GEOGRAPHICAL STUDY AND ASSESSMENT OF SITE AND SITUATION OF MAJOR FORTS IN PUNE DISTRICT, MAHARASHTRA

A Thesis Submitted
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In

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Under the Faculty of Moral, Social and Earth Sciences

By

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May – 2018

DECLARATION

I hereby declare that the thesis entitled **Geographical Study and Assessment of Site and Situation of Major Forts in Pune district, Maharashtra** is the original research work carried by me under the guidance of **Dr. Tushar Anand Shitole** Head and Guide, P.G. Teaching and Research Center, Department of Geography, Prof. Ram Krishna More college, Akurdi, Pune, for the award of Ph.D. degree in Geography of the Tilak Maharashtra Vidyapeeth, Pune. This has not been submitted previously for the award of any degree or diploma in any other Vidyapeeth or examining body.

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CERTIFICATE

This is to certify that the thesis entitled, **Geographical Study and Assessment of Site and Situation of Major Forts in Pune district, Maharashtra,** which is being submitted herewith for the award of the Degree of Vidyavachaspati (Ph. D.) in Geography of Tilak Maharashtra Vidyapeeth, Pune is the result of original research work completed by **Mr. Shivaji Baburao Shinde** under my supervision and guidance. To the best of my knowledge and belief the work incorporated in this thesis has not formed the basis for the award of any Degree or similar title of this or any other University or examining body.

Place: Pune

Date:

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Research Guide

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ABSTRACT

Geographical Study and Assessment of Site and Situation of Major Forts in Pune District, Maharashtra.

Preamble:

India is a developing nation. Tourism is one of the sectors supporting national economy e.g. Switzerland and Southeast Asian countries like Singapore, Hong-Kong have tourism-based economy. The geographical variations from north to south and east to west in India are favorable for tourism. Maharashtra has different geographical regions such as Konkan, Western Ghat and Plateau region i.e. Desh. These geographical differences produce lot of places of interest in the state. The geographical environment provides a greater scope for tourism potential, for instance mountains, rivers, waterfalls, forests, wild life etc. act as center of tourist attraction. The potential for tourism development in any area largely depends on the availability of recreational resources such as mountain peaks, rivers, lakes, waterfalls, reservoirs, forts, historical monuments, an object of art fair or festival, also a person can be a tourist resource in addition to factor like climate, accessibility, attitude of local people, towards the nature and the extent of tourism development.

Tourism in India is the largest service industry, with a contribution of 6.23% to the national GDP and 8.78% of the total employment in India in 2010, total Foreign Tourist Arrivals (FTA) in India were 5.78 million and India generated about 200 billion US dollars in 2008 and that is expected to increase to US$375.5 billion by 2018 at a 9.4% annual growth rate. (*Ref. Travel & Tourism Competitiveness Report 2017*, http://www.cci.in/pdfs/surveys-reports/Tourism-in-India.pdf *and cci reports on tourism in India*).

Study Area:

Pune district, lies between 17º 54' to 19º 24' N latitude and 73º 33' to 75º 10' E longitude. The total geographical area of the district is 15,643 sq. km. The district headquarter is located at Pune. The district consists of 14 tahsils. The topogaraphy of the study areas varies between 500 m to 1400 m ASL. It is situated at 559 m above ASL. Pune district consists of 14 talukas and 1866 villages having 14,642 square kilometres area. The Pune district is bounded by high hill ranges comprising of

Deccan Trap basaltic lava flows. All the rivers such as the Bhima, Vel, Ghod, Mutha, Nira, Kukdi, Mina, Andra, Shivganga, Karha, Indrayani, Mula, are the rivers drain the Pune district. All rivers are originate in the Western Ghat. The Pune district receives rains from southwest monsoon during the period from June to September. The Pune district receives average annual rainfall of 722 mm. According to Census 2001, there was 7232555 population in Pune district of which males are 3769128 and females are 3463427and population has increased up to 9429408 in 2011. The population density of the Pune district was 603/sq. km which is quiet high density of population.

