

SWOC ANALYSIS OF ECO-TOURISM- DESTINATION BICYCLE TOURISM IN DEVELOPED AND DEVELOPING NATION

Vineeta Kumari

Assistant Professor,

Ramaiah University of Applied Science, Bengaluru, India

Vineeta.hk.hc@msruas.ac.in

Abstract

Eco-tourism through destination bicycle tourism stands out as a pivotal solution for environmental conservation and the attainment of sustainable development goals. This research is dedicated to unraveling the nuances of tourism development strategies and the accountability of service providers, drawing a comparative analysis between developed nations and India. This study systematically reviews a spectrum of sources including academic research papers, government white papers, book chapters, and reports. The primary focus is on examining recent developments in bicycle infrastructure, policies, and strategies implemented by selected developed nations. A key aspect explored is the integral role played by the diverse service provider in the effective establishment of bicycle infrastructure within their respective nations. To provide a comprehensive analysis, the study employs a SWOC (Strength, Weakness, Opportunities, Challenges) comparison framework, scrutinizing the latest advancements in the chosen countries as well as in India. The outcomes of this study underscore the critical significance of service provider accountability and the formulation of policies conducive to the development of bicycle tourism in advanced nations. As a significant contribution, the research aims to provide actionable insights for Indian service providers, offering solutions to address issues hindering bicycle tourism and advocating for the implementation of bicycle-related policies and strategies across diverse Indian regions. In essence, this study serves as a valuable resource for Indian stakeholders seeking to enhance their approach to bicycle tourism and align it with global standards.

Keywords: Bicycle Tourism, Sustainability, Service Provider Accountability, PRISMA, Advanced Nation

1. Introduction:

Bicycle tourism refers to a form of travel where bicycles are the primary means of transportation between destinations. It is usually done in small groups or individually for leisure purposes (Millington, 2013). Cycling is gaining popularity among individuals of all ages and social backgrounds. It represents a gentle form of recreational tourism with numerous favorable outcomes, including its eco-friendliness, encouragement of a healthy lifestyle, and utilization of an economical mode of transportation (Dey, D., Akter, S., et al., 2015).

Bicycle tourism promotes the sustainability branding of tourist destinations, preserves local cultural values and heritage places (Manton, Hynes, & Clifford, 2016). It helps in the economic growth of rural areas or tourist destinations. Service providers have a crucial role in improving the overall infrastructure for destination bicycle tourism, including food, lodging, bicycle repair shops, raising awareness among locals, offering improved packages for cyclists, and ensuring safety and security, among other factors.

Factors influencing bicycle tourists visiting a destination include the absence of suitable routes, adequate equipment, elevation, availability of accommodations, and refreshment facilities. Without these essential elements, most tourists are unlikely to consider destination bicycle tourism. Educating the public about destination bicycle tourism is of utmost importance in shaping a positive perception of this form of travel.

Bicycling, cycling, or cycling tourism are gaining popularity in many European countries. The EU (European Union) has supported this type of responsible tourism by co-financing various projects and cycling in climate mitigation, regional development, and transportation plans. (European Cyclists' Federation n.d.). A pan-European master plan for cycling promotion was adopted and the main objective of the plan was to double the usage of bicycles in European countries by 2030. Service providers involved in this strategy-making were the United Nations Economic Commission for Europe and the European Cyclists Federation. This plan guides municipalities to invest in better cycling infrastructure. (ECF Report, Second Edition, 2022).

According to the European Union Cycling Economy report (2016), the bicycle industry has the potential to generate revenue between 55b – 95b \$ by 2022-2030. Bicycle tourism is increasing by 6% yearly in Europe. The main force to generate revenue in the bicycle industry is cycling as a form of leisure or tourism in European countries. The main reasons for the increase in bicycle tourism in European countries are infrastructure development and awareness among European citizens. The main goal of the European federal government is to reduce carbon footprints and provide healthy lifestyles to the people.

Destination bicycle tourism is not a new concept, however, awareness is very minimal in India. India is the second largest manufacturer of bicycles after China (NITI Aayog, 2020) but bicycle infrastructure development in India is very limited. There is a need for an effective strategy to develop bicycle infrastructure in India. The available research studies on this topic appear to be limited in specificity. Hence this study was undertaken to examine the bicycle infrastructure development strategies and service provider accountability between Advanced nations and India. To achieve this goal, PRISMA review was applied focusing on advanced countries with established bicycle infrastructure for rural and urban tourism. We used the PRISMA methodology to systematically examine relevant literature, performing a comparative analysis through SWOC

analysis and exploratory observation. The results highlight the responsibilities of Service providers.

2. Methodology

PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) is used for this study. The PRISMA protocol is designed to minimize the waste of effort when conducting a systematic review, particularly in instances where there are duplicated articles. (Shamseer, Moher, Clarke, Gherzi, Liberati, Petticrew, et al., 2015). The PRISMA protocol has four steps: Identification, Screening, Eligibility, and Inclusion. For an effective literature review, the research approach was limited to 15 years of secondary data from 2008- 2023.

Identification: -

In the search process, utilize the Scopus, Wiley, and Google Scholar databases for identification purposes. Keywords used for the search are Development of conducive bicycle tourism, Policy in the Netherlands, International Bicycle strategies, and Bicycle infrastructure development internationally. Most of the documents selected for literature review were white papers (policy documents) created by the governments of their selected nations. This method aids in establishing criteria to obtain data that effectively meets the study's objectives, including both inclusive and exclusive criteria.

