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**Cultural ecosystem services provided by mountain landscapes -
understanding recreational preferences: A case study of
Sagarmatha (Mt. Everest) National Park and buffer zone, Everest
Region, Nepal**

A thesis
submitted in partial fulfilment
of the requirements for the Degree of
Master of Natural Resources Management and Ecological Engineering

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by
Ngawang Thapke Sherpa

Lincoln University

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Abstract of a thesis submitted in partial fulfilment of the requirements for the Degree of Master of Natural Resources Management and Ecological Engineering.

Cultural Ecosystem Services Provided by Mountain Landscapes - Understanding Recreational Preferences: A Case Study of Sagarmatha (Mt. Everest) National Park and Buffer Zone, Everest Region, Nepal

by

Ngawang Thapke Sherpa

Cultural ecosystem services [CES] are non material benefits that humans receive from the natural environment. They are often characterized as intangible, subjective and difficult to quantify. People can enjoy direct benefits of CES through recreational activities. Tourism and recreation have been argued to provide positive disposition towards the protection of ecosystems and motivation for the management of human-nature interactions. Over the years, mountain regions have emerged as popular tourist destinations due to their spectacular landscapes, natural and cultural features, and amenity values. Pristine mountain environments offer visitors physical, social and psychological benefits. While much of the research work in CES focuses on assessment and mapping of cultural service values using quantitative approaches, there is paucity of literature that focuses on subjective nature of recreational preferences in mountain regions. This research therefore aims to explore recreational preferences of the significant stakeholders (visitors and local residents) in Sagarmatha National Park and its Buffer Zone [SNPBZ], Nepal.

Q method is a robust research method for the subjective study of a range and diversity of perspectives, shared viewpoints & experiences, through thematic identification and analysis. The main strength of this method is that it generates rich data and provides a robust result from relatively small number of participants through the integration of quantitative analysis with qualitative interpretation. A set of 30 images widely representing recreational features/conditions was Q sorted by international visitors to SNPBZ and local residents. The Q sort data were factor analysed using principal component analysis followed by varimax rotation in the PQMethod software program.

Using Q method, three distinct factors emerged across visitors. They are 'superlative scenery seekers', who have strong preferences for 'wild and scenic nature'; 'culturally curious visitors' who have strong preferences for 'culture within nature'; and 'freedom finders', who have strong preferences for 'mountains as a space for freedom'. Similarly, two distinct factors emerged across local residents. They include 'recreational enthusiasts', who have preferences for 'local culture with nature'; and 'recreational pragmatists' who have preferences for 'facilities and infrastructure'. The study also found that two significant stakeholders share a common viewpoint to the issues such as seasonal overcrowding, stray dogs, donkeys/mules, solid waste and degraded trail which are evolving as 'reputational risks' to SNPBZ.

It is expected that the research results will inform concerned authorities, including local government and park management, of the dimensions along which tourism development plans and park management strategies might evolve.

Keywords: Cultural Ecosystem Service, Q method, recreational preference, mountain region, Sagarmatha National Park and Buffer Zone, Everest Region

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Acronyms

CES: Cultural Ecosystem Services

CFA: Confirmatory Factor Analysis

EFA: Exploratory Factor Analysis

MEA: Millennium Ecosystem Assessment

NGO: Non-Governmental Organization

PCA: Principal Component Analysis

SNP: Sagarmatha National Park

SNPBZ: Sagarmatha National Park and Buffer Zone

SPCC: Sagarmatha Pollution Control Committee

UNESCO: United Nations Educational, Scientific and Cultural Organisation

Chapter 1

Introduction

1.1 Background

Ecosystems are often manifested as sites of social and cultural activities (Simmons, 2013), which provide opportunities for recreational, aesthetic, inspirational and educational values to humanity (de Groot, Wilson, & Boumans, 2002; Millennium Ecosystem Assessment [MEA], 2005). Ecosystem services are the benefits that human beings receive from the natural environment (MEA, 2005). They are the elements of nature which are consumed or enjoyed for human wellbeing (Boyd & Banzhaf, 2007).

Cultural ecosystem services [CES] are “non-material benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences” (MEA, 2005c, p. 40). CES are often characterised as intangible, subjective and difficult to quantify (Daniel et al., 2012; Milcu, Hanspach, Abson, & Fischer, 2013). Although specific types of CES have been identified, resources can deliver multiple services concurrently (Daniel et al., 2012; MEA, 2005). For instance, a forested area could provide aesthetic experiences while also providing recreational and spiritual experiences. Moreover, singular CES may also overlap with one another, meaning that people may not explicitly distinguish one cultural service from another (Plieninger, Dijks, Oteros-Rozas, & Bieling, 2013).

The importance of CES for the wellbeing of humankind, and the need for their integration into conservation strategies, has been widely acknowledged (Milcu et al., 2013). Tourism and recreation provide positive disposition towards the protection of ecosystems and motivation for the management of human-nature interactions (Daniel et al., 2012; Milcu et al., 2013). It also increases overall validity and social acceptance (Milcu et al., 2013).

1.2 The nexus of mountains, recreational services and tourism

Mountain ecosystems provide a wide range of services to humankind; for those living in the mountains as well as for those living outside the mountains (Grêt-Regamey, Brunner, & Kienast, 2012). As mountains have become accessible to the broader communities in the world, they have emerged as a popular destination for global tourists due to their spectacular landscapes, natural and cultural features, and amenity values (Kariel & Draper, 1992; Sanjay K Nepal & Chipeniuk, 2005).

For many people, mountains are the compelling icons of an untamed natural landscape which is becoming scarce in the world of urbanization (Monz, 2000). The pure, pristine and protected

mountain environment enhances the attractiveness of an area (Silva, Kastenholz, & Abrantes, 2013) and offers visitors physical, social and psychological benefits (Kaplan & Kaplan, 1989; McCool & Lachapelle, 2000; Moore, Cushman, & Simmons, 1995). Ecologically, mountains are home to significant biodiversity because significant altitude changes result in several climate zones within a short distance (MEA, 2005a; Monz, 2000).

People can enjoy the direct benefits of cultural ecosystem services through recreational activities (Daniel et al., 2012). Around 20 percent of global tourists visit a mountain region, principally to experience appealing symbolic landscapes (Silva et al., 2013). Since the scenic beauty is one of the important determinants for the recreational and ecotourism quality of a tourist destination (Nahuelhual, Carmona, Lozada, Jaramillo, & Aguayo, 2013), mountain regions have a competitive advantage compared to other places (Chhetri & Arrowsmith, 2008; Schirpke, Tasser, & Tappeiner, 2013). The cultural traits of mountain people (such as lifestyle, agricultural practices, religion and customs) also enhance the attractiveness of mountain settings (Kariel & Draper, 1992).

Tourism and recreational activities are instrumental in enhancing the livelihoods of residents in marginalized places. The life quality in the mountains can be improved through “sustainable economic development” and environmental protection, where tourism can play the central role (Sanjay K Nepal & Chipeniuk, 2005, p. 314). They also help to provide financial and moral support for the protection of vulnerable natural environments, and to develop awareness about the importance of protecting natural resources (Wall, 1997). The functioning of the tourism sector and its “ecological sustainability” relies on the “biophysical environment” and its provision of ecosystem services (Simmons, 2013, p. 343).

Concerning the future of mountains and their people, recreation has turned into a matter of concern and optimism as recreationists bring about changes in the economy, lifestyle and landscape of the mountain communities and the environment (Kariel & Draper, 1992; Sanjay K Nepal & Chipeniuk, 2005). The increase in recreationist number can also have negative consequences, which can be problematic in the context of high mountain ecosystems (Monz, 2000) and cultures, potentially causing irreversible impacts (McCool & Lachapelle, 2000). As recreational activities are unavoidable and continue to grow, management strategies are crucial to limit the potential impacts, while attaining the positive benefits (McCool & Lachapelle, 2000).

1.3 Recreational tourism in Nepal

When Nepal opened its border to the international communities in 1951 and Mt. Everest was first successfully summited by Sir Edmund Hillary of New Zealand and Tenzing Norgay Sherpa of Nepal in 1953, it drew unprecedented global attention, and tourism started to flourish in Nepal (K. Bhandari,

2010; Sedai, 2011; M. N. Sherpa, 1985). Tourism development in Nepal was initiated with the country's first five-year plan (1956-1961 AD) (Sedai, 2011), which was institutionalised in 1962, as the state started to keep visitor arrival records (K. Bhandari, 2010). The arrival of 6000 visitors was recorded in 1962.

Tourism is one of the most prominent economic pillars of Nepal as it is a significant contributor to poverty alleviation, economic growth and social development (K. R. Bhandari, 2011). The direct contribution made by travel and tourism to Nepal's GDP in 2016 was NPR 85.2 billion (US\$ 0.8 billion), accounting for 3.6% of the total GDP (Turner & Freiermuth, 2017). In the same year, the sector provided 427,000 jobs directly, which constitutes 2.9% of the total employment in Nepal. It is predicted that by 2027, it will directly contribute to 4% of the total GDP and directly generate 604,000 jobs (Turner & Freiermuth, 2017). Leisure spending and business spending are the two components of travel and tourism that contribute to GDP. Leisure spending is most significant, accounting for 86.7 percent of tourism's contribution to GDP (Turner & Freiermuth, 2017). Trekking and mountaineering are the two main reasons international visitors travel to Nepal (K. Bhandari, 2010).

In developing countries like Nepal, the ecosystem functions and biological diversity can be protected through nature based tourism (Gossling, 1999). As Nepal is endowed with unique natural and cultural features, including biodiversity and ethnic diversity (K. R. Bhandari, 2011), it has significant possibilities for tourism (Baniya & Paudel, 2016). Nepal remains ambitious to attract a significant number of international visitors every year. In 2011, it celebrated "Nepal Tourism Year 2011" which targeted to host one million tourists that year alone (K. R. Bhandari, 2011, p. 76). Nepal is also celebrating "Visit Nepal 2020", aiming to welcome two million tourists in 2020 (Visit Nepal 2020, 2020).

Many Nepalese people are accustomed to exploring different places inside the country with the purpose of recreation and relaxation (Baniya & Paudel, 2016). The growth of domestic tourism has become a worldwide trend, which has been prevailing in Nepal too (Baniya & Paudel, 2016). The main contributor to the continuous growth of domestic tourism in Nepal is increased per capita income and literacy rate (Khaniya et al., 2011, as cited in Baniya & Paudel, 2016, p. 17). The shooting of Nepali movies and music videos in the scenic mountain landscapes has motivated Nepalese youths to visit those places, resulting in an increase of domestic visitors to film locations, particularly in some western mountain regions such as Mustang.

1.4 Problem statement

The Ecosystem and Human Wellbeing manual published by the United Nations Environment Program (UNEP) mainly focuses on quantitative approaches to evaluate ecosystem services, which can be problematic in the assessment of cultural ecosystem services such as recreational experiences. Cultural ecosystem services are difficult to translate into quantitative terms due to the intangible nature of their values (Tengberg, Fredholm, Eliasson, & Knez, 2012). As such, the feelings and viewpoints of different groups of people should be incorporated (Tengberg et al., 2012) because cultural services provided by ecosystems are mostly shaped by the perceptions and expectations of an individual (Daniel et al., 2012).

The Sagarmatha (Mt. Everest) National Park and Buffer Zone, which lies at the foothills of the Himalaya in the northeastern part of Nepal, provides a case study for investigation of cultural services of tourism. There are several reasons why this site was selected as a suitable study area. First, the site is a mountain landscape with elevation ranging from 2,300 metres above sea level (at Surke village) to 8,848 metres at the summit of Mt. Everest (Tamang, 2011). Second, Sagarmatha National Park is the only mountain national park of Nepal designated as a UNESCO World Heritage Site due to its exceptional natural features (UNESCO, April 2019). The study area is also home to Gokyo and associated lakes, which are a Ramsar site (Ramsar Sites, 2019). Thirdly, the study area is a popular tourist destination, attracting tourists from different corners of the world due to its exceptional landscape features, wildlife and the unique culture of local indigenous Sherpa people (Baral, Kaul, Heinen, & Ale, 2017; UNESCO, April 2019).

Following the Millennium Ecosystem Assessment and broader research into the values of nature to human life, ecosystem services provide a recent analytical lens for analysing tourism in the Everest region (Tamang, 2011). Apart from the consequences of significant incidents (e.g. the Maoist insurgency which peaked in 2002, and the devastating earthquake in 2015), visitor arrivals in the Everest Region continue to increase. Sherpa communities in the region have now become increasingly dependent upon the tourism-based economy as they transform from a traditional agro-pastoralism and trade-based economy to nature-based tourism (Vincanne, 1992). Importantly, the increase in the number of visitors in the Everest Region has been argued to have brought about negative changes in the culture and the environment of the region (Jefferies, 2016; UNESCO, April 2019). On the other hand, irrespective of the social, cultural and environmental consequences of tourism, the government is ambitiously aiming to increase the number of visitors (Visit Nepal 2020, 2020).

Most cultural ecosystem service research related to recreation in mountain regions is focused on assessing overall landscape aesthetic or scenic values using quantitative methods and/or spatial data

sets (e.g. Baral et al., 2017; Beza, 2010; Schirpke et al., 2013; Schirpke, Timmermann, Tappeiner, & Tasser, 2016). Less attention has been paid to the subjective experience. From the viewpoint of human subjectivity, such quantitative studies may provide a generalized understanding, but do not address the subjectivity and potential patterns of preferences.

Knowledge of the recreational preferences of key stakeholders in the Sagarmatha National Park and buffer zone area would inform planners of the dimensions along which tourism development plans and park management strategies might evolve. Furthermore, the results of this scoping study may shape the future research agenda.

1.5 Research aim and objectives

The central purpose of this study is to study the recreational preferences of international visitors and local residents in Sagarmatha National Park and Buffer Zone [SNPBZ]. This research focuses on the core group of visitors who travel to the Himalaya for trekking and mountaineering. In SNPBZ, Posch (2013) found that 96.1% of visitors come for trekking. In order to meet the aim of this study, the following research questions have been established.

1. What are the recreational preferences of international visitors to Sagarmatha National Park and Buffer Zone (SNPBZ)?
2. What are the recreational preferences of local residents?
3. What are the features/conditions or the tourism consequences of SNPBZ that are disliked by the visitors and the local people?

1.6 Structure of the thesis

This thesis comprises eight chapters, including this introduction. Chapter two reviews literature on ecosystem services with focus on cultural ecosystem services, tourism in the mountain region and visitor experience. Chapter three sets the contextual background of the study area including environment, geographic structure, patterns of visitor arrival, key attractions and current issues related to tourism. Chapter four presents research methodology and methods applied in this study. It explains Q methodology, how data were collected in the field and how they were analysed. Chapters five and six present the results of data analysis for visitors and local people respectively. Chapter seven discusses major findings on visitors' and local resident's preferences. It also focuses on interpreting the results and discussion on the key issues that were identified as reputational risks in terms of tourism and recreation. Finally, chapter eight summarises the important findings and provides recommendations for future research and to the concerned stakeholders including Local government and park management.

Chapter 2

Literature review

This chapter reviews literature to provide a theoretical context to this research. In particular, the chapter describes ecosystem services, focusing on cultural ecosystem services, a cultural ecosystem services framework, and several studies in tourism-cultural ecosystem services nexus.

2.1 Ecosystem services

In the wake of increasing realisation of human dependency on environment (Leopold, 1949) and the importance of ecosystems to maintain environmental health such as nutrient recycling (Thomas, 1956), the concept of ecosystem services emerged in the mid 1960s (de Groot et al., 2002). In 1977, Westman (1977, p. 960) used the concept of “nature’s services”. In the subsequent paper, it was described as “public services of the global ecosystem” and “nature’s services”, and was finally termed as “ecosystem services” by Ehrlich and Ehrlich (1981) (as cited in Tamang, 2011, p. 2). According to Costanza et al. (1997, p. 2), ecosystem services are “benefits human populations derive, directly or indirectly, from ecosystem functions”.

An ecosystem is a “dynamic complex of plant, animal, and microorganism communities and the non-living environment, interacting as a functional unit” (MEA, 2005a, p. 27). ‘Ecological assets’ such as cycling of natural elements through air, ground and water, and the composition of air and earth are maintained by the ecosystem functions (MEA, 2005b). Every individual in this world directly or indirectly depends upon the services provided by the ecosystem. To reflect on the complexity of ecosystems, and how one of its element can deliver significant ecosystem services for ‘tourism consumption’, Simmons (2013) presents an example of ‘water’. Water provides unique recreational experiences when it exists in different forms, such as waterfall, river and lake.

(MEA, 2005a) identifies four broad functional types of ecosystem services. They comprise provisioning services, regulating services, cultural services, and supporting services. Provisioning services are the products people receive from ecosystems such as food, fibre, fresh water and fuels. Regulating services are the benefits people get from the ‘regulation of ecosystem processes’ such as climate regulation, water regulation, maintenance of air quality and erosion control. Cultural services are the non-material benefits received from ecosystems through various forms such as recreation, spiritual enrichment, cognitive development and inspiration. Supporting services are those that are important for the production of other ecosystem services, examples include soil formation, biomass production and production of oxygen. Biodiversity therefore plays a crucial role for the delivery of ecosystem services (MEA, 2005a).

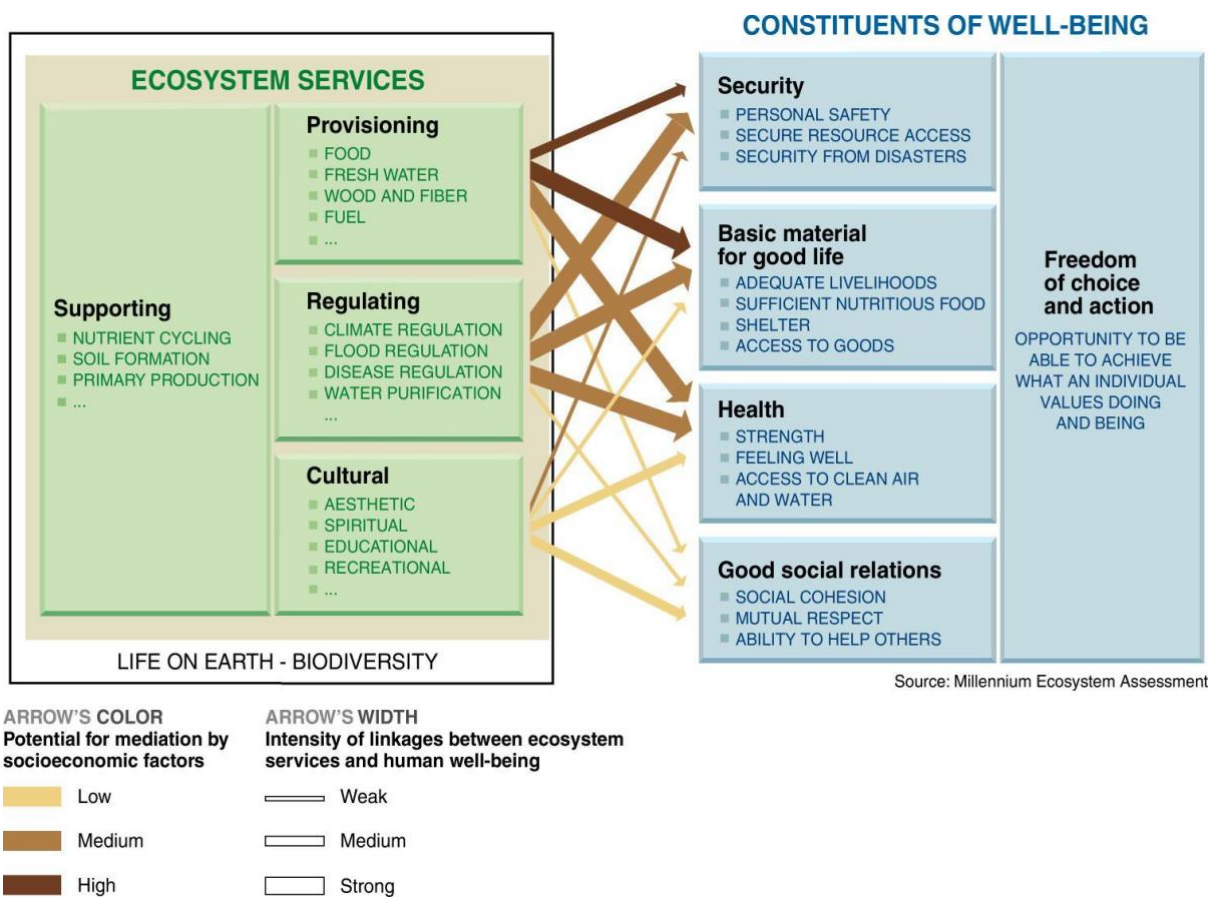


Figure 2.1: Relationship between ecosystem services and human well-being (Source: MEA)

A framework developed by the MEA presents a clear connection between 'ecosystem services' and 'human well-being' at different level of strengths (see Figure 2.1). The MEA mostly emphasises on provisioning and regulating services with medium to high connection with 'constituents of human well-being', while it shows medium to low connection between cultural services and 'constituents of human well-being'. Nonetheless, MEA (2005a) also suggests that some cultural services may co-deliver provisioning services and vice versa. For example, recreational fishing and hunting have provisioning values.

Human kind makes changes to the environment to increase the desired service values from ecosystems (MEA, 2005a). Population growth and economic development mean that the human demand for ecosystem services has grown to the point that trade-offs between ecosystem services have become unavoidable (MEA, 2005a). However, ecosystem services are by their nature interlinked and dependent upon one another. For instance, the delivery of cultural services mainly depends on regulatory and supporting services (MEA, 2005a), and these services must be managed in an integrated way. Nonetheless, the ability of ecosystems to provide many of such services also continues to be compromised by human activities, such as tourism (MEA, 2003, 2005a).

2.2 Cultural ecosystem services

As urban communities continue to grow, demands for cultural services such as aesthetic and recreational values have been increasing. Cultural ecosystem services do not just contribute to non-material human wellbeing, but are also important economic assets. For instance, globally tourism provides employment opportunities to over 200 million people and 11% of global GDP, of which, around 30 percent is linked to culture and nature based tourism (MEA, 2005a). However, the quality and quantity of cultural ecosystem services are declining (Millenium Ecosystem Assessment, 2005). Furthermore, degradation of culturally important ecosystems and landscapes causes social disturbance and marginalisation of societies (MEA, 2005a). MEA (2003, 2005a) classifies the benefits of cultural ecosystem services into different categories:

Cultural diversity: In many societies, the diversity of cultures is shaped by the diversity of ecosystems. For a balanced representation of cultural identity and human well being into ecosystem services, re-establishment of the connection between ecology, economics and ethics is important (MEA, 2005a).

Spiritual and religious values: In many cultures and religions, ecosystems or their components have significant meaning and values. Some examples of spiritual services provided by ecosystems include the use of sacred sites for religious purposes as well as sites of worship for ancestral spirits, feelings of spiritual enlightenment and inspirations from ecosystems and landscapes. People search for spiritual connections with nature through personal reflections and experiences (MEA, 2005a).

Educational values: Ecosystems and their components are essential parts in many formal and informal educational settings (MEA, 2003).

Inspiration: Ecosystems and nature are inspirational sources for many cultural aspects such as architecture, national symbols, arts, folklore, books, photography and films, which evoke the connection of humanity with nature and the appreciation of nature. The production of revolutionary books in the history of environment and conservation such as 'A Sand Country Almanac' by Aldo Leopold (1949) and 'Silent Spring' by Rachel Carson (1962) are some of the notable examples (MEA, 2005a).

Aesthetic values: Many natural and cultivated landscapes are substantial sources of aesthetic enjoyment for human kind. In every day life, people consciously or unconsciously reveal their aesthetic appreciation of nature, such as decorative use of indoor plants at their homes & work places, and the tendency to use scenic routes (MEA, 2005a).

Social relations: The types of social relations that are formed in societies are often influenced by ecosystems and their services. For instance, the fishing society can be different in many ways as compared to other societies (MEA, 2003).

Heritage values: Many cultural features have an important value to many communities that the society tend to maintain or preserve those values. For instance, some ecosystems and landscapes remind the society of their 'historic roots', which gives the sense of continuity and enables for better understanding of the place (MEA, 2005a).

Recreation and ecotourism: Recreation and tourism destinations around the world are largely shaped by ecosystems and their services. Natural, cultural or cultivated landscapes and their features provide people with opportunities for varieties of recreational activity such as nature walks, bird watching, camping and nature based studies. The demand for recreational activities, especially in the natural settings continues to increase.

The MEA (2005a) suggests that although specific types of cultural ecosystem services have been identified, they are practically inseparable and it becomes unrealistic when their collective importance on human well-being is accounted on individual basis. Often times, those services can also come up with multiple experiences (Daniel et al., 2012; MEA, 2005b; Plieninger et al., 2013). For instance, a forested area provides aesthetic experience while it may also provide recreational and spiritual experiences.

2.3 Cultural ecosystem services and tourism in mountain regions

MEA (2003, p. 54) has classified social and ecological systems into ten broad systems namely: marine, coastal, inland water, forest, dryland, island, mountain, polar, cultivated and urban. While criteria vary among nations for defining an area as a mountain region, elevation, slope, and relief are commonly used as criteria for determining a mountain region. The MEA (2003, p. 55) provides following criteria in identifying a mountain region:

- Elevation greater than or equal to 2500 metres,
- Elevation between 1,500 and 2,500 metres and slope greater than 2 degrees,
- Elevation between 1,000 and 1,500 metres and slope greater than 5 degrees or local elevation range (7 Kilometres radius) greater than 300 metres,
- Elevation 300 between 1,000 metres and local elevation range within 7 Kilometres radius greater than 300 metres,

- Isolated inner basins and plateaus that have less than 25 km² extent and surrounded by mountains.

Due to the elevation range and climatic variability, the habitat and species diversity in the mountains are usually higher as compared to the lowlands (MEA, 2005a). Thirty two percent of the world's protected areas lie in the mountains. Almost 50 percent of the world's biodiversity hotspots are found in the mountains. It is also home to approximately 20 percent of the world population (MEA, 2005a). Difficulty of access, marginality, diversity, niche, fragility and aesthetics are the major 'resource characteristics' of mountain regions (Sharma, 2000, as cited in Sanjay K Nepal & Chipeniuk, 2005, p. 317).

As noted above, the MEA category of cultural ecosystem services includes benefits to humans for 'spiritual enrichment'. Mountain environments, such as the Himalayas, are sacred sites for many communities around the globe. The sacredness of mountains can be expressed in three broad ways (Bernbaum, 2006):

- First, some mountains and peaks are regarded as 'places of sanctity' by certain religious or cultural communities. They usually have mythical stories, custom or beliefs that are generally accepted and acknowledged. Examples of sacred mountains are Mt. Sinai, Egypt, Mt. Tongariro, New Zealand and Mt. Kailash, Tibet.
- Second, mountains that may or may not be necessarily regarded as sacred are nonetheless sites of sacred entities such as monasteries, temples and stones, or are linked to revered holy people. For example, Mt. Koya and Kobo Daishi, both located in Japan.
- Lastly, mountains arouse "a sense of wonder and awe", in people which can make them unique places "imbued with evocative beauty and meaning" (Bernbaum, 2006, p. 305). This is one of the most important reasons that many recreationists visit mountain areas such as Sierra Nevada in California and the Alps in Europe.

The major drivers of tourism in the mountain regions are recreation and other types of cultural services provided by ecosystems (MEA, 2005a). A study by Muhar, Schauppenlehner, Brandenburg, and Arnberger (2007) in the Austrian Alps found that 'recreation' and 'landscape experience' are the core motivations for hiking in the mountain regions. Even though difficult access implies limited flow of visitors to the mountains, they support high value tourism products, thereby attracting visitors who are willing to pay more (Sanjay K Nepal & Chipeniuk, 2005). Technological advancements related to recreation, such as Global Positioning Systems and cellular phones, have enabled people to travel remote areas with confidence and greater ease (McCool & Lachapelle, 2000). Local recreationists,

visitors, and amenity migrants, also collectively create demand for recreational activities (Sanjay K Nepal & Chipeniuk, 2005). Amenity migrants are people who get motivated for seasonal residence or settle permanently in and around tourist destinations in the mountain regions that have amenity values. Improved transportation systems have enhanced the connectivity between mountain regions and urban areas, which has motivated many city dwellers to buy houses in the scenic mountain regions (Sanjay K Nepal & Chipeniuk, 2005).

For most developing countries, tourism has become one of the main strategies for economic growth and development. Well-managed tourism has also increasingly become an important supporter of the protection of natural and cultural areas, as well as for the sustainable management of biodiversity (MEA, 2005a). In many scenarios, human wellbeing in the lower catchment areas depend upon the resources generated from the mountain areas, such as water and hydroelectricity. In fact, rivers originating from the mountains supply water to almost half of the world population (MEA, 2005a). Cultural ecosystem services can also inspire “deep attachment” within communities. So, the integration of cultural ecosystem services in to conservation and policy measures is essential for a meaningful connection between human being and natural environment (Chan et al., 2011, p. 206). Nature based tourism enables people to get connected with natural environment which, among many benefits, helps to reduce stress, restore cognitive abilities, aid relaxation and to feel energized (Willis, 2015). Eco-tourism activities that entail difficult access and isolation are continuously forming in the mountain areas around the world (Sanjay K Nepal & Chipeniuk, 2005).

Due to extremes of climate, complex geographical structures and altitude, mountain environments are fragile and difficult to recover once they are degraded. Tourism activities in the mountain regions can be undertaken only to a limited extent (Sanjay K Nepal & Chipeniuk, 2005), while ensuring environmental protection and regeneration, which otherwise would result in irreversible damage to the natural environment (Cole & Sinclair, 2002). In the mountain regions, people are increasingly realising that the cultural landscapes should be preserved or revitalized where they are already degraded (Ramakrishnan et al., 2003; Maurer and Holl, 2003, as cited in MEA, 2005a, p. 459).

2.4 Visitor experience

Visitor experience is defined as “an individual’s immediate or ongoing, subjective and personal response to an activity, setting or event outside of their usual environment” (Packer & Ballantyne, 2016, p. 135). Otto and Ritchie (1996, p. 166) describe the experience of leisure and tourism as “the subjective mental state felt by participants”. Understanding visitor experiences takes account of the aspects that are significant to visitors and considerations of the multiple aspects of the visitors’ experiences is essential to inform strategies for the promotion of tourism products, as well as to provide foundations for further research (Packer & Ballantyne, 2016). The range and depth of non-

material benefits from the nature plays an crucial role on tourist experience (Willis, 2015). Literature (e.g. Nahuelhual et al., 2013; Simmons, 2013; Willis, 2015) present a clear connection between tourism and cultural ecosystem services.

2.5 Cultural ecosystem service framework

Understandings of the complex nexus between tourism, nature and well-being can be achieved through the cultural ecosystem service approach (Willis, 2015). One of the salient features of managing natural resources using ecosystem service approaches is the acknowledgement of cultural service values and benefits (Fish, Church, & Winter, 2016). Over the years, significant literature has emerged that attempts to establish the idea of cultural ecosystem services in geographical scales as well as in the policy and practice. Examples include UN sub Global Assessment Network and its database of more than 80 ecosystem assessments, two third of which are specifically related with cultural ecosystem services (Fish et al., 2016).

Literature on ecosystem services mostly focus on natural science and economics, mostly revolving around provisioning and regulating services, giving less attention to intangible cultural service values (Tengberg et al., 2012). Such bias is evident in the Millenium Ecosystem Assessment report MEA (2005a), which dedicates hardly two percent of its pages for cultural ecosystem services. Nevertheless, a review work by (Milcu et al., 2013) indicates a promising growth in cultural ecosystem service literature too, especially after MEA.

Incorporation of the cultural ecosystem services while making decisions can provide an innovative way of tourism management as it provides a base to understand motivations for nature based tourism (Willis, 2015). Nonetheless, an integrated approach that combines CES with the social dimensions has to inform decision making (Chan et al., 2011; Fish et al., 2016; Willis, 2015). Fish et al. (2016) develops a conceptual framework (see Figure 2.2) for cultural ecosystem services.

Cultural Values

Norms and expectations **influencing and influenced by** services, benefits and their biophysical context

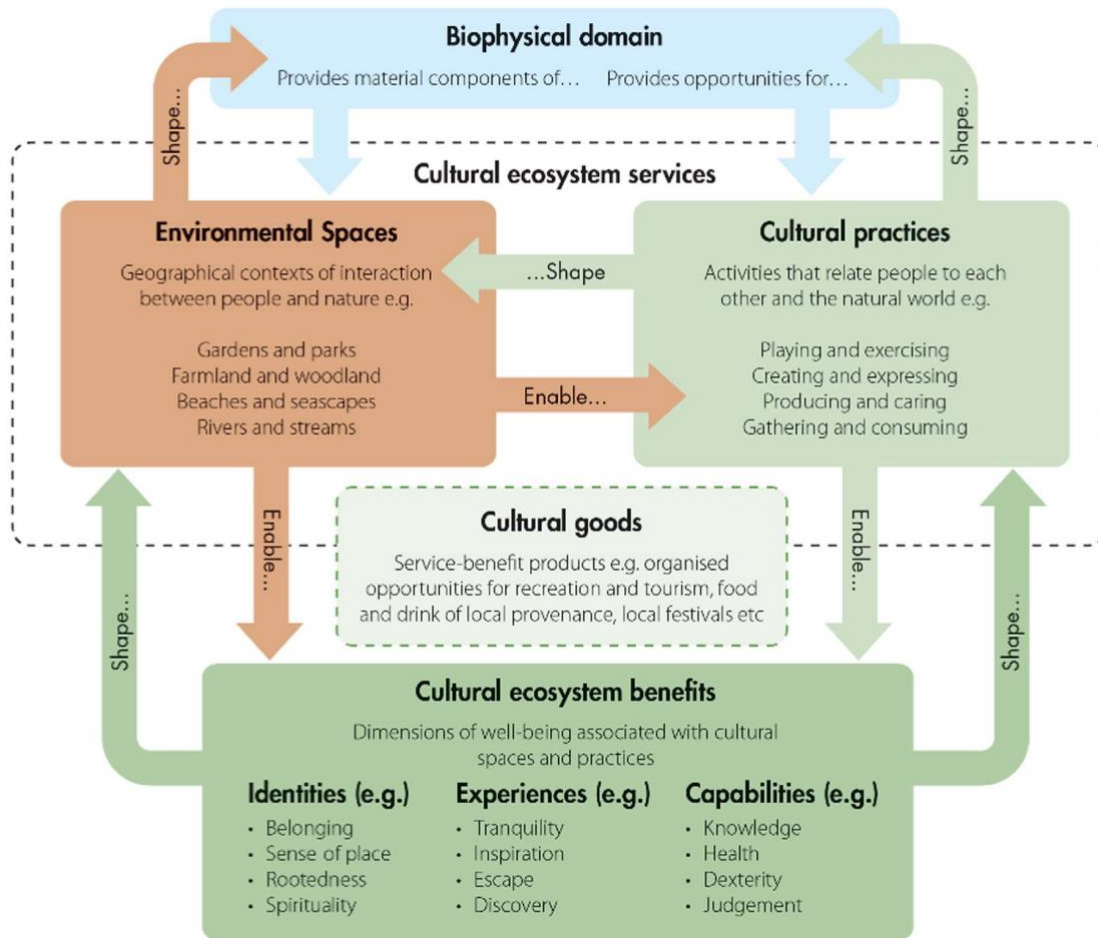


Figure 2.2: Conceptual framework for cultural ecosystem services. Source: (Fish et al., 2016)

Figure 2.2 suggests that understanding of cultural ecosystem services entails wider understanding of cultural values. Fish et al. (2016, p. 212) refers to cultural values as “collective principles and life goals, and the associated norms and expectations that influence how ecosystems accrue meaning and significance for people”. The figure also provides understanding of benefits that tourists can derive from cultural ecosystem services. Key components of their framework include environmental space, cultural practice, cultural goods and cultural ecosystem benefits. It provides an understanding of interactions between cultural practices (e.g. recreation trekking) and environmental spaces (e.g. national park), and the benefits and cultural values they deliver. It also suggests that cultural benefits in return, shapes the interaction between environmental spaces and cultural practices. Fish et al. (2016) argue that environmental spaces and cultural practices mutually act to strengthen cultural ecosystem services which enables to arise cultural benefits and well-being. Willis (2015) proposition of the use of cultural ecosystem service approach to understand the nexus between tourism, nature and wellbeing and the conceptual framework provided by Fish et al. (2016) would be instrumental to understand recreational preferences in the mountain lands.

