of impacts: economic, environmental/physical, and social, [19]. Thus tourism impacts have been discussed differently with different titles in different literature. The literature review disclosed that tourism impacts could be explored from various perceptions: environmental, economic, social, cultural, commercial, physiological, political, and physical [21]. The impacts can also be grouped as direct, indirect, or induced [5]. However, in this study, the impacts have been well documented and are classified as Economic, Socio- cultural, and Environmental.

The identification, categorization, and finally, measurement of tourism impacts are equally important. The indicators basically act as bridges between tourism and other

dimensions- environment, social, economic. Certain significant establishments (WTO, EU, OECD), organizations, and experts are developing essential indicators of tourism [23]. The indicators also can be classified under three heads, namely Economic, Socio-cultural, and Environmental. There is an important function of indicators in the preparation of a framework for tourism development.

1) *Economic Impacts of Tourism*

Tourism creates trade and industry. It is recognized as one of the most beneficial segments of the economy worldwide [24]. The economic indicators cover more service opportunities, increase in revenue [9] [10] [25] [26]; improvement in local business activities [19] [21]; invitation to more demand of services [20]; increase in household as well as cottage industries; revenue for local government, strength of the local economy, and support for public infrastructure [10] [20]. Tourism also increases investment at local and regional level [9] [21]; leads to increase in exports; improvement in living standards [10] [21]; foreign exchange; increase in public revenue [9]; increase in rates of goods [9] [21]; environmental degradation, inflation, congestion [25]; more cost of living, real estate property value, rent, taxes [9] [10] [20]; better utility civil framework (water, electric, telephone), increases the price of services [9] [19]; better price of land [21]; rise in population density. The other indicators include the use of natural resources, changes in land use. modifications of traditional livelihoods, the burden of mass tourism. Hence the growth of tourism development provides both benefits and costs to the economy. The tourism authorities highlight the positive economic impacts to the general public. Nevertheless, planners also acknowledge the negative impacts to address the planning issues holistically.

2) *Socio-Cultural Impacts of Tourism*

Socio-cultural impacts include the more direct impacts on the social organization of the community. The negative impacts include the changes in occupations of the native population. This may create adverse effects on relationships among family members[19]. Travis (1982) has focused on investigating the negative and positive effects of socio-cultural impacts [15]. In many countries, 'the desirable effects of tourism are not equitably distributed' [5]. The social impacts cover changes in work attitude, joint confidence, morality, better public health, friendliness towards strangers, better amenities, improved educational facilities, instability, differences in social order, changes in host-visitor relationships, alterations in value systems, more cultural interchange, modifications in political set ups[19], better work-related opportunities, and antisocial behavior among youth [20]. The other social impacts are due to the migration of local communities. People from villages migrate to areas where tourism flourishes. This leads to social value transformations, modifications in traditional lifestyles [19]; public zone crowding [21]; variation in styles of fashion, varieties of entertainment, slum developments [14].

Because of tourism, cultures are revitalized, certain dying customs are sometimes rejuvenated [21]. At the same time, negatives include gambling, prostitution, brawls, crime, drug addiction, illegal games, [19] 20]; growth of unhealthy competition, unhealthy lifestyles, modifications in the local languages, denial of access to locals on religious places/beaches, rise in lifestyle diseases, HIV, mafia operation, modifications in conventional family life. Tourism also creates prospects for leisure activities, offers education opportunities, leads to degradation of moral values due, upsurge to scams, impact on quality of police services, fire protection services. Seasonal effects of tourism lead to school dropouts and stimulation of cultural activities [9]. Understanding the socio-cultural impacts of tourism is particularly essential. This will enable the government to take action to reduce the probability of a community repercussion against tourists.

3) Environmental Impacts of Tourism

A vital correlation exists between tourism and the environment. The environment can either be natural or man-built. Both of them are the very fundamental components for the development of tourism anywhere. Attention to the environmental effects of tourism development has been taken care of worldwide [27]. Tourism undoubtedly contributes to the destruction of the environment. The prevailing literature points to the information that developing countries face more detrimental impacts of tourism rather than developed countries [14]. The positive impacts comprise of awareness of the necessity to preservation of the environment and natural beauty of the site. This, in turn, increases investments in the building of infrastructure [21]. Many researchers have pointed towards negative impacts like the accumulation of litter, certain effects on the local wildlife activities, and the surrounding natural environment [20]. Other adverse environmental impacts of tourism include pollution of air, water, and also ground. Destruction of heritage sites; depletion of mineral resources; landscape alterations due to development of infrastructure are the after-effects of mass tourism. Certain ecological impacts comprise destruction to ecosystems, harm to fauna and flora, alterations in landscape due to physical developments. Changes in land-use happen because of agriculture, forest lands being converted to commercial, residential areas. [15]. It also leads to the degradation of vegetation, and the depletion of wildlife [21].