Table 1. Inclusion and Exclusion Criteria of PRISMA

Inclusion Criteria	Exclusion Criteria
Peer-reviewed academic journals, book chapters, private and government reports	Exclude studies that focus solely on general tourism services without a specific emphasis on bicycle tourism services
Search results are limited to the years between 2008 and 2023 to capture fundamental and recent research	Exclude multiple sources that cover the same research findings or data to avoid redundancy.
Includes various countries and regions to ensure a global perspective.	Exclude studies that do not contribute valuable insights or answer research questions effectively
Theoretical Framework and Successful Infrastructure Implementation: - Federal Framework, Service Providers Theories, and Strategies Successfully Implemented	Exclude sources that discuss accountability practices in a general business context unrelated to the bicycle tourism industry
Studies include outcomes and impacts of improved service provider accountability, including benefits for local economies,	

environmental conservation, and tourist satisfaction.	
Includes the impact of technology and innovation on accountability in bicycle tourism services, including digital platforms for information-sharing and bike-sharing systems.	
Includes challenges and barriers service providers face in enhancing accountability and implementing bicycle tourism services.	

Screening:

In the initial screening process, found 70 articles relating to the “Development of bicycle infrastructure Internationally”. These articles were then filtered according to specific criteria:

- Topic, Abstract, and Conclusion content
- Duplicate Records
- Unrelated data

Eligibility and Inclusion:

Various sources of data were used in the eligible data collection, including articles from newspapers, thesis, lecture papers, seminars, descriptive reports, and technical reports. The systematic review only included and analyzed qualitative research articles. During the eligibility phase, approximately 36 items were obtained following the PRISMA protocols. The selection process is illustrated in Figure.

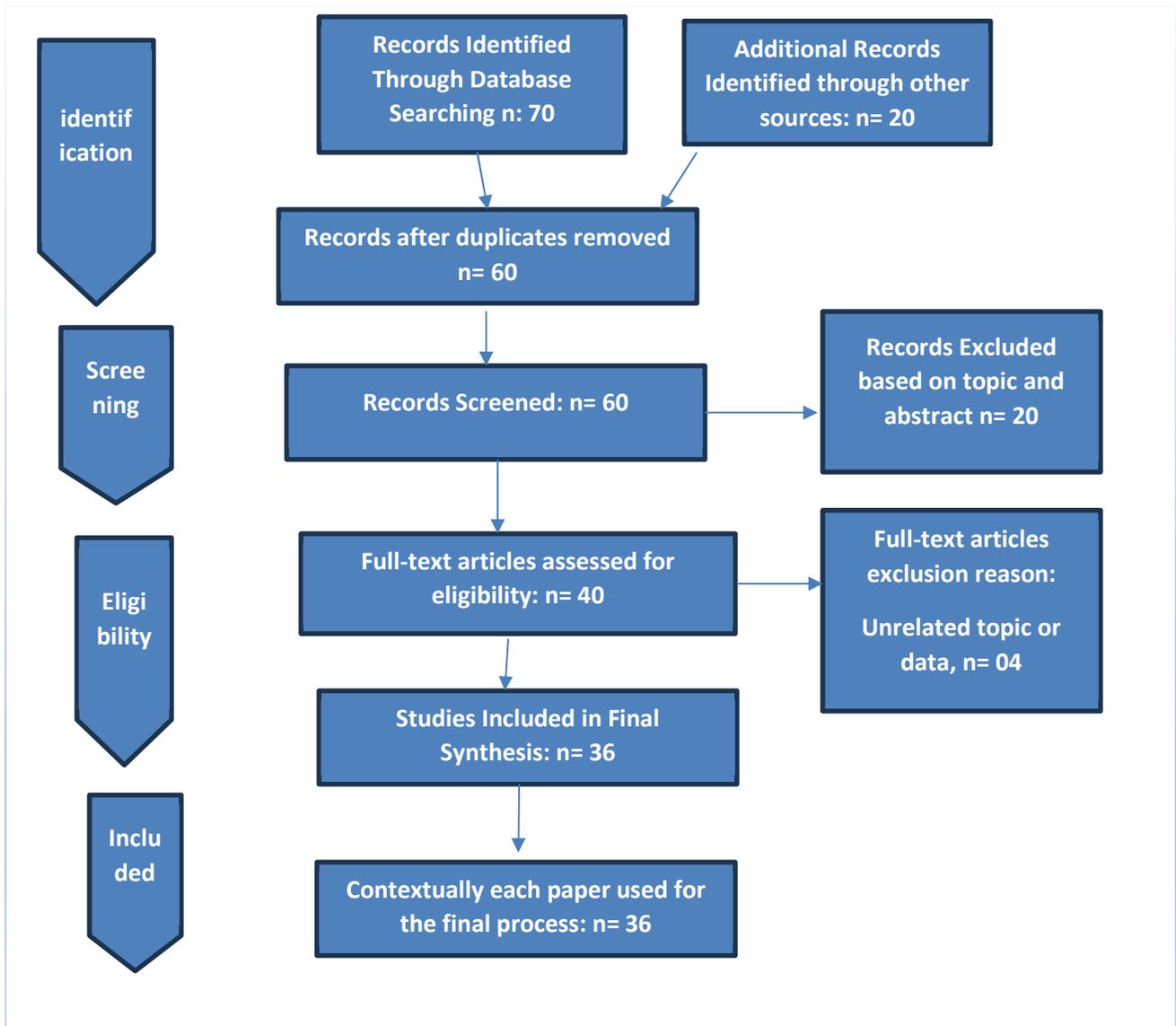


Figure 1: Data Collection using PRISMA Protocol

3. Literature Analysis

Selected advanced nations' studies, reports have been synthesized to understand bicycle infrastructure-related issues and their solutions for the development of bicycle tourism. One of the common reasons for implementing bicycle infrastructure in advanced nations is to reduce carbon footprints and achieve sustainable development goals. This study covers practices from 21 selected countries. The study considered four parameters to select countries for this study which are: well-developed infrastructure, people participation and perception, bicycle awareness and safety policies, and cycling culture and tourism Promotion. The findings include service provider's involvement in the development of bicycle infrastructure and tourism.