2.6 An appraisal on Cultural Ecosystem Service studies in mountain regions

There are growing number of literature that uses CES approaches to study recreational services in mountain regions. Schirpke et al. (2013) and Schirpke et al. (2016) analysed aesthetic landscape values of European Alps using photo based surveys and provide a spatial modelling approach for the estimation of aesthetic values. Tenerelli, Demšar, and Luque (2016) investigated the distribution of cultural services in the mountain landscapes of south-eastern France using geo-tagged images. The works of Bagstad, Reed, Semmens, Sherrouse, and Troy (2016) entailed identification and mapping of potential cultural ecosystem service hotspots and cold spots in the Southern Rocky Mountains in the United States. Paracchini et al. (2014) provides a method for spatial mapping of outdoor recreational potential from ecosystem service perspective. A study by Oteros-Rozas, Martín-López, Fagerholm, Bieling, and Plieninger (2018) in five European countries (Estonia, Greece, Spain, Sweden and Switzerland) analysed the linkage between landscapes features and cultural ecosystem services using content analysis of the social media photos, and identified a relation between recreation and mountain areas. Maes et al. (2011) mapped cultural ecosystem services across Europe. There is also other literature that uses the CES approach (e.g. Beza, 2010; Plieninger et al., 2013; Sherrouse, Semmens, Ancona, & Brunner, 2017; Tengberg et al., 2012; Zoderer, Tasser, Erb, Stanghellini, & Tappeiner, 2016).

Most of the literature on cultural ecosystem service in the mountain region focus on mapping of CES at a broader spatial scale. Even though spatial mapping is useful in assessing outdoor recreational potential (Paracchini et al., 2014) and problem identification (Maes et al., 2011), such spatial data driven techniques may not entirely acknowledge recreational features on the ground that are of special cultural service value, such as sacred sites and built features. In addition, Stålhammar and Pedersen (2017) recommended to assess an individual's value of ecosystem services in understanding individual's subjective views.

A worldwide spatial mapping of the ecosystem service case studies by Seppelt, Dormann, Eppink, Lautenbach, and Schmidt (2011) indicates that much less work has been done in Nepal. Although number of research works have been conducted on ecosystem services in the recent years in Nepal, they are mostly concentrated on assessment, mapping and quantification (e.g. P. Bhandari, Kc, Shrestha, Aryal, & Shrestha, 2016; Laxmi Dutt Bhatta et al., 2018; Laxmi D Bhatta, van Oort, Rucevska, & Baral, 2014; Laxmi D Bhatta, van Oort, Stork, & Baral, 2015; Paudyal, Baral, Burkhard, Bhandari, & Keenan, 2015; Tamang, 2011; van Oort et al., 2015). Most of these literature are concentrated on provisioning and regulating services, paying very little attention to intangible cultural service values.

Most of the studies that link tourism and environment are also focused on tourism impacts on the environment (e.g. S. Bajracharya, 2011; K. Brown, Turner, Hameed, & Bateman, 1997; A. Byers, 2005; Heinen & Kattel, 1992; S. K. Nepal, 2000; Sanjay K Nepal, 2000; Pawson, Stanford, Adams, & Nurbu, 1984; Sacareau, 2009). Other studies concentrate on landscape change (B. Bajracharya, Uddin, & Shrestha, 2009; A. Byers, 1987; S. K. Nepal, 2005), landscape aesthetics (Joshi, 2019) and natural and cultural landscapes (L. N. Sherpa & Bajracharya, 2009).

In Sagarmatha National Park and Buffer Zone, Tamang (2011) provided quantification of provisioning, regulating and cultural services of the ecosystems using 'supply and demand' approach. However, his study on CES quantified religious values using donation received from religious sites and aesthetic value based on landcover types, such as snow, glacier and shrubland. However, literature (Daniel et al., 2012; Milcu et al., 2013) suggest that cultural ecosystem services are intangible and difficult to quantify.

Beza (2010) explored the aesthetic value of 10 mountain landscape types that are found along the Everest Base Camp trek using a rating scale with semantic differential of beautiful and ugly landscapes. However, the study concentrated on landscape level, which may not adequately represent subtle features on the ground, such as local livelihoods, wildlife and culturally significant features that also can be part of the tourist experience. The work by Beza (2010) does not include Gokyo valley and Thame valley, which are also tourist attractions in SNPBZ. Beza (2010) included only Australian tourists to investigate aesthetic value in Everest region from visitors' perspective. However, tourist arrivals record maintained by SNP (2016) shows that Everest Region receives visitors from different countries such as Europe, USA, UK, China and other countries including Australia. Beza (2010) provided a knowledge on the overall most significant landscapes. However, landscape preferences may vary across individuals or groups while taking into account on human subjectivity. For this reason, his study did not incorporate underlying perspectives of diverse international tourists visiting in the Everest region. Nevertheless, Beza (2010) acknowledged that landscape characteristics in Sagarmatha National Park are confounded by different cultural and personal backgrounds, and a standard set of values cannot be readily identified in such a diverse environmental and cultural contexts.

While visitor numbers continue to increase and some socioeconomic and environmental impacts are already observable in the region, there is a paucity of empirical research focusing on the subjective nature of recreational preferences in the mountain regions. Thus, taking into account of human subjectivity, and acknowledgement of the evolved knowledge in Beza (2010) and other relevant literature (e.g. L. N. Sherpa & Bajracharya, 2009; L. N. Sherpa, Clark, Thapa, & Rajbhandari, 2006;

SNP, 2016; Tamang, 2011), this study aims to identify the patterns (types) of recreational preferences of two major stakeholders: visitors and local residents using a cultural ecosystem service approach.

2.7 Chapter summary

Human beings are dependent upon different types of services provided by ecosystems. With the growing human population and increased urbanisation, the demand for cultural ecosystem services continues to increase. Conversely, the quality and quantity of ecosystem services continues to decline as a consequence of unsustainable human activities. Even though specific types of cultural ecosystem services have been identified (such as aesthetic, recreational, spiritual and inspirational values), they are inseparable and often are experienced in conjunction with each another.

Due to climatic variability, mountains have more habitat and species diversity than lowlands. Biodiversity plays a crucial role for the delivery of ecosystem services. For many cultural and religious communities, mountains are regarded as sacred sites. Visitors around the globe are fascinated by the mountains, mainly to experience the scenic beauty and the fresh air.

While most of the research works in cultural ecosystem services focus on assessment and mapping of cultural service values using quantitative approaches, there is paucity of literature that focus on subjective nature of recreational preferences in mountain regions.

The next chapter provides a description of the study area.

Chapter 3

Study area – Sagarmatha National Park and Buffer Zone

The study area includes the Sagarmatha (Mt. Everest) National Park area as well as its Buffer Zone [SNPBZ]. The term 'Everest Region' used in this study also represents the study area i.e. SNPBZ. Generally, Sagarmatha National Park and its Buffer Zone [SNPBZ] is also known as 'Everest Region' or 'Khumbu'.

This chapter provides information about historical development of Sagarmatha National park and its buffer zone, topography and climatic conditions, habitat diversity, access to SNPBZ, cultural ecosystem service values, visitors' trends and issues related to tourism in the region.

3.1 Historical development of Sagarmatha National Park

Sagarmatha National Park (SNP) was created in June 1976, encompassing a boundary of 1,148 square km (SNP, 2016) in Khumbu Pasang Lhamu Rural Municipality, covering the administrative boundaries of Ward 4 and 5 and the northern segment of Ward 3. SNP was designated as a UNESCO World Heritage Site in 1979 under criterion (vii) "to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance" (Jefferies, 2016, p. 9). The park name "Sagarmatha" comes from the Nepali name of the highest mountain in the world, Mt. Everest (8,848m), which is situated within the park. In Nepali, "Sagarmatha" literally means "Sky Head". The Tibetan and Sherpa name of Mt. Everest is "Chomolungma", literally meaning "Goddess mother of mountains". Mt. Everest was named after the British explorer, the Surveyor-General of India, Sir George Everest, who discovered Everest as the highest mountain in the world (Klein, 2018).

The primary motive behind the creation of the Park was the increasing pressure from trekking and mountaineering on the local environment. Even though visitor numbers during the Park's inception were not significant, the uncontrolled use of firewood by trekking and expedition groups and their staff had already started to impact the forest resources (L. N. Sherpa et al., 2006). Other direct and indirect consequences of tourism were already visible at that time, such as haphazard littering, and wildlife hunting. Consequently, the need for a National Park designation and coordinated management was identified in order to serve the growing recreational demands of international visitors in a sustainable way while supporting the local and national economies (L. N. Sherpa et al., 2006). The creation of SNP was supported by the New Zealand government, which had an ambition to make the Park "a world-class natural heritage site" (Sanjay K Nepal, 2002, p. 753).

During the Park's establishment, there was a lot of enmity between local Sherpa people and the park management. Locals had a strong anti-park sentiment. They feared that the park would take away their livelihoods and their traditional way of land use and management (Sherpa, 1993, as cited in Eagles & McCool, 2002, p. 193; L. N. Sherpa et al., 2006). *Khunjo Chumbi*, one of the local Sherpa leaders and Sir Edmund Hillary's friend had reportedly said that "Hillary first brought sugar to the lips of the Sherpas, but he is now throwing salt in their eyes" (Hillary, 1982, as cited in Sanjay K Nepal, 2002, p. 753). Sir Edmund Hillary remains close to the heart of local Sherpas since his successful ascent, with Tenzing Norgay, of Mt. Everest in 1953. He was the first person to reciprocate the support provided to mountaineers and visitors by Sherpa communities through benevolent and tireless advocacy and practical support, which brought about profound development and changes in the Everest region, especially in the health, education, culture and environment sectors. Indeed, Sir Edmund Hillary was the manifestation of a Bodhisattva to the Sherpa communities of Everest Region (L. N. Sherpa, 2019).

The people and park relationship in SNP has been gradually rebuilt and strengthened as local people's traditional livelihoods and access to park resources were secured by Nepal's Himalayan National Park Rules (1979). SNP became one of the first National Parks in Nepal that supported traditional land use by locals, and the local people have over time developed strong support towards the park objectives (L. N. Sherpa et al., 2006). Over the years, they have also learnt how to cope with the strict park regulations and, at the same time, to utilize the benefits of the world famous national park. Now, they are also interested to get involved in the park's governance and decision making processes (L. N. Sherpa et al., 2006; M. N. Sherpa, 2013).

Historically, Sherpas have a traditional approach of "community stewardship" and they took the responsibility for the protection of commons like forest resources and pasturelands under the *Shingi Nawa* institution (Sanjay K Nepal, 2002, p. 751). Even though the local Sherpas have been drawing on the forest resources over the last five centuries, the 'ecological stability' of the region was not disrupted until the late 1950s due to the effectiveness of their traditional approach of regulating the forest resources (A. Byers, 2005). Prior to 1960, village laws used to be constructed by a group of powerful village leaders in a social gathering called *Yul-thim* (village law). The *Yul-thim* used to appoint *Shingi Nawa* (Forest guard) and *Lotok Nawa* (agricultural guard) who had the responsibilities to protect the forest resources and the crops respectively (M. N. Sherpa, 1985). The appointed *Nawa* also has the authority to charge those who are found to be felling trees or any form of wrongdoings that are barred by the village regulations (A. Byers, 2005). Sherpa people's *Shingi Nawa* system has been widely appreciated as an excellent example of indigenous people's customary approach of forest management (Stevens, 1996). However, the traditional regulatory approach of forest management and the local people's autonomy over the forest resources has now been principally

overridden by the strict National Park regulations. Nepal’s National Parks and Wildlife Conservation Act (1973) restricts any form of human use apart from tourism, education and scientific research (Sanjay K Nepal, 2002). Even though the *Nawa* practices of Sherpa communities still remain operational in some places, they have been overshadowed by the enforced National Park regulations, and weakened by the increasing number of migrants and uncontrolled tourism development.

3.2 Buffer zone area of Sagarmatha National Park

The Buffer Zone of the Park was created in 2002, which spreads over 275 square kilometres from the Park’s southern border. A Buffer Zone is an area peripheral to a national park or reserve that may contain different forms of landcover and landuse including forests, settlements, agricultural areas and open spaces (SNP, 2016). Realising the insecure future of the park without the support of local people, the existing settlements within the park boundary were excluded from the core of the National Park (Sanjay K Nepal, 2002), and are now regarded as a Buffer Zone (L. N. Sherpa et al., 2006). The main objective of the buffer zone is to obtain local people’s support to meet the conservation goals of the Park (L. N. Sherpa et al., 2006).

As part of the Nepal Government’s plan to actively engage local communities in the conservation and sustainable management of natural resources, local communities in SNPBZ have been consolidated into 28 Buffer Zone User Groups under Three Buffer Zone User Committees and one Buffer Zone Management Committee. The Buffer Zone receives 30-50 percent of Park visitors’ entry fees. Out of the total revenue that the Buffer Zone receives from the Park, 30% is used for conservation related activities, 30% for community development, 20% for skill development and income generation related activities, 10% for conservation education and 10% for administration (SNP, 2016).

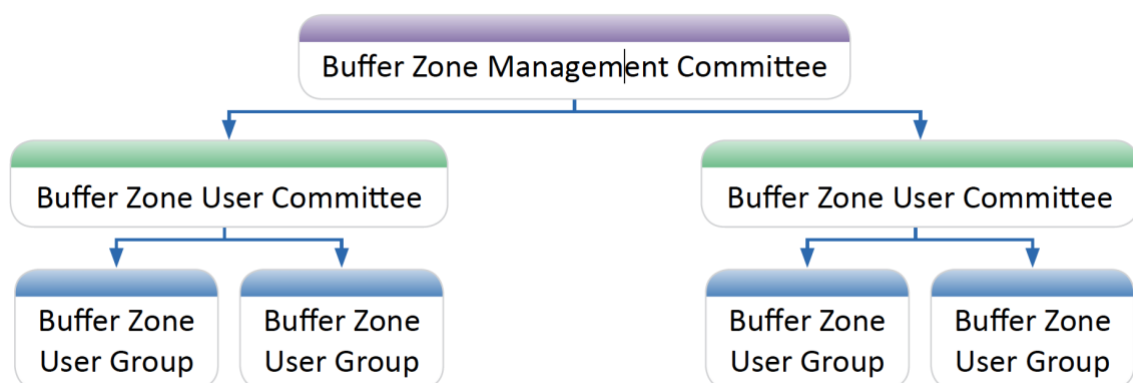


Figure 3.1: Organizational Structure of Buffer Zone (Source: SNP, 2016)



Figure 3.2: Study area map

3.3 Topography and climatic conditions in SNPBZ

The elevation of SNPBZ ranges from 2300m at Surke to 8848m at the summit of Mt. Everest (L. N. Sherpa et al., 2006) within the span of less than 50 Km (Tamang, 2011). The Park has five major ecological zones which include Warm-Temperate Zone, Cool-Temperate Zone, Sub-alpine Zone, Alpine Zone, and Nival Zone (Tamang, 2011).

Most of the areas between 3500 and 5000 metres are covered by shrubs and grasslands. Those areas provide important provisioning services to local communities such as animal grazing, collection of wild foods, fodder, aromatic plants and medicinal plants. The livestock dung collected from those areas is used as fertilizer and fuel as an alternative to firewood. The forested areas hardly cover 10 percent of the entire area of SNPBZ, and are mostly found below 3500 m elevation. They are mostly concentrated in inaccessible areas where human and livestock intrusions are very limited. Major tree species are Hemlock (below 3000m), Himalayan blue pine (2800-3300m), Himalayan silver fir (3000-3900m), juniper (in the dry slopes above 3500 m), birch (3600-4200m) and rhododendron (3600-4200m) (L. N. Sherpa et al., 2006).

The weather in SNPBZ generally remains cool and moist during summer, and cold and dry during winter. The precipitation and temperature in the Everest Region highly varies according to altitude and season of the year (L. N. Sherpa et al., 2006). As the strength of monsoon is weakened by the

mountain ranges in the southern border of the Park, the average annual precipitation in SNPBZ decreases as it gains altitude towards the north (A. Byers, 2005). Most of the days between October and December remain sunny and bright with clear blue sky. July-August is regarded as the monsoon season, and most of the precipitation is received during those months, particularly in the form of rainfall (L. N. Sherpa et al., 2006). The permanent snowline lies above 6,000m in the southern aspect and 5,700m in the northern aspect (Haffner, 1972, as cited in A. Byers, 2005, p. 115).

Major rivers in SNPBZ are Dudh Koshi, Imja Khola and Nangpa Khola which source within the park boundary (L. N. Sherpa et al., 2006). Those rivers are also contributed by several tributary streams. All those rivers and streams in SNPBZ merge at different confluences, leading to the formation of a single and large river known as Dudh Koshi. It flows down the valley and exit SNPBZ. Altogether, the park and its buffer zone has 28 rivers and streams (L. N. Sherpa et al., 2006).

3.4 Habitat diversity

Due to the diversity of ecological zones and ecosystems, SNPBZ hosts diverse flora and fauna in wide-ranging habitats. Of the 865 plant species recorded in SNPBZ, Sixty-two species are globally significant (L. N. Sherpa et al., 2006; SNP, December 2019). The Park and its buffer zone is also home to some endangered species, such as Musk Deer, Snow Leopard and Red Panda. There has been a significant increase in the population of Himalayan Tahr in SNPBZ after more than three decades of protection through the establishment of the Park. Consequently, Snow Leopards have now returned to SNP after disappearing for around forty years (Ale, 2007; Lovari et al., 2009). The Park also contains reptiles (eight species), amphibians (seven species), butterflies (30 species) and birds (194 species) (L. N. Sherpa et al., 2006), including migratory and residential birds (Sanjay K Nepal, 2002). Impeyan pheasant (*Danphe*), blood pheasant, yellow-billed chough, and Himalayan griffon are some of attractive birds that are commonly sighted. Impeyan pheasant is also the national bird of Nepal. The plants and animals that are found at high elevation are vital for global biodiversity as such places are very limited in the world, so they can't be sustained elsewhere (L. N. Sherpa et al., 2006).

3.5 Access to SNPBZ

There are limited access routes to SNPBZ as it is mostly surrounded by high mountains, peaks and glaciers. Lukla airport serves as the main access point to the Everest Region. Travellers can fly from Kathmandu and occasionally from Ramechhap and Phaplu airport to get to Lukla. Lukla airport was first built by Sir Edmund Hillary and his team in 1964. On a clear day during the trekking season, more than 50 flights take off and land, making it the second busiest airport in Nepal after Tribhuvan International Airport (Pasang Yangjee Sherpa, 2012).

Alternatively, people can also enter the region on foot from the southern boundary of the SNPBZ. On foot, it roughly takes two days from Phaplu to reach the southern part of SNPBZ. Phaplu is well connected to Kathmandu¹ by road and air. Before Phaplu was accessible by road, Jiri route was a popular route to get to SNPBZ on foot. People can drive to Jiri from Kathmandu and then walk for around four days to get to SNPBZ. A few adventurous trekking groups enter SNPBZ by crossing Tashi Lapcha Pass (5682m) from the west and Sherpani Col (6135m) from the east (L. N. Sherpa et al., 2006). Currently a road is also under construction which may connect SNPBZ with the country's road network in the next few years.

Another entry point to SNPBZ can be *Nangpa La* (5716m), which bridges Sagarmatha National Park with Qomolongma Nature Preserve in Tibet. It also serves as a border between Nepal and Tibet. Traditionally, before the start of tourism in SNPBZ, Sherpas from Khumbu used to trade with Tibet using this route (L. N. Sherpa et al., 2006). Before 2008, the route was partly operational and Tibetans used to come to SNPBZ through this route for trade. Now this route has been closed due to political reasons. However, some local leaders in SNPBZ are trying to open the route for trade through talks and lobbying with the government. When the border was operational, local people in SNPBZ and neighbouring communities were benefited from the cheap Tibetan products, especially clothes and blankets.

3.6 Cultural ecosystem services of SNPBZ

SNPBZ provides a wide range of cultural ecosystem services. In Nepal, Sagarmatha National Park is one of the pioneering National Parks, as well as one of the most popular destinations for foreign visitors (SNP, 2016).

SNPBZ contains a variety of ecosystems and landscapes which provide recreational and other cultural service values to visitors and local communities. The aesthetic and wilderness values of the park enhance the recreational experiences of visitors. The popularity of movies such as 'Everest' and books such as 'Everest: Mountain Without Mercy' reflects the "enduring fascination" that people from many parts of the world holds for the Everest Region (A. Byers, 2005, p. 115). The deep valleys, high hills, glaciers, rivers, and mountains, including the world's highest peak Mt. Everest (8,848m), provides the park with spectacular landscapes. For many people, the summit of Mt. Everest is "the highest goal one can strive to attain, whether one's pursuit be material or spiritual" (Bernbaum, 2006, p. 305). The blend between cultures of local ethnic Sherpa communities and the exceptional natural environment in the park produces a unique experience for visitors (Jefferies, 1987; UNESCO, April 2019).

¹ *Kathmandu is the capital city of Nepal.*

SNPBZ also provides significant scientific and educational services for researchers around the world due to its extreme topography, wildlife species, environment and the culture. The region is also significant in terms of spiritual and religious values which are enriched by the sacred places and holy mountains. Sherpa communities in SNPBZ revere their homeland as *Beyul*, a sacred hidden valley and refrain from killing animals (L. N. Sherpa et al., 2006).

3.7 Natural landscapes

The outstanding feature of SNPBZ is that it is surrounded by over 25 peaks that are over 6,000m and seven peaks that are above 7,000m (SNP, December 2019). Among them, the major peaks include Mt. Everest (8,848m), Lhotse (8,501m) and Cho Oyu (8153m), which are some of the highest mountains in the world (L. N. Sherpa et al., 2006). The Himalayan mountains are not only the highest mountains, but also the youngest ones in the world. They emerged some 120 million years ago when the Indian continental plate collided with the Eurasian plate and continue to rise at a very slow pace (B. Bajracharya et al., 2009). Almost 60 % of the entire SNPBZ territory is covered by non-vegetative land masses such as mountains, glaciers and rocky outcrops. Nonetheless, these regions have magnificent scenery, and are major drivers of recreation and tourism in SNPBZ. (L. N. Sherpa et al., 2006).

3.8 Cultural landscape

Cultural landscapes are “complex socio-economic expressions of (mainly) terrestrial ecosystems” that are developed from the reconciliation of biophysical factors and human societies (MEA, 2005a, p. 461). Wascher (2004) suggests that both natural and cultural components should be included in a landscape and defines as “Spatially defined units, whose character and functions are defined by the complex and region-specific interaction of natural processes with human activities that are driven by economic, social and environmental forces and values” (p. 237).

From a cultural perspective, SNPBZ is also the physical (and spiritual) home of over 4,400 local indigenous Sherpas (Baral et al., 2017; Stevens, 2013; UNESCO, April 2019), who constitute the majority of the region’s residential population (Census, 2011). The remaining 10 percent of residents come from various ethnic backgrounds including Tamang, Rai, Kami, Magar, Chettri, Damai, Newar and Gurung. More than 90% of people living in SNPBZ are Buddhists while remaining 10 percent are other religious groups such as Hindu, Kirat (L. N. Sherpa et al., 2006) and Christian. The indigenous Sherpas are believed to have arrived in the Everest region some five centuries ago from eastern Tibet (L. N. Sherpa et al., 2006). The arrival of other ethnic groups, especially from the lower regions of Solukhumbu District and the mid-hills of Nepal is a recent development. They migrated to SNPBZ in search of economic opportunities after the region was transformed into a tourism based economy

from traditional agro-pastoralism and transhimalayan barter trade with Tibet (L. N. Sherpa et al., 2006; Vincanne, 1992). The monasteries are at the core of religious and cultural practices of the local Sherpas and other Buddhist inhabitants (L. N. Sherpa et al., 2006).

3.9 Local livelihood

Economic activity in SNPBZ is largely driven by tourism. The dependency of local residents on tourism has consistently increased since the 1970s (L. N. Sherpa et al., 2006). Many locals directly engage with trekking and mountaineering as support staff such as guides, assistant guides and porters. Operation of lodges and tea houses along the trekking trails also has become a substantial income source for many families. As a means of income generation, pack animals such as Yak and Zopke are also used for transporting supplies, particularly in trekking and expeditions. In fact, it is said that Yak and Zopke can make more money than a porter in the trekking as those pack animal can carry more loads than a porter. Apart from that, livestock such as cow, nak, sheep, Bull and zom are also part of the local economy.

Porters are an essential part of trekking and expeditions in the Everest Region. While most of the loads below the base camps of the mountains in SNPBZ are carried either by pack animals or by the farmers from the settlements below SNPBZ who come to SNPBZ for seasonal job opportunities, local Sherpas carry mountaineering equipment and supplies above the base camps (L. N. Sherpa et al., 2006).

Most of the economically marginalized people in SNPBZ are still dependent on an agriculture-based economy (L. N. Sherpa et al., 2006), especially in settlements which are off the trekking trails. The involvement of local youths and seasonal workers in trekking and expeditions has created a shortage of labour resources in the primary sector of the region. The local farmers have to compete with the tourism sector to secure labour resources, often resulting in high labour cost. This recent development has put pressure on many local farmers, especially those whose family members are not engaged in trekking and expeditions. The seasonal workers tend to work mostly for households whose family members are trekking leaders or guides, so that they can secure their place in the next season's trekking. The tourism business, migration of local people to Kathmandu and elsewhere, and costly, scarce labour have retarded traditional livelihood options such as animal husbandry.

SNPBZ settlements can be broadly divided into two categories: On route settlements; that lie along the trekking trail; and Off route settlements; that lie off the trekking trail. A study by Mountain Spirit (2002) indicates that 63% of households lie in the settlements along the trekking routes while 37% of the households lie off the trekking route settlements (as cited in Tamang, 2011, p. 26).

3.10 International visitor arrivals in SNPBZ

After the successful summit of Mt. Everest by Tenzing Norgay Sherpa and Sir Edmund Hillary on 29 May 1953, the Everest Region transformed into a major trekking and mountaineering destination for the global visitors, who have made significant contributions to the local and national economies (Sanjay K Nepal, 2002; L. N. Sherpa et al., 2006).

The most frequently visited trekking routes in SNPBZ are Everest Base Camp, Gokyo valley, and Thame valley. Three popular high passes in SNPBZ [Renjo Pass (5,360m), Cho la Pass (5,420m) and Kongma la pass (5,550m) (aka Three Passes)], connect the aforementioned major trekking corridors of SNPBZ.



Figure 3.3: International visitors to SNPBZ (Data Source: Sagarmatha National Park)

Even though international visitors' travel costs to SNPBZ have significantly increased (Tamang, 2011), visitor numbers continues to grow (Figure 3.3) in the region. From a base of 20 visitors in 1963, the number reached 3,600 in 1975 and 20,014 in 1998. In 2018, the figure soared up to 57,729 visitors, much more than the local population, which was 7,161 in 2011 (Census, 2011).

The Park has no official record keeping system for domestic visitors. If the number of domestic visitors is added to trekking and expedition support staffs, the total number of visitors is likely to be significantly higher.

In 2002, the number of international visitors in SNPBZ dropped to about a third of 1998, consistent with a nation-wide decrease in the number of visitors. The Maoist armed insurgency (1996-2006) had peaked during the early 2000s (Upadhyya, MMuller-Boker, & Sharma, 2011). In December 2001,

Maoists had attacked several government facilities in Solukhumbu, the home district of SNPBZ, including the district administrative office, Phaplu Airport and Nepal army barrack (Refworld, 2003). In 2003, Maoists attacked Lukla airport, leading to temporary closure of the airstrip. Nonetheless, Maoists had no plans of physically harming the tourists and no tourist fatality was recorded during the decade long armed conflict (Upadhyaya et al., 2011).

As Nepal entered into a peace process in 2006, there was no major obstruction in the flow of visitors until 2015 when Nepal witnessed a devastating earthquake, which damaged physical infrastructures and took almost 9,000 lives (BBC, May 2015; Kohrt, May 2015). It also triggered a massive avalanche on Mt. Everest, killing 17 climbers and injuring 37 others (The New York Times, April 2015). Consequently, the visitor numbers in SNPBZ dropped down to 27,465 in 2015 from 37,124 in 2014.

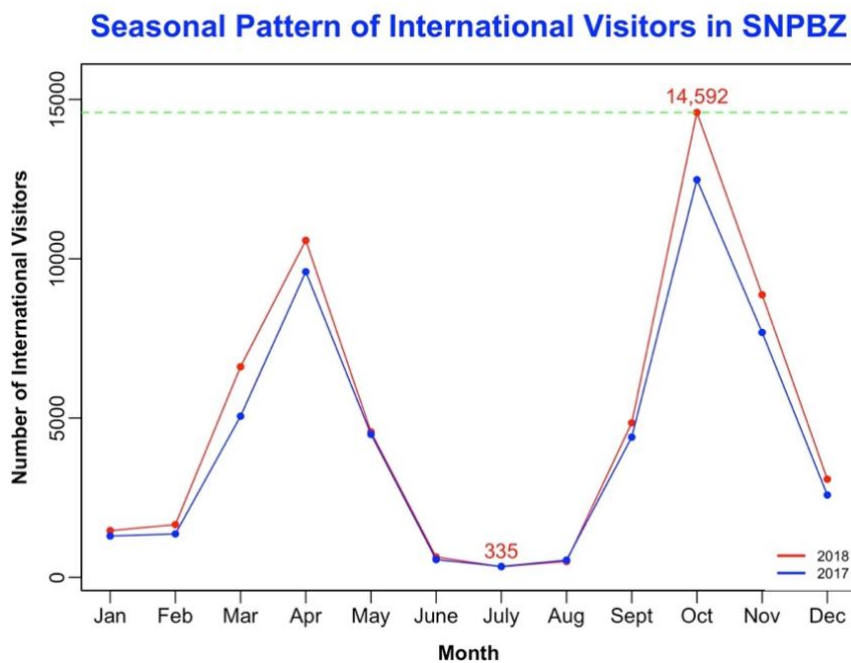


Figure 3.4: Seasonal pattern of international visitor's arrival in SNPBZ

The pattern of visitors arrival in the Everest Region is highly seasonal, which skyrockets during the months of April and October and plummets during the months of January and July (see Figure 3.4). For instance, there were 335 foreign visitor arrivals during July 2018, compared to 14,592 in October that year. The influx of visitors during the peak seasons (March-May and September-November) is principally due to the favourable weather conditions for trekking. April-May is also regarded as the most suitable time for mountaineering expeditions.

3.11 Issues related to tourism and cultural ecosystem services

In SNPBZ, the dramatic influx of visitors have increased the local economy (L. N. Sherpa et al., 2006) but, at the same time, it has also brought about negative changes in the fragile ecosystem and

traditional local cultures (UNESCO, April 2019). Most of the tourism activities in SNPBZ takes place on private lands that are owned by local residents. Furthermore, the Park has no legislative measures to restrict or limit the number of visitors or tourism activities (Sanjay K Nepal, 2002). Uncontrolled tourism development has increased accumulation of solid wastes (Manfredi et al., 2010; Posch, 2013) and degradation of the trails, leading to soil erosion (A. Byers, 2005; Sanjay K Nepal, 2002). Nonetheless, the issues with the solid wastes in SNPBZ dates back to 1980s, which led to the establishment of SPCC² [Sagarmatha Pollution Control Committee] in 1991. Since then, SPCC has been actively working on the management of waste materials in the Everest Region (L. N. Sherpa et al., 2006).

Alongside tourism development, a growing number of economic migrants also continue to put pressure on the environment of SNPBZ (L. N. Sherpa et al., 2006), which has also been changing population dynamics and the socio-cultural landscapes (Pasang Yangjee Sherpa, 2012). Better economic opportunities compared to neighbouring areas has motivated migrants to settle permanently in SNPBZ (Pasang Yangjee Sherpa, 2012).

Everest region is also suffering from significant land use changes (A. Byers, 2005; Garrard et al., 2012), and climate change as evident from the rapid melting of glaciers and decrease in snow and ice cover (Pasang Yangjee Sherpa, 2012; Tamang, 2011). The Park landscape is also dynamic and continues to be shaped by natural erosive forces like rainfall, sun, wind, extreme cold, flood and earthquakes (A. Byers, 2005; Jefferies, 1987; Tamang, 2011). Conventional herding places are also being converted into tourist settlements (L. N. Sherpa et al., 2006).