The tourism impacts discussed in literature have been categorized into different categories. Due to the absence of scope definition, these impacts, the same impacts, have been considered into different categories. In order to overcome this weakness, all identified tourism impacts indicators were categorized into three categories of economic indicators, socio-economic indicators, and environmental indicators. The final list has been prepared and presented in the findings section.

B. Tourism Impact Measurement Tools

As discussed in the previous section, tourism impact indicators are required to define for the measurement of the impacts of tourism. Tourism-related research done to date lacks the discussion of its measurement. The literature that

works on tourism impacts and explains these impacts separately or within a category is insufficient. Discussion on

all impacts with the same measuring units would help to compare the quantum of impacts. Faulkner & Tideswell (1997) have explored resident perceptions of the tourism of the Gold Coast. They have tried to test the hypothesized relationships among different factors affecting resident reactions to tourism [1]. Respondents were required to react to questions concerning perceptions of tourism. The questionnaire consisted of a series of positive and negative statements concerning varied aspects of tourism on a five-point Likert Scale. The study revolved around the community attitude towards tourism.

In the last two decades, tools explained in the literature emphasize the economic benefits or environment protection, which lay stress on measuring the impacts of tourism on the community. Another category of tools classification is the tools, which measure the impact of community on tourism such as SUS-TAS and TIAS. Several models were developed targeting different disciplines and parameters to stress the importance of local inclusion, to fill the gap of theoretical perspectives of tourism impacts on the community and practical validity. Some of them aimed to gain more benefits for the local community. To get more benefits from tourism, positive as well as negative impacts need to be reviewed. Ness and others (2007) work on cost-benefit analysis. It was used for assessing the proposals of public or private investments by weighing the costs of the project against the expected benefits. Social exchange theory was developed by Emerson and has been applied to various research contexts, as stated by Al-Badarneh & Al-Makhadmeh. It is also based on cost-benefit theory to know why and how residents perceive negatively or positively towards tourism developments.

The tourism optimization model has broader coverage, which includes community satisfaction, environmental conservation, promotion of economy, and satisfaction levels of visitors. Environment Impact Assessment (EIA), Strategic Environmental Assessment (SEA), Environmental Auditing (EA), Ecological Footprint are very known tools to measure tourism impacts on the environment. Tourism Impact Assessment Scale (TIAS) is a standardized measurement tool of residents' attitude towards tourism development while Sustainable Tourism Attitude Scale (SUS-TAS) is an instrument for evaluating tourism sustainability measures of residents' attitudes toward issues.

Tourism Carrying Capacity has three essential dimensions: physical-ecological, socio-demographic, and political-economic. It suggests the tourism site's potential to carry the maximum number of tourists. Life Cycle Assessment (LCA) considers environmental impacts only and does not reflect upon economic and social impacts. The table below lists the tourism impact measurement tools.