Well-developed infrastructure: -

Issues faced by the Netherlands in its early years were pollution, increasing growth of traffic congestion on roads, safety issues, insufficient use of public space, environmental issues, and road accidents.

The Netherlands accommodates 23 million bicycles. The main reason for the increased number of bicyclists in the Netherlands is the bike-friendly infrastructure which gives bicyclists a safe environment to ride (J. (Joris) van den Berg Intern, Department of Economy & Trade, 2020). Safe and Convenient cycling policies followed in the Netherlands, Denmark, and Germany are they have separate lanes for bicyclists, roads and streets color-coded directional signs for bicyclists, green signals for cyclists in intersections, bike paths turning bright color while crossing intersections signals, large space given for bike parking throughout the cities, priority parking for women, CCTV facility in the parking area, bicycle parking facility in metro stations, suburban and regional stations, Bike rent facilities in all stations (Pucher & Buehler, 2008). Denmark has a separate lane for bicyclists, highways, and water barriers are overcome by bridges and tunnels (Thomas et al., 2015). Copenhagen, Denmark: - This region got attention because of their efforts to provide bicycle routes connectivity to big employment centers, universities, and residential areas. Route also has a footrest and air pump (Thomas et al., 2015). Groningen, Netherlands: The latest implementation on intersection signals is optical rain sensors. During rain, it senses automatically and provides more green time to cyclists. In their traffic signals, they have a six-second early start to the vehicle green. In some areas, they have separate bicycle signals (Thomas et al., 2015) Green Ways: Stockholm, Sweden is famous for the Gotgatan cycling project. In this lane, they have widened up the road for bicyclists. Sweden developed a tool to collect data related to bicycle issues and help to prioritize the projects(Thomas et al., 2015).Trampe bicycle lift: Norway: Trampe is the world's most significant bicycle cable lift designed for urban use, especially for elevated places(Thomas et al., 2015). Switzerland has separate paths for bicyclists. For All projects, the civil engineering office considers "bikeability" Apart from city cycling, to promote cycling government has marked a 6000km route for bicyclists to explore the country (J. (Joris) van den Berg Intern, Department of Economy & Trade, 2020).

Vancouver, Canada: Implemented fully protected signal phasing for cyclists(Thomas et al., 2015). Canadian jurisdiction has set guidelines for bicycle infrastructure in the country - Road facilities are off-road multiuse pathways, painted bicycle lanes, bike-accessible shoulders, buffered bicycle lanes, protected bicycle lanes, bike boxes, intersection crossing markings, bend-in intersection approaches, advisory bike lanes, neighborhood greenways, protected signals phases, Highway Safety Manual, street lighting, parking facilities, two-way bicycle facilities, contra-flow one-way bicycle route (Montufar, J., Chapman, S., & Poapst, R. 2020).

In Austria, they have construed bike lanes for bicyclists. Traffic calming, bicycle-priority streets, and shared-use paths, mixed paths shared by cyclists and pedestrians in the park, agricultural areas,

online apps to help bicyclists in route planning facilities are available for bicyclists (Buehler et al., 2017). Belgium has 40 theme routes, cycle hire facilities, cycle-friendly café, separate cycle paths (Cycle routes for sport and tourism), availability of online predetermine rides, marked scenic paths for riders, 30 stretches of railway lines, and 1100km slow routes for tourists (Cox, 2012). In France, there are convenient bicycle parking options located near park-and-ride facilities and urban transport hubs. The train station offers 150 bike parking spaces. Additionally, a bike share program called Bicloo is available 24/7. The city also provides a 200-euro allowance for the purchase of an electric bike, and students can participate in cycling through the "Vélocampus" program. This program allows them to rent an affordable bike from a fleet of 300 bicycles or to repair their own bikes themselves. To promote tourism 280 km was certified as a World Heritage site by UNESCO and 300 professionals (accommodation, cycle rental, site visits, tourist information offices) are there to support bicycle tourism (Ministry of Ecology, Sustainable Development and Energy, France, 2014). New York, Portland, San Francisco, and Vancouver have opted to improve the visibility and safety of their bike lanes by applying vibrant colors such as green, blue, or red. This approach is particularly focused on addressing areas with significant challenges related to conflicts between automobiles and bicycles (Pucher et al., 2011). New York, Vancouver, Chicago, San Francisco, Washington, Toronto, Montreal, Portland, and Minneapolis has separate bicycle lane for cyclists, bicycle parking facilities, bike box in the main intersection, bike bike-sharing facilities, except in New York and Montreal other cities have bicycle rack facilities in bus, routes are connected to park and recreational areas (Pucher et al., 2011). In Australia, infrastructure facilities are bike parking facilities (85 Parkiteer Bike Cages across regions), on-road cycle lanes, mountain bike trails, shared park paths, cross-city connectivity, greenway, bicycle wayfinding signs, rail trail cycleways, cyclists friendly intersection designs, bicycle-on-the-footpath permitted, sign boards for distance awareness, mandatory bicycle helmet, green box in major intersection (Australian Bicycle Council, 2016). In Zhuhai, China, Built a greenway of about 968 kilometers in Zhuhai, with 48 rest stations, and more than 300 community parks along the greenway network line. With the help of the original road resources, various greenway projects built by leisure cycling experience have gradually formed a network of interchange development in all directions of Zhuhai (Liu & Li, 2019). Shenzhen, China, established a 490km bi-directional bicycle lane for bicyclists (Zhang et al., n.d., 2013).