The forested area in the Everest Region was significantly depleted in the aftermath of tourism development in the 1950s. Nevertheless, several other factors also triggered the depletion of forest resources, such as the effects of Nepal's Forest Nationalization Act, arrival of Tibetan refugees in the beginning of the 1960s and actions resulting from locals' misunderstanding of the Park's creation in the 1970s (A. Byers, 2005; M. N. Sherpa, 1985). In 1957, the government of Nepal brought all the community forests under its property which also led to the confiscation of the local autonomy of forest use and management. Although the government's interest was to ensure forest protection through forest nationalisation, it had a counterproductive result. Community people felt a loss of forest ownership and it led to massive deforestation all over the country. Later on government realised that forest protection would not be possible without the support and active participation of

² "The Sagarmatha Pollution Control Committee (SPCC) is a community-based NGO established by the local Sherpa people of Khumbu in 1991. It is the lead organization working to manage waste in Khumbu Region, which form the Sagarmatha National Park and its Buffer Zone and also encompass the core Everest trekking area..." Available at <https://www.spcc.org.np>

communities and introduced a community forestry program (Shrestha & Pokharel, 2000). Following the capture of Tibet by China in 1959, many Tibetan refugees fled to the Everest Region with flocks of livestock, which created environmental problems such as forest depletion, overgrazing and soil erosion (M. N. Sherpa, 1985).

To cater to the growing demands of the tourism sector, the number of hotels, lodges and other infrastructure continues to grow in SNPBZ. From a base of 17 lodges in 1978, the lodge number reached over 450 in 2006 (L. N. Sherpa et al., 2006). Over the years, Namche, one of the popular stay over locations for visitors has gone through significant physical transformations. A small and sparse rural settlement during the 1970s has now turned into a small town (See images in A. Byers, 2005 and image 13 in this report for comparison). Rapid development in the number of hotels and construction of illegal trails have spoiled the aesthetic values of Sagarmatha National Park (UNESCO, April 2019).

3.12 Chapter summary

Sagarmatha National Park was created in 1976 with the primary purpose to minimise the impacts of tourism development on the local environment. It became a World Heritage Site in 1979 due to its exceptional natural landscape features. In the beginning, SNP witnessed a lot of hostility between local people and the park management due to locals' misinterpretation of the purposes of the Park's creation. Nonetheless, local people now strongly support the Park objectives as they have internalised the importance of the Park. The region has complex topography and wide ranging climatic conditions due to significant variations of altitude within short distances. SNPBZ is also rich in diverse flora and fauna including endangered species such as Snow Leopard, Musk Deer and Red Panda. Lukla airstrip serves as the main access point to the region. People can also access the region through a few other walking trails, which are often complex and highly adventurous. SNPBZ provides a wide range of cultural ecosystem services. The region is enriched with significant natural landscapes as well as cultural landscapes that attract global visitors. Visitors to SNPBZ make a significant contribution to the local and national economy. However, they have also brought about various socio-cultural and environmental problems in the region.

The next chapter presents description of the methods adopted in this study, including data collection and analysis procedures.

Chapter 4

Methodology

The first section of this chapter describes the methodological approach and the second section provides an overview of the methodology adopted in this study. The remaining sections explain the methodological procedures and methods simultaneously.

4.1 Methodological approach

This research takes a mixed method approach of combining both quantitative and qualitative method. The quantitative method is required for the analysis of comparative preferences to recreational features. Since the perceptions and underlying reasons of preference to a particular feature may vary from one person to another, qualitative method is applied to understand the underlying reasons for preferences and to interpret them. While the qualitative methods are appreciated for openness and subjectivity, quantitative methods produce statistically significant results (Addams, 2001). Thus, in this study, the use of both qualitative and quantitative methods complement each other.

According to Creswell (2009), the use of mixed method in research works began during the late 1980s. Mixed methods are now widely used (e.g. Andersen & Westgaard, 2013; Elizabeth, 2017; Fritz, Balhorn, Riek, Breil, & Dugas, 2012) and its values are also recognized by the research communities (Carayon et al., 2015). After the analysis of several definitions, Johnson, Onwuegbuzie, and Turner (2007) provides a generalized definition of mixed method:

“Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration” (p. 123).

This study uses the Q method. Q method combines the strengths of both qualitative and quantitative methods (Van Exel & De Graaf, 2005), and produces significant results in both terms (Addams, 2001). Q method is also well accepted as a mixed method within both Q methodological research communities and mixed methods research communities (Ramlo, 2016). Furthermore, Kenter (2016) suggests that interpretative methods are suitable approaches to understand the importance of ecosystems for laypeople and the reasons they value them (as cited in Stålhammar & Pedersen, 2017, p. 2).

4.2 An overview of Q methodology

Q methodology is a robust research method for the subjective study of range and diversity of perspectives, shared viewpoints and experiences, through thematic identification and analysis (Addams, 2001; Shinebourne, 2009; Watts & Stenner, 2012). The method was first invented by William Stephenson in 1935 (Addams, 2001) in the guise of a letter to *Nature* journal under the rubric of Q methodology (S. R. Brown, 1980; Watts & Stenner, 2012). Though the Q method travels through a long history, it still is an innovative tool in many subject areas and countries (Van Exel & De Graaf, 2005) such as in Nepal.

Q method is a powerful tool to inspect unmeasurable ecosystem service values (Pike, Wright, Wink, & Fletcher, 2014) which enables participants themselves to reveal their viewpoints and integrate their subjective views in the analysis (S. R. Brown, 1996; Swaffield & Fairweather, 1996; Watts & Stenner, 2012). Unlike pure quantitative research methods, Q method does not rely upon a representative sample from the population but does identify representative viewpoints or opinions across the group of people on a topic of interest (Robbins & Krueger, 2000). Q method provides an opportunity for both researcher and stakeholders to focus on the research topic in a creative way (Shinebourne, 2009).

The Q method has been used for a variety of research works related to cultural ecosystem services and landscape assessments such as investigation of public preference on proposed changes to land use (Swaffield & Fairweather, 1996), studies on visitor experiences of landscapes (Fairweather & Swaffield, 2001), and assessment of cultural service values of rivers (Kerr & Swaffield, 2012) and marine environments (Pike et al., 2014). The main strength of Q methodology is that it generates rich data and provides a robust result from a small number of participants through the integration of “quantitative analysis with qualitative interpretation” (Kerr & Swaffield, 2012, p. 1331). Ideally, the main idea behind Q method is to allow the participants to classify themselves in their own way (Watts & Stenner, 2005).

4.3 Data collection

The following sections present theoretical considerations while collecting data in Q methodological studies and data collection procedures adopted in this study.

4.3.1 Establishment of Concourse and Determination of Q set

The development of concourse is an important step towards data collection in Q methodological studies (S. R. Brown, 1980; Van Exel & De Graaf, 2005; Watts & Stenner, 2012). The concourse represents the universe of possible concepts, types or ideas related to the topic of interest (S. R.

Brown, 1980) and thus should comprise all the pertinent aspects of discourses (Van Exel & De Graaf, 2005). 'Discourse' in Q methodology means "a way of seeing and talking about something" (Barry & Proops, 1999, p. 338). Concourse can be generated from "theoretical grounds, or from naturally occurring (ecological) conditions, or as required for experimental purposes, to suit the particular requirements of an investigation" (Stephenson, 1952, p. 223). It can also be obtained in a number of other ways including interviews, literature review, media reports and newspapers (Van Exel & De Graaf, 2005).

The Q set is a subset of statements or images that is drawn from the concourse (Van Exel & De Graaf, 2005). The concourse can be images, statements, audio and video tapes, objects, newspaper clippings etcetera (S. R. Brown, 1993, 1996; Van Exel & De Graaf, 2005) and must provide wide representation of ideas, opinions, situations or experiences and their balanced coverage on the relevant ground (S. R. Brown, 1980; Fairweather, Swaffield, & Simmons, 1998; Kerr & Swaffield, 2012; Watts & Stenner, 2012).

In the course of identifying and generating concourse, the author adopted two approaches: exploration of online materials and a field visit. In general, the former complemented the later. Prior to the field visits, the author reviewed literature relevant to the study area (e.g. Beza, 2010; A. Byers, 2005; Dhakal, Khadka, Sharma, & Choegyal, 2007; L. N. Sherpa et al., 2006; SNP, 2016; UNESCO, April 2019) to explore what the study area offers the visitor. The author also searched on Google Image and Flickr³ with key words such as 'Khumbu', 'Sagarmatha National Park' and 'Everest Region' to develop an understanding from the visitors' viewpoint about the features and conditions that can be experienced. It also helped to identify potential concourses. In general, the keywords 'Khumbu', 'Sagarmatha National Park' and 'Everest Region' represent the same area.

In the course of data collection process, the author visited the major trekking routes in the study area to get to know more about onsite trekking experiences from the visitors and local people and to take representative images. The author travelled for approximately 22 days during the months of May and June 2019 and covered the major trekking trails: Everest Base Camp/Kala Patthar, Gokyo Valley and Thame Valley/Renjo Pass. During this period, the author informally communicated with visitors, local trekking guides and local people along the trek and they were asked about what they like/dislike about the study area from the recreational point of view. The process provided first-hand ideas on potential images to be captured. Over 300 images were taken during the field trip. In addition, potential images unable to be captured during the field visit were obtained from individuals in the author's network and from Creative Commons online photo repositories.

³ Flickr is an "online photo management and sharing application". Its goals are "to help people make their photos available to the people who matter to them" and ...
Available at: <https://www.flickr.com/about>

It is essential to ensure that any bias towards particular views or opinions does not exist in the Q set, and that respondents are able to express their opinions in their own way within the Q set framework (Watts & Stenner, 2012). In addition, Q sets must not make the respondents feel restricted due to lack of balance and coverage. In this study, representative images of the features and conditions in Sagarmatha National Park and its Buffer Zone (SNPBZ) that people can experience while travelling along the major trekking trails were used to form the Q set. Fairweather et al. (1998) use four categories of landscape features (natural landscape features, land use, cultural features and activity) to study visitors experience in Kaikoura, New Zealand. In this study, a sampling frame with five distinct categories were used for a wide coverage of features in the study area. They include natural landscapes, cultural features, local livelihoods, visitor activity and tourism consequences (see Table 4.1).

A total of thirty images were selected, broadly representing the study area under aforementioned sampling frames. At least 7 photographs were selected to represent each category. Nonetheless, some images represent more than one category. For example, image no 9, 11 and 16 (See Table 4.1) are natural landscapes, however, they also have significant cultural values. The literature (Fairweather & Swaffield, 2002) suggests that 25 to 35 images is sufficient for Q methodological studies. Out of thirty images used in this study, twenty seven were taken by the author during the field visit, one was from the Creative Commons image repository (Image 11) and two were from individuals in the author's network with their permission (Images 5 and 12). All the images taken by the author were captured during a sunny and clear day. Taking photographs during bad weather conditions was avoided. An instance of experienced bad weather was when the author attempted to take the image of a Holy Mountain Khumbi Yul Lha⁴. After enduring two days of bad weather, and considering the time limitations, with no hope for immediate weather improvement, the author opted to draw on Creative Commons photo (image 11). For the creative commons photo, the author searched on Google Image with the commonly used shortened term "Khumbila", as well as the locally used correct term "Khumbi Yul Lha". Only images labelled for non-commercial reuse were selected. The link to the original source was visited to confirm that the image can be reused under Creative Commons licence.

All the selected images were printed on a standard size (150mm X 100mm) in a photo lab and each image was assigned a unique identity number ranging from 1 to 30.

⁴ *Khumbi Yul Lha (shortened to Khumbila) is "one of the deities appointed by Guru Rinpoche to be the protector of Khumbu (Everest Region). This deity currently lives in the mountain directly above the Khunde and Khumjung settlements inside the core area of the Park" (Mallarach, 2008, p. 73).*

Table 4.1: Q set sampling frame

Image no	Representative image	Themes				
		Natural Landscape	Cultural Features	Livelihoods	Visitor Activity	Tourism Consequences
1	Buddhist Stupa		X			
2	Yak transporting supplies			X		
3	Monastery		X			
4	Stray dog					X
5	Mountaineering				X	
6	Agricultural land			X		
7	Donkey/Mule transporting supplies			X		X
8	Bird watching				X	
9	Gokyo Lake	X	X			
10	Solid waste					X
11	Holy mountain- Khumbi Yul Lha	X	X			
12	Seasonal over-tourism					X
13	Built up area			X		X
14	Alpine forest walkway				X	
15	High mountain valley	X				
16	Scenic view of Mt. Everest	X	X			
17	Rock fall area	X				
18	Lukla airport (Tenzing Hillary airport)				X	
19	Porter carrying heavy load			X		
20	High mountain trek			X	X	
21	Glacier	X				
22	Forested area/protected forest	X	X			
23	Degraded trail					X
24	Traditional utensils in Sherpa homes		X			
25	Pasture land			X		
26	Deep valley	X				
27	Helicopter operating in National Park				X	X
28	Stone script with mantras		X			
29	Suspension bridge				X	
30	Wildlife watching				X	
Total		8	8	7	8	7

Categorization of representative images in to different themes was made by the author's own judgement.

4.3.2 Participant (P-set) selection

Addams (2001) suggests that Q method can be executed with a limited number of statements and participants as the number of discourses are limited in a group of population. Nonetheless, the selected participants should be representative of the widest range of potential opinions in the topic of interest. Watts and Stenner (2012) recommend a sample size of at least 50% of the number of Q set elements. A study by Swaffield and Fairweather (1996) using Q method found that each factor group in the study received support from representative participants of many stakeholder groups and there was no significant correlation between types of stakeholder and preference patterns. Klooster, Visser, and de Jong (2008) support this view and note that in Q sort, diversity of stakeholders is more important than the number of stakeholders as representativeness does not rely on large sample size.

Since the primary purpose of this study is to understand the recreational preferences, international visitors were required to have prior (or just completed) trekking/travel experience in the study area. As such, participants can interpret the representative images with respect to their experience, or at least, they can understand the general trekking context of the study area. In terms of selecting research participants, purposive approach was adopted to provide broader representation of viewpoints from participants with different backgrounds (see Appendix 3 for demographic characteristics).

A Research Information Sheet was given to interested visitors who were on trek in the study area. They were requested to contact the researcher on their way back, if they were interested in taking part in the research. Typically, a visitor spends around 12 days in Sagarmatha National Park (Jefferies, 2016).

Secondly, the researcher also coordinated with the local government's visitors' entry records office to approach potential visitors. The office issues entry permits to visitors and basically, keeps records on their intended return date, alongside contact details of the trekking guide (if any). Even though the visitors' entry record indicated arrival of roughly 10-15 visitors a day during the months of June and July (when Lukla airport is favoured by good weather), returning visitors disperse into over 40 scattered lodges in Lukla. Some of the visitors were observed to take a direct helicopter ride from the National Park area to Kathmandu to avoid unpredictable weather conditions at Lukla airport and potential stranding.

In order to take Q sorts and interviews of local residents, the researcher travelled to settlements inside National Park as well as in the Buffer Zone area. Even though all the visitors were interviewed within the study area, few local people were interviewed in Kathmandu. It was because many local

residents associated with the tourism business travel to Kathmandu and elsewhere when the business is slow during the tourist off-season.

In total, sixty two participants completed the Q sort - thirty one international visitors and thirty one local residents (see Appendix C). To maintain the anonymity of research participants, participant names are labelled alphanumerically. For example, Subject 5V and Subject 6L, where the numbers 5 and 6 refer to participants in accordance with serial number, and alphabets V and L refer to visitor and local resident respectively. The country visitors come from has also been replaced with respective continents to maintain further anonymity of foreign visitors who have travelled multiple times to the study area.

There were some limitations in the recruitment of research participants. The researcher attempted to contact visitors through trekking guides, which occasionally failed in case of non-local trekking guides who were unlikely to let the researcher interview their clients. The possibility would be to directly communicate with the visitors, but it may also cause potential misunderstanding and conflict between the trekking guide and the researcher. Some local lodge owners advised that those trekking guides perceive a potential intrusion into their business and they don't entertain other people talking to their clients. Another limitation was unavailability of some visitors for the Q sort and interview due to lack of sufficient time and tiredness.

4.3.3 Q sorting procedure

There is no hard and fast rule regarding the distribution (forced distribution vs free distribution) of items in a Q sort. In a forced distribution, participants can only put a fixed number of images in a given rank, for example: one image in +4, 2 images in +3, 3 images in +3 etc. The number of images to be placed in each rank is predefined by the researcher. However, in free distribution, participants may put more or fewer number of images in a certain rank. Free distribution has negligible impact on the way the factors emerge and thus, participants who feel constrained with the forced distribution can actually place the items in their preferred position (S. R. Brown, 1980). However, most researchers prefer forced distribution over free distribution because "it represents the most convenient and pragmatic means of facilitating the item ranking process" both for the researcher and participants (Watts & Stenner, 2012, p. 78). So, this study also used forced distribution approach.

S. R. Brown (1980) suggests 9 point distribution (-4 to +4) for Q sorts of 40 items or less, 11 point distribution (-5 to +5) for Q sorts of 40-60 items and 13 point distribution (-6 to +6) for Q sorts of 60 items and more. Statistically, the placement of images is argued to approximate a normal distribution (Fairweather et al., 1998). With 30 images to be Q sorted, the study used a 9 point distribution, as recommended by S. R. Brown (1980). The Q sort data collection process commenced with ranking of

representative images in Q sort format followed by post Q-sort interview and collection of participants' demographic information. All the participants who took part in Q sort exercise also participated in post Q sort interviews. Both Q sorts and post Q sort interviews were carried out indoors on a comfortable desk. Prior to Q sorting of images, the research participants were informed that the images are representative of recreational features in the study area. They were also requested not to judge based on the quality of photographs. The Q sorts were performed in two main stages: First, participants were asked to sort the images roughly into three broad piles in terms of their recreational experiences: what they liked, what they did not like and neutral. They were informed that they could change the image positions at any time until they are happy with the configuration.

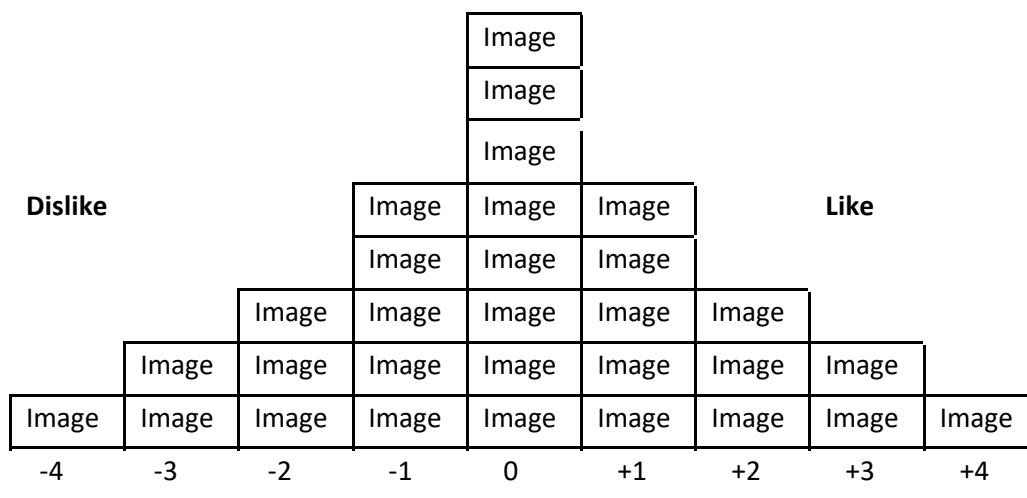


Figure 4.1: Q sort image ranking format

Next, the participant was asked to pick the positive (liked) pile and to select the most liked image (1 image) from recreational point of view, then the next two most-liked images, and so on. For a better understanding of the ranking process, participants were presented a printed template (Figure 4.1). Once they finished sorting the liked images, the same procedure was applied for the images in the disliked pile. In the event they were already running out of images in the disliked pile, they were asked to draw from the remaining image set. Then they were asked to fill the remaining spaces with the images in the neutral pile and whatever they are left with.



Figure 4.2: Q-sort performed by a participant

Finally, the participants were asked to have a thorough look at the configured images and offered the chance to change the image positions if they wanted to do so. Many participants actually swapped image positions at this stage. During the Q sort process participants were encouraged to ask questions if they had any. They were allowed to take sufficient time to rank the images and interference was kept at a minimum, unless the participants got stuck or they asked questions. Once the participant completed the Q sort, they were asked if they were happy with the way they have presented the images. Once they said yes, the assigned image numbers were recorded on the respective boxes in the printed template(e.g. Figure 4.1). This is the core research data.

Following the Q sort, post Q sort interviews were conducted. Post Q sorting interviews are often neglected in Q methodological studies, but provide an opportunity for participants to explain why they actually performed the rankings in such order (S. R. Brown, 1980). It helps to attain “a fuller, richer and more detailed understanding of each participant’s Q sort” (Watts & Stenner, 2012, p. 83). Participants were asked to explain the reasons for their rankings of the six most liked images and six most disliked images. Most of the interviews were audio recorded with prior permission from the participants. Hand notes were taken whenever participants preferred the researcher to take notes. The participants took around 15 minutes to complete a Q sort. The post Q sort interview lasted as short as 6 minutes to as long as 40 minutes. Visitors who travelled the study area multiple times usually spent a longer time in the interviews compared to their counterparts. They had many experiences and associated stories to share as the process went on. Interestingly, some visitors used the opportunity to ask questions about the local natural and cultural features. The same thing happened with some local residents. Some of them were keen to discuss potential resolutions to problems identified in some images, such as tourist crowding (image no 12), and ways to improve tourist experiences in the study area. These peripheral interactions created a comfortable interview environment and enriched the communication between the participants and the researcher. The interviews provided a second set of interpretative data.

4.3.4 Ethical considerations

Prior to field data collection, research approval was obtained from Lincoln University Human Ethics Committee. As required by Nepal's Department of National Parks and Wildlife Conservation (DNPWC) regulation, research approval was obtained from DNPWC and Sagarmatha National Park. The local government of the study area (Khumbu Pasang Lhamu Rural Municipality) also requires researchers to get approval prior to research work. So, approval was also obtained from the local government.

A "Research Information Sheet", was prepared and printed to distribute among potential participants (Appendix B.1). In the field, the researcher invited potential participants to take part in the research by providing a brief introduction about the research, the types of participants who can take part in the research, and the estimated time for the interview. The participants were asked to read the "Research Information Sheet" before the interview. Some participants preferred for oral explanation of the research purpose than reading the research information sheet. The participants were also informed about their anonymity and protection of the collected data. When the participant agreed to take part in the research, s/he was requested to sign the consent form (Appendix B.2). Alternatively, they were offered to give "Oral Consent" if they were hesitant to sign the written consent form. In terms of taking information, the participants were asked to choose between audio recording and taking notes or both.

4.4 Data analysis and interpretation in Q methodological studies

4.4.1 Selection of computer software package

There are number of computer software packages that can be employed for Factor Analysis in Q methodological studies: PQMethod (e.g. Fairweather & Swaffield, 2001; Huang, Qu, & Montgomery, 2017; Kerr & Swaffield, 2012; Olazabal & Pascual, 2015; Pike et al., 2014), and PCQ for windows (e.g. Byrne, Byrne, Ryan, & O'regan, 2017; Klooster et al., 2008). The statistical programming language software 'R', contains the *qmethod* package developed by Zabala (2014), which has been employed by some researchers (e.g. Carmenta, Zabala, Daeli, & Phelps, 2017). The SPSS statistical computing software program also has been used by researchers (e.g. Yong & Pearce, 2013; Zambelli & Bonni, 2004) for factor analysis in Q methodology. Watts and Stenner (2012), however, warn that factor analysis in SPSS is actually designed for R Methodological factor analysis, which is different from Q methodological factor analysis and suggests transposing data before using SPSS. Conclusively, Watts and Stenner (2012) recommend using one of the two dedicated software packages (PCQ for windows

and PQMethod). Given price and system limitations of PCQ, PQMethod⁵ was identified as the most suitable choice as it is freely available, is available for windows, Mac OS and Linux computer operating systems, and is the most popular among Q methodological researchers. Additionally, PQMethod also provides a dedicated software package that can be operated by an external drive (such as USB-stick) on the Windows operating system (Schmolck, November 2019). So, PQMethod software and its output report was used to carry out data analysis and interpretation in this study. For sensitivity analysis, a stand-alone data analysis was performed on R programming software environment with 'qmethod' package developed by Zabala (2014). Nevertheless, the result produced by R was nearly identical to that of PQMethod.

4.4.2 Factor analysis

Factor analysis is an approach to classify the variables (Q sorts) in to specific themes or Factors (S. R. Brown, 1980). Two techniques of factor analysis are Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA), and both methods go through similar steps; production of the covariance matrix, factor extraction and factor rotation (Kim & Mueller, 1978). EFA is used to uncover patterns from a set of variables whereas CFA is used to test hypotheses (Child, 2006, as cited in Yong & Pearce, 2013, p. 79). Since the aim of this study deals with the identification of preference patterns, this study adopts EFA method.

Basically, factor analysis considers that the “observed variables are the linear combinations of some underlying (hypothetical or unobservable) factors” (Kim & Mueller, 1978, p. 8). The factor analysis in Q methodology is distinct from the factor analysis in R methodology, in the way that Q methodology focuses on individual participant correlations while R methodology focuses on “trait correlations” (Addams, 2001, p. 40).

4.4.3 Factor extraction

Akhtar-Danesh (2017) suggests that Principal Component Analysis (PCA) and the Centroid Method as the most popular factor extraction techniques in Q methodology. Watts and Stenner (2012, p. 99) critique that PCA does not provide the opportunity to “properly explore the data and to engage with the process of factor rotation” and recommends the Centroid method. However, Webler, Danielson, and Tuler (2009, p. 28) argue that the Centroid method is entirely based on “commonality among Q sorts” and does not consider the “specificity of individual Q sorts” and suggest that PCA takes

⁵ “PQMethod is a statistical program tailored to the requirements of Q studies. Specifically, it allows to easily enter data (Q-Sorts) the way they are collected, i.e. as 'piles' of statement numbers. It computes intercorrelations among Q-Sorts, which are then factor-analysed with the Centroid or, alternatively, PCA method. Resulting factors can be rotated either analytically (Varimax), or judgmentally with the help of two-dimensional plots...”

Available at: <http://schmolck.org/qmethod/index.htm>

account of both commonality and specificity. Nonetheless, Webler et al. (2009) states that the Centroid method is commonly adopted by Q methodologists who use judgemental rotation instead of automatic varimax rotation.

The author found that both PCA and the Centroid method are frequently used by Q methodologists, e.g. PCA: Jordan, Capdevila, and Johnson (2005); Phelan (2014); Pike et al. (2014); Zambelli and Bonni (2004) and e.g. Centroid Method: Byrne et al. (2017); Klooster et al. (2008); Swaffield and Fairweather (1996). So, it appears that it is up to the researcher to decide which method to employ for factor extraction. S. R. Brown (1980); Webler et al. (2009) suggest that both PCA and Centroid methods usually provide similar results. In this study, the PCA technique was adopted as judgmental rotation was not demanded by the study objectives. PQMethod result by Centroid method of factor extraction was also undertaken for sensitivity analysis. The result was similar to PCA, except PCA resulted in loading of one more visitor in Factor three.

4.4.4 Factor rotation techniques

The primary purpose of factor rotation is to position the factors in a meaningful and focused position in relation to the Q sorts (Watts & Stenner, 2012) so as to make the factors easily interpretable (Addams, 2001). Factor rotation only moves the viewpoints from where the individual Q sorts are observed, but does not change the data points, meaning that the relationships among the factors remain unaffected (S. R. Brown, 1980). Kim (1978a) sheds light on two broad techniques of factor rotation; Orthogonal Rotation and Oblique Rotation. S. R. Brown (1980) indicates that the selection of technique mainly depends upon the research objective and characteristics of the data set.

In general, Orthogonal factor rotation is preferred over Oblique rotation in Q methodological studies. As the orthogonal rotation maintains a fixed 90-degree angle between the factors during rotation, it keeps the factors statistically independent from each other and ensures that all are zero-correlated (Dancey and Reidy, 2011: ch.14, as cited in Watts & Stenner, 2012, p. 119). In the case of Oblique rotation, it breaks the 90-degree relationship between the factors and statistically correlated factors may emerge (Kline, 1994, as cited in Watts & Stenner, 2012, p. 120).

Akhtar-Danesh (2017) suggests various methods of orthogonal rotation (Varimax, Quartimax, Equamax) and oblique rotation (Direct Oblimin). Watts and Stenner (2012) appear to be more selective and suggest only two important methods; judgemental rotation and varimax rotation, noting that both methods have pros and cons and there is no precise way to say which method is preferred. PQMethod software program offers two options: Varimax and Judgemental rotation.

Varimax rotation

Varimax rotation is an orthogonal factor rotation method that tends to reduce the number of variables through high loadings on the factors (Addams, 2001; Akhtar-Danesh, 2017). It is an automatic rotation performed by the software based on statistical criteria such that the factors account for the highest degree of study variance (Watts & Stenner, 2012). Thus, varimax rotation is inclined to focus on the factors with high loadings on them. This method is particularly useful to identify factor arrays with majority viewpoints (Watts & Stenner, 2012). In essence, varimax rotation should not be adopted if there are several unrotated factors or, if there is one general factor between Q sorts (Akhtar-Danesh, 2017).

Judgemental (by hand) rotation

Judgemental rotation is the traditional method of factor rotation where the factors are rotated manually, and the final positions of the rotated factors depend on the researcher's decision. The primary characteristic of hand rotation is that there is always a place to adjust the factors. On the other hand, the drawback of this method is that there always remains a doubt whether the factor solution is just reflecting the researcher's understanding of the scenario (Watts & Stenner, 2012). Thus, when the factors are rotated judgementally the vectors should be displayed graphically so as to make it visually inspectable (S. R. Brown, 1980).

In this study varimax rotation was used. As the varimax rotation is automatically performed by the software, it eliminates potential researcher bias in manual positioning of the factor viewpoints (Watts & Stenner, 2012).

4.4.5 How many factors to consider as a suitable solution?

Eigenvalue criterion

The most widely used method to determine the initial number of factors is the eigenvalue criterion (S. R. Brown, 1980; Kim, 1978a; Watts & Stenner, 2012), also known as Kaiser-Guttman criterion (Watts & Stenner, 2012). "The unrotated factors with eigenvalues greater than or equal to one" can be considered as significant and can be retained (Addams, 2001, p. 27). This criterion is also known as the "latent root criterion" and, this approach is "most reliable" when the number of variables in the study ranges from 20 to 50 (Hair, Black, Babin, & Anderson, 2010, p. 109).

While considering the eigenvalue criterion, S. R. Brown (1980, p. 222) also warns that sometimes the method may result in the extraction of many "spurious factors" and sometimes, the loss of significant factors. Thus, making decisions on the appropriate number of factors mostly relies on "feel and experience" as long as the decisions are justifiable (Watts & Stenner, 2012, p. 107).

Number of significant loadings

S. R. Brown (1980, p. 222) suggests that factors that have two or more “significant loadings” can be considered as a factor. For a factor to have a ‘significant loading’ at the 0.01 level, the loading value must be greater than 2.58 times the standard error, where standard error = $1/\sqrt{V}$ (No of images). At the 0.05 level, the loading value should be greater than 1.96 times the standard error (S. R. Brown, 1980). Applying this equation, with 30 Images in this study, the loading value must be greater than 0.471 for a participant to be significantly loading on any factor.

Percentage of variance criterion

The third method to determine the number of factors for extraction is to use the Percentage of Variance Criterion, which suggests that factor extraction should be continued until “the extracted factors account for at least 95 % of the variance or until the last factor accounts less than 5%” (Hair et al., 2010, p. 109). They also suggest that in terms of social science research, factor solutions that account for 60% of the total variance (or even less under certain circumstances) are acceptable.

Scree test

The test is carried out by plotting the Latent Root (eigenvalues) against the number of factors. “The point at which the curve first begins to straighten out” is assumed to be the optimum number of factors that can be extracted (Hair et al., 2010, p. 110).

Humphrey’s rule

Humphrey’s rule suggests that “a factor is significant if the cross-product of its two highest loadings (ignoring sign) exceeds twice the standard error” (S. R. Brown, 1980, p. 223). Nonetheless, Humphrey’s rule can also be applied in a less restrictive way by accepting the cross products that have value in excess of standard error (S. R. Brown, 1980; Watts & Stenner, 2012).

Qualitative criteria

While there are several statistical criteria to determine the number of factors, Webler et al. (2009) suggest some qualitative criteria:

- **Simplicity:** A factor solution with fewer factors is better as it enables easier understanding of the viewpoints. However, simplicity should not go so far as to lose important information.
- **Clarity:** The idea here is to use the Q sorts that is loaded on only one factor to formulate the factor solution. The confounders (Q sorts that load on more than one factor) and the non-loaders (Q sorts that do not load on any factors) should be avoided.

- **Distinctness:** Lower correlation between factors is preferable. However, it is not necessarily wrong to have high correlation as the factors may agree on most of the issues but disagree on an important issue.
- **Stability:** When performing the factor analysis with different numbers of factor solutions, certain groups of people tend to remain at the same factor. It indicates that those people have a similar viewpoint. A decent set of factors preserves these stable clusters.

While taking account of the criteria for determining the number of factors, the final set of factors should cover “as much of the variability” in the Q sort correlation matrix as possible (S. R. Brown, 1980, p. 209). For the final factors to be considered as an acceptable solution, the sum total of factor variability should account for more than 35% of the total study variance (Kline, 1994, as cited in Watts & Stenner, 2012, p. 105). The insignificant residual factors can be abandoned (S. R. Brown, 1980).

In Q methodology, the researcher should also take into account of practical implications, rather than merely focusing on statistical criteria of factor determination, as the statistically insignificant factors may sometimes play a decisive role. This idea has been expounded by S. R. Brown (1980), concerning the Q methodological study of the decision making perspectives in a psychiatric hospital, where the study retained four factors despite the fourth factor being statistically insignificant. The fourth factor’s eigenvalue was less than 1.00 in unrotated and rotated forms and only one significant loading was observed on that particular factor. However, that particular factor was kept as it represented the viewpoint of a physician who was the “ultimate decision maker” in the team (S. R. Brown, 1980, p. 40).

