

Bharat Raj Gairhe

**TRANSPORTATION DEVELOPMENT AND
CHALLENGES IN NEPAL**

Case Study on Air Transportation Security

Thesis

CENTRIA UNIVERSITY OF APPLIED SCIENCES

Degree Programme in Tourism

February 2013

ABSTRACT

CENTRIA UNIVERSITY OF APPLIED SCIENCES Unit for Technology and Business, Kokkola-Pietarsaari	Date: March 2013	Author Bharat Raj Gairhe
Degree programme in tourism.		
Name of thesis TRANSPORTATION DEVELOPMENT AND CHALLENGES IN NEPAL Case Study on Air Transportation Security.		
Instructor:	Pages 45	
Supervisor: Sara Åhman		
<p>Developing countries and underdeveloped countries are facing the transportation problem. However, poor management and lack of strong agenda should be taken into consideration to change and improve the current status. Developing countries are seem to be concentrated on the major areas, it would be better to focus the planning also to the rural areas. Proper and balanced management would help to step forward with rapid speed.</p> <p>The Researcher has used the pre-existing qualitative data (secondary data analysis) analysis method to accomplish the research. Objective of applying this method in this research is to use genuine statistics provided from governmental bodies published data.</p> <p>This thesis is constructed to emphasize the Nepalese transportation situation and also to list out the possible development areas. Possible economic development derived by transportation and long run aspects. However, this framework mainly concentrated on theoretical aspects. The main sources of the thesis for the statistical part are initially based on Departments of Road, Nepal and the Civil Aviation Authority, Nepal. Where the research will remain as a secondary research.</p> <p>Basically the aim of thesis construction was to provide the actual and fair image of the Nepalese air transportation safety and security as well as the affected areas. During the research, researcher has been able to analyse the different data concerning Nepalese transportation system. The data shows the Nepalese road transportation safety is poor which is shown in GRAPH 1 and GRAPH 2. Moreover, the air transportation safety level of the country is in poor level comparing to the world wide statistics which is shown in GRAPH 3.</p>		

Key words: Transportation, Challenges, Development and Air transportation

ABSTRACT

TABLE OF CONTENTS

1 INTRODUCTION	1
2 DEVELOPMENT OF TRANSPORTATION	4
2.1 Pricing and market condition for discriminating pricing	5
2.2 Disadvantages of price discrimination	6
2.3 Components of the transportation system	7
3 THE IMPACT OF TRANSPORTATION ON TOURISM	8
3.1 Economic impact.....	9
3.2 The social and environmental impact of transportation	10
4 OPPORTUNITIES IN TRANSPORTATION FOR DEVELOPING COUNTRIES	12
5 TRANSPORTATION IN NEPAL	15
5.1 Transportation modes and flows	16
5.2 Transport infrastructure investment	17
5.2.1 Road transportation and possible cost level.....	18
5.2.2 Opportunities and challenges	19
5.3 The economic impact of road networks.....	20
5.4. Statistic of accidents on the highway	22
5.5 Areas of improvement.....	25
6 RESEARCH METHODS AND OUTCOMES.....	27
6.1 Types of research.....	28

6.2 Data collection	29
6.4 Validity and reliability.....	30
7 AIR TRANSPORTATION (CASE STUDY)	31
7.1 The contribution of air transportation to the tourism industry in Nepal	31
7.2 History of the Civil Aviation Authority of Nepal	32
7.3 Air transportation security in Nepal	33
7.4 Infrastructure development and improvement.....	38
7.5 Research and findings.....	41
8 CONCLUSION AND RECOMMENDATIONS.....	43
9 REFERENCES	45

LIST OF GRAPHS

GRAPH 1. Statistical accidents in highways	21
GRAPH 2. National Statistical Trends in Road Accident, Fatalities, Serious Injuries, Slight Injuries	23
GRAPH 3. Status of Nepalese aviation safety	34
GRAPH 4. Fatal accidents and the fatalities statistics 2000-2012	35

LIST OF ABBREVIATIONS

ADB	Asian Development Bank
ATC	Air Traffic Control
APEX	Advanced Purchase Excursion
ASE	Aviation Security Engineering
CAAN	Civil Aviation Authority of Nepal
DOR	Department of Road
HAC	High Accident Cluster
IASA	International Aviation Safety Assessment
ICAO	International Civil Aviation Organization
IPEX	Instant Purchase Excursion Fare
SAARC	South Asian Association for Regional Cooperation
SATDIP	South Asia Tourism Infrastructure Development Project
SOS	Safety Oversight System
TIA	Tribhuvan International Airport
WB	World Bank
WTO	World Trade Organization

1 INTRODUCTION

Tourism cannot be fulfilled if we ignore the contribution of transportation. Transportation is an integral part of the tourism industry. Transportation connects the various destinations, in fact it connects the whole world. It influences the accessibility of tourism in a country and all over the world as well.

The main function of the transportation system is functioning as a transit as well as carrying the goods and passengers between the destinations. An excellent transportation infrastructure means providing the accessibility of all possible markets for the development of any destination. Development of all hospitality and leisure activities are practically close to the transportation terminals, in fact they are correlated each steps they pass through. Flow of tourist has been strongly growing up since past decade. Tourism is not only a business anymore; it has been developing as a culture. Making tourism as a culture is also the result of rapid growing transportation system.

Air transportation is an excellent example of the transportation at the moment. Comparing to other transportation system air transportation is broadly expanded. Trend of air transportation has been that peak level, which is incomparable to any other. Identifying transportation modes and management as the "important ingredients of the international tourism system," acknowledge that the linkage by air, sea and land modes is essential for the operations as well as the availability of support services such as fuel stations, auto repair, motels and rest facilities for land travel. (Culpan 1987, 546.)

The role of transportation is to ease the difficulty of movement and communication. A host of authors justifiably, though perhaps not too critically, attest to the overwhelming importance of transportation and communication. With considerable logic, many scholars regard the early stages of the industrial revolution be more properly labeled as the “transportation revolution” (Taylor 1977, P-195).

Nepal is a small country in South East Asia which is situated between two giant nations China and India. Nepal is spread within 147,181 square kilometers. Land transportation is the mostly followed transportation route. Nearly 15,000 km road is paved all over the country and nearly over 10,000 km is unpaved end of the year 2012. Aviation system is in better state. In the country, 47 airports are working with the schedule flights where the traffic is sizable and frequent. In rainy season most of the rural transportations are affected because of the land sliding which is the major development challenge for Nepal. (Adopted Wiki)

Transportation development speeds have a direct impact or influence in the entire development speed of a nation. In developing countries transportation plays even more vital role. Nepal is also a developing country with a lot of possibility of transformation to the better future. There are anonymous numbers of potential factors which could possibly help to face and overcome challenges.

This thesis is based on transportation and convenience derived by factor related to transportation and also human security situation in air transportation of the host country Nepal. Nepalese air transportation will be main case to research as well as the sub factor related to the whole Nepalese transportation will also be introduced during the process. International air transportation via Nepal and also Nepalese air transportation service joining other big hubs around the globe will be examined. Definitely the internal (domestic) air transportation situation and the

security and the convenience to the traveller will be widely emphasized. Statistics of the traveller safety and security will also be shown during the case study, if possible and appropriate data are found concerning tourist flow in recent years and the impact of it will be also introduced with the possible graphs and tables.

Human safety has been a very critical issue at the moment, countries all around the globe are extremely concerned. Especially the western countries have been more successful to be able to maintain the targeted level. Safety level in the transportation in comparison with the average level of the world wide, where exactly Nepal has been able to stand is also the aim of the research. Main factors that have been a problem for Nepal to improve upon in transportation and safety and the possible alternatives and infrastructure will be focused on (during construction) which will remain as a case study part of the thesis.

Basically the aim of this thesis is to figure out the current position or speed of the Nepalese transportation development and also to know the challenges factors. Air transportation has been a major transportation system in the Himalayas regions. That is why the objective of the writer for case study is safety issues. This thesis also consists of a theoretical framework to define the different general concern factors. Moreover, the thesis will be concluded with the possibilities of the further development process and effective action that are needed in development process of Nepalese transportation system.

2 DEVELOPMENT OF TRANSPORTATION

Urban areas are usually the result of development of the transportation services and industrialization. Those areas, which are highly attached by the transportation, are simply the sockets for mass population. Since last couple of decade the public mass transportation system has been phenomenally developed. This is because transport is not pursued for its self it has been formed from many other activities. The basic point is, new life style and new generation are increasing the demand of it. Current transportation system is also directly influenced by technology. This is making the transportation system more efficient and more convenient to the public. If we just look at the current development ratio of the transportation system is rapid growing large awareness. But also the currently develop bad aspects in transportation system is criminality and related cases. (Van, Aura, Piet. 2007, Page 4-5.)

The transportation system and the transport has been playing strong role to increase the economic development of a country (Hart 1983). Development of transport also traces with public and private investors because the potentiality of the transport but that has been badly bankrupt as well. Beside some exception transportation has been a highly regarded factor for a country's economic development. (D. Banister, J. Berechman. 1999, 10 -11.)