Objectives:

Against the above background, the present work attempts to study the potentialities for majore forts for tourism development in the Pune district. The broad objectives of the proposed study are,

1) To study assessment of site and situation of forts in study area.
2) To assess the present day forts tourism in study area.
3) To identify and examine the tourism potential of the major forts in study area on the basis of geographical location, historical background and infrastructural facilities with transportation and communication, accommodation and boarding facilities available for the tourism.
4) To examine the potential for adventure tourism at fort site.
5) To assess potential for employment generation.
6) To suggest a plan for sustainable tourism development, restoration and conservation of forts through tourism activity.
7) To suggest recommendations for development of tourism activity at important fort sites.

Hypothesis:

"Forts in Pune district have great tourism potential due to their location".

Methodology:

The importance of the study lies is the fact that due consideration may be given to the primary data. Researcher has collected data by visiting tourist's attraction centers during field work. Primary data regarding public utilizes and amenities have been

collected through a questionnarie. For the authentic and reliable information proposed during the field work interviews of the local people have also been taken.

Present study is designed to make an attempt to understand the importance of forts as a tourism potential for tourism development in Pune district. The study covers the physiography of the forts, infrastructural facilities, and tourist attractions in the study area. The study also assesses the present tourism and potential for tourism development. The importance of the study lies is the fact that due consideration may be given to the primary data. Researcher has collected data by visiting tourist's attraction centers during field work. Primary data regarding public utilizes and amenities have been collected through a questionnaire. For the authentic and reliable information proposed during the field work interviews of the local people have also been taken.

Secondary data was collected through District Census Hand Book, District Gazetteer, published and unpublished materials, travel books, newspapers, periodicals, etc. Different statistical methods and cartographic techniques are used wherever necessary. The information related to geographical background, origin of tourists, economic status, mode of transport, infrastructural facilities etc used by tourists, was collected through the questionnaire. Weather data and impact analysis has been used to calculate with the help of Likert Scale. For the identification and inventory of the natural scenery and recreational spots personal camera has been used and certain photographs have been taken. All the collected data is finally classified, tabulated and by applying various cartographic and statistical techniques presented in the form of diagrams, tables, graphs and maps etc. The preparation of tourist map following methodology is adopted.

Elevation Control Sampling: Forts are selected representatively for the Tahasil in Pune district. They are selected on the basis of elevation controlled sampling. All these forts are having natural beauty, religious and also historical importance.

Primary data: collected by relevant questionnaire from tourists, trekking agencies and NGO's the questionnaires include basic information of tourist and the factors for the visit to fort site. It also includes the questions regarding the facilities like transport, food and drinking water, parking, cleanliness, behavior of local people.

Data regarding tourism is collected from the government offices like archeology, NGO and tourism department (MTDC).

Secondary data: regarding the physiography, drainage were collected from toposheets, map. Journals, reference books, tourist guides is used to collect the data regarding tourist activity.

Terrain map of Pune district: The location map of the fort is prepared by using toposheets, satellite image and data collected in the field. Digital Terrain model of these forts were prepared by using GIS softwares.

To assess the tourism potential of forts in Pune district following key indicators are used. Following techniques are employed for the study.

Survey Technique: By questionnaire method qualitative as well as quantitative data is collected.

Dialogue Process: The purpose of the study is to understand profile of the tourists visiting fort sites. Dialogue process is adopted to communicate with tourist, shopkeepers in the area.

Statistical Technique: simple statistical technique like mean, percentage, satisfaction index, network analysis is used to summarize the quantitative data.

Mapping Technique: Charts, 3D model, cross sectional analysis, visibility mapping and line of sight maps were prepared by using GIS softwares.

GIS Technique: The GIS technique is used for analysis and mapping for the preparation of tourist information systsm map following methodology is adopted.

Research Design

The thesis consists of the following five chapters.

Chapter 1: Under the title *'Introduction'* it deals with the significance of the study, objectives, data base, frame work of the thesis.

Chapter 2: Under the title *'Review of Literature'* it deals with contribution of the Indian and foregien authers for tourism development.

Chapter 3: Under the title *'Research Methodology'* it deals with the database, methodoly and various statistical and GIS techniques use in anlyssis of data.