4.4.6 Factor estimates

Factor Estimates is derived by “weighted averaging of all the individual Q sorts that load significantly on that factor and that factor alone” (Watts & Stenner, 2012, p. 129). More weight is assigned to the Q sorts that have higher loadings on a factor (Addams, 2001). The use of all the loaded Q sorts is not always required to create a factor estimate. While performing factor estimates, Q sorts that have significant loadings on two or more factors should not be used (Addams, 2001). Adding a further criterion of factor estimation, some researchers (Jordan et al., 2005) only use Q sorts that have a factor loading of 0.6 or higher on the representative factor and less than 0.4 on others. S. R. Brown (1980) suggests that the factor estimate should be derived from at least two Q sorts to take into account of the commonalities and to get rid of specificities.

4.4.7 Factor array

It is a representative Q sort which characterises the viewpoint of a given factor and represents a hypothetical respondent that loads 100% on that factor (Van Exel & De Graaf, 2005; Watts & Stenner, 2012). Most researchers tend to report factor arrays as they comply with the original Q sort format (S. R. Brown, 1980), which is easier for readers to understand (Watts & Stenner, 2012).

4.4.8 Factor reliability

The reliability of a Factor depends on the number of people associated with it. S. R. Brown (1980, p. 245) suggests that “the more persons defining a factor, the higher the reliability” will be, and as the factor reliability becomes higher the “magnitude of error associated with that factor’s scores” will become lower. Fairweather (2001) suggests that a factor remains moderately stable when six to eight Q sorts are loaded on it and remains highly stable when approximately twelve Q sorts are loaded. He also suggest that once a factor becomes highly stable, additional Q sorts hardly change the distinctive features of that factor. In a factor solution, it is not unusual that some subjects get similar marks across all factors, which reflects fields of consensus across the factors (Addams, 2001).

4.4.9 Factor interpretation

It is done by investigating the ideal Q sort which explains the viewpoints of a given factor. Factor interpretation takes account of the position of images in factor arrays and explores all possible explanations until the best interpretation is achieved (Addams, 2001). Factor interpretation is “an abductive” approach and the researcher should use the hints arising from the factor arrays to trace back to the viewpoints (Watts & Stenner, 2012, p. 149). The interpretation of a factor is normally presented with a label intended to explain salient properties of the factor (Addams, 2001).

In general, the characterizing items i.e. items ranked at the extreme positive and extreme negative ends are used to construct a first set of descriptions (Van Exel & De Graaf, 2005). Q studies conducted by Fairweather and Swaffield (2002) and Fairweather et al. (1998) using photographs as a Q set mainly take into account of the participants’ comments on the top six and bottom six ranked photographs in the interpretation process. While emphasizing the items ranked towards the extreme ends, items ranked at zero or near-zero cannot be totally abandoned as those items sometimes can work as a fulcrum for the factor array (Watts & Stenner, 2012). The distinguishing and consensus items can be utilized to exhibit distinctive and common features among the factors while post Q sort interviews can be used as illustrative material to support factor interpretation (Van Exel & De Graaf, 2005).

4.4.10 Crib sheet

Crib sheet is a technique developed by the first author of (Watts & Stenner, 2012) for an easy interpretation of factor arrays. Factor interpretation, focused on a few highest and lowest ranked items would be atomistic, contrary to the gestalt nature of the Q sort, yet dealing with each and every item configuration would be impractical (Watts & Stenner, 2012). A crib sheet helps to quickly screen the items that “make the most profound or important contributions within the factor array” (Watts & Stenner, 2012, p. 153). It also enables identification of the issues about which the factor viewpoint is polarized and indicates how the viewpoint is polarized from the other factors.

As a first step towards factor interpretation in this study, the top six images from each of the positive and negative extremes were included. Secondly, the distinguishing statement (statement refers to image in this study) produced by the PQMethod software (Schmolck, November 2019) that were not already included in the above image sets were also taken into account for interpretation. The distinguishing statement refers to the statement that distinguishes a factor from other factors (S. R. Brown, 1980). Thirdly, the remaining images from the above selections which are positively ranked higher than other factors were also considered for interpretation using the crib sheet (Watts & Stenner, 2012). The post Q sort interviews were used to understand the reason participants ranked the images, and were crucial to factor interpretation. Even though multiple comments were made about most of the top six positively and negatively ranked images (up to nine comments per image in Factor one), quotes from the 2-3 best reflective comments were used to avoid verbosity and reflection of the same message. Nonetheless, key information from all the comments was analysed for interpretation. The comments from the participants who were significantly loaded on multiple factors were not included in the interpretation.

4.5 Chapter summary

This research uses Q method to study recreational preferences of visitors and local people in Sagarmatha (Mt. Everest) National Park and its Buffer Zone, Nepal. Q method is a powerful tool to study human subjectivity, which encompasses the key strengths of both qualitative and quantitative research methods. For wide coverage of the study area experience, a sampling frame consisting of natural landscape, cultural features, livelihood, visitor activity and tourism consequences was used. These themes were developed from literature review, field observations and interactions with visitors and local people in the field. A set of thirty representative images, broadly representing the study area under the proposed sampling frame was used as a Q set. A total of 62 participants were interviewed which comprised 31 international visitors and 31 local people. For the data analysis, a dedicated software program PQMethod was used. The study applied Principal Component Analysis

method for factor extraction and varimax method for factor rotation. The factor arrays and post-Q Sort interviews were used for factor interpretation.

The next two chapters present the findings of this research. Chapter 5 presents the recreational preferences of international visitors. Chapter 6 presents the recreational preferences of local residents.

Chapter 5

Results (Part 1) – Visitors

This chapter presents the results on recreational preferences of international visitors. The first section of this chapter identifies the emergent factors among the international visitors in Sagarmatha National Park and Buffer Zone [SNPBZ]. The subsequent sections in this chapter explore the preference patterns of each of the three emergent factors. The factors are interpreted based on factor arrays, distinguishing images, crib sheet information and the interview data. Several interview quotes from different participants are used to reflect comments as expressed in original form. Even though comments from all the participants were not included as it would become verbose, care was taken to ensure that no important information was lost while covering a wide range of ideas and opinions. Following the factor interpretation, this chapter discusses the consensus images among the three visitor factor groups.

5.1 Identification of the emergent factors among visitors

When the Q sorts performed by the visitors were subjected to PCA in PQMethod software programme, the software extracted several factors with eigenvalues in descending order until the cumulative percentage accounted to 100.00. The extracted factors' eigenvalues, variance explained and cumulative percentage of variance explained up to 95% is presented in Table 5.1.

Table 5.1: Unrotated factor matrix (visitors)

Factor No	Eigenvalue	Variance explained	Cumulative Percentage
1	16.099	51.932	51.9322
2	2.402	7.749	59.6812
3	2.0228	6.5253	66.2065
4	1.5481	4.9939	71.2004
5	1.358	4.38	75.5804
6	1.295	4.1795	79.7599
7	0.8848	2.854	82.6139
8	0.811	2.619	85.2329
9	0.721	2.327	87.5599
10	0.5963	1.9236	89.4835
11	0.5381	1.7357	91.2192
12	0.474	1.5291	92.7483
13	0.4183	1.3495	94.0978
14	0.366	1.1806	95.2784

Figure 5.1 below is a Scree test that plots the eigenvalues against the factor numbers.

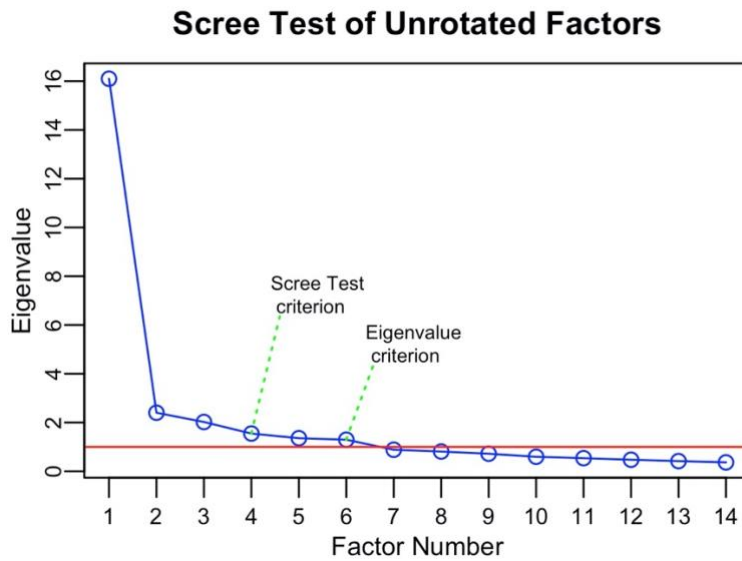


Figure 5.1: Scree Test of visitors’ unrotated factor matrix

A total of 6 factors (see Table 5.1) passed the eigenvalue criterion (S. R. Brown, 1980). The Scree test (Figure 5.1) suggests that up to four factor solution is possible as the line starts to flatten after Factor 4. However, when the factor solutions with three to six factors were tested individually, more than 3 factors resulted in weak solutions with low numbers of loadings in each factor. Consequently, it was decided to retain three-factor solution. Webler et al. (2009) also suggest that a solution that has few factors while ensuring not to lose important viewpoints is important in terms of simplicity.

Table 5.2: Rotated Factor Matrix of visitors with Q sort loading values

SN	Subject ID	Factor 1	Factor 2	Factor 3
1	S58 V	0.8149	0.0404	0.3811
2	S50 V	0.81	0.2245	0.0645
3	S56 V	0.7638	0.3066	0.1679
4	S40 V	0.7455	0.0037	0.3429
5	S9 V	0.737	0.253	0.3252
6	S15 V	0.7213	0.2668	0.3183
7	S44 V	0.7195	0.1615	0.4499
8	S10 V	0.7118	0.2885	0.2448
9	S23 V	0.6989	0.2857	0.4638
10	S36 V	0.6594	0.2331	0.2873
11	S46 V	0.5971	0.1797	0.2803
12	S39 V	0.5878	0.3807	0.0388
13	S53 V	0.5536	0.4388	0.0388
14	S52 V	0.5436	0.1415	0.3325
15	S55 V	0.1179	0.8504	0.1107

16	S27 V	0.3831	0.7301	0.0842
17	S41 V	0.1766	0.7218	0.4585
18	S54 V	0.2977	0.6612	0.1506
19	S26 V	0.3773	0.5853	0.4193
20	S57 V	0.2051	0.3019	0.8081
21	S14 V	0.1766	0.4236	0.7766
22	S37 V	0.4665	0.0262	0.7722
23	S5 V	0.4383	0.1829	0.7136
24	S43 V	0.351	0.238	0.6905
25	S30 V	0.3581	-0.2572	0.5521
26	S42 V	-0.0825	0.466	0.5489
27	S45 V	0.3695	0.3512	0.5189
28	S8 V	<i>0.5478</i>	0.2251	<i>0.5872</i>
29	S51 V	<i>0.7193</i>	0.0708	<i>0.5103</i>
30	S35 V	<i>0.5499</i>	0.1904	<i>0.5316</i>
31	S38 V	<i>0.6159</i>	0.0951	<i>0.5693</i>

Note: **Bold** entries indicate significant loading on respective factors, and *Italics* indicate confounded Q sorts.

S. R. Brown (1980, p. 222) suggests that factors that have two or more “significant loadings” can be considered as a significant factor. In the current study, the loading values should be greater than 0.47 to be significant at the 0.01 level. Swaffield and Fairweather (1996) takes the significant loading criterion to a more stringent level from the perspective of factor stability and accept only factors having at least five significant loadings.

Of the 27 visitors that were purely loaded, 14 participants were loaded on Factor one, followed by 5 participants on Factor two and 8 participants on Factor three. The pure factor representatives are those participants who have significant loadings on only one factor (S. R. Brown, 1980). Q sorts that have significant loadings on more than one factor are considered to be confounded, and they are not included while constructing factor estimates. Four Q sorts were confounded (8V, 35V, 38V and 51V) and they were excluded from production of factor estimates. The factor solution with purely loaded Q sorts explained 87% of the study variables (Q sorts).

The presented Three factor solution (Table 5.2) conformed to the Kaiser-Guttman criterion (eigenvalue criterion) and Humphrey’s Rule. For a factor solution to be considered acceptable, the sum total of factor variability should account for more than 35% of the total study variance (Kline, 1994, as cited in Watts & Stenner, 2012, p. 105). Here, the three factors altogether explained 66% of the total variance. Upon inspection on the Varimax rotated graph, no bipolar factors were observed.

Table 5.3: Summary characteristics of the emerged factors:

Factors	Factor One	Factor Two	Factor Three
Number of defining Q sorts	14	5	8
Average reliability coefficient	0.80	0.80	0.80
Composite Reliability	0.982	0.952	0.970
Standard error of factor Z-scores	0.132	0.218	0.174
% variance explained	31	14	21
Total variance explained	66%		

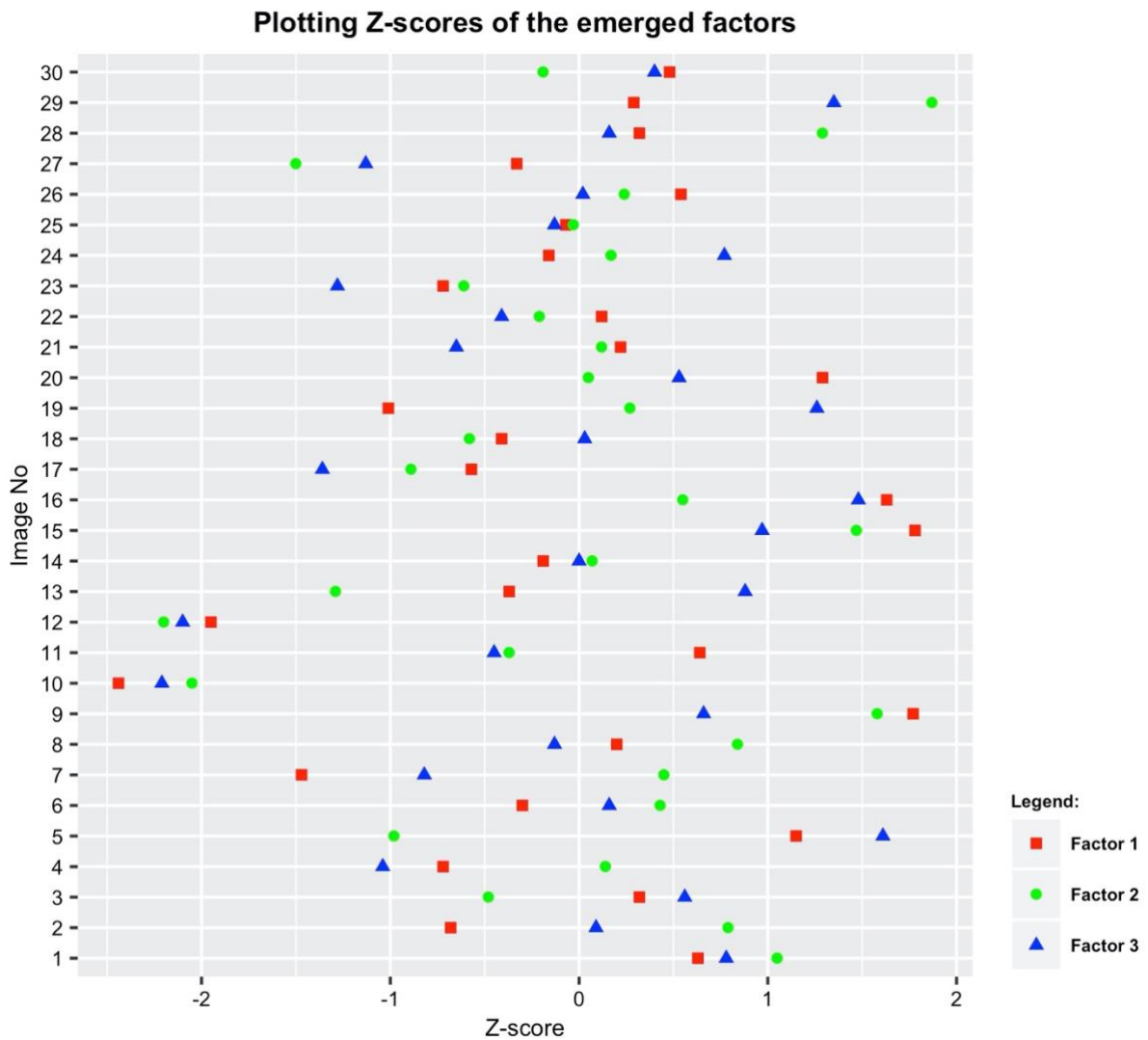


Figure 5.2: A plot indicating Z scores of the three emerged factors

Figure 5.2 provides a comparative analysis of Z scores received by different images in each factor group. Z-scores indicate “how far a statement lies from the middle of a distribution” (Webler et al., 2009, p. 32). The figure indicates that there are several images that are distinctive as well as similar across the three emerged factors. For instance, we can observe that images 2, 3, 5, 7, 11, 13, 19, 20, 27 and 29 are distinctive images as they are far from each other. Likewise, images 1, 10, 12, 14, 25 and 26 are clustered and represent consensus across three emerged factors. The characteristic images for each factor will be further explored and discussed in subsequent sections.

5.2 Visitor Factor One: Superlative scenery seekers

Factor One is significantly represented by fourteen visitors (Male: 8, Female: 6) and explains 31% of the study variance. The majority of them come from Europe (8) followed by Asia(4), Australasia(1) and Americas(1). Their ages range from 21 to 50, with an average age of 33 years old. Interestingly, 50% of those visitors are guided and remaining 50% are unguided. They come from various occupational backgrounds. On average, they spend 10 days in SNPBZ. Exceptionally, one visitor comes for trekking as well as for community volunteer work and spends 60 days on site. At least one visitor (56V) has already travelled five times in the region, while others travelled for the first time. The distinguishing images are presented in Table 5.4 , while the factor interpretation table including crib sheet information (Watts & Stenner, 2012) is presented in Appendix A. 1. The factor array or an idealized Q sort for visitor factor one is presented in Figure 5.3.

Table 5.4: Distinguishing images for Factor One (Visitors)

Representative Images	Factor One		Factor Two		Factor Three	
	Q sort value	Z Score	Q sort value	Z Score	Q sort value	Z Score
Image 20	2	1.29*	0	0.05	1	0.53
Image 5	2	1.15	-2	-0.98	4	1.61
Image 11	2	0.64*	-1	-0.37	-1	-0.45
Image 29	0	0.29*	4	1.87	3	1.35
Image 6	0	-0.3	1	0.43	0	0.16
Image 27	-1	-0.33*	-3	-1.5	-2	-1.13
Image 13	-1	-0.37*	-2	-1.29	2	0.88
Image 2	-1	-0.68*	1	0.79	0	0.09
Image 19	-2	-1.01*	1	0.27	2	1.26
image7	-3	-1.47*	1	0.45	-1	-0.82

Note: Asterisk (*) indicates significance at $P < 0.0$



Figure 5.3: Representative Q sort (Factor Array) to Factor one visitors – ‘superlative scenery seekers’

5.2.1 Recreational features liked by Factor One Visitors

Factor One visitors are represented by 'superlative scenery seekers' who have preferences for 'wild and scenic nature'. They find the mountain landscapes pretty unmarked and feel very special when they see such landscapes for the first time in their life. They are largely attracted by the stunning views of high mountain ranges in Sagarmatha National Park and Buffer Zone (SNPBZ) including Mt. Everest. Highly appealing to these type of visitors is also the unparalleled scenic composition created by the panoramic mountain ranges and the Gokyo Lake at 16,400 feet above the sea level. Even though they do not necessarily want to find themselves conquering high mountains, they want to experience the mountains from very close that the gaining altitudes hardly put them off from travelling in the Himalayas. As such, walking high up in the mountains is a unique experience for these visitors. They appreciate the inspirational services that the mountains and mountaineering extend to them. Even though they are not necessarily aware about the religious value of the holy mountain Khumbi Yul Lha, they find it stunning with its unique shape.

High mountain valley is the most preferred feature for the visitors who are superlative scenery seekers (Image 15: +4).

Image 15: *"It looks like unharmed nature. This kind of picture reveals a kind of serene mind set up. I imagine that if I stand there, I will have a steady kind of feelings in my mind" (Subject 15V). "It's the views. The Himalaya is amazing, the trails, the snow. It's too beautiful. It's about the view of being in contact with the nature" (Subject 23V).*

Similarly, Gokyo Lake and Mt. Everest are the second most preferred features (Image 9: +3; Image 16: +3).

Image 9: *"To me, this is like a perfect kind of beautiful landscape. There is lake, there is mountain, there is stone like rocky mountain, and all these look like cloud factories..." (Subject 15V). "This is something I have not done now but I will come back next time to see the Gokyo Lake" (Subject 58V). I like the beautiful scenery, the nature, the mountain, the lakes, and all that make me feel comfortable and wanting to stay here" (Subject 40V).*

Image 16: *"This is something special, which makes Nepal special. This is why I want to visit this country, and this is unique place on earth" (Subject 9V). "That's something that really makes this area unique..." (Subject 10V).*

Likewise, high altitude trail, mountaineering, and holy mountain (Image 20: +2; Image 5: +2; Image 11:+2) are the third most preferred features.

Image 20: *“It just looks beautiful. This is way from Gorakshep to Everest Base Camp” (Subject 58V). “I really like the view. This is something that makes Nepal special. This is why I came to the Everest Base Camp trek” (Subject 9V).*

Image 5: *“It gives me the power to encourage people not to be afraid, and try to make the dream come true” (Subject40V). “I am impressed that people can go so high” (Subject 44V).*

Image 11: *“I can’t tell you why I like that. It’s just a beautiful looking mountain. It has got lots of different angle” (Subject 56V).*

Factor one visitors also like deep valleys (Image26: +1) and wildlife watching (Image 30: +1) which are ranked higher in Factor one visitors than in other factor group of visitors (see Appendix A. 1)

5.2.2 Disliked features/conditions by Factor One visitors

For the Factor One visitors-superlative scenery seekers, the top six disliked images are solid waste (Image 10: -4), tourist overcrowding during peak season (Image 12: -3), donkeys/mules transporting supplies (Image 7: -3), porters carrying loads (Image 19: -2), degraded trail (Image 23: -2) and stray dogs (Image 4: -2).

Among the disliked images of Factor one visitors, the images that are disliked more than any other visitor factor groups are donkeys/mules transporting supplies (Image 7: -3), porters carrying loads (Image 19: -2) and Yak transporting supplies (Image 2: -1).

Image 7: *“I think it’s just animal cruelty. But, I also understand that there is nothing else and has to be carried by human” (Subject 58V). “You see the shits of the donkey along the trail. It was really disgusting. I know it’s necessary but this did not make the experience any nicer” (Subject 9V). “The minders were screaming at them and sometimes throwing rocks at them to make them go” (Subject 50V).*

Image 19: *“It is not necessarily I dislike porters but I think it would have been more comfortable without them. I also understand that they do it for a living and they have a hard life” (Subject 50V). I don’t mind them but when I look at them carrying all the stuffs, I almost get like pain on my back... but again, they also carry our bag. It did make my experience better” (Subject 56V).*

Visitors associated with Factor one understand that the donkeys/mules are important to carry supplies as there is no proper alternative. However, they don’t like the way they urinate and defecate along the trail. They feel disgusted by the bad smell. They also don’t like the animals being used for hard work and their unethical treatment by their minders. They also think that it would be comfortable without the porters on the trail as they look for solitude. They also feel uneasy to see

the porters carrying heavy loads. They assume that the porters are obliged to do such hard work to earn a living due to the lack of formal education and other opportunities.

5.3 Visitor Factor Two: Culturally curious visitors

Factor Two explains 14 % of the study variance and is defined by five significantly loading Q sorts (Male: 3, Female: 2). Interestingly, all the visitors in this factor group are students and the majority of them are unguided (Guided:1, Unguided: 4). Four of them come from Europe while one comes from Asia. Their average age is 27 years and all of them visited Sagarmatha National Park for the first time. On average, they spent 18 days in the region. All the visitors in this group came to Sagarmatha National Park for trekking. The distinguishing images are presented in Table 5.5 while the factor interpretation table is presented in Appendix A. 2. The factor array is presented in Figure 5.4.

Table 5.5: Distinguishing images for Factor Two (Visitors)

Representative Images	Factor One		Factor Two		Factor Three	
	Q sort value	Z Score	Q sort value	Z Score	Q sort value	Z Score
Image 28	1	0.32	2	1.29*	0	0.16
Image 8	0	0.20	2	0.84	-1	-0.13
Image 2	-1	-0.68	1	0.79	0	0.09
Image 16	3	1.63	1	0.55*	3	1.48
Image 7	-3	-1.47	1	0.45*	-1	-0.82
Image 19	-2	-1.01	1	0.27*	2	1.26
Image 4	-2	-0.72	0	0.14*	-2	-1.04
Image 30	1	0.48	0	-0.19	0	0.4
Image 3	1	0.32	-1	-0.48*	1	0.56
Image 5	2	1.15	-2	-0.98*	4	1.61
Image 13	-1	-0.37	-2	-1.29*	2	0.88

Note: P<0.05; Asterisk (*) indicates significance at P < 0.01

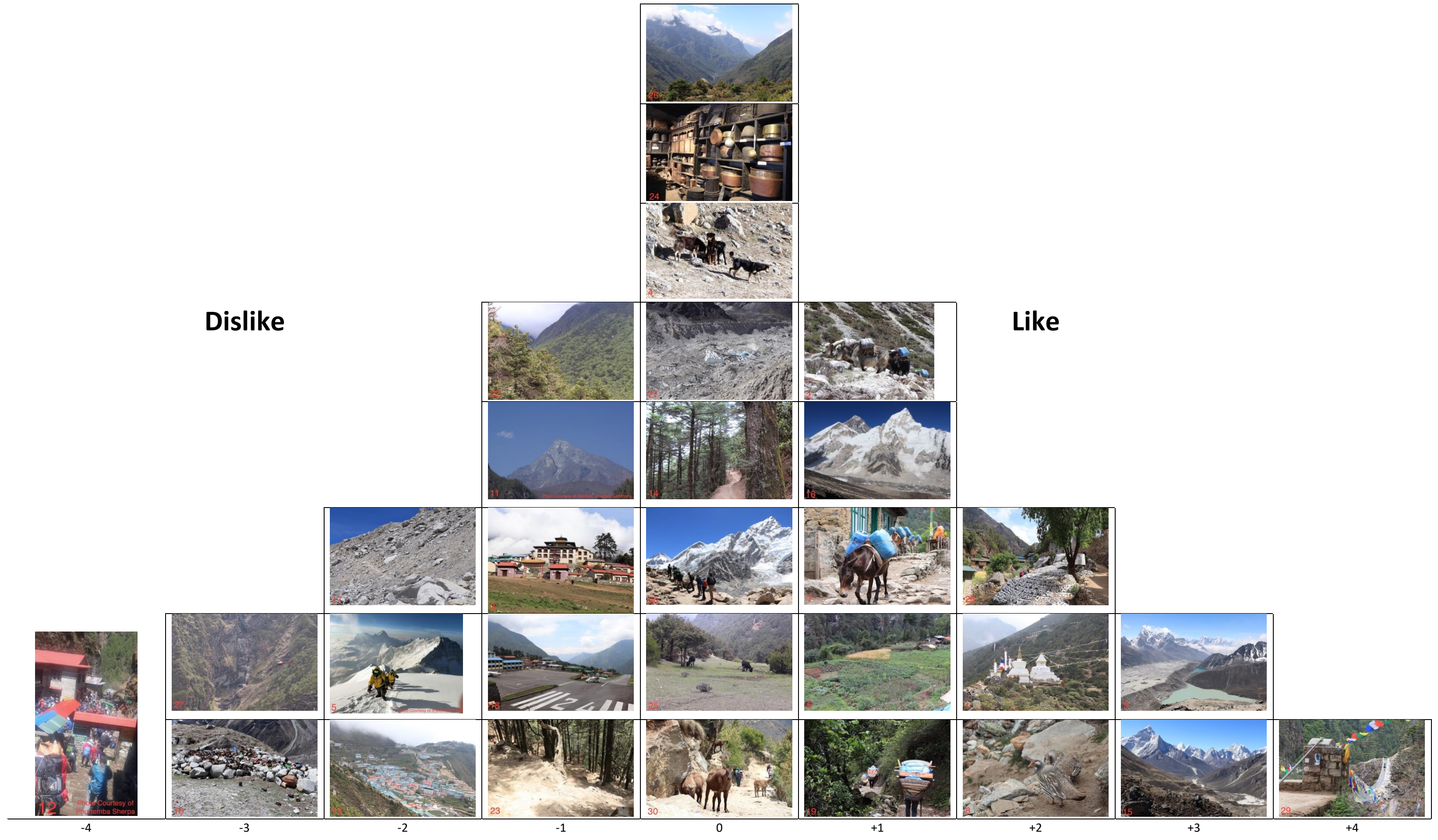


Figure 5.4: Representative Q sort (Factor Array) of Factor two visitor – ‘culturally curious visitors’

5.3.1 Recreational features liked by Factor Two visitors

Factor Two represents ‘culturally curious visitors’ who have preferences for ‘culture within nature’. They find the suspension bridges with the prayer flags remarkably sensational. While they treasure the impressive landscapes of Sagarmatha National Park and Buffer Zone, they also believe that the cultural features are also an important attractions to experience. They find the stone scripts with the Buddhist mantras profoundly impressive as they represent the local culture and the religion. They also feel that such sacred stones indeed invigorate the landscape. They like the stupas and chortens as those features symbolize Buddhist religion. Being distinctive to other factor groups of visitors, they are also interested in local livelihood activities such as agricultural practices in the local farmlands and the use of pack animals (yaks, donkeys and mules) as a means of transporting supplies.

These visitors assume that off-season is actually a good season to trek to Sagarmatha National Park. They feel joyful while getting lost in the lush green mountains in the monsoon. They also enjoy other recreational services offered by SNPBZ, such as bird watching. Outweighed by the varieties of on-hand unique natural and cultural experiences that the park offers, the world famous Mt. Everest is not necessarily a top priority for this group of visitors and falls out of the top six preferred images.

Suspension bridge is the most preferred feature for Factor two visitors (Image 29: +4).

Image 29: *“It was my first contact with the spectacular landscape here. It was something I never saw and there were many such bridges in the area. We also saw mules passing through. That was pretty impressive” (Subject 27V). “The suspension bridge also has prayer flags and Khata⁶, and it represents the culture. It is my image of Nepal” (Subject 41V).*

Likewise, Gokyo Lake and high mountain valley are the second most preferred features (Image 9: +3; Image 15: +3).

Image 9: *“This is from Gokyo Ri. It reminds me of a beautiful morning there. The six lakes are very impressive. It’s kind of crazy to see such lakes at such a high altitude” (Subject 27V).*

Image 15: *“It’s beautiful valley. We went through three different valleys. It’s a good experience walking down the valley, because there is a lot of wind. You see the river, the vegetation and the skyline” (Subject 27V).*

Moreover, stone scripts, Buddhist stupas and bird watching are the third most preferred recreational features for Factor two visitors (Image 28: +2; Image 1: +2; Image 8: +2).

⁶ Khata is a ribbon shaped scarf used in most of the social and cultural occasions in Buddhism such as birth, marriage, welcome, farewell, festivals etcetera.

Image 28: *“I saw so much of the sacred stones like that. It represents the religious feelings in the region. It’s very impressive. It’s beautiful, but more than that, it makes the landscape much lively” (Subject 27V). “When looking at this picture, first, I can feel the local life. I appreciate the cultural aspects of the place. I can imagine the ambience of the village and I like it. Also, I like the old houses. I don’t like this kind of houses (Image 13)” (Subject 26V).*

Image 1: *“I just like the Buddhist Religion, so the stupas and chortens. Today we had been to a monastery, where there was a big ceremony, and was very interesting. People there were nice and welcoming” (Subject 55V).*

Image 8: *Mostly being deprived from the view of mountain ranges due to bad weather, wildlife and birds were pretty much of a highlight for us. We even saw a newly hatched bird, which was so nice (Subject 55V).*

Other than top six preferred images, Factor two visitors also like the donkey/mule transporting supplies (Image 7: +1) and agricultural area (Image 6: +1) which are ranked higher in Factor two than in other visitor factor groups (see Appendix A. 2).

5.3.2 Disliked features/conditions by Factor Two visitors

The top six disliked features/conditions for the Factor two visitors are tourist overcrowding during peak season (Image 12: -4), solid waste (Image 10: -3), helicopter operating in national park area (Image 27: -3), built-up area (Image 13: -2), mountaineering (Image 5: -2) and rockfall area (Image 17: -2).

Among the disliked images of Factor two visitors, the images that are disliked more than any other visitor factor groups are tourist overcrowding during peak season (Image 12: -4), helicopter operating in national park area (Image 27: -3), built-up area (Image 13: -2) and mountaineering (Image 5: -2).

Image 12: *“I think I would not have come to Nepal if it is the peak tourist season. I am not saddened by the rain and cloud. I feel joyful” (Subject 26V). I am so surprised that there could be so many visitors here. Happily, we did not experience this. I think the trip would have been bizarre with so many people (Subject 27V). It looks very crowded. We were lucky that we travelled in off season. If we experienced that, it would be a nightmare for me, having to fight for lodges (Subject 54V).*

Image 27: *I heard the noise of helicopter. It’s kind of breaking silence experience (Subject 55V). “I heard that around 15 helicopters a day take flight to Everest Base Camp. I think helicopters should be kept just for emergency purposes, but not as a means of transportation” (Subject 55V). What I like about the mountains is that it’s quiet, with no road and no cars. But when you see the*

helicopters...Usually they are used by rich tourists who want to go to Kalapatthar really quickly. They just go to Kalapatthar from Lukla, see Mt. Everest, and come back. I find it stupid” (Subject 26V).

Image 13: “It just reminds me of mass tourism and people being more focused on money making business. It loses authenticity” (Subject 55V). “May be a week ago, I saw a picture of Namche taken around 50 years ago. It was a nice place, really nice place. Now it looks like French tourist station in the mountains for skiing” (Subject 26V).

Image 5: “I am not particularly fond of mountaineering activity and I have never experienced that” (Subject 27V). “Many people die in the mountain. Nowadays, too many people are climbing Mt. Everest. It’s not a good idea. If you just do a trek, it’s safe” (Subject 41V).