With globalization, the world has become a small home. To make this world so closely connected to each other air transport has played a vital role but unfortunately air transportation have been facing good and bad moments several times. However air transportation system has gradual development without looking backwards. This 21st century air transportation has established itself very convenient and fast transportation system. Current travelling trend in tourism is

helping to make the air transportation more demanding every year. Asian air transportation system is changing every year in a rapid way. Travelling by air is the probably most important innovation of the 20th century. Air transportation has become incredibly convenient and less time consumption. World has become a small just because of the air transportation, there is no part of the world left which is further away than 24 hours.(Cooper, Fletcher,Fyall, Gilbert & Wanhill 2008, 419.)

Scheduled airlines offer a safe, convenient, reliable, frequent and relatively consumer-orientated product, airlines are more concern to attract the business traveller who tend to be spending more than other traveller, also business traveller are relatively frequent flyers. Airline business is not free from the competition market. To challenge the competitive market, airlines are offering different types incentive package to their loyal customer eg: "Frequent Flyer" programmes. Air transportation is being more convenient in past few years. For the leisure traveller airlines are offering the low fare ticket, although the booking should be made given prior time. These fare including advanced purchase excursion fare (APEX), previously standby, and other forms of instant purchase excursion fares (IPEX), were experimented with. However, more sophisticated yield management, assisted by internet booking and e-ticketing has been available in most of the operating airlines. (Cooper, et al. 2008, 419.)

2.1 Pricing and market condition for discriminating pricing

Pricing is an important element for transportation operators. The objective of setting up pricing is a result of pricing policy, transportation providers and operators who are always trying to set up that level of price where they can maximize the profit. Maximizing the price is not the easy task for operator because

in the market there are other transportation operators seeking the same purpose. Maximized revenues in competitive market is very challenging. Either market size should be expanded or customers should be attracted from other operators as the only way to extend the revenue or increase the market share. (Stole, 2003.)

The transport operator may have monopoly control of the supply of service that makes a lot of difference in price discrimination. Perfect competition provides for many suppliers and many consumers all of whom can freely enter or leave the market. The supplier is the price taker and therefore the firm cannot set the premium or any discount prices.

2.2 Disadvantages of price discrimination

Even in situations where the operator has a near monopoly on its mode of transport, for example railway companies or airlines, a customer may move from being a high yield, first-class passenger to being a lower yield, second-class, saver fare passenger unless strong inhibitors are used to retain that passenger's high fare. The inhibitors may involve restrictions on the train the passengers can use with his/her lower priced ticket, thus excluding departures convenient for most business meeting starts. Price discrimination may bring the customer dissatisfactions and with that mostly bad results, where passengers are paying standard fare another operator maybe providing everything on discount though the services are equally allocated. On the one hand standard fare certainly increases the revenue and low fare holds less amount of revenue. On the other hand, price discrimination is always operator approach based, and passengers may be disadvantaged by its operation. (Stole, 2003.)

2.3 Components of the transportation system

Basically there are four different elements of the transportation system identified. These are, the way, the terminal, the vehicle and motive power. Transportation modes are directly related to those elements, which accelerate the smoothness of operation of transportation. However, transportation cannot be free without the interaction of the other four elements: speed, capacity, safety and security. (Cooper et al. 407.)

The medium of travel over which the vehicle operates is called 'way'. Way can be defined as artificial or natural. Artificial means manmade structures such as roads or railways. Those that exist without any efforts of human being are called 'natural', such as, air or water. Rail networks and inland waterways have various kinds of restrictions while road ways are broadly connected as a flexible network. Air and water transportation logically should be free to use as they are not constructed by human effort but international rules restriction level and areas are defined. Even the civil air space is controlled by air traffic control (ATC). (Cooper et al 2008, 407.)

3 THE IMPACT OF TRANSPORTATION ON TOURISM

Practically proved theory states that tourism plays a vital role in the growth of an economy. Eventually the ratio of tourism economy is directly affected by transportation. Transportation consisting of international and domestic, ground transportation, marine transportation and air transportation, are the most visible factors of transportation. There have been many small transportation systems which are indirectly affecting the tourism, and which should also be counted in transportations, since they have been contributing the transportation somehow. Transportation in tourism is usually a part of the tourism industry. Development in transportation is always bringing new destination and new possibilities of tourism expansion, and also the attraction of visitors. The transportation system of any tourist destination has an influence on the experience of the tourists. They choose various destinations for different purposes and they use the different transportations system. (Cooper et al. 2008.)

Access to various tourism destinations according to the infrastructure and efficiency of the transportation system, has a huge impact in tourism. Simply the direct impact of transportation on tourism is just mostly seen as a part of tourism system, which is responsible for transporting the tourist to the desired destinations and providing the service during the stay. On the one hand a transportation system is always taking some kind of statistics for the tourism industry by measuring the flow of the tourists to the destination, on the other hand better services and facilities in transportation affects the tourist inflow. These general things are always affecting the tourism industries. (Proceedings of the Eastern Asia Society for Transportation Studies 2005, 1767 – 1777.)

3.1 Economic impact

Roads play a fundamental role in the development of a town, city, region and a country, as they affect accessibility and the relative attractiveness of all locations. The trend of new constructions has been developing mostly outside of the cities, which has had a positive impact on the development of a region. This apparent contradiction between the benefits of roads and the negative aspects has never really been addressed in analysis, which has tended to concentrate on the physical quantitative aspects rather than the social and environmental qualitative aspects. Most of the new constructions of the roads have been focusing on the specific areas where development has been encouraged. The consequence of the investment in the locations would suggest that the development pressures have also responded by moving to these corridors and the network outside the cities, it is no surprise that just because of the investment in new road construction out of city centers has generated substantial pressures. (Banister et al. 2000, 252.)

Certainly a step of construction and development of anything in a positive ways has an impact on the economy. The development of transportation has an absolute impact on a country's economy. The apparent impact could be direct impact or indirect impact, but they make huge difference on a country level. A micro economic factor could turn out as a macro level factor when it merges in large scale economy. Development of transportation always opens a new way to communicate with rural places as destinations. Expansion of transportation decentralizes the economy. Economy level expands in a big area which is a very framing factor of impact of transportation in economy. (Surface Transport & Environmental Research: A Long-Term Strategy Special Report 2002, 268.)

3.2 The social and environmental impact of transportation

A general impact which is possible to observe and experience in a short period, developed by transportation system is the environmental impact. Transportation development brings parallel changes to the environment. Mobilization demand of transportation of urban areas to the rural areas by the passenger freights are eventually linked to the international market. Transportation has become a numerous part of the society which is also considered as the main element of the development. Transportation has a grand influence on human choices like, urbanization. Extensive development of transportation influences the people to choose the different place to live, establish their business, leisure travel, shopping and vacations etc, which directly helps a country to develop different parts of a country that helps to parallel development. (Kulash 1999, 4.)

Environmental impacts of the transportation are divided into three dimensions. They are known as 'direct environmental impact', 'indirect environmental impacts' and 'cumulative environmental impacts'. Carbon dioxide emission increased by the growing number of the vehicles are polluting the environment, which is the basic worldwide issue, sustainability concept is having a positive impact on public mentality. However, the status of the emission production by the vehicle are not downward, they are increased instead. (Rodrigue 2009, 1.)

Transportation supports many dimensions that affect the environment pollution such as climate change, air pollution, noise pollution, water quality which is known as hydrological pollution, soil quality, biodiversity, and land take. Mentioned dimension in the transportation are considered as all kinds of impact, direct impacts, indirect impact and cumulative impact in environment. Direct

impact meaning that showing immediate influences in general. Similarly, the impact caused in secondary phase is called indirect impact but in practice this kind of impact can come with bigger consequences than the direct impact does. Cumulative impacts are known as unpredictable impacts, this impact are basically result of direct and indirect impacts. (Rodrigue 2009, 1.)

4 OPPORTUNITIES IN TRANSPORTATION FOR DEVELOPING COUNTRIES

Transportation brings more opportunities to the regions which are congested, intermediate and underdeveloped which is more beneficial in comparison to the other urban areas and developed areas. To develop such areas economic overhead capital should be concentrated seriously so that the achievement would be higher. Economic aspect of such areas will be growing eventually. Basically road investment always affects the whole economic movement. The trends of road development have been more focused to the urban areas which are leading the extremely undeveloped regions to be remaining the same. Basic theory for road investment: “unless implemented the effect of transportation will be higher and higher”.(Paradis 2008, 200).

Identifying and solving transportation problem is one of the hard tasks confronting governments in developing countries. Allocation of huge number of budget titled as an urban transportation cannot develop the transportation just because of lack of planning and lack of governmental rule and unavoidable corruption. Becoming the ideal of the major corruption and being planning free country have been a worst part for the developing countries. Developing countries are mostly managed by constructing larger roads; just making the larger roads does not give the total result, in fact that is not the ultimate solution. Projected road should be part of overall transportation plan which should include traffic management, transit system and public transportation. (Tahir, Khan, Hassain 2011, 256-266.)