Chapter 4: Under the title *'Analysis and Interpritation'* it deals with the detail study of the region. First half of chapter discuss on physical determinants like location, physiography, geology, drainage system, climate, vegetations, soil and cropping pattern, demographic pattern, industry, trade and commerce in the study area.Second half of the chapter discuss on to identify and assess the various factors regarding tourism in major fort sites in Pune district. It deals mainly with historical importance as well as with Geology, Physiography, Drainage, Climate, Natural Vegetation, water Supply, Transport and communication, socio economic conditions of the fort. Last part of chapter deals with the assess the potential of tourism activity of the fort sites, which include assessment of forts on the basis of key indicators. The chapter includes analysis and classification of fort site into high, moderate and low potential region on the basis of potentiality.Various maps are prepared to describe the environmental profile of the study area.

Chapter 5: Under the title *'Summary, Results, Conclusions and Recommendations'* a precise summary of this work and the important conclusions drawn at the end of the study are given in this chapter.

Findings

There are 32 forts in Pune district. Every fort has its own importance and uniqueness. There are 14 thasils in Pune district. The forts are lying in eight thasil of Pune district which includes Maval, Bhor, Khed, Mulshi, Purandar, Junnar, Velhe and Haveli. Tourism potential fort sites are classified on the basis of elevation. The forts from 400m to 1600 m MSL were selected and classified according to elevation with interval of 400 m. The minimum elevation of the fort Chakan is 618 m and maximum elevation of the fort Purandar is 1320 m (Table 4.10). Pune city region is not selected for any fort sites because in this region all type of infrastructural facilities are available to tourist, forts are well known, easy accessible, the information of these fort is easily available from MTDC, travel agents, media, internet and secondary data. On the basis of the above mentioned criteria different major fort sites have been selected from different terrain and environment. Chakan, Rajmachi, Tung, Shivneri, Rajgad, Purandar etc. forts were selected to assess the tourism potential of these fort sites.

Assessment of level of satisfaction is necessary to find out the degree of development therefore here attempt has been made to assess satisfaction of the visitors regarding lodging, boarding, food, transportation, darshan, travelling problems and the behaviour of local people. Transport factor for Rajgad, Purandar, Shivneri and Tung have satisfactory index 5 and 4 which shows that tourists are not satisfied with traveling facilities. Therefore, these places must have metalled road with increased in no. of vehicles by Govt. and by private agencies this will provide the employment for the district people.

The food and drinking water facilities available at Chakan, Shivneri, Rajad and Purandar are good because these places have index 1. There are some regions which have satisfied the travelers, for e.g. special food like Junnar non-veg and for the veg. there are some special items like masswadi, shengoli etc.

All other places have satisfied to the travelers for natural scenary except Chakan. At Rajmachi number of houses are less as compared to other places, accomodation and food facilities are also not available which creates problems to the local people.

Tourist guide factor for Chakan, Rajmachi and Tung have satisfactory index 6 which shows that tourist guide facilities are also not available which creates problems to the tourist. As far as other management factor like electricity, water supply, safety of tourists is concerned are not satisfied except Shivneri. Most of the places have no electricity supply, problem of water supply and protection. Therefore, it is advisable to the local Govt. or State Govt. to provide these basic facilities which will improve the no. of tourists.

The impacts of forts on the region are not widely understood because people think that this has only economic impacts. However, the range of impacts from forts is broad and residents of the places are realize with only positive impacts but this is also associated with negative impacts. The examining of these impacts is become easier to understand the development of region and maximizing positive impacts while minimizing negative impacts with keeping it under control. Therefore here attempt has been made to find out impact of forts by using seven point Likert Scale method. Tourism has a major impact on environmental conditions of the region. Assessment of the environmental impact of tourism is particularly important, for the various facts of

the environment constitute the basis of much tourist development. The questionnaire for assessment of environmental impact consists of 15 questions. These questions will help to understand the environmental impact of the tourist on the region. The mean and standard deviation of residents of the Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri forts responses to environmental impact on tourists are calculated. The mean and standard deviation of overcrowding and congestion is respectively 75 and 63.37, noise and air pollution 90 and 67.42, road condition 90 and 51.70 etc. The higher the number of respondent tourists larger the effect on host population of tourist centers fort. The frequency distribution of environmental impact means is 14.29 and standard deviation is 11.25. So, it can be said that in Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri forts there is an overall positive effect of tourism.