The visitors associated with Factor two don’t like tourist overcrowding. They think that overcrowding would make people feel like crowded, and it would spoil the trekking experience. These visitors are happy that they travelled during off season and did not have to experience overcrowding. These visitors find the helicopters disruptive and they think that it should be used just for rescue purposes. They also don’t like the built up areas as they speculate that too much infrastructure takes away the authenticity of the region. They also perceive that such augmentations of the buildings are symptomatic of avaricious people. They don’t like mountaineering as they perceive that mountaineering is a risk to life, whereas doing trekking is much safer.

5.4 Visitor Factor Three: Freedom Finders

Factor Three explains 21% of the total study variance. Out of eight defining Q sorts (Male: 6, Female:2), four of them come from Europe, three from Asia, and one from Africa. They come from various occupational backgrounds. Two of them were guided, while six of them were unguided. Their age ranges from 24 to 60 and average age is 37 years. As a trekker, they spend 11 days in average in the Everest Region, with the exception of two visitors who also came for project works and stayed for a long time (Subject 57V and Subject 30V). Out of eight visitors, seven of them were there for the first time. while one had visited multiple times. The distinguishing images are presented in Table 5.6 and the factor interpretation table is presented in Appendix A. 3. The representative Q sort for visitor Factor Three is presented in Figure 5.5.

Table 5.6: Distinguishing statements for Factor Three (visitors)

Representative Image	Factor One		Factor two		Factor Three	
	Q sort value	Z score	Q sort value	Z Score	Q sort value	Z score
Image 5	2	1.15	-2	-0.98	4	1.61
Image 19	-2	-1.01	1	0.27	2	1.26*
Image 13	-1	-0.37	-2	-1.29	2	0.88*
Image 24	0	-0.16	0	0.17	1	0.77
Image 9	3	1.77	3	1.58	1	0.66*
Image 2	-1	-0.68	1	0.79	0	0.09
Image 18	-1	-0.41	-1	-0.58	0	0.03
Image 21	0	0.22	0	0.12	-1	-0.65*
Image 7	-3	-1.47	1	0.45	-1	-0.82*
Image 23	-2	-0.72	-1	-0.61	-2	-1.28

Note: Asterisk (*) indicates significance at $P < 0.01$

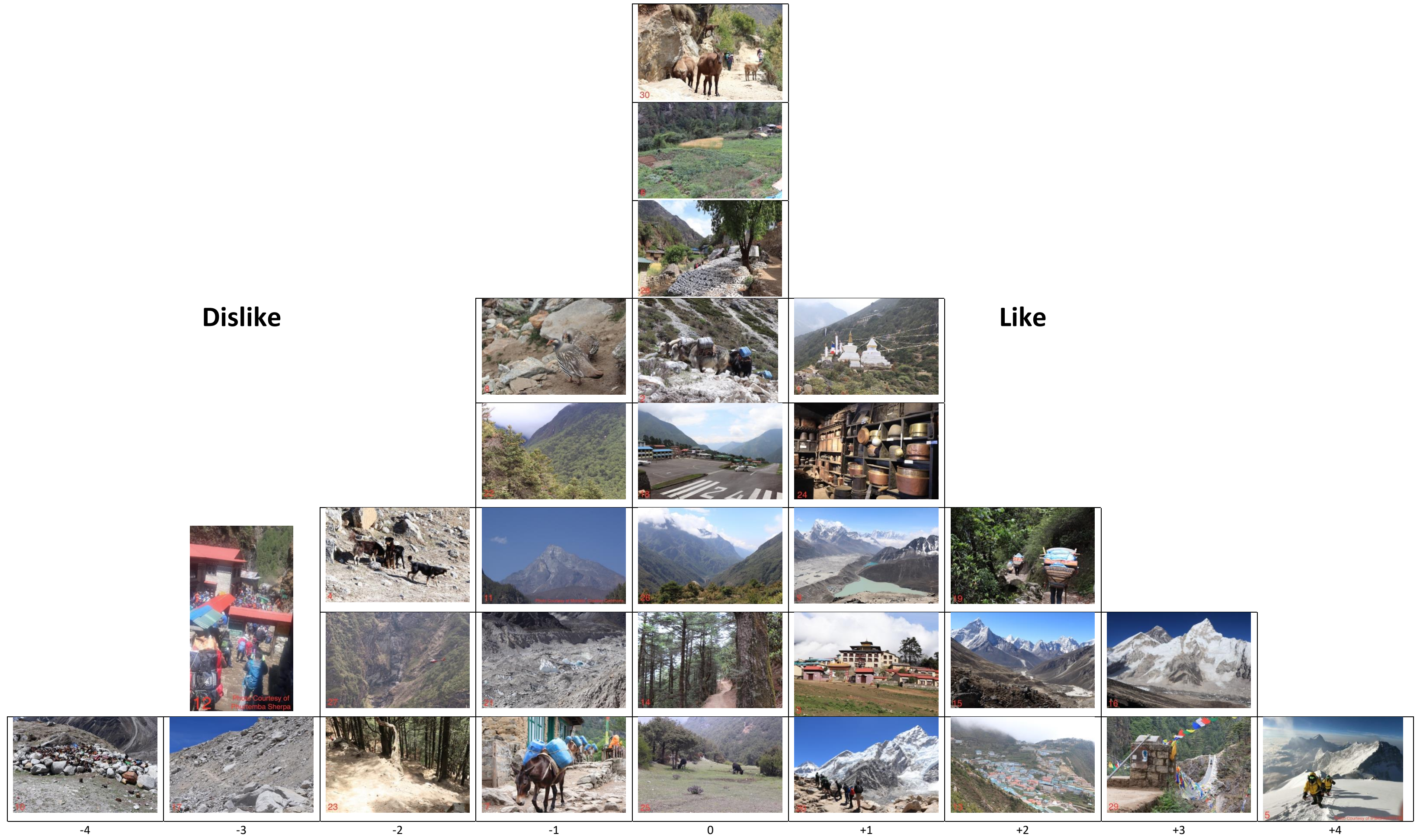


Figure 5.5: Representative Q sort (Factor Array) of Factor three visitors – ‘freedom finders’

5.4.1 Recreational features liked by Factor Three visitors

Factor Three visitors are the 'freedom finders' who have preferences for 'mountains as a space for freedom'. They love to be up in the Himalayas as they feel freedom, peace and contentment. They also have aspirations for mountaineering. This group of visitors believe that Mt. Everest is iconic in the world and the most outstanding feature of the Everest Region. They think that Mt. Everest is a must see experience and one of the best memories that visitors take away. Seeing the porters carrying loads is a first time experience for many visitors. They are amazed to see porters tirelessly carrying heavy loads to make a living. They find the porters' job very hard and show respect to the porters. Unlike other visitor factor groups, they like one of the biggest and densest built up areas in SNPBZ, Namche Bazar. They think the place is aesthetically appealing as it is in a unique location and has got a unique shape. Some of the visitors developed emotional attachment with Namche Bazar. They loved seeing how the place had grown from a small rural village into a tourist hub. They also appreciated that even though the place is high up in the Himalaya and virtually disconnected to the outside world, it still provides visitors with most facilities.

Mountaineering is most preferred by the Factor three visitors (Image 5: +4).

Image 5: *"I come from a tropical region. Something like this is new for me and I would love to experience this because this is something what I cannot do in my country. I want to be in the mountains. I kind of feel that this is the moment of peace" (Subject 57V). "It is something I would like to do in the future. I am not sure to which degree, may be Island Peak or Mera Peak or something like that" (Subject 37V). "I kind of love getting up on high points. I don't like low points. I don't like to dive in the ocean deep down. I feel trapped. Here, up in the high mountains, you get a huge view. You are almost above the clouds. For me, that is a sense of freedom that makes my spirit very alive and feel very content" (Subject 30V).*

Similarly, Mt. Everest and suspension bridge are the second most preferred images for this group of visitors (Image 16: +3; Image 29: +3).

Image 16: *"That's the view I had on my trip. That's the memory I will probably take away from this trip. That kind of represents one of the best memories for me" (Subject 37V). "It's the reason I came here" (Subject 5V). "For the Khumbu Region, I would say Sagarmatha (Mt. Everest) is the most prominent symbol. It is the sole highest point on this earth, which makes it very special. For me, personally I have been on two expeditions to the Everest. That also means it is something special for me. I think that is the most natural and unique part of Khumbu" (Subject 30V).*

Image 29: *I love swings. It might sound poetic, but it is like swinging between forest and it is always pleasant walking on those bridges. I love them (Subject 57V). It is the first suspension bridge that I*

had ever walked across. They are quiet iconic with the prayer flags. As soon as you see that, you think of Nepal. So, it's quite nice (Subject 37V).

Porters carrying loads, high mountain valley and the built-up areas are the third most preferred features for Factor three visitors (Image 19: +2; Image 15: +2; Image 13: +2).

Image 19: *“Lifestyle itself is so different. It may be tough for them but looks like they do it regularly. They have the songs playing throughout their journey. I think they kind of enjoy it” (Subject 57V). “That is something I saw for the first time in my life. I was really curious about that. Besides, I think this is really hard work. Big respect for those people. I would never be able to do that kind of things” (Subject 43V).*

Image 15: I like the landscape view. I can see most of the peaks (Subject 14V). this is something I saw for the first time in my life, and probably I may never see that again. So for me, it was really exciting to get over here, to get over high altitude and to see that (Subject 43V).

Image 13: *“This is structurally different...I like the view when I look from the top, on the way to Khumjung” (Subject 14V). “For me, it kind of represents more going through villages rather than just stuck at a place, which again is part of the experience” (Subject 37V). Namche Bazar has a special place in my heart since many years... I have seen this place developing from a small rural village into a tourist hub. I also have close relationship with many people in Namche... It does not have any direct connection with the outside world but it still provides people with most of the things they actually need” (Subject 30V).*

Apart from the top six preferred images, Factor three visitors also like traditional kitchen utensils of a Sherpa home (Image 24: +1), which is ranked higher by Factor three visitors than other factor group of visitors (see Appendix A. 3).

5.4.2 Disliked features/conditions by Factor Three visitors

For the Factor Three visitors, the top six disliked images are solid waste (Image 10: -4), tourist overcrowding during peak season (Image 12: -3), rockfall area (Image 17: -3), degraded trail (Image 23: -2), helicopter operating in national park area (Image 27: -2) and stray dogs (Image 4: -2).

The disliked features/conditions that are comparatively disliked more by Factor three visitors than other factor group of visitors are rockfall area (Image 17: -3), glacier (Image 21: -1) and bird watching (Image 8: -1).

Image 17: *“Even though it is natural, it seems like a total destruction. It is not recreationally beautiful” (Subject 14V). “I think it's just a kind of generic picture. My kind of memory is the forest*

and the mountains” (Subject 37V). “It’s dangerous to walk over here and I did not feel safe to walk” (Subject 43V).

While the Factor three visitors don’t like glaciers, they also don’t feel safe walking on trails that are prone to rockfall. They find no recreational value in such features.

5.5 Consensus images across the emerged Factors

Table 5.7: Consensus images that do not distinguish between any pair of factors

Image No.	Image Title	Factor One		Factor two		Factor Three	
		Q sort score	Z score	Q sort score	Z score	Q sort score	Z score
1*	Buddhist stupas	1	0.63	2	1.05	1	0.78
10*	Solid waste	-4	-2.44	-3	-2.05	-4	-2.21
12*	Tourist overcrowding during peak season	-3	-1.95	-4	-2.2	-3	-2.1
14*	Alpine forest walkway	0	-0.19	0	0.07	0	0
18	Lukla airport (Tenzing Hillary airport)	-1	-0.41	-1	-0.58	0	0.03
22	Forested area	0	0.12	-1	-0.21	-1	-0.41
23	Degraded trail	-2	-0.72	-1	-0.61	-2	-1.28
25*	Pasture land	0	-0.07	0	-0.03	0	-0.13
26	Deep valley	1	0.54	0	0.24	0	0.02

Note: All Listed Images are Non-Significant at $P > .01$, and Those Flagged With an * are also Non-Significant at $P > .05$.

Visitors across all factor groups don’t like the solid waste (Image 10: Factor one and 3; -4, Factor two; -3). *Factor one-Image 10: “I just don’t like it. I have watched the documentary that how much garbage is there in the Everest. People can’t just throw garbage anywhere” (Subject 58V). Factor two-Image 10: “Of course you don’t want to see waste in the Himalaya. Thankfully, we did not see that a lot” (Subject 54V). Factor three-Image 10: “I don’t want to see these garbage here. It should be well taken care of. I saw it in one place but I did not exactly remember the village name” (Subject 14V).*

Moreover, all the factor groups dislike tourist overcrowding in Sagarmatha National Park, which is observed during the peak trekking season (Image 12: Factor one and 3; -3, Factor two; -4). They assume that the overcrowding takes away solitude and they can’t enjoy the place.

Factor one-Image 12: “Personally I like solitude a lot. I hate to see a lot of tourist. I don’t like crowd. It’s like a tourist trap and no longer authentic (Subject 50V). Factor three- Image 12: “If I am coming to a place for vacation, it is to escape the hassle. Here it is completely crowded and it is kind of killing the mood. You can’t actually enjoy the place because of crowd” (Subject 57V).

The visitors also demonstrate similar opinions about degraded trails (Image 23: Factor one and 3; -2, Factor two; -1). They think that it's difficult to walk on such trails. They are also concerned that the trails get damaged by rainfall, especially in combination with pack animals walking over them, making it very risky to walk over.

Factor one-Image 23: "They easily get destroyed when it rains, and especially if you have the donkeys walking over them. I think it's very tough to walk and it's very easy to slip and hurt yourself" (Subject 9V). Factor three-Image 23: "It's a sign of human being bad to the environment, destroying it. It is not great. It's a sign of all people in number 12 in the trail. It's pressure on the trail, pressure on the environment. It's not just these visitors, but also all the support stuffs like mules, and the people and so. It's the sign of a lot of people coming through" (Subject 5V)

Visitors in all the factor group like the Buddhist stupas (Image 1: Factor one and 3; +1, Factor two; +2). They have neutral or near neutral preferences about the Lukla airport (Image 18: Factor one and 2; -1, Factor three; 0), alpine forest walkway (Image 14: Factor one, 2 and 3; 0), forested areas (Image 22: Factor One; 0, Factor two and 3; -1) and pasture land (Image 25: Factor one,2 and 3; 0).

5.6 Chapter summary

When the recreational preference data of the international visitors travelling to SNPBZ was factor analyzed, three significant factors were emerged. Fourteen visitors are significantly associated with Factor One (superlative scenery seekers) which explains 31% of the study variance. They have strong preferences for 'wild and scenic nature'. Factor Two (culturally curious visitors) constructs over significant association of Five visitors and explains 14% of the study variance. They have preferences for 'culture within nature'. Factor Three (freedom finders) develops with the significant association of Eight visitors and explains 21% of the study variance. They have preferences for 'mountains as a space for freedom'.

There is also consensus among the three visitor Factor groups on the preferences to several features such as Buddhist stupa, tourist overcrowding during peak season, alpine forest walkway and pastureland.

Chapter 6

Results (Part 2) – Local people

Chapter Six presents the results on recreational preferences of local residents in Sagarmatha National Park and Buffer Zone (SNPBZ). This chapter begins with the identification of emergent factors and their consistency based on quantitative and qualitative criteria. The emergent factors are then interpreted based on factor arrays, distinguishing images, crib sheet information and interview data. While using the quotes, care was taken to ensure that no important information was lost while covering a wide range of ideas and opinions. Following the factor interpretation, this chapter also presents the consensus images across the local people Factor groups.

6.1 Identification of the emergent factors among local residents

The Q sort data of 31 local participants were subjected to factor extraction using PCA technique in the PQMethod software developed by Schmolck (2014). The extracted factors' eigenvalues, variance explained, and cumulative percentage of variance explained are presented in Table 6.1.

Table 6.1: Unrotated factor matrix (local residents)

Factor No	Eigenvalues	Variance Explained	Cumulative Percentage of Variance Explained
1	17.93	57.84	57.84
2	1.74	5.60	63.44
3	1.36	4.40	67.84
4	1.28	4.12	71.96
5	1.24	4.01	75.97
6	1.11	3.59	79.56
7	0.90	2.92	82.48
8	0.88	2.84	85.32
9	0.67	2.17	87.49
10	0.64	2.06	89.55
11	0.57	1.83	91.38
12	0.41	1.32	92.7
13	0.40	1.28	93.98
14	0.33	1.07	95.05

Scree Test of Unrotated Factors (Locals)

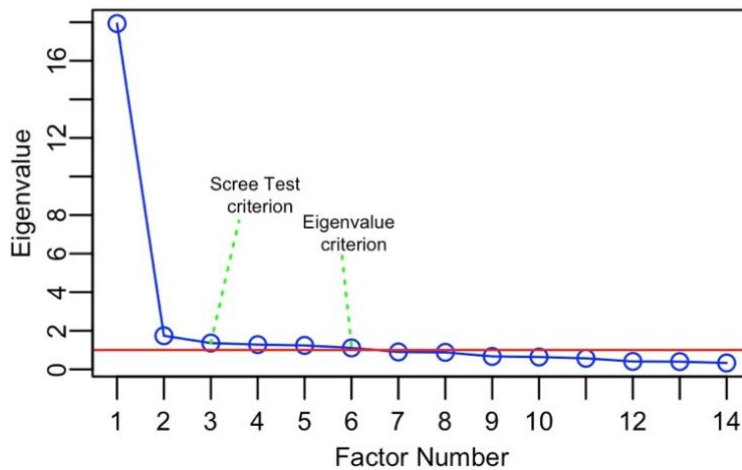


Figure 6.1: Scree Test of locals’ unrotated factor matrix

From the unrotated factor matrix result in Table 6.1, it can be observed that six factors passed the eigenvalue criterion (eigenvalue ≥ 1). However, plotting eigenvalues against Factor numbers indicates that a two factor solution would be suitable as the line in the Scree test flattens from Factor three (see Figure 6.1). As a matter of inquiry, the possibility for more than two factor solutions was tested using varimax rotation. When the data were first tested with a two factor solution, sixteen Q sorts were significantly loaded on either of the factors. Nonetheless, in a three factor solution, only two factors were significantly loaded. When the test was carried out with four factor solution, only fifteen Q sorts had significant loadings on three factors, and one factor was insignificant. Solutions with more than two factors also resulted in a weak factor, having fewer factor loadings. Consequently, it was decided to use the two-factor solution, which emerged as two strong factors upon submission to varimax rotation (see Table 6.3). The two factor solution also satisfied the statistical criteria such as the Eigenvalue criterion (S. R. Brown, 1980; Kim, 1978b; Watts & Stenner, 2012), criterion of two or more significant loadings (S. R. Brown, 1980), percentage of variance criterion, (Hair et al., 2010), and Humphrey’s rule (S. R. Brown, 1980, p. 223), as discussed in Chapter 4. The summary of factor characteristics is presented in Table 6.2.

Table 6.2: Summary of Factor Characteristics

Factors	Factor One	Factor Two
Number of defining Q sorts (Significant loadings)	11	5
Average reliability coefficient	0.8	0.8
Composite Reliability	0.978	0.952
Standard error of factor Z-scores	0.148	0.219
Percentage of Variance explained	35%	28%
Total percent variance explained	63%	

Table 6.3: Rotated Factor matrix of local people with Q sort loading values

SN	Subject ID	Factor One	Factor Two
1	S61 L	0.8647	0.0249
2	S31 L	0.8173	0.3326
3	S12 L	0.7721	0.382
4	S16 L	0.7714	0.3934
5	S25 L	0.7591	0.3965
6	S29 L	0.7436	0.0501
7	S33 L	0.7258	0.2366
8	S6 L	0.699	0.3917
9	S21 L	0.6575	0.4408
10	S59 L	0.6477	0.4606
11	S7 L	0.6129	0.452
12	S24 L	0.2394	0.8288
13	S47 L	0.3709	0.7516
14	S4 L	0.188	0.6935
15	S13 L	0.3371	0.6393
16	S48 L	0.375	0.4992
17	S17 L	<i>0.6901</i>	<i>0.5026</i>
18	S60 L	<i>0.6727</i>	<i>0.499</i>
19	S22 L	<i>0.619</i>	<i>0.498</i>
20	S1 L	<i>0.6095</i>	<i>0.5161</i>
21	S34 L	<i>0.5845</i>	<i>0.5141</i>
22	S18 L	<i>0.5793</i>	<i>0.7054</i>
23	S2 L	<i>0.5656</i>	<i>0.6129</i>
24	S20 L	<i>0.5398</i>	<i>0.6581</i>
25	S49 L	<i>0.5381</i>	<i>0.6014</i>
26	S28 L	<i>0.5227</i>	<i>0.5537</i>
27	S32 L	<i>0.5052</i>	<i>0.5248</i>
28	S19 L	<i>0.4991</i>	<i>0.7721</i>
29	S11 L	<i>0.4856</i>	<i>0.4831</i>
30	S62 L	<i>0.4805</i>	<i>0.5874</i>
31	S3 L	<i>-0.0673</i>	<i>0.4539</i>

Note: **Bold** entries indicate significant loading on respective factors, and *Italics* indicate confounded Q sorts.

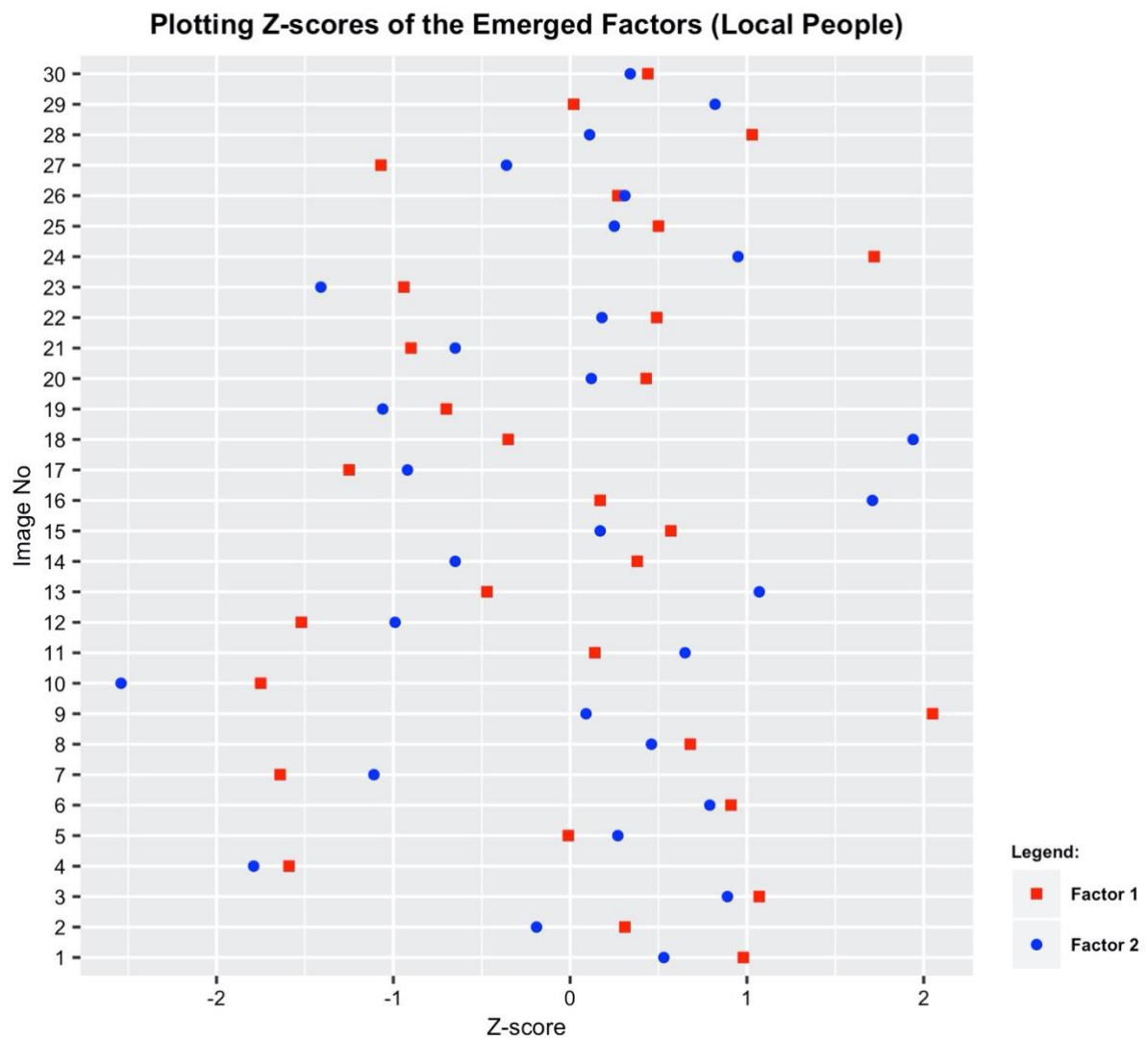


Figure 6.2: Z scores of the two factors

Figure 6.2 presents the Z-scores received by individual images in each of the two factor groups for local residents of SNPBZ. The Z-scores suggest that several images are distinctive in each of the two factor groups. The longer the distance between the positions of an image, the more distinctive the images become and vice versa. Images 9, 10, 13, 14, 16, 18, 24, 27 and 28 are far from each other, so are distinctive. Similarly, several clustered images are in consensus across the two factor groups, such as images 1, 2, 3, 4, 5, 6, 7, 8, 15, 17, 19, 20, 21, 22, 25, 26 and 30 . Those distinctive and consensus images will be discussed further in subsequent sections.

6.2 Local Factor One: recreational enthusiasts

Factor One represents eleven local people (all male) and explains 35% of the study variance. Their ages range from 25 to 45, with an average age of 36 years old. Ten of them come from villages that lie along the trekking route. Five participants in this group are trekking guides, two participants are lodge operators while others are a shopkeeper, an international mountain guide, a writer and a

social worker. Some of them are also involved in secondary occupations, such as trekking guides also working at their lodge when they are not going to trekking. Table 6.4 presents the distinguishing images for local residents associated with Factor One. Their factor interpretation table appears in Appendix A. 4. The representative Q sort is presented in Figure 6.3.

Table 6.4: Distinguishing images for Factor One (local people)

Representative Images	Factor One		Factor two	
	Q sort value	Z-score	Q sort value	Z-score
Image 9	4	2.05*	0	0.09
Image 24	3	1.72*	2	0.95
Image 28	2	1.04*	0	0.11
Image 14	0	0.38*	-1	-0.65
Image 16	0	0.17*	3	1.71
Image 29	0	0.02*	2	0.82
Image 18	-1	-0.35*	4	1.94
Image 13	-1	-0.47*	3	1.07
Image 27	-2	-1.07*	-1	-0.36
Image 12	-2	-1.52	-2	-0.99
Image 7	-3	-1.64	-2	-1.11
Image 10	-4	-1.75*	-4	-2.53

Note: P<0.05; Asterisk (*) indicates significance at P < 0.01

6.2.1 Features liked by Factor One local residents

Local people who cluster on Factor One are characterized by ‘recreational enthusiasts’ who share similar preference to visitors and enjoy the direct use values of cultural ecosystem services. They are the ‘avid’ recreationally active locals who have preferences for ‘local culture with nature’. For them, Gokyo remains the best place to travel due to its scenic views and the quiet environment. Based on their experience, they report that the Gokyo trek is better than the Everest Base Camp trek. Gokyo also contains an important wetland that has been designated as a Ramsar Site. They are also fascinated with the cultural and religious features of SNPBZ such as monasteries, stupas and stone scripts. They identified that traditional household utensils are important to the cultural identity of Sherpa people, and attribute this importance in terms of both culture and history. They are concerned that such cultural assets are becoming rare now. Of the ten comments attracted by this image, six of them actually expressed that they are getting lost now. Monasteries are the public institutions where community people gather to perform rituals and celebrate festivals. Factor One visitors regard that Tengboche monastery is one of the attractions in the Everest region. Monasteries have historical significance in SNPBZ and they are also the schools to learn about the culture and religion. They think that stone scripts are important in terms of tourism, religion, culture and environmental protection. They feel peaceful and joyful while walking by the chortens. The

agricultural lands are also recreationally important for the Factor one local residents. They like the fact that farmlands give a reflection of rural areas where the environment is clean, green and tranquil.

Among the recreational features of SNPBZ, Gokyo Lake stands out as the strongest feature for the Factor one local residents (Image 9: +4).

Image 9: *“Gokyo side has a good view. It is also quieter as compared to the Everest Base Camp side. I think visitors also prefer this side” (Subject 61L). “Last time when I went to Gokyo as a tourist, I felt it so amazing and beautiful. It has got a scenic view. Gokyo [trek] was better to me as compared to base camp [Everest Base Camp trek]” Subject 33L. “This is one of the most beautiful landscapes in Khumbu Valley. We can experience different types of landscapes in Gokyo. You can see beautiful lakes, big glaciers, panoramic view of mountains such as Mt. Everest, Cholatse, Amadablam, Kusum Kanguru and many more. We can also see the lake in different colours, sometimes in blue and sometimes in green. It is also listed as a Ramsar site and one of the important watershed areas. It has five lakes...Gokyo is also the departing point of two important passes in Khumbu: Chola Pass and Renjo Pass” (Subject 6L).*



Figure 6.3: Representative Q sort (Factor Array) of Factor one Local People – 'recreational enthusiasts'

Traditional utensils of a Sherpa home and Buddhist monastery are the second most preferred features (Image 24: +3; Image 3: +3).

Image 24: *“Our traditional utensils of a Sherpa home is slowly getting lost. Now we can see such traditional utensils in very limited homes” (Subject 31L). “It is our cultural asset” (Subject 12L). “It has a lot of old kitchen utensils... It also reflects the trade history of Sherpas. It has the household items that were made locally as well as traded from outside. When I see such tools at nun’s home, at other local’s home or at my own home, it realizes me of the fact that our people make and use such things back in the [old] days. I feel good when I see them” (Subject 33L). “We can hardly see such utensils in modern Sherpa homes. I have tried to collect such traditional utensils in my home. I have also attempted to make new ones with a similar design. It is our identity. It is the identity of Sherpa culture” (Subject 21L).*

Image 3: *“Monastery is regarded as a public institution in our community” (Subject 31L). “Tengboche monastery is one of the famous monasteries in the Everest Region. Historically it is important. Lama Sangwa Dorjee used to meditate here. In that monastery, you can still see his footprint on a rock. The monastery also organizes Manirimdu⁷, one of the important cultural festivals in the region” (Subject 6L). Sherpas are usually interested in Buddhism and without monastery, most of our cultural works remain unfulfilled. Monastery is also the source of learnings about our culture and religion. In Khumbu, it is regarded that the monasteries were already established even before the existence of settlements. So, the monasteries are also our historical features (Subject 21L).*

The stone scripts, Buddhist stupas and agricultural land are the third most preferred features (Image 28: +2; Image 1: +2; Image 6: +2).

Image 28: *“It is our culture, and it looks natural. It also represents that we are protecting our culture” (Subject 61L). . “Our ancestors used to carve scripts on the stones. However, they are disappearing. Now we only print on papers. Foreign visitors also like this kind of stone scripts” (Subject 16L). “It is all mantras scripted on stones. Local people believe that these are very sacred mantras. When you start quarrying stones, the foundation becomes weak, and you get landslide and all those bad things. When you carve mantras on stone, it becomes holy, and no one touches it” (Subject 59L).*

Image 1: *It is a good attraction. Myself being a Buddhist, I feel peaceful when I see such stupas in different places (Subject 31L). I feel joyful when I travel close to them (Subject 25L). I like the structure of stupas. It is a good representation of Buddhism. It also looks like they are well preserved.*

⁷ A colourful festival involving Wong (blessing offered by senior monk), masked dance, entertaining dramas and fire puja. It is an annual festival usually held in November in Tengboche Monastery and in June in Thame monastery.

It also has got stone scripts and prayer flags. It signifies that people are interested in Buddhism and preserving such monuments (Subject 6L).

Image 6: *“It reflects the lifestyle of a countryside. The environment looks clean and tranquil” (Subject 12L). I like agriculture and greenery. It looks green (Subject 25L). One thing that I like about Khumbu is that people are practicing agriculture in such a harsh landscape, and agriculture has been sustaining a lot of people in the region. The village farming also has a kind of beauty in its own right. It has something special (Subject 33L).*

Factor one local people also place high importance on mountain valley, pastureland and forested area (Image 15: +1; Image 25: +1; Image 22: +1) than the Factor two local people.

6.2.2 Disliked features/conditions by Factor one local people

The top six features/conditions that the local people associated with Factor one don't like are solid waste (Image 10: -4), donkeys/mules transporting supplies (Image 7: -3), stray dogs (Image 4: -3), tourist overcrowding during peak season (Image 12: -2), rockfall area (Image 17: -2) and helicopter operating in the National Park area (Image 27: -2).

Among the images that received negative scores, the ones that are disliked more than Factor two local residents are donkeys/mules transporting supplies (Image 7: -3), rockfall area (Image 17: -2), helicopter operating in the National Park area (Image 27: -2), built-up area (Image 13: -1) and Lukla airport (Image 18: -1).

Image 7: *“It is very disturbing in the route. It causes a very unpleasant smell in the trail. It also damages the trail. The minders are also rude to the donkeys. It's so annoying that sometimes we have to wait for 2-3 hours at the suspension bridge because of it. The trails in SNPBZ are mostly on steep slopes. So, it is risky when mules use the same trail as we do” (Subject 61L). “Aesthetically, the donkeys carrying loads does not look good” (Subject 12L). Donkeys are not a traditional mode of transportation for Khumbu” (Subject 29L).*

Image 17: *“We can experience it in many places while walking. Naturally, it does not look good” (Subject 31L). “It looks barren and dangerous” (Subject 29L). “It is one of the worst trails in Everest Base Camp trek. Every time the trail changes. It's kind of glacier” (Subject 6L).*

Image 27: *“In Khumbu, helicopters are allowed to go anywhere, and that's what helicopter operators are doing now...I think mountain flights by helicopters should be banned and should be allowed only for emergency rescue purposes. Sometimes, it starts to disturb from very early in the morning” (Subject 61L). Now people use helicopters even for regular works. It has a lot of negative impacts in*

terms of business and environment. It should be operated in a controlled manner” (Subject 31L). “Now, the number and frequency of commercial helicopters have significantly increased. Visitors walk while going up [in the final trekking destination] but many of them take helicopter while returning. We also have to think about local people’s livelihood, environment and wildlife” (Subject 29L). Recently these helicopters also significantly damaged the reputation of Khumbu [fake rescue]. It is also a symbol of greed” (Subject 33L).