Multi-model transportation is the main requirement for the developing countries, which also facilitates community growth and the parallel development of the

country. Financial allocation for those urban areas with a strong plan and avoiding the corruption practice is the most important factor on the base level. In order to achieve this goal the government should take serious measures and provide professional manpower which helps to get a solution to the complex mobility problem confronting urban areas and it requires collaboration. Inabilities to provide effective traffic solutions management is facing undesired consequences created by the dramatic population growth. (Masood et al. 2011, 256-266.)

In developing countries, transportation has to be taken care of by the governmental official department, expecting transportation sector and its need to be taken care of by the public generally does not happens. People living in development countries have an unimaginable mentality comparing EU countries and most of the western countries. Because people have different mentality towards transportation development responsibility, they think all the transportation and traffic system has to be taken care of by the government, and that is why government has to be functioning in the transportation-based system. Nevertheless, private sectors are helping to manage hauls. (Masood et al. 2011, 256-266.)

Transportation networks of any country are of vital importance to its development and affect all the sectors through the economic linkage. The speedy and unplanned and uncoordinated growths of the cities are seriously creating the problems, in fact they are compromising existing transportation systems, significantly they are creating the big problem for the future transportation. These sorts of practice are mostly appearing in developing countries like Nepal. Another truthful fact of the reliable transportation network creates the tremendous level of employment all over the country. (Masood et al. 2011, 256-266.)

South East Asian regions are mostly developing regions. The associations for South Asian region have been developing some framework for expanding the transportation facility and cooperation between each other to achieve the projected goal. There have been many agendas proposed since several years. In 1999, the member nations consisting of Nepal, Bhutan, Bangladesh and India of the South Asian Association for Regional Cooperation (SAARC) formed a committee for developing transport facility and infrastructure development. . (Subramanian, John 2000, 108.)

The main purpose of the committee is to coordinate the Air transportation within SAARC nations in an easy way and also to make logistic transportation facility adjustment. The treaty between Nepal and India about transportation has been somehow upgraded, which is making practically more efficient and both countries have been beneficial because of the open border system as well. Within the SAARC nations air transportation is more convenient to the public since they have assigned the agreement to cooperate with each other. (Subramanian, et. al. 2000, 108.)

5 TRANSPORTATION IN NEPAL

This chapter will describe about the transportation system available at the moment in Nepal and also analyze the potentiality and importance of transportation system. Before writing further about Nepal, it is necessary to know the basic facts of Nepal's current situation, physical structure and some other basics facts as well. Nepal is a developing country which lies in South East Asia and is bordering with India and China. India is bordering in the East, West and South whereas China is in the North. Nepal has been a monarchy political system but since the last 3 years it has formed the Democratic, Federal Republic of Nepal. Kathmandu is the capital city of Nepal. The total population 2,858,4975 (Census 2011, Central statistical bureau of Nepal). According to the Ministry of physical planning and work, Nepal 2008, the total highway connection within the country is 13,233 KM (Ministry of Physical planning and works Nepal 2011)

Transportation plays a very important role when it comes to a country like Nepal. For developing countries any kinds of transportation are equally important. The physical structure of Nepal, has always been a difficult part for developing the transportation routes. Basically Nepal is depending on two transportation systems. Possibly the transportation with rail would be the cheaper and more reliable but it is not due to the physical structure of Nepal. There is a railway operating within little distance connecting India and Tarai (plane landscape) of Nepal. Road transportation is the main possible transportation for Nepalese landscapes. Air transportation is also the most used transportation system in Nepal. Those places where road transportation is still not available, air transportation already exists.

A well-managed public transportation system is always the first visible part of the transport condition of a host country. Nepalese public transportation situation is not an example of a well-managed transportation system, although there is enough transportation available to different places. Road transportation is not safe enough because of the physical structure of the country and because of little awareness among the public about traffic rules. Nepal's government has been developing many strategies to improve but that has not get succeed to get public awareness. Government has always concentrated the policy to those areas where tourist flow is high; there are plenty of transportation companies which are working for tourism which is practically incomparable with the normal public transportation. The current situation of the road transportation of Nepal is an example of an unbalanced and poor road transportation system but if comparing with the past years, definitely it has been getting better. (World Bank , Nepal Overview 2012, 1.)

5.1 Transportation modes and flows

Networks and flows were positioned within the transport framework. It was suggested that these elements when combined they effectively determine the transportation products. Basically transportation modes are generated to flow some sort of market such as, different transportation modes are being used to promote a certain tourism destination. Transportation modes and flows are co-related to each other, that is why it should be a target plan for any government or state to develop the transportation situation in a proper way. Development of any state, town, village or any remote areas should not be just considered issue of supply and demand, but it also should be considered as how government are involved in transport planning. (Duval2007, 56.)

The key argument has always been that through understanding the spatial relationship and spatial interaction within and across networks and flows, different kinds of analyses of supply, demand and also government planning and policy making, becomes more meaningful. Always to keep in mind, network and flows are influenced by management, planning, marketing, demand and other external variables. Transportation modes and flows have large impact in tourism as well beside other governmental benefits. Connectivity and accessibility are the part of transportation flows. The ability to examine the relationship between various kinds of modes of transportation and the wider networks within which they function can also be a main outcome of the proper network flows. Also the ability to compare, between two places, the relative strength of a particular mode of transport to another mode of transportation is directly influenced by proper flow of means of transportation. (Duval 2007, 63.)

5.2 Transport infrastructure investment

Infrastructure is the capital for a city and a country, location of this kind of capital is fixed. The transportation sector includes all kinds of transportation communication, which includes railways, roadways, communication (eg; air traffic control) and terminals.

One should take a very broad based approach to infrastructure as it comes all the social overhead capital necessary for the development (including education, health and nutrition), rather than the narrower definition of the economic overhead capital (including roads, sewerage, water and utilities). (World Bank; 2012)

Infrastructure is a capital good for which users do not pay the full market price and is often perceived as a source of external economies. (Banister, David, Joseph 1999.)

Better transport infrastructure always influences higher production and higher consumption patterns, but eventually it helps to reduce the cost of transportation and travel. Interesting part of development process of transportation infrastructure, is that it is always hard to build a new infrastructure in transportation because the people living in host city or country they do not think there are any kind of benefits to them either it is direct or indirect, which is not just true for roadways transportation but also for railways transportation. Need of capital and labor may be reduced because of infrastructure as productivity is improved. Influence of infrastructure appears also in employment and private capital through changes in accessibility and marginal transport costs. Infrastructure is a generic term that needs to be carefully qualified to make it suitable for focused policy analysis. (Banister et al. 1999, 10-22.)

5.2.1 Road transportation and possible cost level

In an openly competitive transport market, allocation of all possible resources of services can be determined on the basis of the operator producing at the minimum possible cost services required by their customers. Basically this applies to both freight and passenger operation and in both sectors. Customers are always grown enough to choose the best combination of cost and quality, where price can be considered by them. High quality services are often available with higher price but this is considered as luxury and comfort. This comfort is not the only characters but also the timing of arrival and departure affect the customer psychologically. (Bayliss 2012, 8-14.)

Generally the private cost means that amount of money spent by individuals and receiving different services offered by the market. Since the transportation is a

non-storable product it needs different methods of providing and financing infrastructure and moving units like all kinds of motorized vehicles. Each mode make transportation industry costs more complex rather than other industries. Construction of roads consumes many miles of lands that cost is always apart from the individual cost in normal view but that affect a lot in the long run. (Bayliss 2012, 8-14.)

5.2.2 Opportunities and challenges

Physically Nepal is a small country with a lot of possibilities. Natural beauty is one of the best things it has got. Existing bio-diversity across the narrow cross section is known as a vast subject in this country. Nepalese people are totally bounded by cultural aspects, which makes it very easy for uniting creative groups for development and construction. Unfortunately the country has tremendous amount of electric power cut problem which have to be resolved as soon as possible. Construction and reconstruction process are directly affected by these power cut problems. Transportation is the basic element of the development process which has to be taken very seriously by the Nepalese government. New constructions of good standard such as roadways are needed to make transportation smooth. (Sitaula 2010, 1-7.)

By developing wide highways, fast track accessing biggest cities and the expressways, a country can jump to the next level of transportation system which would lead the country into the trade market, tourism market, industrial market, foreign market, and convenient internal market. Construction of new highways would diversify the centralization of a market which would benefit different zones all over the country. (Sitaula 2010, 5.)

Topographical challenges are the main problem to the new constructions. Nepal faces several kinds of challenges to develop surface transportation. Fragile geology, numerous rivers crossings are the main issues with the development of roads. Nepal is facing several problems such as; infrastructure development in rugged topography and fragile geology complicated by high seismicity and big rivers, lack of skillful manpower, lack of political stabilities and unbelievable prolonged transition phases, inadequate maintenance, awareness of sustainability, corruption, harsh competition with the membership of WTO etc. (Sitaula 2010, 6.).