There is a correlation between tourist response and average score of Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri forts. The explained variance is 88% and unexplained variance is 12%. It indicated that tourist response is depending on score. The equation derived is significant at 99% level. The calculated **t** value is 5.43 i.e. more than table t value on 99% level. Hence it is clearly indicating that tourist response depends on the score. So, it can be said that in Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri forts there is an environmental impact of tourism.

Conclusions

Based on GIS analysis, field survey calculation of satisfaction index, matrix analysis, application of Likert scale, bivariate analysis of the data. Following conclusions are made.

1. It is seen that socio- economic resources act as a positive elements for the growth of tourism in the study area.
2. It is found that the numbers of forts concentrate in the western part of the Pune district e.g. Sinhagad, Tung, Tikona, Shivneri, Rajgad, Torna and Dhakoba. Therefore, there is a wide scope for to be developed forts in the eastern parts of the district as tourist centers to be coping with the rate of increase of population in this area.
3. Case studies (Details regarding case studies is given in chapter IV) which will be useful for development tourism in the district case studies of Purandar,

Chakan, Rajgad, Rajmachi, Tung and Shivneri forts shows strong positive response of tourists as potential tourist size, which will be useful for development of tourism on these fort sites.

4. The tourism potential forts have been analyzed on the basis of satisfaction index analysis. The indicatorwise weight values are calculated for the identification of levels of satisfaction for forts (Details of satisfaction index analysis is discussed in chapter IV) scores high on most of the indicators is classified as highly potential forts.
5. The tourism potential forts have also been analyzed on the basis of site suitability parameters. The matrix has been prepared based upon the weighted index method. Purandar and Shivneri (Details regarding matrix analysis is discussed in chapter IV) scores high on most of the parameters are classified as highly suitable forts. On the other hand Tung fort is low on most counts and classified as the least suitable. But Tung is highly tourism potential forts as compared to other forts.
6. Most of the parameters can be improved immediately without disturbing the eco-system, to increase the tourist potential of these forts.
7. With the help of GIS and TIS (Tourist Information System) of the needs and potentials of rural areas and economically disadvantage are studied. The tourist zones according to tourist category are demarcated e.g. forts places along the Bangalore-Pune express way can be display with the help of GIS.
8. The western part of Pune city having maximum number of forts with tourism facilities. Many forts of these parts are Shivneri, Sinhagad, Rajgad, Torna are well known tourist centers but few of them like Tung, Tikona, Bhorgiri sites are having strong tourism potential but there are no well developed tourist activies due to lack of facilities.
9. The Eastern part of Pune city having less number of fort sites and are not well developed due to lack of facilities as well as promotional activity by local government eg. Chakan and Purandar forts.

Suggestions

- To promote and develop tourism in the district there is an urgent need for improvement of transport facilities and equipments. The way side amenities should be create by tourism authorities such as petrol pumps, water facility, medical facilities at Rajmachi, Korigad, Sonori, Purandar, Rajgad, Tung etc. Roads condition should be improved and unmetalled roads (Kachha) should be converted into metalled roads at Kenjalgad, Raireshwar, Rajmachi, Tung, Purandar and Rajgad. The forts of rural areas should be provided the regular bus services i.e. Dhakoba, Tikona, Lohgad, Visapur, Jivadhan etc. comfortable buses and adequate number of auto rikshaw, jeeps and cars should be arranged in tourist season at Kenjalgad, Raireshwar, Hadsar Rajgad, Torna, Shivneri, Tung, etc. for tourist and pilgrims.
- Now a day's medical tourism, agro-tourism, eco-tourism, health tourism are growing rapidly. Some medical patienent required dry climate for that purpose at Narayangad, Sinhagad, Shivneri, Rajmachi, Tung, Tikona and Borgiri should be developed as medical and health tourism centers. The eco-tourism forts sites should be developed at most of the rural places in the Pune district i.e. Maval, Junnar, Ambegaon, Velha, Purandar, Bhor etc. which are ideal for susitanabale development of the region and will create employment opportunities in this area and improved their standard of living. There are some places like Shivneri, Rajmachi, Korigad, Sonori, Lohagad, Tikona and Borgiri etc. at the time of full moon (except rainy season) tourist can enjoy and observe the animals in dry region like rabbits, taras, deer and spotted deer etc.
- Most of the new potential suitable forts sites face the problem of accommodation e.g. Chakan, Rajgad, Rajmachi, Tung and Shivneri etc. in the Pune district. So, the problem regarding accommodation must be solved by construction of hotels, motels, youth hostels, lodges, dharmshalas, dormitories and MTDC rest house. The cheap and comfortable accommodation should be provided to the tourist.
- Every tourist center has its own tourist carrying capacity. If it is over utilized the infrastructural facilities are over strained and environment will be

disturbed. So extra flux of tourist should be diverted to the other near by tourist centers e.g. Chakan, Rajgad, Rajmachi, Tung and Shivneri etc.