Cape Town, South Africa, constructed a 450km bicycle network for bicyclists, parking facilities near rail stations, and bicycles are permitted in city buses and rail (Jennings, n.d.).

Bogotá, South America, has 550 km of protected bicycle network connected to rural and urban areas and bike-sharing system facilities (3,300 bicycles) (Remolina, V., 2022). Dubai, aimed to provide 850km of cycleways in central business areas, out of which 23km of Jumeirah Street and 1.4k AI Street were completed. They have parking facilities near metro stations (1,400 bike racks), and cycle track signage (Bulmar, D. Place Dynamix report, 2014).

People Participation and Perception: -

In France, 37.5% of the employees have quit car commuting and started riding bicycles, 90% of students ride to school, and increase in e-bikes sold by 1000% times more past seven years (Ministry of Ecology, Sustainable Development and Energy, France, 2014). In Germany, Austria, and Switzerland people started commuting to their workplaces and also started exploring new places in their regions via bicycles, The main reasons to attract people were infrastructure development in the region and health consciousness (Buehler et al., 2017).

According to the EU cycling economic study (2016), Bicycle tourism is increasing by 6% yearly in Europe, people prefer bicycles to explore Eurovelo and other Scenic routes.

The Netherlands is widely known as the "bicycle capital of the world" due to its remarkable utilization of bicycles and well-maintained bicycle paths. Dutch people cycle daily and cover an average of 630 miles per year. Additionally, they possess more than 1.2 bicycles per person (50% for education trips, 28% for shopping trips, and 11% for business trips) .In the North American Regions, the proportion of utilitarian cycling has notably risen, going from 43% of total cycling journeys in 2001 to encompassing 52% of bike trips by 2009 (Pucher & Buehler, 2008). In the last 15 years, Australia has witnessed the importation of approximately 17.7 million bicycles. These numbers reveal that bicycle sales have surpassed car sales by a margin of over 3 million throughout these 15 years. Additionally, over 50% of Australian households now possess at least one bicycle (Australian Bicycle Council, 2016). In China, the number of bicycle use is increased age between 20 to 40 years and among those has low income (Zhang et al., n.d., 2013). As reported during the 2019 China Bicycle Industry Conference by the China Bicycle Association, the population of China possesses nearly 400 million bicycles and approximately 300 million electric bikes, establishing the country as the global leader in bike ownership (Keystone Paper 10 2020). In Cape Town, South Africa, a mere 1% of transportation journeys are conducted using bicycles, and there is a limited number of commutes to work and school that involve cycling. The government's strategies aim to increase bicycle use from 1% to 8% by 2030 (TDA, Cape Town Report, 2017). In Bogota, South America, a mere 13% of transportation journeys are conducted using bicycles (Remolina, V., 2022).

Bicycle Awareness and Safety Policies: -

Netherlands: - In residential areas, commercial streets, schools, colleges, recreational areas, and quiet streets cars are not allowed to go too fast speed (18kmph is the max limit). The Netherlands government has introduced designed soft measures to change the Dutch people's perception, attitude, and beliefs on bicycles. For awareness, the government has included bicycle traffic examinations in early schools for kids (Van Ommeren, K., Ruffino, P., de Boer, S., & Buis, J. 2017). In the Netherlands, Denmark, and Germany Traffic education and training (cycle training test for children to follow traffic rules, training to motorists to respect bicyclists and avoid hitting them), Traffic laws (Special laws for children and elderly cyclists, strict law for motorist in case for hitting cyclists) (Pucher & Buehler, 2008).

Austrian cities have traffic calming shared roadway networks calmed to 30km/hr and cars are not allowed on bicycle streets. Austrian cities organize mass rides for bicycle awareness. Traffic safety lessons in schools and followed by practical tests for children. Cycling training courses for all age categories (Buehler et al., 2017). In Belgium, One-way streets for cars are in fact two-way streets for cyclists and traffic calming shared roadway network calmed to 25km/hr. (Cox, 2012). In Canada, They conduct workshops, Bike mentorship programs for newcomers, bike-to-school projects, etc. for awareness and to educate people (Manager & Development, 2016). New York, Vancouver, Chicago, San Francisco, Washington, Toronto, Montreal, Portland, and Minneapolis schools participate in the Safe Routes to School Program for bicycle safety awareness education for school kids and adults local service providers give cycle training (Pucher et al., 2011). In Australia, they organize education campaigns for bicycle safety rules, safe cycling road rule education Programs, and Combine safety rule handbooks for motorists and bicyclists for Awareness and organization of summits and conferences. (Australian Bicycle Council, 2016). In China, the minimum speed for cyclists on bicycle highways is 15km/hr (Keystone Paper 10, 2020). In Cape Town, South Africa, for bicycle awareness among people they have organized various conferences and workshops, and the University of Cape Town has launched an African excellence center for the public and non-mortised vehicle (Jennings, n.d.). Dubai, Various campaigns, and workshops are organized to promote bicycle awareness and change attitudes towards cyclists (Bulmar, D. Place Dynamix report, 2014).