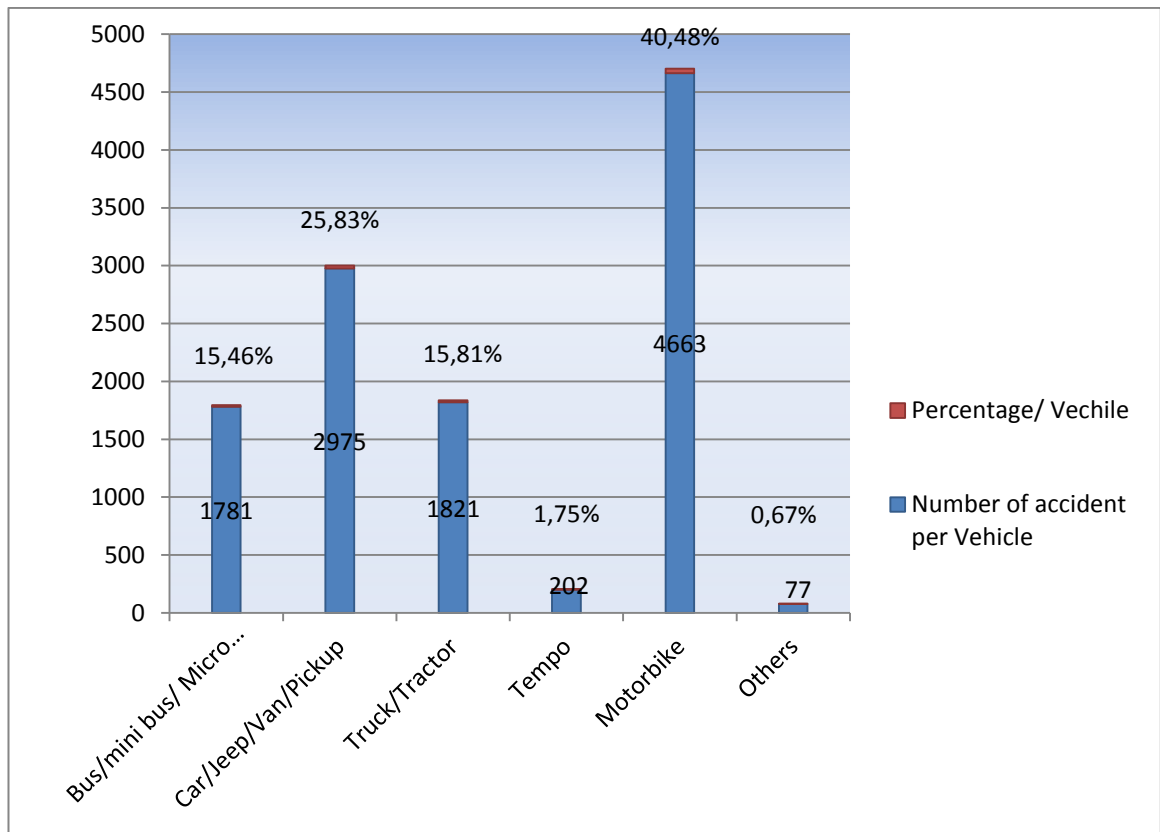
5.3 The economic impact of road networks

Economy has been a major concern of all kinds of decision makers, just to ensure that investment of their interest is secure. Transportation concerned decision makers are also looking for clear benefits of their investment just as other investors are. Economic development of current generation should be more concerned with social and environmental economy development, which prevents the investment to become narrow. Evaluations of transportation based macro-economically have a wider and very simple approach towards transportation development. Impact of the road transportation for a nation would help with several things, for instance; agriculture production would create new markets for goods and link isolated areas with the main towns and cities. Road transportation networks would help to develop the logistic relationships. Land value is also one of the important factors for the economy. As distance from the center increases, the total cost of transportation also increase, and these factors determine the highest use value of any particular location, which affects the economic part directly.(Banister, Berechman 1999, 5-9.)

The developmental tradition has involved a strong belief that transport made a vital contribution to the economic growth. Conclusions derived from various sectors of the economic history have been to downgrade, comparing transportation innovation performance in aggregate. Road investment influences directly in that it has greater effect on economic activity, basically in less industrialized regions. The result of producing low growth rate is caused by focusing on the urbanized areas more than the intermediate locations; similarly underdeveloped areas are less focused than the intermediate regions. The economic effects are positively co-related with urbanization levels and the metropolitan proximity. The maximum number of roads may result in marginal returns in diminishing mode. (Banister et al. 1999, 14.)

A fact of developing countries is that they have anonymous growth of traffic which is definitely a huge problem to settle in as a good system, what is even more disappointing is that they do not have parallel economic growth as the growth of traffic is, which becomes a basic problem for the transportation system. Developing countries which have very low income and a low economic growth still manage to have an amazingly high level of private vehicle owners, that is resulting as less attractive destination. .(Cooper et al. 2008, 415.)

5.4. Statistic of accidents on the highway



GRAPH 1. Statistical accidents on the highways (adapted from Department of road, Nepal)

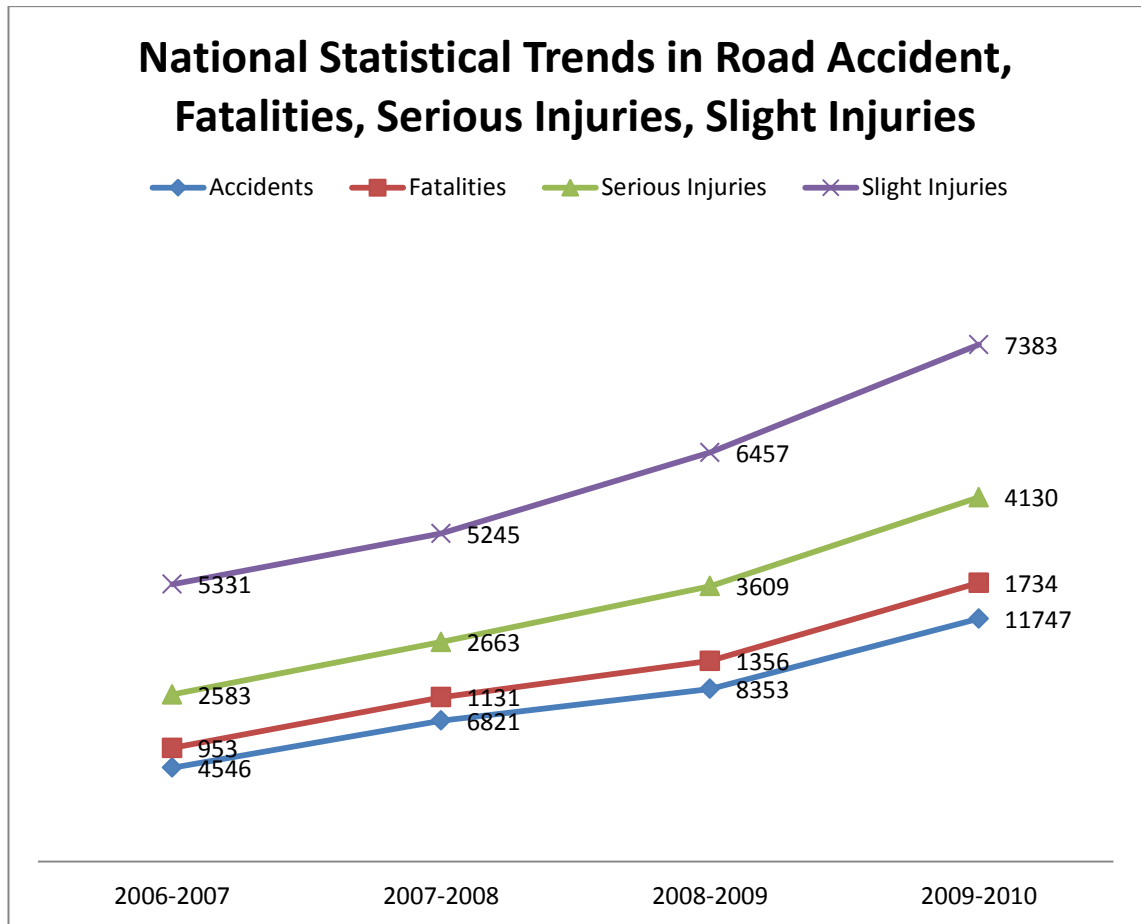
The statistical bar chart shown above is completely constructed on the basis of numeric sources provided in the primary source. This statistical result shows the different types of vehicles involved in accidents.

Accidents caused by the motorcycle is very high according to the data. More than 40% of the accidents happen just because of the motorcycle. The main cause of being such an incredibly high number is also because of the physical structure of Nepal. Motorcycle is also a tool to expose the proactive driving, according to the department of road of Nepal. The trend of accidents of motorcycle is higher on the highways rather than in the cities. An astonishing 40% of accidents are on the

highways in Nepal which is very critical, and has to be seriously taken. (Sharma 2011, 19-22.)