- Present study is carried out with the help of GIS, so up gradation (in term of develop) is possible to new researcher.
- Safety measures and rescue operation teams should be arranged by the Government with proper training in most of the forts especially at Sinhagad, Tung, Rajmachi, Lohgad, Shivneri and Rajgad where the death incidents are happening frequently.
- Language translator/interpreters (Guide with special training) for other state and foreigner tourists must be facility at each place should be available.
- Government of Maharashtra should make websites of tourist sites having updated information for the local and overseas tourist.

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C H A P T E R – I

I N T R O D U C T I O N

1.1 Introduction

1.2 Historical Development

1.3 Study area

1.4 Hypothesis

1.5 Objectives

1.6 Data Source

1.7 Present Status of Forts

1.8 Design Of The Work

1.1 INTRODUCTION

Geographical location greatly contributes to the tourism associated with the forts. Tourism is among the sectors who support national economy. For e.g., Asian countries like Singapore, Hong-Kong have their economy largely based on tourism. The geographical variations produce lot of places of interest in Maharashtra. It provides a great scope for tourism potential. The mountains, waterfalls, forests, rivers, wildlife, ancient architectures etc. are the center of tourist attraction. The potential for tourism development is largely dependent on the availability of multiple factors such as recreational resources that includes mountains, waterfalls, forests, wild life, reservoirs, historical monuments, forts. An object of art fair or festival, even a person can be a tourist resource.

The tourism industry has recorded a huge growth. Since, India possesses various attractions like mountains and beaches, religious places ,deep valleys, landscapes, scenic beauty, wildlifes, etc, it can be the reason that attributed to the growth of tourism industry in India. Hence, development has to be done radipdly in order to encourage and widen more tourism activities. Since, tourism is one of the largest service industry in India is a part of 8.78% of the total employment in India and also contributes to 6.23% to the national GDP. In 2010, on an average the reported Foreign Tourist Arrivals in India was 5.78 million due to which India could achieve about 200 billion US dollars in 2008. This has been expected to escalate by 2018 with a 9.4% annual growth rate which is up to US$ 375.5 billion. (*Travel & Tourism Competitiveness Report 2017*, http://www.cci.in/pdfs/surveys-reports/Tourism-in-India.pdf *and cci reports on tourism in India*).

The world Travel and Tourism Council has predicted India to be a tourism hot-spot from 2009 to 2018. The Travel and Tourism competitiveness report 2017 ranks India as 39th out of 140 countries. India also stands high i.e 9th considering the natural and cultural resources. However, few aspects of India's tourism infrastructure remain underdeveloped. According to the World Travel and Tourism Council tourism generated 14.03 lakh crore's in 2016 which in return contributed to the 40.35 million jobs. Hence, in 2016, 9.4% of the total employment was generated by tourism industry. In 2016, around 88.91 lakh foreign tourists arrived in India. Uttar Pradesh,

Rajasthan, Tamilnadu, Maharashtra , Kerala, Goa, Himachal Pradesh, Uttaranchal, Jammu and Kashmir and Madhya Pradesh were the most popular states which gathered most of the tourists attraction (*Tourism Survey for State of Maharashtra*). Thus, tourism industry has an important share for the generation of employment in India.

According to area and population, Maharashtra is the third largest state of India. Maharashtra is home to 350 odd forts which is beaten by the sea waves, scorched in the blazing sun, lashed at by the torrential Deccan rains, or, stand imposing with ramparts and crumbling walls. Maharashtra is also the land of forts. It has total 350 odd forts. The Archaeological Survey of India (ASI), an agency controlled by the union government, controls 29 of the important forts of Maharashtra whereas the state archaeological department controls 39 other forts and 99 forts are unprotected forts. The remaining 183 forts are either controlled by the revenue department, which knows little about archeology or are privately owned (*Maharashtra Tourism Policy 2016*).There are variety of forts in Maharashtra, sited on an island, as Murud-Janjira or Suvarnadurg, or guarding the seas as at baseline or up amidst the Sahyadries, as at Torna and Raigad, whose zig-zag walls and rounded bastion sit like a scepter and crown amidst hills turned mauve.