Cycling Culture and Tourism Promotion:-

Bicycle Promotion Activities in the Netherlands, Denmark, and Germany include Free bike parking facilities, inexpensive bicycle rentals, tax concession purchase of bikes in the Netherlands, easy availability of air pumps, bicycle tour website, convenient base bicycle online planning trip tool, maps for bicyclist, Public awareness campaigns and festivals, regular survey. Taxation policies that indirectly promote bicycles include a high tax on the purchase of cars, on the other hand, tax concessions given on the purchase of bikes, and strict rules for driving licenses (Pucher & Buehler, 2008). Switzerland Tourism has produced a booklet called “Bicycling in Switzerland”. Provision of cycling maps in any bookshop initiative by the Traffic Association of Switzerland. Certain cantons in Switzerland conduct events, fairs, and workshops to promote bicycles in the region e.g. Halo Velo (J. (Joris) van den Berg Intern, Department of Economy & Trade, 2020). Austria and Vienna have a special agency for bicycle promotion and an online platform to promote bicycle tourism (Buehler et al., 2017). Belgium formed a cycling association called Rando-Velo to promote, encourage, and facilitate bicycle tourism in the region, organize Vlaanderen (road cycling race), the website for race information, the waymarked tour of Flanders, printed and online maps, campaigns, and GPS system to promote bicycle tourism (Cox, 2012). In Canada, for the marketing web pages for tourism (links to cycling maps are available), cycling maps and guides for tourists are provided in all bookshops, libraries, civic centers, and electronic newsletters on cycling infrastructure projects, guided rides for conference delegates (Shaikh,Z. 2016). In France

to promote bicycle tourism they establish secure parking, a bike room with tools and services, changing rooms and showers; giving out a bike kit comprising the cycle map of the city and/or different cycling routes, and an urban cycling guide, prepared by the Federation of bicycle users (FUB) (Ministry of Ecology, Sustainable Development and Energy, France, 2014).

New York, Vancouver, Chicago, San Francisco, Washington, Toronto, Montreal, Portland, and Minneapolis to promote bicycle and bicycle tourism has maps and online facilities for trip planning, and a website for a wide range of information like cycling routes, events, safety, training, parking, etc., organize races, rides for a special cause, mass rides (Pucher et al., 2011). In Australia, to promote bicycle and bicycle tourism sponsors are sponsoring events, constructing trails, and boosting the popularity of mountain biking. On the other hand, efforts to facilitate cycling for commuting purposes encompassed endeavors like the Sydney Rides Business Challenge, mandating bicycle parking facilities, and making bicycle fleets available. Active Healthy Kids Australia Association encourages kids to physically participate in cycling activities, short trips, and bicycle festivals organized by local service providers to promote bicycling (Australian Bicycle Council Report, 2016). In Shanghai, China, to promote bicycles, the cornerstone of China's first urban cycling strategy involves overseeing the operation of the world's largest bicycle-sharing initiative. This endeavor has resulted in a 2.7% decline in fine particulate matter (PM2.5) and a 0.9% drop in nitrogen oxide (NOx) emissions (Sudmant et al., n.d., 2020). In Hangzhou, Wuhan, and Shanghai, China, to promote bicycles in urban areas the government has introduced bicycle bicycle-sharing system (Public bike-sharing programs were officially established in twelve Chinese cities, boasting a network of 5,331 stations and a fleet of 180,500 bicycles) (Zhang et al., n.d., 2013). In Cape Town, South Africa, to promote bicycle in the region every March they organize the Cape Town cycle tour which is a major individual time race in the world, Cape town is enormously active in the recreational and sports cycling sector to promote that they conduct weekly cycling tour, events and festival (TDA, Cape Town Report, 2017). In Bogota, South America, to promote cycling on each Sunday and public holiday throughout the entire year, a considerable number of city streets are shut off to motorized cars. This allows individuals to explore the city using bicycles, roller skates, skateboards, or simply walking. This practice of closing roads for this purpose has continued over time, leading to an expansion of the length of these designated routes. Currently, the ciclovía road closures span 128 kilometers (Institute for Transportation and Development Policy, 2022). In Dubai, to promote the use of bicycles, a cycling park has been established offering various amenities. This cycle park serves as a recreational destination for families, featuring sports facilities such as mountain bike trails, BMX trails, a desert trail track, and a 100km cycling course. Additionally, the park provides essential amenities like food options, restroom facilities, and medical services. Notably, cycling races are also hosted here to foster the culture of cycling in Dubai (Bulmar, D. Place Dynamix report, 2014).

Stakeholder Involvement: -

In planning the Netherland's infrastructure, various Service providers are involved. The municipality's role is to develop a cycling strategy and plan safe infrastructure for bicyclists. The transport region and water bodies' role is deciding and connecting inter and regional bicycle paths. Government to promote reorganization and provide a framework. Dutch railway's role is to provide bicycle parking facilities. The advisory bodies' role is knowledge development and support bicycle policy. All this systemic approach helped the Netherlands to obtain the world's best bicycle infrastructure (Van Goeverden et al., 2015). In Denmark, for bicycle infrastructure development main leaders are the municipality, governmental bodies, business owners, real estate associations, developers, and citizens. Municipality role for promotion- Prioritizing bicycle lanes in the region and putting modern street devices like footrests and air pumps at intersections for bicyclists' convenience Elesawy, E. (2021). To support bicycling Austria, Germany, and Switzerland governments have master land and funding to increase bicycle routes and safety. To reduce car usage all the cities' governments have made strict rules for car owners, for example, more tax while buying a car, paid parking, speed limits, car access limitation to a certain zone, high driving license fees, etc. (Buehler et al., 2017)