A quarter of the percentage of the total accidents is occupied by personal vehicles mostly. Literally Cars, Vans, Jeeps are also the victims of road accidents. The trend of being a victim of the private-owned vehicles is absolutely higher than the public transportation, whereas, minibus, micro van and buses are less involved in accidents which consists of nearly 16 percent of the total accident statistic of Nepal. Being involved in so many accidents by the private vehicle is also the reason of drunk and drives which is not the good part or image of any country. A country like Nepal should have a very strong law to stop or at least to reduce such an unhealthy exercise. Another transportation vehicle called truck and tractor are usually used for construction carries or agriculture carriage. If we compare the casualty of the passenger in those vehicles system it is low because they mostly carry other goods rather than the people. Still the passengers of the vehicle are mostly found dead after the accident. If it were cars or vans there would be high numbers of fatalities in the accident. (Sharma 2011, 19-22.)

Tempos are mostly running inside the city, they are rarely caught in accidents. The number of casualties could be zero because they are known as low speed vehicles. Beside some exception there are not any fatal deaths in tempo accidents mostly they only caused minor injuries. There are very few numbers of accidents caused by tempos which is nearly 2 percentages. Other data in the figure refers to that the vehicles used by people, like, bicycle, rickshaw and very typical vehicle are considered as having a micro-level of accident (Sharma 2011, 19-22.)



GRAPH 2. National Statistical Trends in Road Accident, Fatalities, Serious Injuries, Slight Injuries (Adopted from Sharma 2011)

This graph shows the clear view of the road safety level of Nepal. This graph only covers the statistics from 2006 to 2010. This data was published by the Traffic police department. Every year the number of accidents has been increasing rapidly. The ratio of accidents in 2007-2008 is much higher compared to 2006-2007; the line indicator of the accident is heading upward every year. Since 2008-2009, the number of accidents has raised to a miserable level.

The indicator of fatalities is also growing almost in the same ratio as the accidents have risen. In year 2006-2007 the number of fatalities was 953 after three years the number had become 1,734 almost the double, which is not normal statistics. The fatalities number is also including pedestrian victims.

Serious injuries are also on a critical level, every year the number of serious injuries has increased. 2006-2007 and 2007-2008 seem more constant than year 2008-2010. Within two years the number of serious injuries has become a catastrophe. Slight injuries are also the indicator of the accident; fortunately they have been able to cheat death or any kinds of serious injuries. (Sharma 2011)

5.5 Areas of improvement

Nepal has a lot of areas to be improved upon in order to make transportation system smooth and safe. Urban areas are the most affected areas because of the narrow roads and the traffic jam, which is making the city very ugly and people living in urban areas are facing very serious problems every day. To address this problem the government should take serious initiatives. Roads should be expanded and also new possible alternatives should be constructed. Highways have a higher number of accidents and fatalities. The physical structure of the country is very difficult and unavoidable, indeed, but alternatives and appropriate technology could make it safer than it is. Traffic signs available on the high way are not enough, and the many sharp bends in highways which should be reduced. (Sharma 2011)

Lane marking in the highways is most important when the road structure is more difficult in that it makes the driver alert and the new technology should be introduced to the public about traffic regulations and kept updated. The upgrading of the road to a parallel level with the urban areas is most important in order to develop road transportation. Maintenance of the road in time is one of the key problems in Nepal (Sharma 2011). Another problem in traffic safety is unbalanced traffic and unmanaged traffic system in peak hours.

Infrastructure is the most important elements for development. In Nepal, the essential infrastructures are on a minimal level. Bypass, flyovers, subways, free space for parking for different types of vehicles are most important elements for safe and convenient transport. Rules for the inspection of vehicles should be more focused, which also helps to keep the city clean and avoids the possible road accidents, but there should be very strict rules implemented. The Department of road and transportation should be flexible to keep excellent coordination with related agencies who are responsible for road safety issues. Ultimately, the big issue of everything is funding. The Government should have better planning and enough allocation of road construction and maintenance of budget. (Sharma 2011.)

6 RESEARCH METHODS AND OUTCOMES

Answers can be obtained in several ways; research is also one of the ways to find reliable and professional answers to the questions, (Kumar 2005). This part of the thesis will describe how this frame work will be constructed. What will be the procedure and what are the criteria and limitation of the case study are.

This thesis is partially designed as a case study. The Case study method generally investigates a mutual phenomenon through various analyse. Reliable and relevant data are to be used to complete a case. It provides an opportunity for the intensive analysis of many specific details often overlooked by other methods. (Kumar 2005, 113.)

Basically research methods mean techniques used while conducting the research; it can be defined in various ways, such as understanding the matters of the research in an appropriate and easy way which is also scientific. Research methods and techniques are the scientific elements, but research methodology is the basic elements during the research, which is most important. A researcher should always take in consideration what the research methodology is. Making research is itself a very critical task, using different techniques and applying them to the research is a very hard task. Sometimes the researcher may have to use mathematical or statistical data, in these conditions the researcher should be careful to choose the most reliable and suitable technique. (Kumar 2008, 4.)

Research methodology is divided into many dimensions and secondary data research method is also one part of it. Research methodology is known as wide subject, which is why a researcher should be alert about research methods during the construction of the research. (Kumar 2008, 4.)

6.1 Types of research

Introducing something which was not known before in a scientific way, which may include theoretical or numerical tools is called research. Research is known as a part of science which is a huge subject to describe in one sentence. But basically the research function states that, research can be divided into three different parts. They are known as 'descriptive research', 'explanatory research' and 'evaluative research'. The descriptive research method is mostly used method in research. The descriptive method focuses on findings and analyses what those findings meant to describe. This descriptive research method is the mostly used in tourism and transportation sector because they are always changing as either destination as tourism or destination as transportation. (Veal 2006, 3.)

Explanatory research basically explains how things are working as normally as they are working. These sorts of research are basically the answers to the questions. For example, a destination for transportation is working very well, the task if this explanatory research is to find out what makes this destination to become so popular or on the other hand, why the destination is losing its popularity. Transportation is the development process of a destination, so it goes on and on until the destination gets its best out from the transportation facilities. (Veal 2006, 4.)

Evaluation is the main rule of the evaluative research method. Related to the event management and same nature of cases comes in evaluative research methods. This type of research is most useful for the theoretical evaluation. For example, In transportation this research can be used as a tool to evaluate between targeted development of transportation of a destination, or to the destination, with the result gained within the target time and budget. (Veal 2006, 5.)

During this research different types of statistics will be involved to create a new result as the researcher has aimed. Basically the type of research will be based on secondary data analysis of qualitative data. Generally this thesis will be constructed as per qualitative method's guideline.

6.2 Data collection

Data collection is very genuine work during the research. The Researcher always should choose the data according to his/her research, in fact data are always depending on the technique used by the researcher. During the research, the researcher created the data him/herself from the initial level called 'primary data' but the source already exists but researcher modified it in a different chart, table or any kind of displays, or he/she uses the data as it is called the secondary research. There are many positive and interesting facts of the secondary data collection. While using the secondary data, the researcher can save money and time because the data already exists. Using secondary data also avoid the possible errors. (Veal 2006, 147.)

Here, the data will be collected from different sources, such as Tourism and Civil Aviation Authority and Department of roads, Nepal. Data collected from those different sources will be presented and described according to the information available in the primary sources. Collected data are qualitative; however this data will be the main sources of the research, literally the research is secondary analysis of qualitative data.

All the data included in the research process are statistics of the aviation security level comparing to the world's average data and statistic of Nepal's airline safety

structure, which will show the entire image of the past years history of the air transportation security which is the main issue of the case study of the thesis.

6.4 Validity and reliability

Generally validity is the extent which reflects the measurement of the research according to the data collected, and it also reflects truthfulness of the data. In fact validity in quantitative research navigates what data should be collected and which kinds of hypotheses should be interpreted. Because of the large criteria of empirical research it is always hard to be certain about qualitative results. In qualitative research method where series of questionnaires have been used the complexity of answers is low but the complexity of validity is higher. (Veal 2006, 41.)

Consistency of the results over a long time which also the representation of mass population verdict in a certain methodology, which repeatedly remain the same in qualitative research. In other words, stability of measurement over time and close result of the measurement for the identified period. Although in social science this might vary. Human beings desires and passions can change throughout time, for example, the same person may change his approach to the same subject he had before. These kinds of uncertainties can occur mostly in research. However, the researcher might be able to prove the similarity, which basically refers to reliability. (Veal 2006, 41.)

7 AIR TRANSPORTATION (CASE STUDY)

Nepal has reached a unique level of development in air transportation despite the very difficult physical structure and weather which is not avoidable, indeed; however the air transportation should be as safe as level set by the international civil aviation authority. However, Nepalese air transportation has been developing, and has been expanding with airlines operating with many countries around the world. Since 2009, Nepal has signed bilateral agreements with India, Sri Lanka, South Korea, Bhutan, Japan, Myanmar, Bangladesh, Brunei, China, Malaysia, Singapore, Thailand, Macau, Maldives, Hon Kong, Philippines, Oman, Egypt, Saudi Arabia, Jordan, Qatar, Bahrain, Pakistan, Kuwait, UAE, Israel, Austria, France, Luxemburg, Russia, Germany, Italy, Netherlands, UK, Croatia and Turkey. This agreement also proves that the Nepalese air transportation has been developing gradually. (CAAN Report 2012, 7.)