Maharashtra is also linked by good transportation network to major, minor cities and growth centers all over India. There is a vital need to protect and preserve the forts. At the same time, there is a great need to educate people and to increase the employment rate in order to fight poverty and misery.

Pune district lies in the Sahyadri mountain ranges and extends to the Deccan plateau on the east. With its physiography, Pune district has plenty of forts and fortress situated in it. With the long-standing bastion of the maratha empire and home to the legendary King Shivaji, the Pune district is marked by magnificent land forts, testimony to its glorious past. Each and every taluka in Pune district has significant forts located in it. It is necessary to preserve and conserve them. Many of the forts in Maharashtra are in a worn out condition. Since, forts represents history they must be preserved. The study will help to aware people to conserve these sites. Tourism is the major subject of jobs and other means of subsistence for the local people. At fort sites

increasing number of tourists will be very beneficial to the local people. They can earn their livelihood by providing meals and other things needed by the visitors. Hence, Business and jobs for locals will be initiated.

Computer revolution has boosted the tourism development from the last two decades of 20th century through media advertising. In the 21st century GIS has added in this list. GIS is used as a tool for the forts study for known as well as unknown places considered in the present study.

1.2 HISTORICAL DEVELOPMENT

Forts play an important role in the protection of a region or a territory. A very significant characteristic of defense in the ancient and also the medieval times was the construction of forts in important cities and places of strategic importance. According to Prabhakar (1982), “A warrior protected by the fort can fight with hundred enemy soldiers and a force of one hundred fighting from the fort can encounter ten thousand enemy soldiers.” Forts in an ordinary usage implies of the stronghold that offers security to the inhabitants that seek refuge in it. In Sanskrit, fort is called as Durga, which means the one that is hard to approach or difficult to access (Ramachandra Murty, 1996, 55). The Vedic literature also implies on forts. The Rig Veda mentions Agni and Indra as destroyer of forts. That means, it calls the latter as demolisher of forts. Even the KalikaPurana gives more stress on the construction of forts by kings (Naravane, 1995) Kautilyassaptanga or the seven-element theory for a state imparts a very crucial role for forts in defending the empire. Forts were constructed to demonstrate strength. Forts were also considered as a symbol of pride and prestige.
Geostrategy is principally guided by geographical factors as they inform, constrain or affect military as well as the political planning. Sahyadri hills provided an ideal landscape for the foreign policy in the Deccan plateau. It compromises hilly area with caves, peaks, inaccessible and defensive sites. Many Deccan forts, built by Shivaji, enabled the Marathas to mount significant resistance to the Mughals. They have been described as the "cradle of liberty" by Ramesh Desai in Shivaji: The Last Great Fort Architect (Maharashtra Information Centre, 1987). They appear inaccessible because they are located on the flat-topped summits of natural scarps rising precipitously

above the surrounding highly forested slopes. These forts played strategic importance in the history of Maratha e.g the Panhalgad Battle, Sinhagad battle, Pratapgad battle etc.

There are 32 forts in Pune district and 14 thasils in Pune district. These forts are a part of eight thasil of Pune district i.e. Maval, Bhor, Khed, Mulshi, Purandar, Junnar, Velhe and Haveli.

The forts are selected according to the elevation controlled sampling see the table 1.1.

Table 1.1: List of forts in Pune District

Sr. No.	**Fort**	**Elevation in meters**	**Elevation Category**	**Total**
1	Induri	595	400 to 800 m	06
	Kavlya	597		
	Anghai	612		
	Chakan	618		
	Rajmachi	692		
	Bhorgiri	735		
2	Daulatmangal	815	800 to 1200 m	18
	Narayangad	820		
	Jivdhan	898		
	Korigad	929		
	Kailasgad	944		
	Sonori	953		
	Tung	964		
	Nimgiri	980		
	Ghangad	982		
	Tikona	988		
	Junnar	998		
	Shivneri	998		

	Chavand	1010		
	Lohgad	1016		
	Sindhola	1043		
	Visapur	1045		
	Morgiri	1052		
	Rohida	1095		
3	Kenjalgad	1267	1200 to 1600	08
	Vajragad	1290		
	Rajgad	1307		
	Sinhagad	1308		
	Purandar	1320		
	Torna	1358		
	Raireshwar	1375		
	Hadsar	1431		
Total				**32**

Source:Gazeter Pune District (2011).