In Belgium to support bicycling Ministry of Transport, the Local government, and Local cycling authority make cycling strategies and organize events to promote bicycle tourism (Cox, 2012). Safety policies and facilities for bicycling in Canada were obtained from Canadian jurisdictions, municipalities, and agencies (Montufar, J., Chapman, S., & Poapst, R. 2020). In France, cycling is promoted as a healthy mode of transportation by Service providers. Whether for work or leisure, efforts are made to ensure that cyclists have the best possible travel experience. Local governing bodies are responsible for the road network's cycling strategy, management, and incentives, the cycling association is responsible for conducting events to promote cycling, Tour de France is one of the most famous races in the world organized by France. (Ministry of Ecology, Sustainable Development and Energy, France, 2014). In New York, Vancouver, Chicago, San Francisco, Washington, Toronto, Montreal, Portland, and Minneapolis Active Transportation Alliance in Chicago, Bicycle Transportation Alliance in Portland, Bike Walk Twin Cities in Minneapolis, San Francisco Bicycling Coalition, Transportation Alternatives in New York City, Toronto Cyclists Union, Vancouver Area Cycling Coalition, Vélo Québec in Montréal, and the Washington Area Bicyclist Association played a vital role to generate public and political support, energetically advocating for increased funding dedicated to cycling initiatives and infrastructure. Additionally, they play a role in coordinating and promoting numerous cycling events and collective rides within their urban and rural areas (Pucher et al., 2011). In Australia, A sum of \$1.8 million was invested by State and Territory Governments to promote cycling, coupled with an additional \$123.6 million allocated for enhancing cycling routes, both on-road and off-road, that connect crucial destinations within urban and rural regions (Australian Bicycle Council, 2016). The Shanghai, China government released a document called the "White Paper of Urban Transport Development in Shanghai" focusing on the city's transportation progress. Documents outlined two main factors-

encouraging bicyclists for short trips and actively guiding long-distance bicycle trips to public transport (Zhang et al., n.d., 2013). In Cape Town, South Africa, the Transport and Urban Development Authority holds the responsibility for overseeing the organization, creation, building, upkeep, administration, and functioning of the urban transportation system, cycling facilities within that network, and their integration with the built environment. Numerous non-governmental organizations (NGOs), groups, and individuals play a significant role as Service providers by their involvement in promoting bicycle utility and recreational cycling. This includes aiding in the distribution of bicycles, arranging cycling events, and advocating for cycling-related causes (TDA, Cape Town Report, 2017). In Bogota, South America, the main stakeholder is the Mayor of Bogota, who constructed a bicycleway in the city, to maintain the transport local transport department plays a vital role, and the city council helps to promote the bicycle (Vanessa Remolina, 2022). In Dubai, the primary entity involved is the Roads and Transport Authority, which has reacted favorably to the swift growth in cycling's popularity. They have taken proactive steps in creating the Dubai Bicycle master plan to address this trend (Bulmar, D. Place Dynamix report, 2014).

India's Latest development:

India is the second largest manufacturer of bicycles after China (Publication Puneeth, 2021). Two Indian states Mysore and Bhopal have successfully implemented the Public Bicycle Sharing System. Issues faced by India are Insufficient funding, political issues, infrastructure, user perception, and urbanization. (B.R.Puneeth, 2021). To promote bicycles and support underprivileged students bicycle distribution scheme is being run in different parts of the country (Niti Aayog, 2020). Bicycling tours in India have been managed by privately owned companies and do not fall under the purview of any government or any community-instituted central body (Indian Adventure Tourism guidelines, 2018). The Indian state, of Chandigarh, currently has a pre-existing network of 200 kilometers of exclusive cycle tracks, making it the only city in India to boast such a comprehensive citywide network dedicated to cycling (National Institute of Urban Affairs reports, 2021). Chandigarh, the city boasts the most extensive public bicycle-sharing system to accommodate cyclists (National Institute of Urban Affairs report, 2020). In Chandigarh, although pedestrian and bicycle path facilities are present along the pathway, motorized two-wheelers intrude into routes designated for non-motorized transport. The ineffective timing of traffic signals leading to traffic congestion poses a significant barrier to the smooth and safe utilization of non-motorized transport facilities (Jain, D. A., & Patil, A. 2013)

4. Findings

SWOC analysis is done based on the parameters considered during the PRISMA literature review between advanced nations and India. Parameters considered were developed infrastructure, bicycle awareness and safety policies, people participation and perception, and cycling culture and tourism promotions.