Table- 1: Tourism Impacts Measurement Tools

Tools	Description
Cost-Benefit Analysis (CBA) [28]	Purpose: It is an economics tool, being applied since the early 20th century. It can be a successful tool for measuring the costs and benefits of various fields, e.g. energy and transports. Application: It is used for assessing proposals concerning public or private investments. It weighs the costs of the project against the benefits that are expected.
Social Exchange Theory (SET) [29]	Purpose: The theory involves the exchange of resources between individuals or groups when interacting. Application: It can be used as a conceptual framework to know why and how residents perceive in a positively or negatively towards tourism development impacts according to their evaluation of the costs and benefits.
Tourism Optimization Management Model (TOMM) [30] [31]	Purpose: Managing conservation of the environment, satisfaction of the community, promotion of the economy, and satisfaction levels of the visitors through its indicators. Application: In collaborative management and monitoring programs.
Environmental Impact Assessment (EIA) [32] [33]	Purpose: To assess the environmental impacts of a project. Application: It is used for assessing the environmental impacts of new and specific projects, like marinas, airports, eco-resorts. It is helpful to work on direct and indirect, short and long term, local and global impacts.
Strategic Environmental Assessment (SEA) [30]	Purpose: SEA gives the appropriate prospect for ignoring unsuitable plants, projects. It also helps in their identification. Application: It is applied to the identification of plans, policies, and, projects.
Environmental Auditing (EA) [33]	Purpose: Firstly, it enables tourist companies not to conform with legislation. Then it helps in identifying their problems. Finally, it take measures to assess environmental performance. Application: In evaluating the level of performance of different environmental organizations with their aim of safeguarding the environment.
Sustainable Tourism Attitude Scale (SUS-TAS) [34] [35]	Purpose: To evaluating tourism sustainability measures residents’ attitudes toward issues. Application: It comprises of seven-factor structure - perceived sustainability towards the environment, perceived social costs, perceived economic benefits, ensuring satisfaction of visitors, long-term planning, community-based tourism, and maximizing of participation of the community.
Tourism Impact Assessment Scale (TIAS) [17] [36]	Purpose: Standardization of the measurement of the attitude of the residents towards tourism development Application: For planning tourism and recreation development
Tourism Carrying Capacity [33]	Purpose: To estimate the maximum number of visitors that can visit a specific site without causing any destruction on the environment. Application: It is based on three main components: physical-ecological, political-economic, and socio-demographic.
Life Cycle Assessment (LCA) [33]	Purpose: It cumulatively assesses all impacts within the doma of a system. Application: Its focus has traditionally been global impacts. It does not assess social and economic impacts. It is developed for the evaluation of impacts on the environment.
Ecological Footprint [33]	Purpose: It helps in comparing the environmental performance of different organizations. They can be of different scales and different ranges. Application: t gives estimates of waste assimilation and resource consumption. It also provides requirements for a specific human population in terms of a relative productive area of land.

IV. FINDINGS AND CONCLUSIONS

The literature review suggests that the classification of tourism development impacts are done with different thoughts, which creates overlapping impacts or categories because of the absence of a categorization base. A clear difference of impacts could be discussed into three categories of economic indicators, socio-cultural indicators, and environmental indicators. The identified tourism impact indicators could also be categorized into the categories of positive impacts and negative impacts. There is an urge to work on the negative impacts and turn it into positive for the welfare of the public. After bad experiences of negative tourism impacts, authorities and policymakers realized that the well-being of the public should be measured along with the requirements of all stakeholders. It is suggested to collect data about stakeholders and those individuals who want to

gain economic benefits from tourism development. Research concerning the study of impacts of tourism has been through several stages of development. Deery and others (2012) had studied the progress of tourism impact research. They presented the findings from the research undertaken and projected a new stage of research which should intend towards providing an understanding of the fact that some impacts are more related to residents than others. The new era explores tourism impact measures for its sustainable, economically profitable, social equality, cultural advancement, and environmental protection. The impacts can be both positive and negative, or direct, indirect, or induced. It is of significant importance to the tourism planners as they should encourage positive ones and resist the negative impacts. Various kinds of impacts of tourism development that are studied from various dimensions (economic, socio-cultural, and environmental, are listed below