Factor One local residents find the donkey caravans very disturbing on the trail. They also don’t like the way donkeys pollute the trail and the risk donkeys pose while walking on the trails in steep slopes. Unlike Yaks and Jopkeyos, Donkeys in SNPBZ are usually careless of the trail users and the hasty donkey’s load may sometimes push traveler off the trail. They also don’t find the donkeys carrying loads attractive. They also don’t find aesthetic beauty on the rockfall areas. Rather, they find it dangerous and assume that it is one of the worst trails on the way to Everest Base Camp. Even though this group of people understand that helicopters are essential for rescue purposes, they do not like increased commercial helicopter use in SNPBZ and their effects on local business, environment and wildlife. They also don’t like the way helicopters damaged the reputation of Everest Region due to fake rescue scam⁸.

⁸ *The trek operators, guides, hospitals and helicopter companies conspired unneeded rescue operations of trekkers in the Everest Region and bilked millions from the insurance companies. In 2018, Nepal government ordered for detailed investigation of the rescue scam*
<https://www.theguardian.com/world/2018/sep/03/nepal-cracks-down-on-multimillion-dollar-helicopter-rescue-scams>

6.3 Local Factor Two: recreational pragmatist

Factor Two explains 28 percent of the study variance, and five participants are significantly associated with this factor (see Table 6.3). Their ages range from 30 to 48, with an average age of 39. Out of those five participants (Male: 3, Female: 2), four live in trekking route settlements. In terms of occupation, three of the participants are lodge operators, one operates a coffee shop, and one is a trekking guide. They are also engaged in other occupations such as agriculture, climbing guide [mountain], social service and civil service [publicly elected local government member]. Four participants are permanent local residents who are born and grown up in SNPBZ, while one is a migrant from the mid-hills of central Nepal who has been living in SNPBZ for the last seven years and operating a tourist lodge. The distinguishing images for this factor group are presented in Table 6.5, while factor interpretation table is in Appendix A.5, which also presents idealized Q Sort and crib-sheet information. The representative Q sort for local factor two is presented in Figure 6.4.

Table 6.5: Distinguishing images for Factor two (Local people)

Representative Images	Factor One		Factor Two	
	Q sort value	Z-score	Q sort value	Z-score
Image 18	-1	-0.35	4	1.94*
Image 16	0	0.17	3	1.71*
Image 13	-1	-0.47	3	1.07*
Image24	3	1.72	2	0.95*
Image 29	0	0.02	2	0.82*
Image 28	2	1.03	0	0.11*
Image 9	4	2.05	0	0.09*
Image 27	-2	-1.07	-1	0.36*
Image 14	0	0.38	-1	0.65*
Image 12	-2	-1.52	-2	-0.99
Image 7	-3	-1.64	-2	-1.11
Image 10	-4	-1.75	-4	2.54*

Note: P<0.05; Asterisk (*) indicates significance at P < 0.01



Figure 6.4: Representative Q sort (Factor Array) of Factor two local residents – 'recreational pragmatists'

6.3.1 Features liked by Factor Two local residents

Factor two local residents are 'economic pragmatists' who have preferences for 'facilities and infrastructures'. Their recreational preferences are influenced by the importance of recreational features in terms of tourism and local livelihood. Nonetheless, they value the religious and cultural features of the region, irrespective of their importance in terms of tourism and economy. For them, Lukla airport is linked directly with the local economy. Even though people assume that the airport is one of the most dangerous airports in the world, Factor two local residents' interpretation is that Lukla airport is actually the most beautiful and adventurous airport. The airstrip also offers a fast and convenient way to travel. They also feel proud that their homeland is also the home to Mt. Everest, the highest mountain in the world. They believe that SNPBZ is a popular trekking destination because of Mt. Everest. They also report that Mt. Everest has a significant role in improving the local economy. They believe that built-up areas are important as visitors need proper accommodation facility. Factor two participants are worried that traditional utensils are getting scarce now. They believe that the monasteries are essential part of the Sherpa culture and religion where the rituals and religious ceremonies are performed. Given that SNPBZ has many rivers and streams, Factor two local residents consider that bridges are essential infrastructure for travelling.

Lukla airport (Tenzing Hillary airport) is most preferred by the Factor two local residents (Image 18: +4).

Image 18: "We do not have road access. Our economy is so much dependent upon tourism. Most of the visitors come by aeroplane. If the airport is closed, we do not receive guests" (Subject 24L). "People say this airport is the most dangerous airport, but I think it is the most beautiful and adventurous airport in the world" (Subject 48L). "It is an easy and quick way to travel" (Subject 47L). "If we go to Kathmandu on foot, it takes several days" (Subject 24L).

Mt. Everest and built-up area are the second most preferred features for the Factor two local residents (Image 16:+3; Image 13: +3).

Image 16: "Majority of the visitors come to our place to see Everest. Trekking in Khumbu is famous because of Everest" (Subject 24L). "Visitors mostly come here [SNPBZ] to see Everest and the economy of Khumbu [SNPBZ] has improved a lot because of Everest" (Subject 47L). "it is the highest mountain in the world, and it is in our place" (Subject 13L).

Image 13: We need proper accommodation facility for the visitors (Subject 24L). It's good to have this kind of settlement with good looking houses. It is called as Yul Chyau [settlement established]. It has also got variety of facilities (Subject 47L).

Traditional utensils of a Sherpa home, Buddhist monastery and suspension bridge are the third best features for the local people associated with Factor two (Image 24: +2; Image 3: +2; Image 29: +2).

Image 24: "They [traditional utensils of a Sherpa home] are getting rare now. We can hardly see such kind of traditional kitchen utensils in modern houses" (Subject 4L). "They [traditional utensils of a Sherpa home] are important in Sherpa culture" (Subject 13L).

Image 3: "In Khumbu [SNPBZ], majority of the local residents are Sherpas who are Buddhists. Monastery is the main place for religious ceremonies. Tourists who visit here are also interested in monasteries. So, it is very important for us" (Subject 24L). "Monasteries are very important in Sherpa culture. We perform rituals, public ceremonies and various other religious events in the monastery" (Subject 47L).

Image 29: "It would be very difficult to travel if there is no suspension bridge to cross the rivers" (Subject 24L).

Other than the top six preferred images, Factor two local residents also put higher values on Holy mountain (Image 11: +1) than the Factor one local residents.

6.3.2 Disliked features/conditions by Factor two local residents

For the local residents associated with Factor two, the top six disliked images are solid waste (Image 10:-4), stray dogs (Image 4: -3), degraded trail (Image 23: -3), donkeys/mules transporting supplies (Image 7: -2), porters carrying loads (Image 19:-2) and tourist overcrowding (Image 12: -2).

Among the negatively scored images by Factor two local residents, the images that received lower scores than in Factor one local residents are degraded trail (Image 23: -3), porters carrying loads (Image 19:-2) and alpine forest walkway (Image 14: -1).

Image 23: It is a dusty trail (Subject 24L). "The trail has not been properly taken care of" (Subject 13L).

Image 19: I wonder why they have to carry loads in their lives, and I feel pity.

The local residents associated with Factor two do not like the degraded trails as such trails are not well taken care of and dusty. Factor two local residents also feel pity when they see porters carrying loads.

6.4 Consensus images

Table 6.6: Consensus images among two emerged factors out of local participants

Image No.	Image Title	Factor One		Factor Two	
		Q sort score	Z score	Q sort score	Z score
1*	Buddhist stupas	2	0.976	1	0.534
2*	Yak transporting supplies	0	0.313	-1	-0.186
3*	Buddhist monastery	3	1.074	2	0.888
4*	Stray dogs	-3	-1.585	-3	-1.793
5*	Mountaineering	0	-0.006	0	0.267
6*	Agricultural land	2	0.91	1	0.789
7	Donkeys/Mules transporting supplies	-3	-1.64	-2	-1.11
8*	Bird watching	1	0.681	1	0.464
11*	Holy mountain	0	0.142	1	0.648
12	Tourist overcrowding during peak season	-2	-1.52	-2	-0.99
15*	High mountain valley	1	0.568	0	0.174
17*	Rockfall area	-2	-1.254	-1	-0.916
19*	Porters carrying loads	-1	-0.699	-2	-1.062
20*	High altitude trail	0	0.434	0	0.116
21*	Glacier	-1	-0.9	-1	-0.646
22*	Forested area	1	0.492	0	0.184
23*	Degraded trail	-1	-0.94	-3	-1.412
25*	Pastureland	1	0.501	0	0.246
26*	Deep valley	0	0.271	0	0.308
30*	Wildlife watching	1	0.439	1	0.336

Note: All listed statements are non-significant at $P > .01$, and those flagged with an * are also non-significant at $P > .05$.

Among the two factor groups representing the local residents, they have 20 consensus images which account for 66.6% of the total images (see Table 6.6). Local people in both factor groups like the Buddhist Stupas (Image 1: Factor one; +2 and Factor two; +1) and monasteries (Image 3: Factor one; +3 and Factor two; +2).

Participants in Factor one and Factor two also like agricultural lands (Image 6: Factor one; +2 and Factor two; +1). They also like wildlife observation activities such as bird watching (Image 8: Factor one; +1 and Factor two; +1) and wildlife watching (Image 30: Factor one; +1 and Factor two; +1).

Both factor groupings have neutral opinions about mountaineering (Image 5: Factor one; 0 and Factor two; 0), the high altitude trail (Image 20: Factor one; 0 and Factor two; 0) and deep valley

(Image 30: Factor one; 0 and Factor two; 0). Many images have neutral value in one factor and near-neutral value in another factor, indicating that they are still slightly away from having 100% consensus among the two factor groups. Such images include Yak transporting supplies (Image 2: Factor one; 0 and Factor two; -1), holy mountain (Image 11: Factor one; 0 and Factor two; 1), high mountain valley (Image 15: Factor one; 1 and Factor two; 0), forested area (Image 22: Factor one; 1 and Factor two; 0) and pastureland (Image 25: Factor one; +1 and Factor two; 0).

The consensus images which are ranked at the extreme six positions by the two factor groups and not discussed in previous sections are reported below.

Neither of the local resident factor groups like stray dogs in SNPBZ (Image 4: Factor one; -3 and Factor two; -3). The local residents report that the stray dogs are problematic in SNPBZ. They suggest that the concerned authorities should take initiatives to control those stray dogs.

Factor one-Image 4: "In Sagarmatha National Park, we have a lot of this kind of stray dogs. They [stray dogs] follow the visitors and disturb them, but we cannot beat them [stray dogs] in front of visitors. It also creates a problem for the wildlife" (Subject 61L). "Some of them even bite, especially around Labuche⁹...In Namche, it is risky to walk during night time as we fear that the dogs bite. These dogs usually attack people who do not look good and tidy" (Subject 25L). Factor two-Image 4: "This kind of stray dogs pollute a lot. They disperse the body parts of dead animals in the forest. They also damage the crops (Subject 24L). "Dogs should not be unattended like this. The concerned authorities should take initiatives to control those dogs" (Subject 4L). Now so many dogs have come in Khumbu. We feel unsafe to walk during night time in Lukla (Subject 48L).

The local participants associated with Factor one and Factor two also do not like seasonal tourist overcrowding during the peak trekking season (Image 12: Factor one; -2 and Factor two; -2).

Image 12-Factor one: "It takes too long to get through the queue during peak trekking season. It is very troublesome. Sometimes we have to wait for 1-2 hours" (Subject 61L). "It looks like people gathering for protest. It is the ill management of the national park..." (Subject 29L). "Overcrowding is an ever-increasing problem. If it continues to increase, it will come up with many more challenges such as crowd management, increased environmental impacts and risk of losing reputation" (Subject 33L). Image 12-Factor two: "They [National Park management] make the house looking like a monastery, but do not provide a good service. Sometimes we have to wait in a queue for up to three hours." (Subject 47L). "We [local government] found that tourists also have given written complaints in this regard [having to wait for a long time in queue for the entry permit]. We must manage it now" (Subject 48L).

⁹ A village close to Everest Base Camp

6.5 Chapter summary

From the analysis of the recreational preferences of local residents, two significant factors emerged. Factor One has significant association of eleven local residents and explains 35 % of the study variance. They are 'recreational enthusiasts' who have preferences for 'local culture with nature'. Factor two constructs over significant association of five local residents and explains 28 % of the study variance. They are 'economic pragmatists' who have preferences for 'facilities and infrastructure'. Both the Factor One and Factor Two local residents also have consensus on their preferences to several features/conditions, especially on the issues that compromise the trekking experience in SNPBZ such as seasonal overcrowding, problems with the donkeys and stray dogs.

The next chapter presents the discussion of this research.

Chapter 7

Discussion

The main focus of this research was to study international visitors' preferences of the recreational features in Sagarmatha National Park and Buffer Zone (SNPBZ). Subsequently, the study was extended to include local residents also to understand their recreational preferences. Section 7.1 interprets the emerged factors or preference patterns across international visitors. Section 7.2 draws the likelihood of preferences by the factor groups among the visitors to natural features, cultural features, visitor activity, local livelihood and positive tourism consequences in SNPBZ. Section 7.3 then focuses on local residents, and summarizes and interprets the two distinct factors that emerged from their analysis of recreational preferences in SNPBZ. Section 7.4 identifies the distinctions between visitors and local residents by using the positively preferred image sets. Section 7.5 discusses the key issues that were identified as 'reputational risks' to the study area in terms of its role as a tourist destination.

7.1 Interpretation of the visitor factors

A significant proportion of visitors associated with Factor one have a strong fascination with the 'scenic' views of the towering mountain landscapes. Factor three visitors also report that Mt. Everest is the 'most prominent symbol' in SNPBZ. These findings confirm the common view that Mt. Everest and other mountains are the jewels of SNPBZ that draw thousands of visitors worldwide every year. In agreement with the preferences of Factor one visitors, the literature (Kariel & Draper, 1992; MEA, 2005a; Sanjay K Nepal & Chipeniuk, 2005) suggests that scenic natural landscapes are major factors that attract visitors to mountain regions. Nevertheless, the emergence of three distinct factors suggests that visitors make their way to SNPBZ not just to see Mt. Everest and mountain scenery but also to experience the local Sherpa culture and livelihoods.

Everest Base Camp trek is ranked among the top ten trekking destinations in the world (Lonely Planet, 2020a). Nonetheless, the ranking of image 15 - *High mountain valley* ahead of Image 16- *Mt. Everest* by Factor one indicates that many of the classic visitors actually enjoy the en-route scenery of the stunning mountain ranges more than the visual image of the final destination per se. One of the reasons may be the comparatively higher number of days that the visitors spend walking along the trekking route than in the final destination, that enables the visitors with significant time to experience a variety of scenery en route. During the field visit for data collection, the author experienced that visitors spend a very short time, usually less than an hour in their ultimate destination, the Everest Base Camp, whereas, they dedicate several days to getting there. Similarly,

en-route scenery in SNPBZ is also complemented by the mosaic of cultural features, agricultural lands and wildlife, that leads to the creation of a 'living landscape'.

Tourism activity in SNPBZ almost ceases during the months of June-July, the off-season. Nonetheless, from the experience of Factor two visitors, it is apparent that travelling during the off-season can actually bring much enjoyment and recreational experiences associated with culture and nature. Unlike during the peak trekking season, visitors also do not have to compete to get accommodation. Often times, they find a quiet environment in the lodges with just a few visitors. The literature (e.g. Baral et al., 2017; L. N. Sherpa et al., 2006; Skog, 2010; SNP, 2016; UNESCO, April 2019; Vincanne, 1992) suggests that in addition to scenic natural landscapes, Sherpa culture is also an important feature for visitors in SNPBZ. However, during the peak trekking season, local Sherpas have a busy life as they get heavily engaged with tourism businesses in different forms, such as operating lodges and tea houses, guiding visitors, and supplying vegetables to the hotels and lodges along the trekking route. During that time, local people usually set aside the major cultural and religious festivals. Thus, the visitors may have only limited opportunity to engage with the local people and experience many of the cultural and religious ceremonies that are actually the colourful parts of Sherpa culture. Off-season is the time when the local people are more social and celebrate religious and cultural events such as *Dumji*¹⁰ and Manirimdu. Travelling during the off-season can actually provide visitors with some of the most meaningful wilderness experiences with a lush green environment, while avoiding tourist overcrowding and enjoying the diversity of local cultures. As reported in the results chapter, Factor two visitors also found the local people "nice and welcoming" (Subject 55V) when they attended a religious ceremony in a village. Visitors might not get this kind of cultural experience with the same level of warmth and hospitality from the local people during the 'peak' trekking season. Given that tourism is the major drivers of economy in the region (L. N. Sherpa et al., 2006), local people might also be in favour of promoting off-season tourism as long as visitor numbers do not compromise cultural ecosystem service values of the region.

Local residents and visitors suggest that there are notable changes in trekking trends in SNPBZ. It is reported that increasing number of visitors use helicopters to come back to Lukla or to fly all the way back to Kathmandu after trekking to the final destination (Subject 29L). Visitors are also reported to go for a helicopter tour to Everest Base Camp or Kalapatthar (Subject 26V). There are also several tour operators who organize helicopter tours with 'breakfast' in the Everest Region (Lonely Planet, 2020b; Trekguiders, 2020; Tripadvisor, 2020). Shifting trends in conventional trekking to such directions, and park management and local authority's inattention may lead to unsustainable tourism development, which may jeopardize cultural ecosystem service values and local livelihoods.

¹⁰ A festival of masked dance performed by Buddhist monks and organized by local people. In SNPBZ, it is celebrated across all the major settlements such as Pharak, Namche, Khumjung, Thame and Pangboche.

On the other hand, flying commercial helicopters also impact the trekking experience of passionate trekkers in multiple ways, such as noise disturbance and distractions (Subject 26V). It also impacts the national park wildlife. In a similar context, Annapurna Rural Municipality [local government] banned operations of commercial helicopter flights to Annapurna Base Camp in February 2020, except for rescues purposes as they realized negative implications of such flights on local tourism and environment (The Kathmandu Post, 2020).

7.2 Likelihood of recreational preference by visitors

The likelihood of preference by a different group of visitors to various recreational features was derived from the list of liked images and their ranks in the associated factor arrays (see Appendix D. 1).

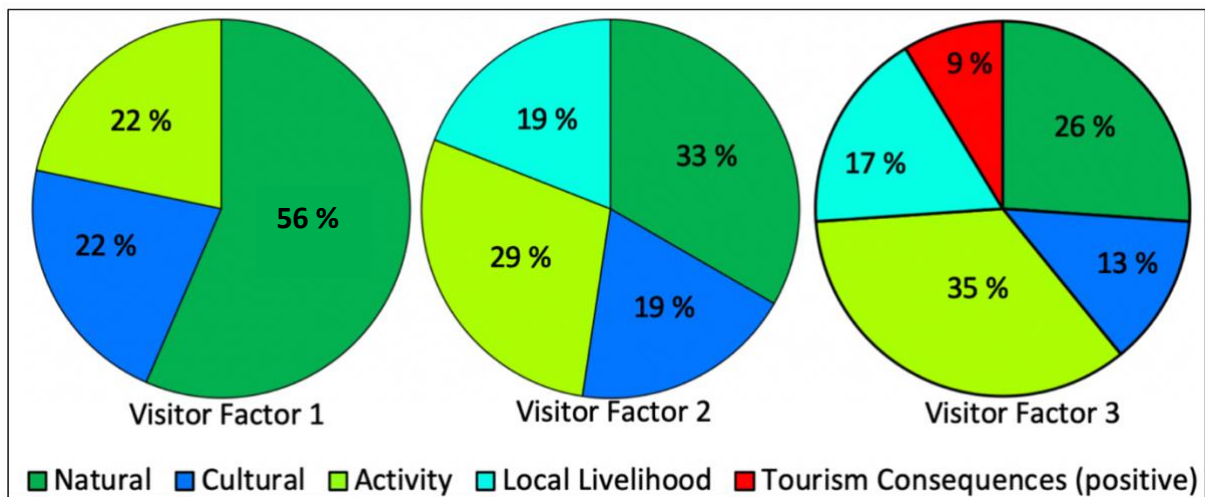


Figure 7.1: Likelihood of preference by different types of visitors

Figure 7.1 suggests that natural landscapes, cultural features and visitor activities are preferred by all the visitors travelling to SNPBZ. More specifically, visitors associated with Factor one have a firm preference for natural landscapes as the likelihood of recreational preference is around 56%. Here, the natural features include attractions such as high mountain valley, Gokyo Lake and Mt. Everest. On the other hand, these visitors do not like development infrastructure such as built-up areas and the airport. So it can be argued that Factor one visitors' recreational preference depends upon landscape naturalness.

Respondents who align with Factor two are not only fascinated by the natural landscapes, cultural features and visitor activities, but also by the local livelihoods such as agriculture and the use of yaks as a pack animal. The positive preference by visitors for livelihood options like agriculture suggests that the local livelihood practices in the rural mountains can actually enhance the recreational experience of the visitors. A study by Casado-Arzuaga, Onaindia, Madariaga, and Verburg (2014) in

northern Spain also found that countryside landscapes having rural activities such as crops and livestock, especially together with the farmhouse, had more aesthetic values compared to landscapes that do not have such activities.

Factor three visitors identified as 'freedom finders' have the highest preferences for visitor activities followed by natural features and local livelihoods. While some visitors in this group also have developed emotional attachment with the region, they also respond positively to the positive consequences of tourism such as development of infrastructure and facilities.

7.3 Local people

In terms of tourism planning and management implications, it is essential to understand the perspectives of local people. Local communities are the key stakeholders in the 'hospitality atmosphere' of a tourist destination, while the effects of tourism are also felt most acutely in the destination area (Simmons, 1994). Therefore, local people were also included in analysis.

7.3.1 Interpretation of the local people factors

The recreational preferences of the local people associated with Factor one indicate that many local residents also enjoy the direct use values of cultural ecosystem services that are provided by the environs of their home town. A study by Baniya and Paudel (2016) found that escape from daily life, sightseeing and seeking relaxation are the top motivations for domestic travel in Nepal. In SNPBZ, the improvement of local economy, increase in literacy rates and diversification of employment opportunities (L. N. Sherpa et al., 2006) may also have further contributed to motivations for recreational travel among the local residents.

The preference patterns of the local residents associated with Factor two and the reasons they prefer such images indicates that their recreational preferences are influenced by the associated economic values in terms of local livelihoods and their adoption of visitor's preferences. They assign higher recreational value to a feature if the associated economic importance is higher in terms of tourism and local livelihood. For instance, they choose Lukla airport as the most preferred feature since they assume that the airport serves as a gateway for the visitors in SNPBZ. Even though mountains are an everyday reality for the local Sherpas (Beza, 2010), local participants in Factor two choose Mt. Everest as the second best feature because they believe that trekking in SNPBZ is 'famous' due to Mt. Everest.

Even though the cultural properties of SNPBZ also have tourism values, preferences of the local communities for cultural features such as traditional home utensils, monasteries and stupas are independent of the associated economic values. The local people's quick and united response to

rebuild the monasteries in the aftermath of the devastating Nepal earthquake in 2015 (P. Y. Sherpa, 2017) also indicates their reverence for cultural heritage. Monasteries are at the very core of Sherpa people's religious practices, where the spiritual principals of Buddhism are kept alight (Sestini & Somigli, 1978). Rich cultural features of Sherpa people in SNPBZ who are indigenous to the region can actually give an added identity of 'cultural heritage' to Sagarmatha National Park and its environs.

Although local people adore the local culture, it is apparent from the comments attracted by image 24 - *traditional utensils in a Sherpa home* that such inherited cultural features continue to disappear in SNPBZ. The modern homes in SNPBZ hardly use such traditional utensils. They are being replaced by mass produced industrial utensils. For instance, *Dongmu* (a wooden tea mixer) is now ousted by a blender. On a similar note, with the advancement in the tourism sector, traditional Sherpa architecture has been almost entirely abandoned in newly constructed houses. Modern concrete buildings are becoming increasingly visible, while traditional Sherpa homes continue to disappear. For instance, image 13 (Namche Bazar) depicts a built-up area, where a lot of such concrete buildings can be observed. When Namche Bazar (image 13 in this study) is observed in repeat photography (A. Byers, 2005), a significant transformation in the building styles is visible. Rapid and uncontrolled development of modern houses continues to compromise the visual quality of SNPBZ landscape that has negative implications in terms of recreational value.

7.4 Distinctions among visitors and local people in terms of positive scoring images

Relationships between positively preferred images for the emerged factors for visitors and local people are depicted in a Venn Diagram in Figure 7.2. There are specific distinctions among preference patterns of the groups, except the Buddhist stupa (image 1), which is positively preferred by every factor groups.

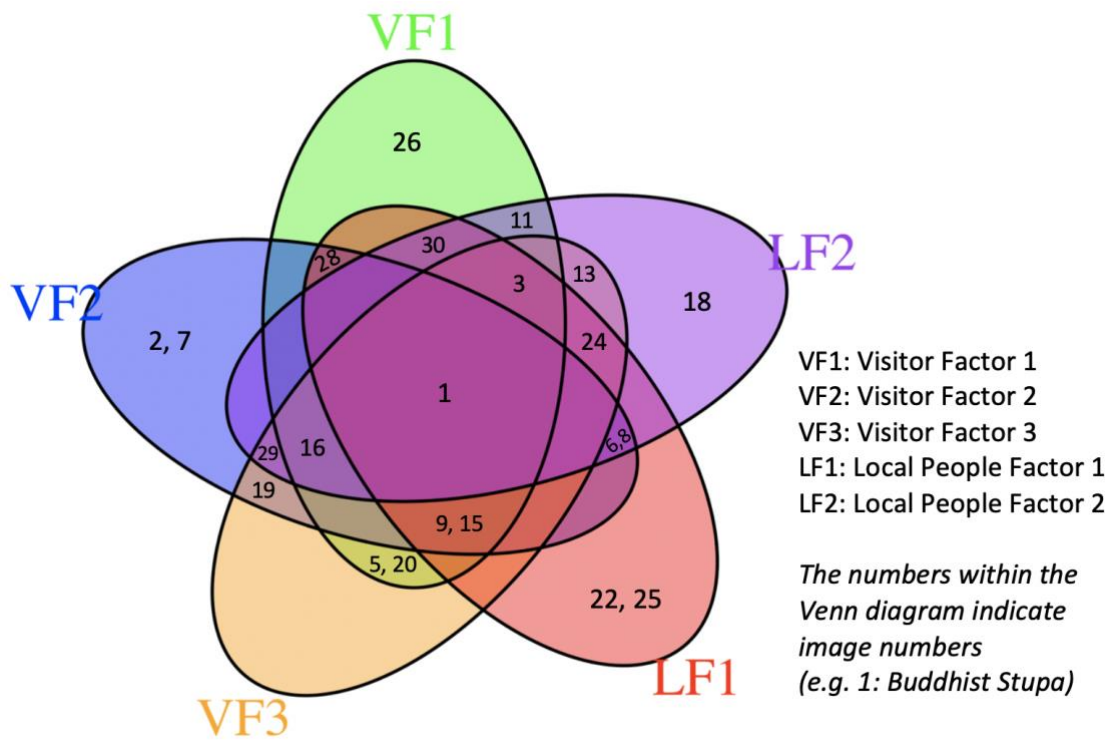


Figure 7.2: Liked images by factor groups among visitors and local people



Figure 7.3: Buddhist stupa in Thame village of SNPBZ (image 1 in this study)

Visitors factor one is the only factor that likes deep valley (Image 26), which again depicts their preferences for 'scenic and wild' nature. While visitors of Factor one and Factor three, and the local residents have no positive interest in Image 2- *yak transporting supplies* and image 7- *donkey/mule transporting supplies*, the positive preference by the Factor two visitors to such images further reflects their interests in the local livelihoods.

Even though there is no (single) image, which is exclusively liked by Factor three visitors, the factor itself is unique as it demonstrates specific distinctions from Factor one and Factor two visitors as well as from the local people. For instance, image 13-*built up area* and 24-*traditional utensils in a Sherpa home* that the Factor two visitors like are not positively preferred by other visitor groups and again, image 19-*porter carrying loads*, 5-*mountaineering* and 20-*high altitude trail* that the Factor three visitors like are not liked by the two factors that represent local people.

Local people associated with Factor one exclusively like the forested area (image 22) and pasture land (image 25). The exclusive preference of Factor two local people to Lukla airport (image 18) makes this factor distinct from rest of the factor groups and supports for the assumption that Factor two local residents are 'pragmatic' recreationists who associate recreation with local livelihoods.

7.5 Reputational risk and its implication on visitor experience

While tourism development has brought about many positive changes in SNPBZ, it has also brought about many negative consequences. During the post Q-sort interviews, most of the negatively scored images (such as stray dogs, donkeys/mules, seasonal overcrowding and trail degradation) were explained as issues that have direct or indirect impacts on the recreational experience of visitors to SNPBZ. What is more important, is that there is strong consensus among visitors and locals of common problems arising from tourism development. These problems in turn are interpreted as 'reputational risks' to SNPBZ, which may tarnish its image as a popular tourist destination.

Figure 7.4 presents the negatively scored images by both visitor and local factor groupings. For instance, images 10 (solid waste), 12 (tourist overcrowding), 23 (degraded trail), 17 (Rockfall area) and 27 (helicopter operating in national park area) received a negative score across all the five factors. Likewise, image 7 (donkeys/mules transporting supplies) and 4 (stray dogs) received a negative score in all factor groups except visitor - Factor two, and so on.

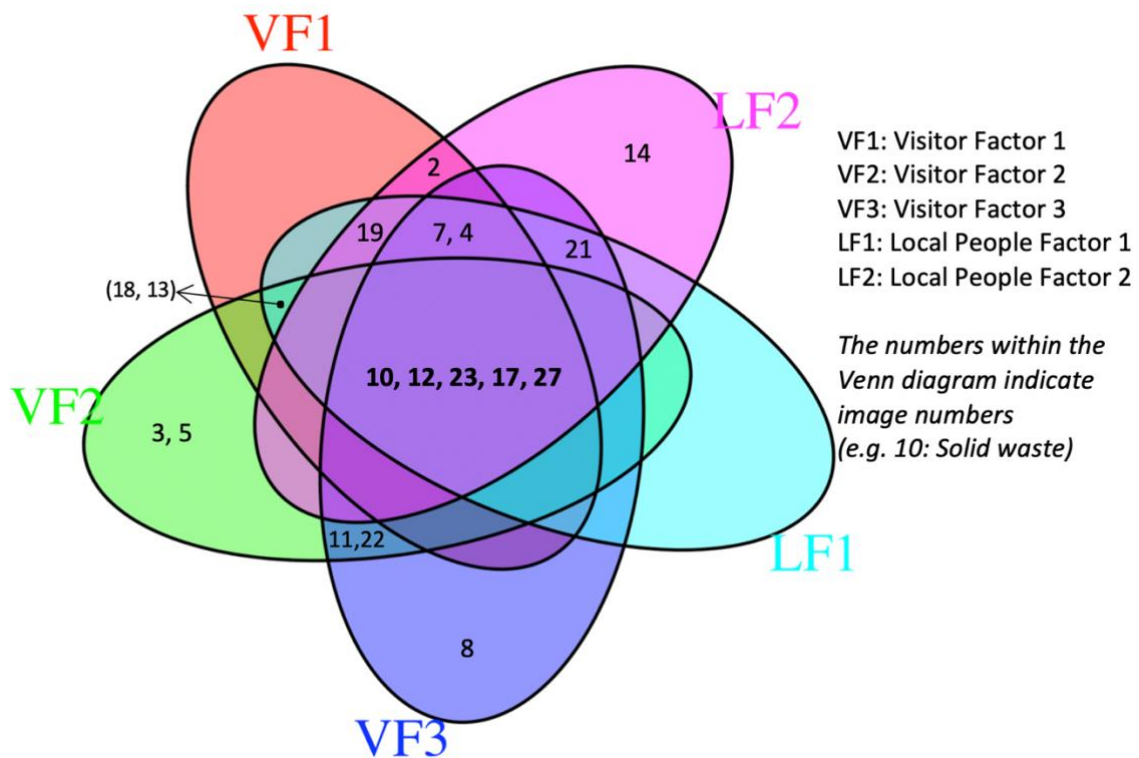


Figure 7.4: Disliked images by visitors and local people

An in-depth discussion on the issues concerning tourism and recreation in SNPBZ (including the negatively scored images) deserves a deeper understanding and warrants attention as a subsequent standalone study. Notwithstanding, the major contemporary issues, which the author identifies as reputational risks to SNPBZ, are discussed below in an indicative form. These discussions are mostly based on comments received from visitors and local people on the negatively scored images as reported in Chapter 5 and 6.

7.5.1 Seasonal overcrowding (image 12)

High seasonality accompanied by overcrowding is one of the major problems with tourism in SNPBZ which has led to congestion of visitors in tourist checkpoints, bridges and narrow trails. Overcrowding takes away the visitor’s feelings of serenity and wilderness. During the peak season, visitors also have to compete for accommodation, especially in areas where there are limited lodges. The crowding problem in the park was first observed during the peak seasons of 1999 and 2000 (L. N. Sherpa et al., 2006). This problem continues to grow to date with no restriction on the flow of visitors. An often overlooked factor in terms of visitors’ impact in SBPBZ is the “visitor days per year” while each visitor spends 12 days on average (Jefferies, 2016, p. 10). Based on visitor days per year, it appears that visitors spent an estimated 692,748 days in SNPBZ in 2018 as 57,729 visitors travelled that year (Data source: Sagarmatha National Park – see Figure 3.3 in Chapter 3). Thus, increase in visitor number also may have significant effects on environmental health and tourism sustainability.

7.5.2 Operation of commercial helicopters in national park (image 27)

Over the years, with growth in the tourism sector, there has been a significant increase in the use of commercial helicopters in Sagarmatha National Park and its buffer zone area. Sometimes, the helicopters start to operate as early as 6:30 am and continue more or less the whole day, especially during the peak season (Subject 30V). The commercial use of helicopters has become so frequent that visitors sometimes call helicopters a 'taxi' in the Everest Region.