7.1 The contribution of air transportation to the tourism industry in Nepal

Tourism is about being elsewhere and, in consequence, the main function of transportation in the tourism system is transit. Generating the tourist in transit and carrying them to the destination certainly influences the tourism economy. Access to the adequate transportation system and the better transit attracts the traveller to use the destination as a transit point. Tourism is a fragile business, which is quite hard to predict compared to other business. Slight change in a plan and situation can create the huge catastrophe. (Cooper et al. 2008, 406.)

Transportation is a part of the tourism industry, certainly a development of the transportation helps to improve the whole tourism industry. Simply, the

development of transportation system is development of tourism. In a country like Nepal where road transportation is complicated, air transportation is the only one alternative. Basically Nepalese tourism destinations are mountain areas, and particularly those areas are without road transportation. Air transportation is the only transport service available. There are several domestic transportations flowing by the local inhabitants, those transportation system are also somehow responsible to motivate tourism activity.

7.2 History of the Civil Aviation Authority of Nepal

The history of aviation Nepal has become more than half a century. In 1949 was the establishment year and since then the aviation is still running through the different stages. Aviation Nepal started its service with four-seated Beechcraft. After a decade aviation made another history by landing the first charter flight from Kolkata. Later in 1957, the Nepalese government founded a department of civil aviation authority (CAAN), which is taking care of all the activity related to aviation. In 1960, Nepalese aviation had another achievement which was attending International civil aviation organization (ICAO) membership. During the 1960s the Civil aviation authority made a lot of changes in airport infrastructure, which was generally enough to gain the trust from European airlines. In the 1960s German Airlines Company Lufthansa landed at Tribhuwan International Airport (TIA) Kathmandu which is only one International airport at the moment in Nepal. After 1970s, TIA has landed 100s of different aircrafts companies joining different continents which has a huge prospective in itself but does it have the entire infrastructure that one international airport should have at this technical age? TIA has been developing regarding ICAO standard, which has reflected as when CAAN received TRAINAIR PLUS associate membership from ICAO in year 2012. (CAAN report 2011-2012.)

CAAN has developed more than 35 domestic airports over the country. CAAN has installed all available and possible infrastructures in domestic airports concerning safety. For enhancing the effectiveness of aviation security monitoring system, modern CCTV with 175 cameras have been installed at TIA. In order to instill a feeling of responsibility in various agencies during aircraft and airport emergencies, emergency exercises were conducted at two major domestic airports, i.e. Nepalgunj in Chaitra, 2067 and Biratnagar in Baisakh, 2068. Both exercises were found effective as these witnessed the participation of local administration, the Nepalese Army, Nepal Police, the Armed Police, hospital, fire brigade, and the ambulance service providers. (CAAN Report 2011-2012.)

7.3 Air transportation security in Nepal

“The state of being free from danger, damage, or worry” is called security. (Kölle 2011). The International Civil Aviation Organization (ICAO) defines in Annex 17 aviation security as “safeguarding civil aviation against acts of unlawful interference. This objective is achieved by a combination of measures and human and material resources.(Kölle 2011). Annex 17 further specifies unlawful interference as “acts or attempted acts such as to jeopardize the safety of civil aviation...” The Foundation for the definition of aviation security and all its aspects is ICAO. But ICAO does not have a clear opinion on it. (Kölle, Markarian, Tarter 2011.)

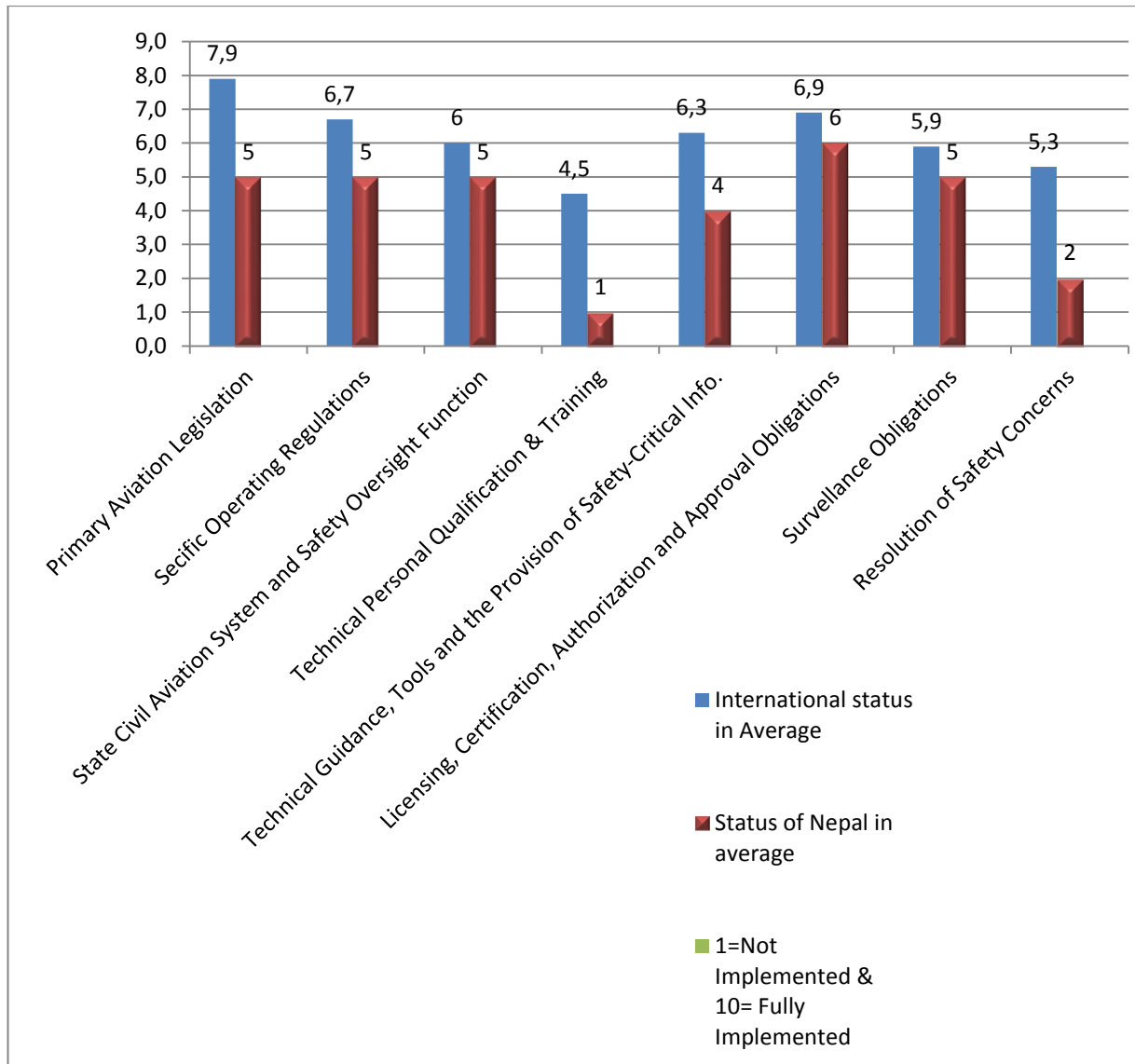
The issues of security has become an important part of aviation in the 1980s, seriousness of security and awareness got a high level because some series of hijackings. Security and safety have become the main issues for the aviation. Since

the September 11, 2001 aviation has become more concerned with safety matters. (Kölle et al.2011, 1-17.)

Concerning global air transport security system Civil Aviation Authority of Nepal has been following the ICAO's guidelines and all the strategic plans. ICAO is acting as a watch dog to look after whether the contracting states are able to discharge their safety oversight responsibility and implementation status of standards and recommended practices promulgated by ICAO. According to the Universal Safety Oversight Audit Program (USOAP) as provisioned by ICAO to monitor the safety status of its member states, a safety audit was carried out in Nepal from 5-14 May 2009. ICAO is monitoring CAAN, on a continuous basis, the safety oversight capabilities and the safety performance of the states. (CAAN Report 2011.)

Nepalese aviation security system is monitored by the ICAO's. Nepal is also using the same security equipment used in other countries. Beside that some manual checks are also done if needed. ICAO has the authority regarding audit of all the resources used by the Nepalese aviation authority. (Civil Aviation report 2009-2010.)