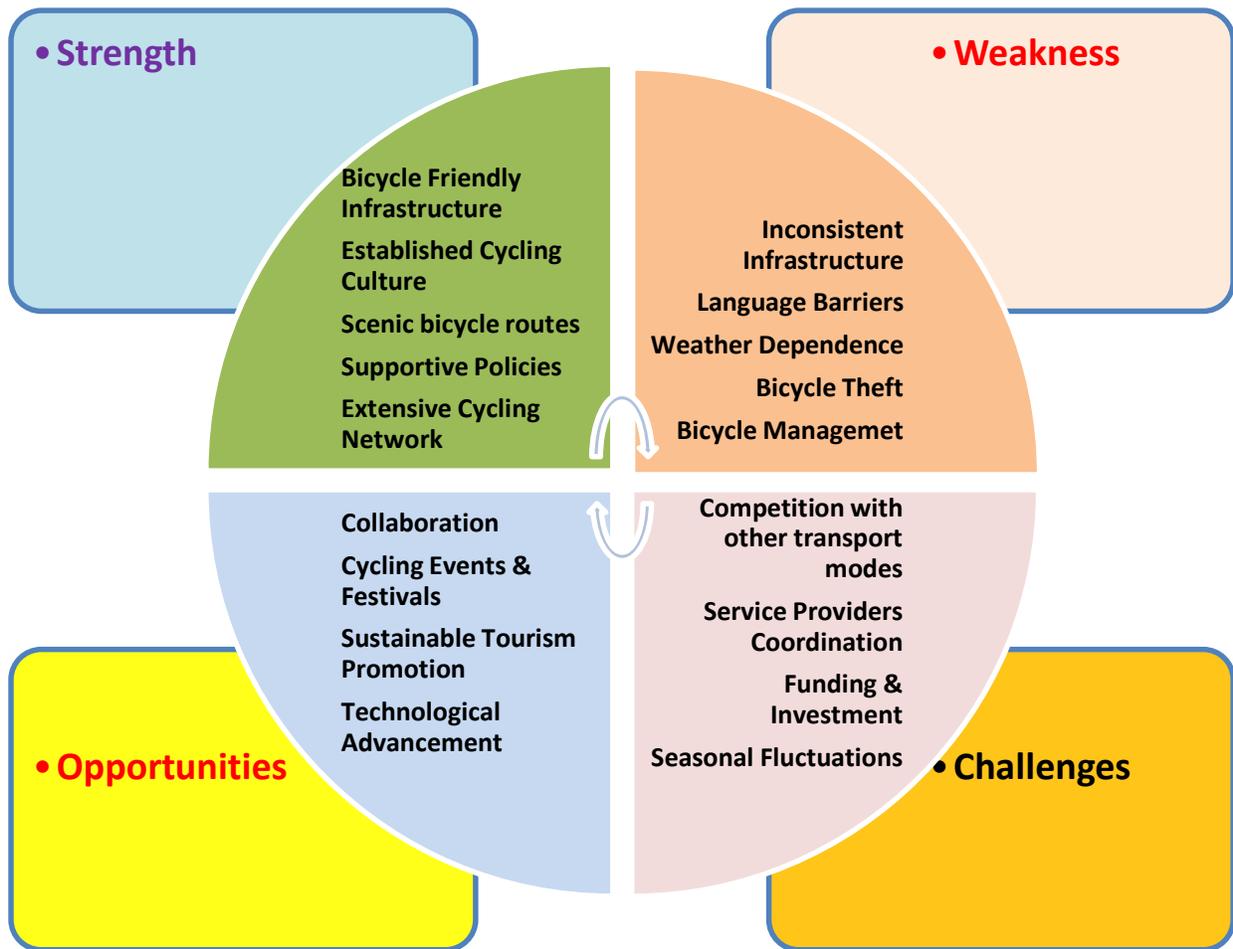


Figure 2: SWOC Analysis of Advanced Nations

Based on the PRISMA literature review of research studies conducted in India the following SWOC analysis of India is represented in Figure 3.



Figure 3: SWOC Analysis of India

Comparative Analysis between Developed Countries and India:

The PRISMA literature review provided insight related to the comparison between the selected advanced nations and India based on the selected parameters.

In advanced nations, the robust integration of cycling into the transportation landscape is evident through dedicated bike lanes, traffic-calming measures, and well-designed infrastructure, emphasizing safety and separation from motor vehicle traffic. This comprehensive approach extends to the promotion of cycling for tourism, supported by accessible travel guides and websites. The positive societal perception of cycling as a practical and eco-friendly mode of transport is reflected in the widespread acceptance of bicyclists on the roads. Service providers actively contribute to the cycling culture, investing in infrastructure, implementing safety programs for school children, and supporting bike-sharing systems, making cycling a convenient and respected choice for residents and tourists alike.

In contrast, India is navigating the early stages of developing cycling infrastructure. Limited or no dedicated facilities, coupled with a lack of comprehensive safety measures, pose challenges. Cycling, in the Indian context, is often associated with necessity or lower-income individuals, and there is a dearth of widespread government policies prioritizing sustainable transportation. While bike-sharing systems are emerging, they are not as established as in advanced nations. Moreover, there is a need for greater initiatives from both public and private sectors to invest in and promote cycling. Comprehensive strategies, safety programs for school children, and assessment systems are essential components that are currently lacking in the Indian context, hindering the widespread adoption of cycling as a preferred mode of transport.

In essence, the disparities between advanced nations and India in terms of cycling infrastructure, safety measures, societal perception, and government support underscore the ongoing journey of India in establishing itself as a cycling-friendly nation. The potential for growth and improvement exists, emphasizing the importance of concerted efforts to develop and promote cycling as a sustainable and widely accepted means of transportation in the country.

Table 2. Analysis based on the study:

Selected Advance Nations	India (Emergening Country)
1. Dedicated bike lanes, traffic-calming measures, parking facilities, and bike-friendly road designs	1. Limited or no bicycle infrastructure facilities
2. Widespread and connected network of bicycle paths and lanes	2. Limited cycling infrastructure
3. Travel website and travel guidebook	3. Limited information available online
4. Bike lanes are often physically separated from the main road, and intersections are designed to minimize conflicts between cyclists and vehicles	4. In India, cycling infrastructure is still developing, and safety measures might not be as comprehensive
5. Bicyclists are generally respected on the roads	5. Bicyclists are generally considered low-income employees or not respected
6. The service provider invests funds to improve, construct, and promote bicycle infrastructure in the region	6. No such initiatives are taken by the service providers
7. Well-established bike-sharing systems	7. Bike-sharing systems are also emerging in some cities, but they might not be as

	widespread or well-established as in International cities
8. Comprehensive cycling strategies and government policies	8. No such strategies and government policies are there to support bicycle infrastructure and tourism
9. Bicycle road safety rules program and examination for school children for positive attitude and belief towards bicycling	9. No such practices are taught to children in Indian schools
10. A proper assessment system is established in regions for proper implementation and further improvement by the service provider	10. Local bicycle tour promotion is done by the organizer or local service providers

5. Service Provider Accountability:-

Service providers play a pivotal role in the development of bicycle infrastructure, as highlighted in the review. Federal government policies have significantly contributed to the promotion of bicycling and bicycle tourism across regions. Municipalities, along with NGOs and bicycle associations, have strategically implemented these policies by formulating and executing specific strategies within their jurisdictions. NGOs have further enriched the cycling landscape through the organization of events such as cycling festivals and workshops, fostering a community of enthusiasts, and raising awareness about the benefits of bicycling. Transport authorities and tourism boards have been instrumental in supporting bicycling as a tourism product in selected advanced nations. The collaboration between tourism boards, local communities, and tour operators has resulted in the creation of guided bicycle tours and improved facilities, showcasing a concerted effort to enhance the overall bicycle tourism experience.