Due to geographical difficulty and remoteness, the use of helicopters for search and rescue operations and emergency purposes is understandable, and is essential for ensuring visitors feel safe (Subject 30V). However, some visitors in SNPBZ use helicopter as a means of transportation (Subject 37V, Subject 29L). Increase in such non-rescue operations of helicopter impacts the local business, environment and wildlife (Subject 29L). Local trekking guides also comment that visitors get 'demotivated' to walk when they see helicopters flying overhead. Sagarmatha National Park is a world heritage site under criterion VII "to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance". The harsh noise and visual effect caused by the unrestricted use of helicopters impairs the "aesthetic importance" component of the Park (Jefferies, 2016, p. 9).

7.5.3 Degraded trails (image 23)

Degraded trails were identified as another problem that visitors experience in SNPBZ. A. Byers (2005) and Sanjay K Nepal (2002) suggest that uncontrolled tourism development has brought about the degradation of the trails in SNPBZ, causing soil erosion. In recent years, there has been a significant increase in the number of visitors and pack animals, leading to an increase in the use of trails. Since degraded trails make walking unsafe and compromises the naturalness of landscapes, such trails understandably generate negative effects on visitor experience (Leung & Marion, 1996).

7.5.4 Problems with solid waste (image 10)

Most of the visitors and local people in this study were concerned about the solid waste problems and their implications on the visual quality and naturalness of the landscapes. Uncontrolled tourism development has brought about the increased accumulation of solid wastes in SNPBZ (Manfredi et al., 2010; Posch, 2013). The underlying challenges associated with waste in SNPBZ include the management of such wastes at different sites such as in the settlements, along the trekking trails, in the mountains and on the disposal sites. Waste generation continues to increase every year in parallel with visitor numbers. Even though the trekking trails are somehow clean and well managed now with installed rubbish bins, there are dozens of open landfill sites throughout the settlements in the National Park, and some of them are very close to the trekking trail and easily visible when

visitors stroll around. There are for example, landfill sites in Thukla¹¹ and Gorakshep¹². Often times, strong winds scatter the light wastes, such as plastics and papers, from these open landfills.

Each year, hundreds of climbers summit Mt. Everest and other mountains, but the problem is that they do not bring their waste back (Hickok, 2018) even though they are required to do so (SPCC, February 2020). In the recent years, especially after the decentralized local government was formed for the first time in Nepal in 2017, significant initiatives have been launched to minimize solid wastes in SNPBZ. In 2018, SPCC signed an agreement with Tara airlines to airlift waste materials from SNPBZ to Kathmandu for free (Nepal Times, March 2018). A 45 day Mt. Everest mega cleaning campaign was organized by the Nepal government in 2018, in a first of its kind, and over 10 tonnes of waste was pulled off Mt. Everest (The Himalayan Times, May 2019). In 2019, SPCC and its partner organization launched the 'carry me back' initiative, whereby visitors voluntarily take wastes packed in small pouches back to Kathmandu (Subject 31L).

7.5.5 Use of donkeys/mules along the trekking trail (image 7)

The use of Donkeys/mules in SNPBZ was started around a decade ago to cope with the growing demand for goods and supplies as tourism continued to grow in the region. Unlike Yaks and Jopkiyok¹³, donkeys and mules are neither native nor traditionally used pack animals of the Everest region. The increase in the number and use of donkeys and mules has caused congestion, pollution and destruction of the trekking trails. Sometimes, the 'donkey caravan', especially during the peak trekking season makes visitors wait for more than an hour at the bridges (Subject 61L). There are also reported issues of visitors who have fallen off the trail due to donkeys (Subject 24L), which has raised a serious question in terms of visitors' safety. What makes the trekking in SNPBZ awful is the mule trains that carry loads all the way from Kharikhola to Namche (A. C. Byers, October 2019). Further, donkeys/mules are also reported to suffer from pain and physical injuries due to the reckless and compassionless behaviour of the herders (Subject 33L).

7.5.6 Stray dogs (image 4)

Stray dogs have put pressure on the local environment and livelihoods and present risks to wildlife (Subject 24L, Subject 61L). Subject 61L, a local trekking guide also suggests that stray dogs follow visitors and disturb them. A potential danger is that if such dogs make 'significant behaviour changes' and become aggressive to visitors and local people. Subject 24L, a local female participant who owns a tourist lodge and agricultural land, commented that once the stray dog gets the taste of wildlife blood, it becomes aggressive and attacks domestic animals, especially calves. Local people suggest

¹¹ A small settlement on the way to Everest Base Camp

¹² Last settlement before Everest Base Camp

¹³ A breed between Yak and Cow

that stray dogs are usually introduced from the settlements below SNPBZ when they follow visitors coming to SNPBZ.

7.6 Chapter summary

This chapter discussed the key preference patterns (factor groupings) that were identified among the visitors and local residents in terms of their recreational preferences. From these, the images that were disliked in common by visitors and local residents were also highlighted and discussed.

SNPBZ offers a wide range of recreational services that can be experienced by various visitors with varied interests. Mt. Everest and scenery of the towering mountain ranges are still the compelling jewels of SNPBZ in terms of attracting global visitors. Nonetheless, many other visitors find the local Sherpa culture and their livelihoods fascinating.

In the light of a high seasonality of visitor flows, the experience attributes identified within Factor two visitors suggests that the off-season is also a good time to travel to SNPBZ for some visitors who might seek a deeper experience of Sherpa culture and nature while avoiding tourist overcrowding. While natural features, cultural features and a range of visitor activities are preferred by all the visitors travelling to SNPBZ, the natural features in general have the highest weight in terms of visitor's recreational preferences.

While tourism has brought about many positive changes, it has also brought about negative repercussions that deteriorate the ecosystem service values of SNPBZ. The major issues include seasonal tourist overcrowding, excessive operation of commercial helicopters in National Park, degraded trails, problems with solid waste, use of donkeys/ mules along the trekking trail and the stray dogs. What this analysis does highlight is that while there are clear distinctions among the emerged factors in terms of positive preferences, there remains high degree of commonality in terms of negative preferences.

Chapter 8

Conclusion

This study has analysed the recreational preferences of foreign visitors and local residents to cultural ecosystem services provided by Sagarmatha (Mt. Everest) National Park and Buffer Zone (SNPBZ). This final chapter summarises key study findings, discusses the study limitations, provides recommendations for the concerned key stakeholders and makes suggestions for further studies.

8.1 Summarising the key findings

The key findings are summarised as followings.

- I. The recreational preferences to cultural ecosystem services provided by SNPBZ varies across visitor groups. Three distinct types of visitors have been identified:
 - ‘Superlative scenery seekers’ who have preferences for ‘wild and scenic nature’,
 - ‘Culturally curious visitors’ who have preferences for ‘culture within nature’,
 - ‘Freedom finders’ who have preferences for ‘mountains as a space for freedom’.
- II. Visitors travel to the mountain regions not only to enjoy scenic views but also to experience exotic local cultures, and to find freedom and peace of mind.
- III. There are two distinct groups of local people in terms of recreational preferences:
 - ‘Recreational enthusiasts’ who have preferences for ‘local culture with nature’,
 - ‘Recreational pragmatists’ who have preferences for ‘facilities and infrastructure’.
- IV. The iconic Mt. Everest and other towering mountains are still core visitor’ drawcards.
- V. In addition to natural landscapes and cultural features, local livelihoods such as agriculture and the use of yaks to transport supplies also fascinate many visitors travelling to SNPBZ.
- VI. Mt. Everest is the most prominent symbol in SNPBZ. Nonetheless, most of the visitors actually enjoy the collective en-route sceneries more than the view of Mt. Everest itself.
- VII. Travelling to SNPBZ during the off-season can provide visitors with an authentic wilderness experience while avoiding tourist overcrowding and enjoying the local culture, natural

features and the lush green environment of the monsoon. Indeed, visitors who are aware of the seasonality problem in SNPBZ were found to travel during the off-season. They were also found to have an enriched experience of the local Sherpa culture and religious ceremonies.

8.2 Study limitations

The number of images used in this study may not represent all relevant features of the study area. In an attempt to address this limitation, five sampling frames were constructed, and a set of thirty images was selected, broadly representing the recreational features of the study area. Even though more images could have been used for broader representation, it would have demanded significant time from the research participants. More images also demand significant space for ranking them in Q sort format as the standard size of the printed image used for Q sort was 150mm x 100mm. If the size of printed image was reduced, less space is required but it also makes the participants difficult to interpret the images.

The images used in this study may not cover the entire spatial and temporal dimensions of the region's recreational features. Also, the images may have different views according to viewpoint locations. For instance, image 15 (high mountain valley) may have different views from different viewpoints and the image does not capture the entire landscape. To address such limitations, the images were taken from the spots along the walking trail which visitors usually use as a photographic viewpoint. Furthermore, research participants were informed that the images were used as a representation of recreational features in the study area and not to judge based on the image quality. As a temporal limitation, the images do not reflect the seasonal variations of the landscape views. For instance, Image 9 (Gokyo Lake) that was taken in May (summer season) can have a snow cover view during December (winter season) which may influence visitor's preferences.

8.3 Recommendations

The following sections provide management recommendations and research recommendations.

8.3.1 Management recommendations

Most of the visitors travel to SNPBZ during peak season (April and October). Visitors who have preferences for local culture and nature, can be encouraged to travel during off-season, thereby promoting culture and nature-based tourism products such as religious festivals (*Dumjee and Manirimdu*), and wildlife watching. It helps for the flow of visitors throughout the year and minimize overcrowding problems during the peak trekking season.

The local government anticipates that SNPBZ will receive around 500,000 international and domestic visitors once the region gets connected by road network in the next few years (Prasain, September

2019). However, tourism development in SNPBZ has to the present been spontaneous and unrestricted. Given the promise of continual increasing visitation, local authorities will need to develop short term and long term tourism management strategies to ensure sustainable tourism development and to optimize visitors' experience.

Rather than targeting to increase the number of visitors, Nepal government and the concerned authorities at the local level should target to attract high-value visitors while ensuring the delivery of 'quality' trekking experience. High-value visitor refers to those who spend more and spend many days in trekking, and whose visitation directly or indirectly benefits the livelihoods of as many local people. In Everest Region, it is not uncommon that some visitors are hesitant to pay a room charge that cost less than US\$5 per night and ask for a 'free' room. Amid competition between the growing number of lodges, such visitors opt for the next lodge if their requests are not met. Thus, many local lodge owners are compelled to do so. As an example of high value tourism in a developing country like Nepal, Bhutan has adopted 'high value, low impact' tourism policy (Rinzin, Vermeulen, & Glasbergen, 2007).

To enhance visitors' experience of SBPBZ and to minimize the reputational risks, there is an urgent need to address the current issues such as overcrowding, commercial helicopters in the national park, solid waste management, degraded trails, increase in the number of stray dogs and the increased use of donkeys/mules in the trekking trail. Visitors and locals are acknowledged as significant stakeholders in tourism. As such, high degree of commonality between those stakeholders towards the disliked features/conditions warrants attention of the concerned authorities such as local government and national park management for further investigations.

8.3.2 Research recommendations

A comparative study of the visitors' experiences between the peak trekking season and off-season would provide information on effects of a temporal tourism management strategy, to address the high seasonality problem in SNPBZ.

Cultural features in SNPBZ have individual, social and tourism benefits. Local people have expressed values and positive preferences to those features. Nonetheless, they also contend that some cultural features such as traditional utensils are getting lost. A comprehensive appraisal on the underlying causes to the decline in such features and possibilities for their preservation and restoration of their values is recommended.

This study has indicated the nature of issues that can be problematic to visitor's experience such as seasonal overcrowding, donkeys/mules, stray dogs and degraded trail. However, this study does not

identify the extent of those issues. An in-depth study is recommended to identify the prevalence and severity of such issues in terms of visitors' experience.

8.4 Conclusion

Using the Q method, this study identified that there are significant distinctions in the preferences of visitors travelling to SNPBZ and local residents. The exceptional natural and cultural features coupled with typical local livelihoods and varying climates, make the cultural service values of the ecosystems in the Everest Region a unique experience for global visitors. Uncontrolled tourism development accompanied by growing visitor numbers and their negative repercussions compromise the visitor's positive experience. Thus, it is vital to address those issues to minimize the reputational risks and to ensure the delivery of 'quality' experience to the visitors. Notwithstanding the limitations of this study, what is emerging is a core of visitor and local preferences which should act as a guiding narrative for local government and park management to inform tourism development plans and park management strategies.

References

- Addams, H. (2001). Q methodology. In *Social discourse and environmental policy : an application of Q methodology* (pp. 14-40). Cheltenham.
- Akhtar-Danesh, N. (2017). A comparison between major factor extraction and factor rotation techniques in Q-methodology. *Open Journal of Applied Sciences*, 7(04), 147-156.
- Ale, S. B. (2007). *Ecology of the Snow Leopard and the Himalayan Tahr in Sagarmatha (Mt. Everest) National park, Nepal*. (Doctoral Dissertation). University of Illinois at Chicago, Retrieved from http://www.carnivoreconservation.org/files/thesis/ale_2007_phd.pdf
- Andersen, G. R., & Westgaard, R. H. (2013). Understanding significant processes during work environment interventions to alleviate time pressure and associated sick leave of home care workers—a case study. *BMC health services research*, 13(1), 477.
- Bagstad, K. J., Reed, J. M., Semmens, D. J., Sherrouse, B. C., & Troy, A. (2016). Linking biophysical models and public preferences for ecosystem service assessments: a case study for the Southern Rocky Mountains. *Regional Environmental Change*, 16(7), 2005-2018.
- Bajracharya, B., Uddin, K., & Shrestha, B. R. (2009). *Land cover mapping in the HKKH region: cases from three mountain protected areas*: HKKH Partnership Project by International Centre for Integrated Mountain
- Bajracharya, S. (2011). *Tourism development in annapurna conservation area*. Retrieved from
- Baniya, R., & Paudel, K. (2016). An Analysis of push and pull travel motivations of domestic tourists in nepal. *Journal of Management and Development Studies*, 27, 16-30.
- Baral, N., Kaul, S., Heinen, J. T., & Ale, S. B. (2017). Estimating the value of the World Heritage site designation: a case study from Sagarmatha (Mount Everest) National Park, Nepal. *Journal of Sustainable Tourism*, 25(12), 1776-1791.
- Barry, J., & Proops, J. (1999). Seeking sustainability discourses with Q methodology. *Ecological Economics*, 28(3), 337-345.
- BBC. (May 2015). Nepal earthquakes: Devastation in maps and images. Retrieved from <https://www.bbc.com/news/world-asia-32479909>
- Bernbaum, E. (2006). Sacred Mountains: Themes and Teachings. *Mountain Research and Development*, 26(4), 304-309.
- Beza, B. B. (2010). The aesthetic value of a mountain landscape: A study of the Mt. Everest Trek. *Landscape and Urban Planning*, 97, 306-317.
- Bhandari, K. (2010). Tourism in Nepal: post-monarchy challenges. *Journal of Tourism and Cultural Change*, 8(1-2), 69-83. doi:10.1080/14766825.2010.491917
- Bhandari, K. R. (2011). Nepal Tourism Year 2011. *Nepal Tourism and Development Review*, 1(1), 127-130.
- Bhandari, P., Kc, M., Shrestha, S., Aryal, A., & Shrestha, U. B. (2016). Assessments of ecosystem service indicators and stakeholder's willingness to pay for selected ecosystem services in the Chure region of Nepal. *Applied Geography*, 69, 25-34. doi:10.1016/j.apgeog.2016.02.003
- Bhatta, L. D., Khadgi, A., Rai, R. K., Tamang, B., Timalisina, K., & Wahid, S. (2018). Designing community-based payment scheme for ecosystem services: a case from Koshi Hills, Nepal. *Environment, Development and Sustainability*, 20(4), 1831-1848.
- Bhatta, L. D., van Oort, B. E. H., Rucevska, I., & Baral, H. (2014). Payment for ecosystem services: possible instrument for managing ecosystem services in Nepal. *International Journal of Biodiversity Science, Ecosystem Services & Management*, 10(4), 289-299.
- Bhatta, L. D., van Oort, B. E. H., Stork, N. E., & Baral, H. (2015). Ecosystem services and livelihoods in a changing climate: Understanding local adaptations in the Upper Koshi, Nepal. *International Journal of Biodiversity Science, Ecosystem Services & Management*, 11(2), 145-155.
- Boyd, J., & Banzhaf, S. (2007). What are ecosystem services? The need for standardized environmental accounting units. *Ecological Economics*, 63, 616-626.
- Brown, K., Turner, R. K., Hameed, H., & Bateman, I. (1997). Environmental carrying capacity and tourism development in the Maldives and Nepal. *Environmental Conservation*, 24(4), 316-325.

- Brown, S. R. (1980). *Political subjectivity: Applications of Q methodology in political science*: Yale University Press
- Brown, S. R. (1993). A Primer on Q Methodology. *Operant subjectivity*, 16(3/4), 91-138. doi:10.15133/j.os.1993.002
- Brown, S. R. (1996). Q methodology and qualitative research. *Qualitative Health Research*, 6(4), 561-567.
- Byers, A. (1987). An assessment of landscape change in the Khumbu region of Nepal using repeat photography. *Mountain Research and Development*, 77-81.
- Byers, A. (2005). Contemporary human impacts on alpine ecosystems in the Sagarmatha (Mt. Everest) National Park, Khumbu, Nepal. *Annals of the Association of American Geographers*, 95(1), 112-140.
- Byers, A. C. (Producer). (October 2019, 12 February 2020). Too many mules on the Everest trail. Retrieved from <https://www.nepalitimes.com/banner/too-many-mules-on-the-everest-trail/>
- Byrne, R., Byrne, S., Ryan, R., & O'regan, B. (2017). Applying the Q-method to identify primary motivation factors and barriers to communities in achieving decarbonisation goals. *Energy Policy*, 110, 40-50. doi:10.1016/j.enpol.2017.08.007
- Carayon, P., Kianfar, S., Li, Y., Xie, A., Alyousef, B., & Wooldridge, A. (2015). A systematic review of mixed methods research on human factors and ergonomics in health care. *Applied ergonomics*, 51, 291-321.
- Carmenta, R., Zabala, A., Daeli, W., & Phelps, J. (2017). Perceptions across scales of governance and the Indonesian peatland fires. *Global Environmental Change*, 46, 50-59. doi:10.1016/j.gloenvcha.2017.08.001
- Casado-Arzuaga, I., Onaindia, M., Madariaga, I., & Verburg, P. H. (2014). Mapping recreation and aesthetic value of ecosystems in the Bilbao Metropolitan Greenbelt (northern Spain) to support landscape planning. *Landscape Ecology*, 29(8), 1393-1405.
- Census. (2011). *Nepal Population and Housing Census Report 2011*. Retrieved from <https://cbs.gov.np>
- Chan, K. M., Goldstein, J., Satterfield, T., Hannahs, N., Kikiloi, K., Naidoo, R., . . . Woodside, U. (2011). Cultural services and non-use values. In P. Kareiva, G. C. Daily, S. Polasky, a. H. Ricketts, & H. Tallis (Eds.), *Natural capital: Theory and practice of mapping ecosystem services* (pp. 206-228).
- Chhetri, P., & Arrowsmith, C. (2008). GIS-based modelling of recreational potential of nature-based tourist destinations. *Tourism Geographies*, 10(2), 233-257.
- Cole, V., & Sinclair, A. J. (2002). Measuring the ecological footprint of a Himalayan tourist center. *Mountain Research and Development*, 22(2), 132-141.
- Costanza, R., d'Arge, R., De Groot, R., Farber, S., Grasso, M., Hannon, B., . . . Paruelo, J. (1997). The value of the world's ecosystem services and natural capital. *Nature*, 387(6630), 253-260.
- Creswell, J. W. (2009). Mapping the field of mixed methods research. In: Sage Publications Sage CA: Los Angeles, CA.
- Daniel, T. C., Muhar, A., Arnberger, A., Aznar, O., Boyd, J. W., Chan, K. M. A., . . . Dunk, A. v. d. (2012). Contributions of cultural services to the ecosystem services agenda. *Proceedings of the National Academy of Sciences*, 109(23), 8812-8819.
- de Groot, R. S., Wilson, M. A., & Boumans, R. M. J. (2002). A typology for the classification, description and valuation of ecosystem functions, goods and services. *Ecological Economics*, 41, 393-408.
- Dhakal, D. P., Khadka, M., Sharma, S., & Choegyal, L. (2007). *Lessons Learned: Nepal's Experience Implementing Sustainable Rural Tourism Development Model of Tourism for Rural Poverty Alleviation Programme*. Retrieved from <http://lib.icimod.org/record/13182/files/4997.pdf>
- Eagles, P. F. J., & McCool, S. (2002). *Tourism in national parks and protected areas: planning and management*. New York: New York : CABI Pub.
- Elizabeth, A. B. (2017). An Exploratory Sequential Mixed Methods Approach to Understanding Researchers' Data Management Practices at UVM: Integrated Findings to Develop Research Data Services. *Journal of eScience Librarianship*, 6(1), e1104. doi:10.7191/jeslib.2017.1104

- Fairweather, J. R. (2001). Factor stability, number of significant loadings and interpretation: Results from three case studies and suggested guidelines. *Operant subjectivity*, 25(1), 37-58.
- Fairweather, J. R., & Swaffield, S. R. (2001). Visitor experiences of Kaikoura, New Zealand: an interpretative study using photographs of landscapes and Q method. *Tourism Management*, 22, 219-228.
- Fairweather, J. R., & Swaffield, S. R. (2002). Visitors' and locals' experiences of Rotorua, New Zealand: An interpretative study using photographs of landscapes and Q method. *International Journal of Tourism Research*, 4(4), 283-297.
- Fairweather, J. R., Swaffield, S. R., & Simmons, D. G. (1998). *Understanding visitor's experiences in Kaikoura using photographs of landscapes and Q method*. Retrieved from <http://researcharchive.lincoln.ac.nz/handle/10182/104>
- Fish, R., Church, A., & Winter, M. (2016). Conceptualising cultural ecosystem services: A novel framework for research and critical engagement. *Ecosystem Services*, 21, 208-217.
- Fritz, F., Balhorn, S., Riek, M., Breil, B., & Dugas, M. (2012). Qualitative and quantitative evaluation of EHR-integrated mobile patient questionnaires regarding usability and cost-efficiency. *International Journal of Medical Informatics*, 81(5), 303-313.
- Garrard, R., Kohler, T., Wiesmann, U., Price, M. F., Byers, A. C., & Sherpa, A. R. (2012). An ever-changing place: interpreting landscape change in Sagarmatha National Park, Nepal; re-photographic survey and encounter. *Eco. mont-journal on protected mountain areas research*, 4(2), 49-55.
- Gossling, S. (1999). Ecotourism: a means to safeguard biodiversity and ecosystem functions? . *Ecological Economics*, 29, 303-320.
- Grêt-Regamey, A., Brunner, S. H., & Kienast, F. (2012). Mountain ecosystem services: Who cares? *Mountain Research and Development*, 32(1), S23-S34. doi:10.1659/MRD-JOURNAL-D-10-00115.S1
- Hair, J. F., Black, W. c., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis : a global perspective* (7th ed. / Joseph F. Hair ... [et al.].. ed.). Upper Saddle River, N.J. London: Upper Saddle River, N.J. London : Pearson Education.
- Heinen, J. T., & Kattel, B. (1992). Parks, people, and conservation: a review of management issues in Nepal's protected areas. *Population and Environment*, 14(1), 49-84.
- Hickok, K. (2018). How much trash is on Mount Everest Retrieved from <https://www.livescience.com/63061-how-much-trash-mount-everest.html>
- Himalayan National Park Rules 1979, (1979).
- Huang, Y., Qu, H., & Montgomery, D. (2017). The Meanings of Destination: A Q Method Approach. *Journal of Travel Research*, 56(6), 793-807. doi:10.1177/0047287516663652
- Jefferies, B. E. (1987). *Sagarmatha National Park and Tourism*. Retrieved from <https://researcharchive.lincoln.ac.nz/handle/10182/5592>
- Jefferies, B. E. (2016). *Report on the IUCN advisory mission to Sagarmatha National Park* Retrieved from <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=2ahUKEwjKqdG1mLXhAhXYZCsKHbs6C4wQFjABegQIBRAC&url=https%3A%2F%2Fwhc.unesco.org%2Fdocument%2F142424&usq=AOvVaw1nAZm7IDRjnprOpO6e9p0I>
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, 1(2), 112-133.
- Jordan, K., Capdevila, R., & Johnson, S. (2005). Baby or beauty: a Q study into post pregnancy body image. *Journal of reproductive and infant psychology*, 23(1), 19-31.
- Joshi, J. (2019). *Landscape aesthetics, tourism and change: case studies in Nepal*. (Doctor of Philosophy). Victoria University of Wellington,
- Kaplan, R., & Kaplan, S. (1989). *The experience of nature : a psychological perspective*: Cambridge New York : Cambridge University Press.
- Kariel, H. G., & Draper, D. L. (1992). Outdoor recreation in mountains. *GeoJournal*, 27(1), 97-104.

- Kerr, G. N., & Swaffield, S. R. (2012). Identifying cultural service values of a small river in the agricultural landscape of Canterbury, New Zealand, using combined methods. *Society and Natural Resources*, 25(12), 1330-1339.
- Kim, J.-o. (1978a). *Factor analysis : statistical methods and practical issues*. Beverly Hills, Calif.: Beverly Hills, Calif. : Sage Publications.
- Kim, J.-o. (1978b). *Introduction to factor analysis : what it is and how to do it*. Beverly Hills, Calif.: Beverly Hills, Calif. : Sage Publications.
- Kim, J.-o., & Mueller, C. W. (1978). *Factor analysis : statistical methods and practical issues*. Beverly Hills, Calif.: Beverly Hills, Calif. : Sage Publications.
- Klein, C. (Producer). (2018). Who is Mount Everest named after. Retrieved from <https://www.history.com/news/who-is-mount-everest-named-after>
- Klooster, P. M. t., Visser, M., & de Jong, M. D. T. (2008). Comparing two image research instruments: The Q-sort method versus the Likert attitude questionnaire. *Food Quality and Preference*, 19(5), 511-518.
- Kohrt, B. (May 2015). Time and trauma. *The Kathmandu Post*. Retrieved from <https://kathmandupost.com/opinion/2015/05/26/time-and-trauma>
- Leopold, A. (1949). *A Sand County almanac, and sketches here and there*. New York: New York : Oxford University Press.
- Leung, Y.-F., & Marion, J. L. (1996). Trail degradation as influenced by environmental factors: A state-of-the-knowledge review. *Journal of soil and water conservation*, 51(2), 130-136.
- Lonely Planet. (2020a). The 10 best treks in the world Retrieved from <https://www.lonelyplanet.com/articles/the-10-best-treks-in-the-world>
- Lonely Planet. (2020b). Everest Heli Tour with Breakfast . Retrieved from <https://www.lonelyplanet.com/nepal/kathmandu/activities/everest-heli-tour-with-breakfast/a/pa-act/v-64910P23/357144>
- Lovari, S., Boesi, R., Minder, I., Mucci, N., Randi, E., Dematteis, A., & Ale, S. B. (2009). Restoring a keystone predator may endanger a prey species in a human-altered ecosystem: the return of the snow leopard to Sagarmatha National Park. *Animal Conservation*, 12, 559-570.
- Maes, J., Braat, L., Jax, K., Hutchins, M., Furman, E., Termansen, M., . . . Bidoglio, G. (2011). *A spatial assessment of ecosystem services in Europe: methods, case studies and policy analysis-phase 1* (Vol. PEER Report No 3): Ispra: Partnership for European Environmental Research.
- Mallarach, J.-M. e. (2008). *Protected landscapes and cultural amd spiritual values* (Vol. 2). Heidelberg: Kasperek Verlag.
- Manfredi, E. C., Flury, B., Viviano, G., Thakuri, S., Khanal, S. N., Jha, P. K., . . . Bhochohibhoya, S. (2010). Solid waste and water quality management models for Sagarmatha National Park and Buffer Zone, Nepal. *Mountain Research and Development*, 30(2), 127-143.
- McCool, S., & Lachapelle, P. R. (2000). Recreational uses of mountain forests. In M. F. Price & N. Butt (Eds.), *Forests in sustainable mountain development: a state of knowledge report for 2000. Task Force on Forests in Sustainable Mountain Development*. (pp. 330-337).
- MEA. (2003). *Ecosystems and Human Well-being: A Framework for Assessment*. Washington: Island Press.
- MEA. (2005a). *Ecosystems and Human Well-being: Current State and Trends: Findings of the conditions and Trends Working Group* (R. Hassan, R. Scholes, & N. Ash Eds.): Island Press, Washington.
- MEA. (2005b). *Ecosystems and human well-being: multiscale assessments: findings of the Sub-global Assessments Working Group of the Millenium Ecosystem Assessment* (D. Capistrano, C. Samper, M. J. Lee, & C. Raudsepp-Hearne Eds.): Island Press, Washington, DC, USA.
- MEA. (2005c). *Ecosystems and Human Well-Being: Synthesis*. Washington, DC: Island Press.
- Milcu, A. I., Hanspach, J., Abson, D., & Fischer, J. (2013). Cultural Ecosystem Services: A Literature Review and Prospects for Future Research. *Ecology and Society*, 18(3). doi:10.5751/ES-05790-180344
- Millenium Ecosystem Assessment. (2005). *Ecosystems and Human Well-Being: Synthesis*. Washington, DC: Island Press.

- Millennium Ecosystem Assessment [MEA]. (2005). *Ecosystems and Human Well-Being: Current State and Trends, Volume 1* (I. Press Ed.): Millennium Ecosystem Assessment, Island Press, Washington.
- Monz, C. (2000). *Recreation resource assessment and monitoring techniques for mountain regions*. UK: CABI Publishing: Wallingford, UK.
- Moore, K., Cushman, G., & Simmons, D. (1995). Behavioral conceptualization of tourism and leisure. *Annals of Tourism Research*, 22(1), 67-85.
- Muhar, A., Schauppenlehner, T., Brandenburg, C., & Arnberger, A. (2007). Alpine summer tourism: the mountaineers' perspective and consequences for tourism strategies in Austria. *Forest Snow and Landscape Research*, 81(7), 7-17.
- Nahuelhual, L., Carmona, A., Lozada, P., Jaramillo, A., & Aguayo, M. (2013). Mapping recreation and ecotourism as a cultural ecosystem service: An application at the local level in Southern Chile. *Applied Geography*, 40, 71-82.
- National Parks and Wildlife Conservation Act, (1973).
- Nepal, S. K. (2000). Tourism in protected areas: The Nepalese Himalaya. *Annals of Tourism Research*, 27(3), 661-681. doi:10.1016/S0160-7383(99)00105-X
- Nepal, S. K. (2000). Tourism, national parks and local communities. *Tourism and national parks: issues and implications.*, 73-94.
- Nepal, S. K. (2002). Involving indigenous peoples in protected area management: Comparative perspectives from Nepal, Thailand, and China. *Environmental management*, 30(6), 0748-0763.
- Nepal, S. K. (2005). Tourism and Remote Mountain Settlements: Spatial and Temporal Development of Tourist Infrastructure in the Mt Everest Region, Nepal. *Tourism Geographies*, 7(2), 205-227. doi:10.1080/14616680500072471
- Nepal, S. K., & Chipeniuk, R. (2005). Mountain Tourism: Toward a Conceptual Framework. *Tourism Geographies*, 7(3), 313-333. doi:10.1080/14616680500164849
- Nepal Times. (March 2018). Everest Garbage CARAVAN. Retrieved from <https://www.nepalitimes.com/here-now/everest-garbage-caravan/>
- Olazabal, M., & Pascual, U. (2015). Urban low-carbon transitions: cognitive barriers and opportunities. *Journal of Cleaner Production*, 109, 336-346. doi:10.1016/j.jclepro.2015.08.047
- Oteros-Rozas, E., Martín-López, B., Fagerholm, N., Bieling, C., & Plieninger, T. (2018). Using social media photos to explore the relation between cultural ecosystem services and landscape features across five European sites. *Ecological Indicators*, 94, 74-86.
- Otto, J. E., & Ritchie, J. R. B. (1996). The service experience in tourism. *Tourism Management*, 17(3), 165-174. doi:10.1016/0261-5177(96)00003-9
- Packer, J., & Ballantyne, R. (2016). Conceptualizing the Visitor Experience: A Review of Literature and Development of a Multifaceted Model. *Visitor Studies*, 19(2), 128-143. doi:10.1080/10645578.2016.1144023
- Paracchini, M. L., Zulian, G., Kopperoinen, L., Maes, J., Schägner, J. P., Termansen, M., . . . Bidoglio, G. (2014). Mapping cultural ecosystem services: A framework to assess the potential for outdoor recreation across the EU. *Ecological Indicators*, 45, 371-385.
- Paudyal, K., Baral, H., Burkhard, B., Bhandari, S. P., & Keenan, R. J. (2015). Participatory assessment and mapping of ecosystem services in a data-poor region: Case study of community-managed forests in central Nepal. *Ecosystem Services*, 13, 81-92.
- Pawson, I. G., Stanford, D. D., Adams, V. A., & Nurbu, M. (1984). Growth of tourism in Nepal's Everest region: impact on the physical environment and structure of human settlements. *Mountain Research and Development*, 4(3), 237-246.
- Phelan, C. (2014). *Understanding the farmer: An analysis of the entrepreneurial competencies required for diversification to farm tourism*. (Doctoral Dissertation). University of Central Lancashire,
- Pike, K., Wright, P., Wink, B., & Fletcher, S. (2014). The assessment of cultural ecosystem services in the marine environment using Q methodology. *Journal of coastal conservation*, 19(5), 667-675.