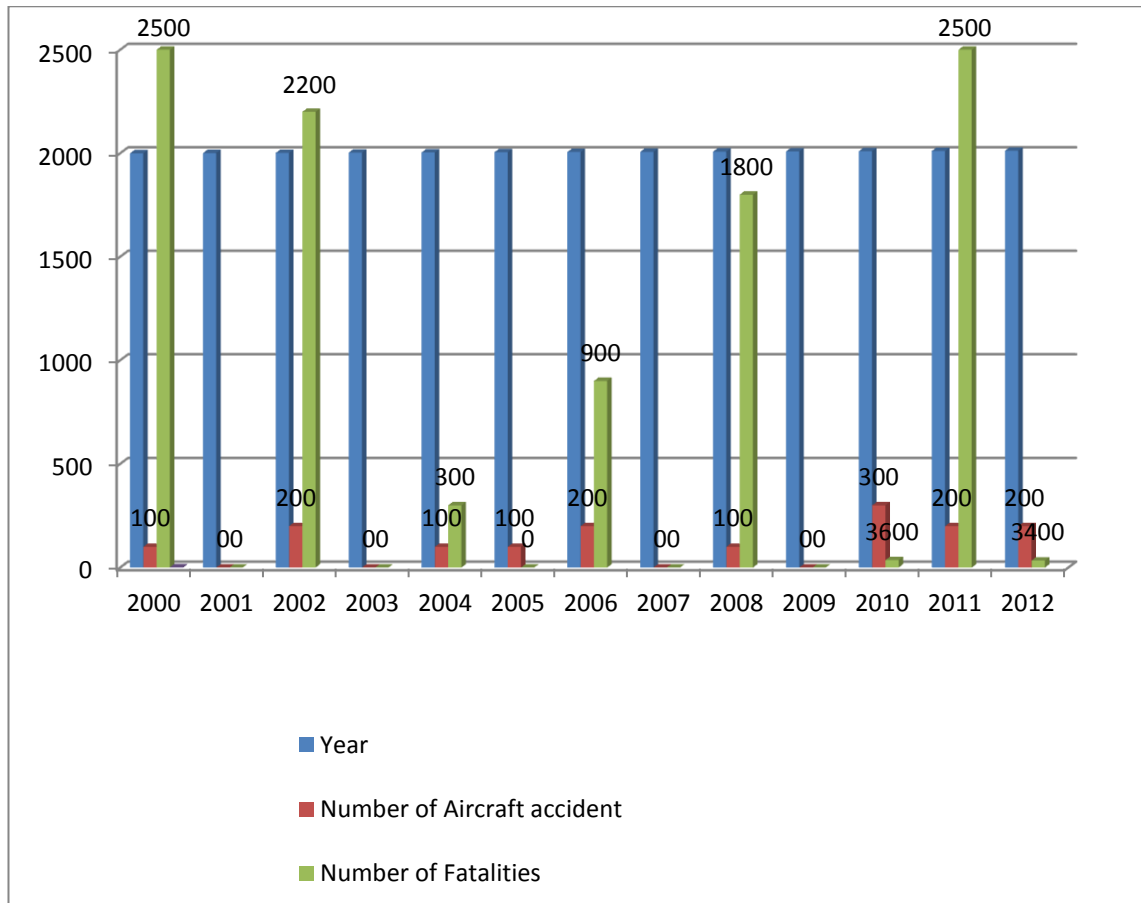
Statistically Nepalese has a negative plane crash history compared with some South Asian region countries. Most of the crashes have happened because of the high mountains and lack of enough experience. (Graph 4.)



GRAPH. 3 Status of Nepalese aviation safeties (Adopted from Aviation safety network 2013)

The Above shown graph shows that the safety status of Nepalese aviation and implementation of the critical elements addressed by Safety Oversight System (SOS). The report was presented after ICAO's safety audit in May 2009. The presented graph shows that the primary aviation legislation followed by the Nepalese aviation is comparatively less than the average followed rate worldwide. Primary aviation legislation is a very basic element, but Nepal has not yet met the average level. Regulations regarding specific operation is yet not reached to the

average level worldwide (Graph 3), which consists of five percent where the average percentage is 6.7%.



GRAPH 4. Fatal accidents and the fatalities statistics 2000-2012 (adapted from Aviation Safety Network.2013)

The Above graph is the actual image of the Nepalese air transportation accidents where 172 people were killed in 13 years, these numeric values of fatalities are multiplied by 100 to make it easier to the reader. There has been an aircraft accident one in a year in average. The number of fatalities is comparatively low if we look at the normal airplane crash history. In 13 years there have been 15 airplane crashes but still the fatalities are low because all the crashes are domestic airplanes which have a very low passenger capacity. In year 2000 there was one

plane crashes where 25 people were killed including three crew members. Luckily there was not any kind of fatal accident in year 2001, but year 2002 had become another historic year with two different airplane crashes where 22 people were killed. On the 27th of July 2002 a private owned airline company's twin otter plane was crashed where four people were killed, right after a month another fatal accident happened where 18 people were killed near Pokhara. (Aviation safety network 2013)

Year 2003 was registered as an accident-free year for the Nepalese aviation authority. On the 25th of May 2004 a twin otter crashed where 3 crew members were killed. In year 2005 there was another twin otter crash owned by Gorkha Air, but fortunately nobody was killed. Yeti airline's twin otter plane crashed nearby the Jumla airport in 2006, six passengers and three crew members were killed. The craft was written off (damaged beyond repair). Year 2007 was another airplane-accident-free-year. Twin otter crashing history was repeated in October 2008. Yeti airline's twin otter took off from Kathmandu to Lukla (Tenzing-Hillary Airport) but before the landing the plane crashed where 18 people were killed and one crew member survived but the plane was written off. (Aviation safety network 2013)

2009 also became an accident-free year. Year 2010 was a nightmare in history. There were three different aircraft accidents. In April 2010 the first plane was crashed for the year. Nepal Airline's plane took off from Kathmandu airport but before reaching the destination the airplane crashed, luckily no one was injured, all the passengers and crew members survived suffering normal injuries. Agni Air's Dornier plane crashed in August 2010 where 14 people were killed including three crewmembers, and the plane was found in the middle of rice field in small pieces. In mid-December 2010 another twin otter owned by Tara Air crashed with

19 passengers and three crew members. Everyone inside the airplane was killed. (Aviation safety network 2013)

In September 2011 Buddha Air's Beechcraft was crashed; unfortunately no one came alive out of 19 people including three crew members. Nepal Army's airplane crashed on the 18th of October, 2011 where six people were killed including two crew members. Recently, in year 2012 there were two different airplanes crashed: Sita Air and Agni Air operating flights. Agni Air crashed on the 14th may, 2012 and reported 15 fatalities out of 21 people, and Sita Air crashed where the number of fatalities was 19 including crew members. (Aviation safety network 2013)

7.4 Infrastructure development and improvement

Improvement of infrastructure in certain departments is extremely important, which basically benefits the citizen, just like all the governmental authorities are providing their specified services. Air transportation has also the same sort of importance like other human concern elements have, for example, concerning roads, water supplies, wastage disposal, and other infrastructure that are directly related to the human lives and beside that there are various kinds of activities related as secondary need. As important as daily lives activity those secondary activities are also related. Development of other infrastructure serves efficiently and reliably the wide range of social and economic activities. A very general infrastructure is also co-related with other infrastructures, like a flood can cause an interruption in an airport operation through communication. Globalization can benefit a nation in different ways by enabling advantages of service commodities. To gain those kinds of benefits nation must have an appropriate infrastructure to

handle it adequately and safely. Air traffic control is a very sensitive part in aviation, which should be updated by latest technology to avoid the accidents.

Globalization can enable a nation to develop and benefit from its comparative advantage in commodities and services including tourism, but a nation must have adequate infrastructure to realize its comparative advantage. For example, a country must have a network of airports that are capable of handling operations by large jets safely and efficiently as well as an air traffic control system that uses the latest technology to optimize routings and prevents from unexpected disaster. Until year 2008 the number of airports operating is 49,000 in the world. They have made substantial development in aviation infrastructure; air traffic control system is trying to implement the satellite-based technology to make the aviation and air safety more strong and accurate. A Result of infrastructure development investment is that it has improved in the long run airline safety, during 2005 the world's scheduled airlines experienced only 0.02 passenger fatalities per 100 million passenger kilometers. (de Rus 2008, 1.)

Developing countries are benefited somehow by the fast growing technology but beside that developing countries have challenges to compete with the higher economic countries. Moreover, all the databases are hardly installed in every airport in developing countries. Firm line has not been drawn in defining a single developing country but most nations in Africa fall under the heading, as do many countries in South America and parts of Asia, along with some of the transition states in Europe. (de Rus, 202.).

Civil Aviation is a huge field which has unlimited responsibilities, to fulfill those criteria and bear all the responsibilities it needs a lot of capital and investment. CAAN is taking care of everything that comes within the CAAN's criteria such as; management of airports, provision of air navigation services, new construction of

the airports, safety and security etc. CAAN has received some amount of money as a loan from the Asian Development Bank (ADB) entitled South Asia Tourism Infrastructure Development Project (SATIDP). A portion of that amount Rs. 8.234 Million and Rs.12.75 Million of grant to construct a regional international airport, which has been named Gautam Buddha International airport. (CAAN Report 2011-2012.)

The role of CAAN has been more expanded and challenging. Safety and Security has become a more important factor for aviation. The Expansion of parking bay in TIA airport is in the final mode of its construction, another important infrastructure is provision of more baggage trolleys which has been made. The Sterile zone post last security check has been extended recently. Total 350 seat halls inside the airport have just been constructed and also the walkway in arrival is expanded. CAAN has just finished some domestic airport expansion and development surveys, expansion and renovation of runways throughout the country. Extension and renovation of some of the airports has been already completed eg. Taplejung airport, Khanidanda and Thamkharka domestic airports. (CAAN Report 2011-2012.)