The listed service’s provider accountability is provided in the results conducted through the PRISMA literature review for the study.

Table 3. Listed Service’s Provider Accountability

S.no.	Service Provider	Accountability
1.	Federal Government	<ul style="list-style-type: none"> • Framing Policies • Providing funds to municipalities for region-wise development

2.	Municipality	<ul style="list-style-type: none"> • Develop a bicycle infrastructure strategy and divide funds for better infrastructure. • Coordination with bicycle associations, NGOs, and Transport Authorities for proper connectivity.
3.	Bicycle Association	<ul style="list-style-type: none"> • Bicycle associations often advocate for improved cycling infrastructure, policies, and regulations at local, regional, and national levels. • Organize guided tours, events, and cycling festivals that showcase the destination's cycling offerings. • Associations may research to gather data on cycling trends, economic impacts of bicycle tourism, and user preferences.
4.	NGO	<ul style="list-style-type: none"> • Organize events, workshops, and cycling festivals that bring together cyclists, enthusiasts, and tourists. These events can create a sense of community and boost the local economy. • Collaborate with various Service providers, including government agencies, local businesses, tourism organizations, and community groups, to develop comprehensive bicycle tourism strategies.
5.	Transport Authorities (Rail, Urban, and Rural Transport)	<ul style="list-style-type: none"> • Collaborate with rail authority for bike parking facilities outside the railway station and bike transportation inside trains to cover last mile distance. • Collaborate to integrate cycling with Buses providing bike racks on buses
6.	Tourism Board	<ul style="list-style-type: none"> • Develop and distribute cycling itineraries, maps, and guides that cater to different levels of cyclists, helping tourists navigate the area's cycling infrastructure. • Promote the destination as a bicycle-friendly location, highlighting the diverse cycling experiences available, such as scenic routes, challenging trails, and cultural attractions. • Collaborate with local tour operators to develop guided cycling tours and vacation packages, providing convenience for tourists and promoting local businesses.

		<ul style="list-style-type: none"> Gather feedback from cyclists and tourists to identify areas for improvement in infrastructure, services, and overall cycling experiences
7.	Local Service Providers	<ul style="list-style-type: none"> Providing guided bicycle tour Providing accommodation and food Bicycle rental services, repair, first aid, and selling
8	Government-funded R&D Team	<ul style="list-style-type: none"> Continues research for continued improvement

6. Conclusion

The primary focus of this research study was to assess the bicycle tourism strategies and the accountability of service providers between advanced countries and India. The study examines the development of bicycle infrastructure, the associated policies, and the strategies developed nations employ. European regions exhibit the most advanced bicycle infrastructure systems. Government authorities at the Federal level play a crucial role in these countries, including the Netherlands, Denmark, Germany, Sweden, Switzerland, Belgium, Austria, Canada, France, Norway, New York, Portland, Sans Francisco, Chicago, Vancouver, Washington, Australia, China, South Africa, Bogota and UAE (Dubai) with responsibilities encompassing policy formulation, funding allocation, and the execution of cycling infrastructure projects. Selected 21 developed countries for this analysis, commonly share the goal of reducing their carbon footprint by 2030 and decreasing healthcare expenses by promoting healthier transportation options. According to the study local municipalities, urban planners, and engineers are entrusted with the task of designing and implementing bicycle infrastructure that prioritizes safety, convenience, and seamless integration. Furthermore, advocacy groups dedicated to cycling make significant contributions by raising awareness regarding the advantages of cycling. According to the study, most of the selected developed nations introduce bicycle awareness programs at the school level, which helps the government to avoid bicycle traffic accidents. The study underscores that numerous international regions boast well-established, extensive bicycle infrastructure networks featuring dedicated bike lanes, cycle paths, and integration with public transportation systems. The study also determined that well-maintained infrastructure motivates people to opt for a bicycle for traveling. These Advanced nations have properly framed procedures to keep enhancing the bicyclists' experiences by maintaining the current infrastructure and expanding the bicycle routes for bicyclists to promote bicycle tourism in their nations. They also maintain a research and development team that continuously conducts studies on bicycle infrastructure users. Their goal is to sustain cyclists' motivation and discourage car usage. Also, the promotion of bicycle tourism would aid in Sustainable development goals – SDG 3, SDG 13, SDG 11.

In contrast, the adoption of cycling in India encounters substantial obstacles, including traffic congestion, insufficient infrastructure, low awareness levels, and safety concerns. The rapid urbanization and population growth experienced by Indian cities present unique challenges in

urban planning and transportation management. India, however, possesses the potential to meet the demand for bicycles and develop bicycle infrastructure, particularly in rural areas and tourist destinations. Coordinating various governmental bodies and agencies operating at different administrative levels within India can be daunting. Consequently, establishing a Public-Private Partnership model for promoting bicycle tourism as a product becomes imperative in the Indian context. Additionally, the role played by various Service providers in the successful implementation of bicycle infrastructure in the country warrants attention. Subsequent research endeavors could explore the development of a comprehensive framework and strategies for bicycle infrastructure within tourist destinations.

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