- Plieninger, T., Dijks, S., Oteros-Rozas, E., & Bieling, C. (2013). Assessing, mapping and quantifying cultural ecosystem services at community level. *Land Use Policy*, 33, 118-129.
- Posch, E. (2013). *Solid Waste Management in Sagarmatha National Park, Nepal: Understanding Tourists' Perceptions, Attitudes and Behaviours*. (Masters). University of Vienna,
- Prasain, S. (September 2019). Revival of road project to Everest region will transform travel and local economy, officials say. Retrieved from <https://elevenmyanmar.com/news/revival-of-road-project-to-everest-region-will-transform-travel-and-local-economy-officials-say>
- Ramlo, S. (2016). Mixed Method Lessons Learned From 80 Years of Q Methodology. *Journal of Mixed Methods Research*, 10(1), 28-45. doi:10.1177/1558689815610998
- Ramsar Sites. (2019). Ramsar Sites Information Service. Retrieved from <https://rsis.ramsar.org/ris/1692?language=en>
- Refworld. (2003). Nepal: Reports of Maoist rebel activity in the Solukhumbu district; whether the Maoists commit abuses against the ethnic Sherpa living there; whether the Maoists have extorted money from Sherpas and owners of trekking lodges in the Solukhumbu district (2001-2003). Retrieved from <http://www.refworld.org/docid/3f7d4de818.html>
- Rinzin, C., Vermeulen, W. J., & Glasbergen, P. (2007). Ecotourism as a mechanism for sustainable development: the case of Bhutan. *Environmental Sciences*, 4(2), 109-125.
- Robbins, P., & Krueger, R. (2000). Beyond Bias? The Promise and Limits of Q Method in Human Geography. *The Professional Geographer*, 52(4), 636-648. doi:10.1111/0033-0124.00252
- Sacareau, I. (2009). Changes in environmental policy and mountain tourism in Nepal. *Journal of Alpine Research | Revue de géographie alpine*(97-3).
- Schirpke, U., Tasser, E., & Tappeiner, U. (2013). Predicting scenic beauty of mountain regions. *Landscape and Urban Planning*, 111, 1-12.
- Schirpke, U., Timmermann, F., Tappeiner, U., & Tasser, E. (2016). Cultural ecosystem services of mountain regions: Modelling the aesthetic value. *Ecological Indicators*, 69, 78-90.
- Schmolck, P. (2014). PQMethod Manual. Retrieved from <http://schmolck.org/qmethod/pqmanual.htm>
- Schmolck, P. (November 2019). The QMethod Page. Retrieved from <http://schmolck.org/qmethod/index.htm>
- Sedai, R. C. (2011). Tourist accommodation facilities in the major tourist areas of Nepal. *Nepal Tourism and Development Review*, 1(1), 102-123.
- Seppelt, R., Dormann, C. F., Eppink, F. V., Lautenbach, S., & Schmidt, S. (2011). A quantitative review of ecosystem service studies: approaches, shortcomings and the road ahead. *Journal of applied Ecology*, 48(3), 630-636.
- Sestini, V., & Somigli, E. (1978). *Sherpa architecture* (T. Paterson, Trans.): UNESCO.
- Sherpa, L. N. (2019). Preface. In L. Choegyal (Ed.), *Everest Reflections on the Solukhumbu*. Kathmandu: Vajra Books.
- Sherpa, L. N., & Bajracharya, B. (2009). *View of a high place: natural and cultural landscape of Sagarmatha National Park*: International Centre for Integrated Mountain Development (ICIMOD).
- Sherpa, L. N., Clark, L., Thapa, S., & Rajbhandari, S. L. (2006). *Sagarmatha National Park Management and Tourism Plan 2006-2011*.
- Sherpa, M. N. (1985). *Conservation for Survival: A Conservation Strategy for Resource Self-Sufficiency in the Khumbu Region of Nepal*. (Master of Natural Resources Management). University of Manitoba,
- Sherpa, M. N. (2013). *Conservation Governance and Management of Sagarmatha (Mt. Everest) National Park, Buffer Zone, and Buffer Zone Community Forest User Groups in Pharak, Nepal*. (PhD Dissertation). University of Massachusetts Amherst,
- Sherpa, P. Y. (2012). *Sherpa perceptions of climate change and institutional responses in the Everest region of Nepal*: Washington State University.
- Sherpa, P. Y. (2017). Community and resilience among sherpas in the post-earthquake everest region. *Himalaya*, 37(2), 103-112.

- Sherrouse, B. C., Semmens, D. J., Ancona, Z. H., & Brunner, N. M. (2017). Analyzing land-use change scenarios for trade-offs among cultural ecosystem services in the Southern Rocky Mountains. *Ecosystem Services*, 26, 431-444. doi:10.1016/j.ecoser.2017.02.003
- Shinebourne, P. (2009). Using Q Method in Qualitative Research. *International Journal of Qualitative Methods*, 8(1), 93-97. doi:10.1177/160940690900800109
- Shrestha, T. B., & Pokharel, S. (2000). The potential of medicinal and aromatic plants for sustainable mountain development in Nepal. In M. F. Price & N. Butt (Eds.), *Forests in sustainable mountain development: A state of knowledge report for 2000* (Vol. 5): CABI.
- Silva, C., Kastenholz, E., & Abrantes, J. L. (2013). Place-attachment, destination image and impacts of tourism in mountain destinations. *Anatolia*, 24(1), 17-29. doi:10.1080/13032917.2012.762312
- Simmons, D. G. (1994). Community participation in tourism planning. *Tourism Management*, 15(2), 98-108.
- Simmons, D. G. (2013). Tourism and ecosystem services in New Zealand. In: Manaaki Whenua Press, Lincoln, New Zealand.
- Skog, L. A. (2010). *Beyul Khumbu: Sherpa Constructions of a Sacred Landscape*. (Master of Arts in Geography). Portland State University,
- SNP. (2016). *Sagarmatha National Park Management Plan 2016-2020*. Retrieved from http://www.sagarmathanationalpark.gov.np/index.php/documents/cat_view/4-publication
- SNP. (December 2019). Introduction. Retrieved from <http://www.sagarmathanationalpark.gov.np/index.php/2014-06-03-06-27-06/physical-features>
- SPCC. (February 2020). Waste Management in the Mountains. Retrieved from <https://www.spcc.org.np/waste-management-in-the-mountains/ourwork>
- Stålhammar, S., & Pedersen, E. (2017). Recreational cultural ecosystem services: How do people describe the value? *Ecosystem Services*, 26, 1-9.
- Stephenson, W. (1952). Q-methodology and the projective techniques. *Journal of Clinical Psychology*, 8(3), 219-229.
- Stevens, S. (1996). *Claiming the high ground: Sherpas, subsistence, and environmental change in the highest Himalaya*. Berkeley: University of California Press.
- Stevens, S. (2013). National Parks and ICCAs in the high Himalayan region of Nepal: Challenges and opportunities. *Conservation and Society*, 11(1), 29-45.
- Swaffield, S. R., & Fairweather, J. R. (1996). Investigation of attitudes towards the effects of land use change using image editing and Q sort method. *Landscape and Urban Planning*, 35(4), 213-230.
- Tamang, B. (2011). *An Assessment of Ecosystem Services of the Everest Region, Nepal*. Retrieved from https://macau.uni-kiel.de/receive/dissertation_diss_00006519?lang=en
- Tenerelli, P., Demšar, U., & Luque, S. (2016). Crowdsourcing indicators for cultural ecosystem services: A geographically weighted approach for mountain landscapes. *Ecological Indicators*, 64, 237-248.
- Tengberg, A., Fredholm, S., Eliasson, I., & Knez, I. (2012). Cultural ecosystem services provided by landscapes: Assessment of heritage values and identity. *Ecosystem Services*, 2, 14-26.
- The Himalayan Times. (May 2019). More than 10 tonnes garbage collected from Everest. Retrieved from <https://thehimalayantimes.com/nepal/more-than-10-tonnes-garbage-collected-from-everest/>
- The Kathmandu Post. (2020). Chartered helicopter services banned inside Annapurna Base Camp region. Retrieved from <https://kathmandupost.com/gandaki-province/2020/02/18/chartered-helicopter-services-banned-inside-annapurna-base-camp-region>
- The New York Times. (April 2015). Everest Climbers Are Killed as Nepal Quake Sets Off Avalanche. Retrieved from <https://www.nytimes.com/2015/04/26/world/asia/everest-climbers-killed-as-nepal-quake-sets-off-avalanche.html>
- Thomas, W. L. (1956). Man's Role in Changing the Face of the Earth. *Chicago, London*, 10-13.

- Trekguiders. (2020). Kongde for Breakfast. Retrieved from <https://www.trekguiders.com/kongde-for-breakfast>
- Tripadvisor. (2020). Everest base camp helicopter landing group flight tour with breakfast at Everest. Retrieved from https://www.tripadvisor.com/AttractionProductReview-g293890-d15180395-Everest_base_camp_helicopter_landing_group_flight_tour_with_breakfast_at_Everest-K.html
- Turner, R., & Freiermuth, E. (2017). *TRAVEL & TOURISM ECONOMIC IMPACT 2017 NEPAL*. WORLD TRAVEL & TOURISM COUNCIL. Retrieved from <https://www.wttc.org/-/media/files/reports/economic-impact-research/archived/countries-2017-old/nepal2017.pdf>
- UNESCO. (April 2019). Sagarmatha National Park. Retrieved from <https://whc.unesco.org/en/list/120>
- Upadhy, P. K., MMuller-Boker, U., & Sharma, S. R. (2011). Tourism amidst armed conflict: Consequences, copings and creativity for peace-building through tourism in Nepal. *The Journal of Tourism and Peace Research*, 1(2), 22-40.
- Van Exel, J., & De Graaf, G. (2005). *Q methodology: A sneak preview*. Retrieved from https://www.researchgate.net/profile/Gjalt_Graaf/publication/228574836_Q_Methodology_A_Sneak_Preview/links/02bfe50f946fc9978b000000.pdf
- van Oort, B., Bhatta, L. D., Baral, H., Rai, R. K., Dhakal, M., Rucevska, I., & Adhikari, R. (2015). Assessing community values to support mapping of ecosystem services in the Koshi river basin, Nepal. *Ecosystem Services*, 13, 70-80.
- Vincanne, A. (1992). Tourism and Sherpas, Nepal Reconstruction of Reciprocity. *Annals of Tourism Research*, 19, 534-554.
- Visit Nepal 2020. (2020). Visit Nepal 2020 Updates. Retrieved from <https://visitnepal2020.com/news.html>
- Wall, G. (1997). FORUM: Is Ecotourism Sustainable? *An International Journal for Decision Makers, Scientists and Environmental Auditors*, 21(4), 483-491. doi:10.1007/s002679900044
- Wascher, D. (2004). Landscape indicator development: steps towards a European approach. *Volume*, 4, 237-252.
- Watts, S., & Stenner, P. (2005). Doing Q methodology: theory, method and interpretation. *Qualitative research in psychology*, 2(1), 67-91.
- Watts, S., & Stenner, P. (2012). *Doing Q methodological research: Theory, method & interpretation*: Sage.
- Webler, T., Danielson, S., & Tuler, S. (2009). Using Q method to reveal social perspectives in environmental research. *Greenfield MA: Social and Environmental Research Institute*, 54, 1-45.
- Westman, W. E. (1977). How Much Are Nature's Services Worth? *Science*, 197(4307), 960-964. doi:10.1126/science.197.4307.960
- Willis, C. (2015). The contribution of cultural ecosystem services to understanding the tourism–nature–wellbeing nexus. *Journal of Outdoor Recreation and Tourism*, 10, 38-43. doi:10.1016/j.jort.2015.06.002
- Yong, A. G., & Pearce, S. (2013). A Beginner's Guide to Factor Analysis: Focusing on Exploratory Factor Analysis. *Tutorials in Quantitative Methods for Psychology*, 9(2), 79-94. doi:10.20982/tqmp.09.2.p079
- Zabala, A. (2014). qmethod: A Package to Explore Human Perspectives Using Q Methodology. *The R Journal*, 6(2), 163-173.
- Zambelli, F., & Bonni, R. (2004). Beliefs of teachers in Italian schools concerning the inclusion of disabled students: a Q-sort analysis. *European Journal of Special Needs Education*, 19(3), 351-366. doi:10.1080/0885625042000262505
- Zoderer, B. M., Tasser, E., Erb, K.-H., Stanghellini, P. S. L., & Tappeiner, U. (2016). Identifying and mapping the tourists' perception of cultural ecosystem services: A case study from an Alpine region. *Land Use Policy*, 56, 251-261.

Appendix A

Factor interpretation table

Appendix A. 1: Factor one (visitors) interpretation table

Image No	Image Title	Rank	Ranking Higher than other factors	Ranking Lower than Other Factors	Z score
15	High mountain valley	+4	Yes	-	1.78
9	Gokyo Lake	+3	-	-	1.77
16	Mt. Everest	+3	-	-	1.63
20	High altitude trail	+2	Yes	-	1.29
5	Mountaineering	+2	-	-	1.15
11	Holy mountain	+2	Yes	-	0.64
1	Buddhist stupas	+1	-	-	0.63
26	Deep valley	+1	Yes	-	0.54
30	Wildlife watching	+1	Yes	-	0.48
3	Buddhist monastery	+1	-	-	0.32
28	Stone scripts	+1	-	-	0.32
21	Glacier	0	-	-	0.22
8	Bird watching	0	-	-	0.2
22	Forested area	0	Yes	-	0.12
25	Pasture land	0	-	-	-0.07
24	Traditional kitchen utensils in a Sherpa	0	-	-	-0.16
14	Alpine forest walkway	0	-	-	-0.19
29	Suspension bridge	0	-	Yes	0.29
6	Agricultural area	0	-	-	-0.3
27	Helicopter operating in National Park area	-1	Yes	-	-0.33
13	Built up area	-1	-	-	-0.37
18	Lukla airport (Tenzing Hillary airport)	-1	-	-	-0.41
17	Rockfall area	-1	Yes	-	-0.57
2	Yak transporting supplies	-1	-	Yes	-0.68
4	Stray dogs	-2	-	-	-0.72
23	Degraded trail	-2	-	-	-0.72
19	Porters carrying loads	-2	-	Yes	-1.01
7	Donkeys/Mules transporting supplies	-3	-	Yes	-1.47
12	Tourist overcrowding during peak season	-3	-	-	-1.95
10	Solid waste	-4	-	-	-2.44

Appendix A. 2: Factor two (visitors) interpretation table

Image No	Image Title	Rank	Ranking Higher than other	Ranking Lower than Other	Z score
29	Suspension bridge	+4	Yes	-	1.87
9	Gokyo Lake	+3	-	-	1.58
15	High mountain valley	+3	-	-	1.47
28	Stone scripts	+2	Yes	-	1.29
1	Buddhist stupas	+2	Yes	-	1.05
8	Bird watching	+2	Yes	-	0.84
2	Yak transporting supplies	+1	Yes	-	0.79
16	Mt. Everest	+1	-	Yes	0.55
7	Donkeys/Mules transporting supplies	+1	Yes	-	0.45
6	Agricultural area	+1	Yes	-	0.43
19	Porters carrying loads	+1	-	-	0.27
26	Deep valley	0	-	-	0.24
24	Traditional kitchen utensils in a Sherpa home	0	-	-	0.17
4	Stray dogs	0	Yes	-	0.14
21	Glacier	0	-	-	0.12
14	Alpine forest walkway	0	-	-	0.07
20	High altitude trail	0	-	Yes	0.05
25	Pasture land	0	-	-	-0.03
30	Wildlife watching	0	-	-	-0.19
22	Forested area	-1	-	-	-0.21
11	Holy mountain	-1	-	-	-0.37
3	Buddhist monastery	-1	-	Yes	-0.48
18	Lukla airport (Tenzing Hillary airport)	-1	-	-	-0.58
23	Degraded trail	-1	Yes	-	-0.61
17	Rockfall area	-2	-	-	-0.89
5	Mountaineering	-2	-	Yes	-0.98
13	Built up area	-2	-	Yes	-1.29
27	Helicopter operating in National Park area	-3	-	Yes	-1.5
10	Solid waste	-3	Yes	-	-2.05
12	Tourist overcrowding during peak	-4	-	Yes	-2.2

Appendix A. 3: Factor three (visitors) interpretation table

Image No	Image Title	Rank	Ranking Higher than other	Ranking Lower than Other	Z score
5	Mountaineering	4	Yes	-	1.61
16	Mt. Everest	3	-	-	1.48
29	Suspension bridge	3	-	-	1.35
19	Porters carrying loads	2	Yes	-	1.26
15	High mountain valley	2	-	Yes	0.97
13	Built up area	2	Yes	-	0.88
1	Buddhist stupas	1	-	-	0.78
24	Traditional kitchen utensils in a	1	Yes	-	0.77
9	Gokyo Lake	1	-	Yes	0.66
3	Buddhist monastery	1	-	-	0.56
20	High altitude trail	1	-	-	0.53
30	Wildlife watching	0	-	-	0.4
6	Agricultural area	0	-	-	0.16
28	Stone scripts	0	-	Yes	0.16
2	Yak transporting supplies	0	-	-	0.09
18	Lukla airport (Tenzing Hillary airport)	0	Yes	-	0.03
26	Deep valley	0	-	-	0.02
14	Alpine forest walkway	0	-	-	0
25	Pasture land	0	-	-	-0.13
8	Bird watching	-1	-	Yes	-0.13
22	Forested area	-1	-	-	-0.41
11	Holy mountain	-1	-	-	-0.45
21	Glacier	-1	-	Yes	-0.65
7	Donkeys/Mules transporting supplies	-1	-	-	-0.82
4	Stray dogs	-2	-	-	-1.04
27	Helicopter operating in National Park	-2	-	-	-1.13
23	Degraded trail	-2	-	-	-1.28
17	Rockfall area	-3	-	Yes	-1.36
12	Tourist overcrowding during peak season	-3	-	-	-2.1
10	Solid waste	-4	-	-	-2.21

Appendix A. 4: Factor one (locals) interpretation table

Image No.	Image Title	Rank	Ranking higher than other factors	Ranking lower than other Factors	Z score
9	Gokyo Lake	4	Yes	No	2.054
24	Traditional utensils of a Sherpa home	3	Yes	No	1.72
3	Buddhist monastery	3	Yes	No	1.074
28	Stone scripts	2	Yes	No	1.035
1	Buddhist stupas	2	Yes	No	0.976
6	Agricultural land	2	Yes	No	0.91
8	Bird watching	1			0.681
15	High mountain valley	1	Yes	No	0.568
25	Pastureland	1	Yes	No	0.501
22	Forested area	1	Yes	No	0.492
30	Wildlife watching	1			0.439
20	High altitude trail	0			0.434
14	Alpine forest walkway	0	Yes	No	0.379
2	Yak transporting supplies	0	Yes	No	0.313
26	Deep valley	0			0.271
16	Mt. Everest	0	No	Yes	0.166
11	Holy mountain	0	No	Yes	0.142
29	Suspension bridge	0	No	Yes	0.022
5	Mountaineering	0			-0.006
18	Tenzing Hillary airport (Lukla airport)	-1	No	Yes	-0.353
13	Built-up area	-1	No	Yes	-0.466
19	Porters carrying loads	-1	Yes	No	-0.699
21	Glacier	-1			-0.9
23	Degraded trail	-1	Yes	No	-0.94
27	Helicopter operating in the National Park area	-2	No	Yes	-1.072
17	Rockfall area	-2	No	Yes	-1.254
12	Tourist overcrowding during peak season	-2			-1.515
4	Stray dogs	-3			-1.585
7	Donkeys/Mules transporting supplies	-3	No	Yes	-1.639
10	Solid waste	-4			-1.749

Appendix A. 5: Factor two (local) interpretation table

Image No	Image Title	Rank	Ranking higher than other factors	Ranking lower than other factors	Z score
18	Lukla airport (Tenzing Hillary airport)	4	Yes	No	1.942
16	Mt. Everest	3	Yes	No	1.713
13	Built-up area	3	Yes	No	1.07
24	Traditional utensils of a Sherpa home	2	No	Yes	0.952
3	Buddhist monastery	2	No	Yes	0.888
29	Suspension bridge	2	Yes	No	0.818
6	Agricultural land	1	No	Yes	0.789
11	Holy mountain	1	Yes	No	0.648
1	Buddhist stupas	1	No	Yes	0.534
8	Bird watching	1	-	-	0.464
30	Wildlife watching	1	-	-	0.336
26	Deep valley	0	-	-	0.308
5	Mountaineering	0	-	-	0.267
25	Pastureland	0	No	Yes	0.246
22	Forested area	0	No	Yes	0.184
15	High mountain valley	0	No	Yes	0.174
20	High altitude trail	0	-	-	0.116
28	Stone scripts	0	No	Yes	0.114
9	Gokyo Lake	0	No	Yes	0.092
2	Yak transporting supplies	-1	No	Yes	-0.186
27	Helicopter operating in the National Park area	-1	Yes	No	-0.364
21	Glacier	-1	-	-	-0.646
14	Alpine forest walkway	-1	No	Yes	-0.651
17	Rockfall area	-1	Yes	No	-0.916
12	Tourist overcrowding during peak	-2	-	-	-0.985
19	Porters carrying loads	-2	No	Yes	-1.062
7	Donkeys/Mules transporting	-2	Yes	No	-1.107
23	Degraded trail	-3	No	Yes	-1.412
4	Stray dogs	-3	-	-	-1.793
10	Solid waste	-4	-	-	-2.535

Appendix B

Data collection materials

B.1 Research Information Sheet

My name is Ngawang Thapke Sherpa. While I come from Chhuserma village in the Everest Region, I am studying Master of Natural Resource Management and Ecological Engineering at Lincoln University, New Zealand.

I would like to invite you to participate in my research project entitled "Cultural Ecosystem Services Provided by Mountain Landscapes - Understanding Recreational Preferences". Your participation in this research is voluntary, and you may withdraw from the study at any time during the interview or advise the researcher to pause the interview to take a short break.

The aim of this study is to investigate the recreational preferences of visitors and local residents, using a cultural ecosystem service approach. As a case study, this research will be conducted in Sagarmatha National Park and Buffer zone (Everest Region). I am inviting visitors to Sagarmatha National Park and Buffer Zone and local residents to take part in the research. As a participant in this project, you must be at least 18 years old, and you must have experience traveling to Sagarmatha National Park and Buffer Zone.

Your participation in this project will involve providing brief background information about yourself and sorting a set of 30 images, based on your recreational preferences into a bell-shaped format. You will be provided with technical instruction on how to put the images in bell-shaped format. So, no prior experience will be required to participate in this research. You will be provided with full control over the placement of images in the order you prefer to present in the predefined bell-shaped format. After the ranking of images is complete, you will be invited to comment on why you put the images in the order you have presented. In total, I estimate to take approximately 30 minutes to complete.

All the images used in this study are the representative images of the recreational features and conditions that can be commonly observed by visitors and local residents in Sagarmatha National Park and its Buffer Zone such as mountains, lake, monastery and forested areas. During the interview, some images may engender bad memories to certain participants. For example, some participants may have lost their relatives or friends or clients in the mountaineering expeditions. In this case, when the participant deals with the mountain image, he/she may recall the past incident and may become emotional. You are advised not to participate in the research if any of the images

used in the research are likely to be emotionally distressful to your current capacity. You also have the right to withdraw from this study at any time during the interview for whatsoever reason. You may also decline to answer any question. You may also withdraw from this study, including withdrawing any information you have provided, up to 31st July 2019 by contacting me (Ngawang Thapke Sherpa) or my supervisors through the contact details below. In case of withdrawal, all the collected information including audio recordings will be destroyed.

The interview will either be audio recorded, notes taken or both, depending on your choice. The results of the research may be published. However, you may be assured of your anonymity in this investigation: the identity of any participant will not be made public or made known to any person other than the researcher, his supervisors and the Human Ethics Committee in the event of an audit. Only aggregated data will be presented in any publications, and no information will be reported in a way that might identify research participants. To ensure anonymity, the following steps will be taken:

- All hard copies of the data and consent forms will be securely kept in a locked bag while at field in Nepal and stored in a locked cabinet at Lincoln University which will only be able to be accessed by the research team.
- All the electronic copies of data will be stored in secure files in the university network server and principal researcher's personal computer with encoded passwords to boot and login.

This project has been reviewed and approved by the Lincoln University Human Ethics Committee. If you have any queries or concerns about your participation in the project, please contact me or my supervisors; we would be happy to discuss any concerns you have about participation in the project.

Researcher:

Ngawang Thapke Sherpa

Contact Details: Ngawang.Sherpa@lincolnuni.ac.nz , New Zealand: +642041593545, Nepal: +9779803726848

Name of Supervisors:

Prof. David Simmons (Main Supervisor), David.Simmons@lincoln.ac.nz , Department of Tourism Sports and Society, Lincoln University

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Prof. Andreas Muhar (Associate Supervisor), andreas.muhar@boku.ac.at , Institute of Landscape Development, Recreation and Conservation Planning (ILEN), BOKU

B.2 Consent Form

Name of Project: Cultural Ecosystem Services Provided by Mountain Landscapes: Understanding Recreational Preferences

I have read and understood the description of the above-named project. On this basis, I agree to participate in the project, and I consent to the publication of the results of the project with the understanding that anonymity will be preserved. I understand also that I may withdraw from the project, including withdrawal of any information I have provided, up to *31st July 2019*.

I provide consent to (please choose one or two options of the following)

Audio record the interview

Take notes of the interview

Name: _____

Signed: _____ Date: _____

B.3 Participant's background information

Background Data Collection for visitors

Subject No:

Participant's Name:

Gender:

Country:

City/town/Village:

Age:

Occupation:

Purpose of visit: Trekking Mountaineering Others.....

Use of trekking guide: Guided Unguided

How many days did you spend in Everest Region (Sagarmatha National Park and Buffer Zone)?

How many more days do you plan to spend?

Have you been to Everest Region before? Yes No If yes, how many times?

.....

Background Data Collection for local residents

Subject No:

Participant's Name:

Gender:

Age:

District:

City/town/village:

Primary occupation:

Other occupation (if any):

Are you a local resident or in-migrant to Everest Region (Sagarmatha National Park and Buffer Zone)?

.....

How long have you been living in this place?

Appendix C

Demographic characteristics of participants

Appendix C. 1: Demographic characteristics of visitors

SN	Subject ID	Factor Loaded	Loading Value	Gender	Age	Region	Occupation	Use of Guide	Days in SNP	Purpose of Visit	Been in SNP before?
1	S58V	Factor One	0.8149	M	21	Asia	Student	Guided	5	Trekking	No
2	S50V	Factor One	0.81	M	29	Europe	Stock Market Trader	Unguided	8	Trekking	No
3	S56V	Factor One	0.7638	M	50	Europe	Teacher	Unguided	7	Trekking	Five times
4	S40V	Factor One	0.7455	F	28	Asia	Teacher	Unguided	12	Trekking	No
5	S9V	Factor One	0.737	M	22	Europe	Student	Guided	11	Trekking	No
6	S15V	Factor One	0.7213	F	28	Asia	Student	Unguided	12	Trekking	No
7	S44V	Factor One	0.7195	M	32	Europe	Did not mention	Unguided	9	Trekking	No
8	S10V	Factor One	0.7118	F	22	Europe	Student	Guided	11	Trekking	No
9	S23V	Factor One	0.6989	M	32	Americas	Restaurant Manager	Unguided	60	Trekking + Volunteer	No
10	S36V	Factor One	0.6594	M	29	Australasia	Chef	Guided	10	Trekking	No
11	S46V	Factor	0.5971	F	40	Asia	Teacher	Guided	12	Trekking	No

		One									
12	S39V	Factor One	0.5878	F	48	Europe	Researcher	Unguided	12	Trekking	No
13	S53V	Factor One	0.5536	F	45	Europe	Professor	Guided	11	Trekking	No
14	S52V	Factor One	0.5436	M	38	Europe	Teacher	Guided	9	Trekking	No
15	S55V	Factor Two	0.8504	M	25	Europe	Student	Unguided	12	Trekking	No
16	S27V	Factor Two	0.7301	M	23	Europe	Student	Unguided	27	Trekking	No
17	S41V	Factor Two	0.7218	F	44	Asia	Student	Guided	12	Trekking	No
18	S54V	Factor Two	0.6612	F	25	Australasia	Student	Unguided	12	Trekking	No
19	S26V	Factor Two	0.5853	M	20	Europe	student	Unguided	26	Trekking	No
20	S57V	Factor Three	0.8081	F	24	Asia	Architect	Unguided	60	Others (Project work)	No
21	S14V	Factor Three	0.7766	M	28	Asia	Student	Unguided	12	trekking	No
22	S37V	Factor Three	0.7722	M	39	Europe	Software Developer	Guided	11	trekking	No
23	S5V	Factor Three	0.7136	M	42	Africa	Marketing	Unguided	10	trekking	No
24	S43V	Factor Three	0.6905	M	33	Europe	Did not mention	Unguided	9	trekking	No
25	S30V	Factor Three	0.5521	M	60	Europe	Project Director	Unguided	20	Others (Project work)	More than 5 times
26	S42V	Factor Three	0.5489	F	40	Asia	Teacher	Guided	13	trekking	No
27	S45V	Factor	0.5189	M	32	Europe	Did not	Unguided	9	trekking	No

		Three				mention				
28	S8V	Confounded	F	38	Europe	Did not mention	Guided	17	Trekking + mountaineering	No
29	S35V	Confounded	M	67	Americas	Geographer	Unguided	21	Trekking + Research	More than 5 times
30	S38V	Confounded	F	32	Australasia	Sommelier	Guided	11	Trekking	No
31	S51V	Confounded	M	30	Asia	Engineer	Guided	15	Trekking	No

Appendix C. 2: Demographic characteristics of local residents

SN	Subject ID	Factor loaded	Consent(Audio Record/Take Notes)	Age	Gender	Primary occupation	Other Occupation (if any)	Local / migrant	Living since (years)
1	S1L	confounded	both	35	M	Construction	Hotel	local	35
2	S2L	confounded	both	65	F	Lodge		Local	30
3	S3L	confounded	take notes	26	F	Hotel		Local	26
4	S4L	two	take notes	43	M	Lodge		Migrant	7
5	S6L	one	both	29	M	Trekking	Rescue company	local	29
6	S7L	one	both	33	M	Trekking guide	mountain guide	local	33
7	S11L	confounded	both	41	M	Trekking guide	agriculture	local	41
8	S12L	one	take notes	38	M	Trekking guide	Hotel	Local	38
9	S13L	two	take notes	34	M	Trekking guide	Climbing guide	Local	34
10	S16L	one	both	45	M	Lodge		Local	45
11	S17L	confounded	both	49	M	Trekking guide	Lodge	Local	49
12	S18L	confounded	take notes	26	F	Hotel	trekking	Local	26
13	S19L	confounded	take notes	36	F	Hotel	Agriculture	Local	36
14	S20L	confounded	both	31	M	Trekking guide	Hotel	Local	31

15	S21L	one	audio record	36	M	Trekking guide		Local	36
16	S22L	confounded	both	29	M	Trekking guide		Local	29
17	S24L	confounded	audio record	38	F	Hotel	Agriculture	Local	15
18	S25L	one	both	25	M	Shop		Local	25
19	S28L	confounded	audio record	34	M	Trekking guide	climbing guide	Local	12
20	S29L	one	both	42	M	Hotel		Local	42
21	S31L	one	both	35	M	Social Service		Local	35
22	S32L	confounded	audio record	63	M	Researcher		Local	40
23	S33L	one	both	33	M	Writer	Student	Local	33
24	S34L	two	both	48	M	Hotel	Social service	Local	48
25	S47L	two	take notes	42	F	Hotel	Agriculture	Local	42
26	S48L	two	both	30	F	Hotel	Elected local representative	Local	30
27	S49L	confounded	take notes	27	M	Climbing guide		Local	27
28	S59L	one	audio record	36	M	International Mountain Guide	Wall climbing instructor	Local	36
29	S60L	confounded	audio record	28	F	Student		Local	28
30	S61L	one	audio record	38	M	Trekking guide	Hotel	Local	38
31	S62L	confounded	take notes	34	F	Hotel	Agriculture	Local	34

Appendix D

Evaluation of recreational preferences by visitors

Appendix D. 1: Evaluation of recreational preferences by visitors among natural landscapes, cultural features, local livelihood, activity and pre-existing tourism consequences

Visitor Factor One:				
Image No	Image Title	Score¹⁴	Associated Experiences¹⁵	Sum (Score x Associated Experiences)
15	High mountain valley	4	N - Natural	4N
9	Gokyo Lake	3	N	3N
16	Mt. Everest	3	N	3N
20	High altitude trail	2	A- Activity	2A
5	Mountaineering	2	A	2A
11	Holy mountain	2	N + C	2N + 2C
1	Buddhist stupas	1	C - Cultural	C
26	Deep valley	1	N	N
30	Wildlife watching	1	A	A
3	Buddhist monastery	1	C	C
28	Stone scripts	1	C	C
Sum Total Factor One				13N+5C+5A (N=56%, C=22%, A =22%)
Visitor Factor Two:				
Image No	Image Title	Score	Associated Experiences	Sum (Score x Associated Experiences)
29	Suspension bridge	4	A - Activity	4A
9	Gokyo Lake	3	N - Natural	3N
15	High mountain valley	3	N	3N
28	Stone scripts	2	C - Cultural	2C
1	Buddhist stupas	2	C	2C
8	Bird watching	2	A	2A
2	Yak transporting	1	L- L.	L
16	Mt. Everest	1	N	N
7	Donkeys/Mules transporting supplies	1	L	L
6	Agricultural area	1	L	L
19	Porters carrying loads	1	L	L
Sum Total Factor Two				7N+6A+4C+4L (N=33%, C=29%, A =19% , L=19%)
Visitor Factor Three:				

¹⁴ Based on the score received by each image in visitors' factor arrays.

¹⁵ In associated experiences: N=Natural Landscapes, C=Cultural Features, A=Visitor activity, L=Local Livelihood, Tc=Tourism consequences. Some images come with multiple experiences such as image 11 (Holy mountain)- Natural and Cultural

Image No	Image Title	Score	Associated Experiences	Sum (Score x Associated Experiences)
5	Mountaineering	4	A	4A
16	Mt. Everest	3	N	3N
29	Suspension bridge	3	A	3A
19	Porters carrying loads	2	L	2L
15	High mountain valley	2	N	2N
13	Built up area	2	L + Tc (Tourism)	2L + 2Tc
1	Buddhist stupas	1	C	C
24	Traditional utensils in a Sherpa home	1	C	C
9	Gokyo Lake	1	N	N
3	Buddhist monastery	1	C	C
20	High altitude trail	1	A	A
	Sum Total Factor Three			8A+6N+4L+3C+2Tc (A=35%, , N=26%, L=17%, C=13%, Tc=9%)

Note: The likelihood of preference by each visitor factor group presented in discussion chapter (Figure 7.1) was prepared by assuming the total sum of individual experiences as 100%. For instance, in Factor One ($13N+5C+5A = 23$), the likelihood of preference for Natural Landscapes = $(13*100\%)/23 \approx 57\%$. Even though Mt. Everest and Gokyo Lake also have a cultural significance among local people, based on the comments received from visitors during the post Q sorting interviews, here, it has been assumed as a natural feature for the visitors.