7.5 Research and findings

During the research, various kinds of results have appeared. Basically, the outcome of the research is displaying situation of both transportation system (air transportation and road transportation). The impact of the Nepalese transportation situation in different sectors and also the challenges they have been facing in past years and predicted result for the next few years, have been presented.

Road development in Nepal compare to the neighbouring developing countries and also the internationalization of transportation relationship, has been discussed as well as possible opportunities influenced by the transportation development and the impact in the long run. Most of the developing countries are going through the same nature of development process which seems to be less productive and very low impact in development. The trends of road development are seemed to be more focused in urban areas instead rural areas. Infrastructure development and implementation of the rules are not flowed in proper level which is leading the transportation development and security to a critical situation.

The key factor of slow development speed and the maintenance of the existing roads are affected by the physical structure of the country. To construct 100 Kilometre road are comparatively very expensive with roads constructed in the plain areas. Most of the places in the plain region in Nepal are accessed with road ways where potential tourism and other industrial areas are still far from transportation access. The main reason causing those kinds of differences is the physical structure of the country.

Safety issues are not taken seriously according to the statistics collected during the research. Air transportation security is on a very critical level, while the whole world is applying the rule of safety first Nepal still seems to be at the primary stage of safety level according the statistics. Infrastructures' development and the expansion of the airports facilities regarding safety and security are not properly followed.

The number of road accidents and plane crashes is very frequent. This has a direct impact on tourism and the other industries, eventually it will have a direct impact on the national economy. The Concerned governmental bodies and the other NGO and INGO's involvement in active action is poor.

8 CONCLUSION AND RECOMMENDATIONS

This research has a massive number of results regarding Nepalese transportation system, specifically road transportation and air transportation in different aspects. During the construction of the thesis, many criteria have been included to accomplish the thesis, as it was aimed. Deciding the reliability of the references and concluding them in an easy image and presenting into the content was a challenging task. However, the data included in this research were initially collected from different the departments of Nepali government.

A trend of development and challenges faced by the government of Nepal concerning transportation sector, was the main issue of the thesis. In fact this research has come to the conclusions with mixed result of the transportation situation at the moment. Development of infrastructure is on a primary level but it has been included in the agenda in recent years, definitely that will have a positive impact on transportation security, this concern is appreciative.

Transportation planning and construction process are also in gradual development which is not certainly a great aspect but the speed of the process and planning should be visible broadly. The micro level of development will have only micro level of changes, so to get the better and long term impact the effort should be on a macro level. Road transportation development areas are very narrow, as the result of research shows, planning and allocated funding for development are more concentrated on urban areas, eventually the total result of the development in country wise will turn negative, though urban areas are developed. Recommendation for the situation, is that the planning and construction budget should be allocated concerning the rural transportation development.

Challenges for the adequate development of transportation in Nepal, is certainly the physical structure of the country beside the efficiency of budgets and planning. The economic development and investment is also another fact and challenge. Transparency of the budget use in right time in right place should be measured and legal issues should be strictly regulated.

The air transportation system is also as general as road transportation is. The infrastructure development process has just begun, after more than half a century of the transportation history of Nepal it is in poor condition in terms of infrastructure development. The key element of the safety and security of transportation is infrastructure. Almost every year one aircraft has crashed according to the statistic, which is definitely not a good image on an international level. Trained manpower and installation of new technology could make Nepalese air transportation safe(r).

9 REFERENCES

- Aviation Safety Network.2013. Nepal air safety profile. Available:
<http://aviation-safety.net/database/country/country.php?id=9N>. Accessed 28
 January 2013.
- Baylliss, B.T., 2012. Report of the High Level Group on the Development of the EU
 Road Haulage Market 2012, 8-14.
[http://ec.europa.eu/transport/modes/road/doc/2012-06-high-level-group-report-
 final-report.pdf](http://ec.europa.eu/transport/modes/road/doc/2012-06-high-level-group-report-final-report.pdf). Accessed 21 December 2012.
- Cooper, F., Fyall, G & Wanhill 2008. Tourism principles and practice.
 Milan:Prentice Hall. Pearson Education Limited.
- Culpan, R. 1987. International tourism model for developing economies, Annals of
 Tourism, Vol 14, USA.
- Duval, D. T., 2007. Tourism and Transport, Modes, Networks and flows, Page 56
 59 and 63, London.
- Kulash, D.J., 1999. Transportation planning handbook, transportation society, 2nd
 ed, Washington. Available.
http://safety.fhwa.dot.gov/ped_bike/docs/tph_1.pdf. Accessed 22nd January 2013.
- Banister, D., Berechman, J., 1999. Transport Investment and economic
 development:, Page no. 10,11,14,22 73 and 252 Routledge London, Available
<http://site.ebrary.com/lib/cop/Doc?id=10062793&ppg=2>. Accessed 5 April 2012

Rodrigue, J-P., 2009. Geography of transport system, The environmental impacts of transportation: (2nd ed,) F books. UK.

Sharma, Keshab K. 2011. Status Paper on Road & Safety in Nepal, The forth meeting of the working group on the Asian Highway, Bangkok, Pg 9-21.
<http://www.unescap.org/ttdw/common/Meetings/TIS/EGM-Roadsafety-2011/Status/Countries/Nepal-2010-Status.pdf>. Accessed 31st January, 2013.

Kumar, R. 2005. Research Methodology: A Step-bystep Guide for Beginners, (2nd ed,) SAGE Publications Ltd.

Kumar, R. 2008. Research Methodology. New Delhi: S: B Nagia.

Stole, Lars. A. 2003. Price Discrimination and Imperfect Competition. USA. Available.
<http://web1.cenet.org.cn/upfile/72167.pdf>. Accessed on 7th March 2013.

Masood MD Tahir, Khan A, Naqvi Hassain A, 2011. Transportation Problems in developing countries, CCSE, Toronto, ABI Journal.
<https://proquest-portal.cou.fi/docview/906290356?accountid=10007>. Accessed 2nd January 2013.

Paradis, Adrian A. 2008. Opportunities in Transportation Careers. 2nd ed. USA: McGraw-Hill

Proceedings of the Eastern Asia Society for Transportation Studies. 2005. Vol. 5, Bangkok.

R, Kölle., G, Markarian., A, Tarter., 2011, Aviation Security Engineering, page 3-17, Artech House, USA. Available.

http://books.google.fi/books?id=pr2BK-jjpwgC&pg=PR17&lpg=PR17&dq=aviation+security+engineering+2011&source=bl&ots=hT9CKM7RYr&sig=Z5Y32L1fOMXSLwngv_QTQxg0Y8Q&hl=en&sa=X&ei=ByUMUbqaH4WL4ASHzoC4Dg&ved=0CD8Q6AEwAw#v=onepage&q=aviation%20security%20engineering%202011&f=false. Accessed on 10th January 2013.

Surface Transport & Environmental Research: A Long-Term Strategy -- Special Report 268. 2002, Washington, page 9

<http://site.ebrary.com/lib/cop/Doc?id=10078699&ppg=23>. Accessed on 20 November 2012.

Taylor, G.R. 1977. The Transportation Revolution, Vol 4. Rinehart, USA.

Sitaula, TP. 2010. Infrastructure Development in Nepal: Opportunities and Challenges for Engineers, Page 5- 7.

<http://scaef.org.np/conference/conference/pdf/Session-3/2.%20Tulasi%20Sitaula%20-%20Theme.pdf>. Accessed on 25th of December 2012.

U. Subramanian, A. John. 2000. Forging subregional links in transportation and logistics in south Asia. page 108. Available.

<http://books.google.fi/books?id=1Xfk8U10YrYC&lpg=PA108&dq=saarc%20transportation%20agenda&pg=PR2#v=onepage&q&f=true>. Accessed 5 April 2012.

Veal, A.J. 2006. Research method for Leisure and Tourism. 3rd edition. Harlow: Pearson Education Ltd.

Van, G.M., Reggiani, A. and R, Piet. 2007. Policy analysis of Transport Networks. Ashgate group: Oxon, GBR. Available

<http://site.ebrary.com/lib/cop/Doc?id=10211132&ppg=18>. Accessed 13 May 2012.

Winston, Clifford de Rus 2008 Aviation Infrastructure Performance: A Study in Comparative Political Economy, Page 1-10 and 202, Washington.

World Bank. 2012. Nepal Overview, Kathmandu. Available.

<http://www.worldbank.org/en/country/nepal/overview>. Accessed 31 January 2013.

Census, Department of roads. 2008. Road statistics. Nepal. Available.

www.census.gov.np

Department of Road. 2012. Nepal

<http://www.dor.gov.np>. Accessed 25 April 2012.

Civil Aviation report 2009-2010, Nepal, Available

<http://www.caanepal.org.np>. Accessed 25 April 2012.

Civil Aviation Authority of Nepal, Civil Aviation report 2012, Nepal, Available.

<http://www.caanepal.org.np/publication/CaanReport2011-2012.pdf>. Accessed 26th March 2013.