Table- 2: Tourism Impacts Category Matrix

Category	Positive Impacts	Negative Impacts
Economic	<ul style="list-style-type: none"> • Better opportunities for jobs • Enhancement of the income of households • Increase in demand for labor • Increase in living standards • More development in tourist areas • Better availability of goods and services • Simulation of trade and income • Improvement of the economy of the local communities • More shopping offers and opportunities • Better earning through foreign exchange • A rise in GNP (Gross National Product) • Increase in revenue through taxation • Additional export income in region 	<ul style="list-style-type: none"> • Improper tourism estimates • Unnecessary labor or goods import • Unequal production, due to seasonal tourism • low rate of return on investment • increased local inflation • Unrealistic speculation of real estate pricing • Additional pricing for essential services • Foreign investments • Excessive expenditure of local community • More price of goods and basic services • Unnecessary more price of housing • Increase in living cost
Socio-Cultural	<ul style="list-style-type: none"> • Upgradation of social services • Betterment in quality of life • More interactions among communities of varied regional backgrounds • Attraction of younger people to areas of tourism development • Increase in the education standards and health standards of the people • Potential increased in safety • Increase of social contacts, • Development of new ideas and values • Strengthening of traditional values and traditions • Preservation of the of local culture • Appreciation of the arts, music, cuisine, and language of the tourism area • Cultural interchange, peace and understanding 	<ul style="list-style-type: none"> • Commercialization of personal or private activities • Escalation of crime, prostitution • Change in the structure of the local communities, and their dislocation • More reasons for tension, hostility, conflicts, and suspicion • Religious intolerance, terrorism and security issue • Aggressive advertising campaigns • Introduction of drugs, gambling, thefts, prostitution, • Unacceptable increase in cultural conflicts • Social pressures to alter dress, social values, and habits • Loss of original stability and cultural pride • Introduction of diseases • Diminishing of personal relationships in the community due to mass tourism
Environmental	<ul style="list-style-type: none"> • Conservation of historical, heritage • Restriction of traffic • Construction of parks and gardens • Opportunity for regional development • More public awareness regarding environmental issues 	<ul style="list-style-type: none"> • Environmental damage and change in natural processes • The general spread of litter, garbage • Trampling of flora and fauna • Increase in various kinds of pollution - Water, air, noise, and visual • Changes in feeding and breeding habit of wildlife • Deterioration of green area • Reduction of natural landscapes • Depletion, contamination of water resources

Tourism is an essential economic, socio-cultural, and environmental-related experience of the 21st century. Reliable indicators of socio-economic growth and environmental protection have been developed in many parts of the world. Thus, the practice of sustainable tourism cannot be ignored by its various kinds of impacts. Local communities encourage tourism development as a means to improve their quality of life, household income, and speedy growth. However, researchers have found that the most severe effects involve not only economic values to the community but changes to the quality of life from social perspectives also. There is a lengthy list of impacts of tourism developments in literature. Based on the literature review, it can be classified into three impacts types of economic, socio-cultural, and environmental. The focus of tourism development activities lies in benefits in the form of economic benefits - jobs, additional sources of income, tax revenues, etc.; socio-cultural benefits - improvement in social services, quality of life, education standards and health standards of the people, attentiveness of music, arts, cuisine, and language; environmental benefits - improvement in quality of environment, conservation of historical, cultural heritage, natural green areas, creation of

environment-related facilities like parks and gardens. In order to improve the impacts due to tourism development, all impacts were classified into positive and negative classes after the identification of their typologies. Positive impacts should be promoted while the negative ones should be overcome, after identification of their causes.

The local residents should be made stakeholders in the development of tourism, in order to make a tourism-based economy to sustain. The attitudes of the native population towards tourism and their perceptions of its impact on their community life must be repeatedly assessed. It will provide the prospects for the betterment of understanding between people of different backgrounds. Tourism increases the awareness of the host community through their interactions with visitors. It improves the status and vision of the host community to outsiders. It also increases their social contracts; gives rise to new ideas, values, and ways of life.

It is necessary to appreciate, monitor, and do proper management of the impacts of tourism on the host community because the success of tourism is solely dependent on the support of the local communities. It is important that the impacts of tourism should not exceed acceptable limits in order to manage these impacts.

To measure tourism impacts on the discussed three categories, indicators were identified, which have been tabulated in the literature review finding section. These indicators have also been categorized into positive and negative categories. Some of these indicators are qualitative in nature which other indicators are quantitative in nature. Tools and techniques to measure tourism impacts were also reviews. Eleven useful tools to measure tourism impacts have also been listed. TOMM, SUS-TAS, and TIAS are the only identified tools that cover all three categories of tourism impacts. These kinds of literature were also helpful to differentiate tourism impact categories. The specific tourism impacts like carrying capacity and ecological footprints have been elaborated with standardized equations. These defined equations do not apply to qualitative indicators. The Likert scale has been used by some authors to measure quantitative as well as qualitative impacts. It quantifies qualitative indicators and scale into the same quantum as quantitative indicators could be made. Therefore comparative discussion on the result of tourism impact analysis could be made, and cumulative benefit or loss of tourism could be argued. It is experienced that mass tourism is declining, and specific types of tourism are growing. Hence there is a requirement for the creation of a precise group of indicators for various types of tourism. This will assist in monitoring and maintaining its sustainability. A systematic analysis of the impacts of tourism will benefit the government, stakeholders, planners, local communities, and tourism promoters to identify actual problems and issues in order to formulate appropriate policies and actions.

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