1.3 STUDY AREA

Pune district is termed as the cultural capital of Maharashtra which is situated at 559 m above ASL. It lies between 17º 54' to 19º 24' N latitude and 73º 33' to 75º 10' E longitude. The geographical area of the Pune district is 15643 sq. km. Pune district has 14 tahsils. It is surrounded by Thane district in north and northwest, Ahmadnagar district to the east, Satara district in South, Raigad district in the west, Solapur district in the south and southeast.

All the major rivers have their sources in the Western Ghat region such as Bhima, Nira etc. The average annual rainfall of Pune district is 722 mm in which about 85% of the rainfall is received from June to September. The temperature in summer goes up to 40ºC, where as in winter it cools down to 10ºC. Moreover, the climate of Pune district belongs to the subtropical type. The topography of the study area reflects between 500m to 1400m above ASL.

1.4 HYPOTHESIS

“ Forts in Pune district have great tourism potential due to their location”.

1.5 OBJECTIVES

Considering the above background, the present work is an attempt to study the potentialities of the major forts for tourism development in the Pune district. The broad objectives of the proposed study are,

- To study assessment of site and situation of forts in study area.
- To identify and examine the tourism potential of the major forts in study area. The potential will be determined on the basis of geographical location, historical background and infrastructural facilities with transportation, communication, accommodation and boarding facilities available for the tourism.
- To assess the present day fort tourism in study area.
- To assess potential for employment generation.
- To examine the potential for adventure tourism at fort site.
- To suggest recommendations for development of tourism activity at important fort sites.
- To suggest a plan for sustainable tourism development, restoration and conservation of forts through tourism activity.

1.6 DATA SOURCE

In order to understand the assessment of tourism potential of major forts in Pune district, the methodology adopted for the present study is divided into following phases.

In the first phase i.e. pre-field work phase literature review i.e. previous work carried out by other researchers are obtained from various journals and internet, visit to the MTDC resort to know about annual tourist flow, collection of Survey of India toposheet (SOI) having scale 1: 250000, Atlas, Gazetteers, District Census Handbook, Village and Town Directory, Tourist maps, etc. use for collection of information, District Resource map of Pune district published by Geological Society

of India, Government published map of Pune district P.W.D. map, Digital Elevation Model (DEM), Terrain slope map, Shaded relief map and other were completed with help of S.O.I. toposheets. Questionnaire was prepared for the actual fieldwork with the help of supervisor and consultant in the tourism field.

In the second phase i.e. fieldwork phase extensive field surveys were undertaken for major forts. The questionnaire was completed in this phase. During this field surveys tourist facilities regarding destination photographs, GPS reading altitude and the related information is noted which were also useful to study.

In the third phase i.e. Laboratory work was carried out. Government published map of (P.W.D.) Pune district is scanned, then digitized to generate thematic layer i.e. point layer - forts, tahsil headquarters, line layer - roads, railways, rivers etc. and polygon layer - dams, reservoirs etc. and map were georeference same time. Integrating all above information and maps with help of GIS software, Auto CAD Map- 2000 i, ILWIS- 3.2 a, Surfer 7, various thematic layers were generated. Finally these thematic layers analyzed to demarcate tourism potential zones and site suitability. On the basis of study results and conclusions were made.

1.7 PRESENT STATUS OF FORTS

India has many tourist attractions. However, in spite of many tourist attractions, the arrival of tourists in India is not up to the expectations. Even though, Maharashtra attracts the maximum number of tourists coming to India, but still it is not established that whether the tourism scope in Maharashtra has been well exploited or not. Hence, there is a considerable gap in the understanding of the tourist potential of Maharashtra. Also there is a gap in understanding the efforts that is needed to get more tourists coming from all over the world and make it as an international tourism destination. It has become necessary to analyze the satisfaction of the tourists coming to the state, understanding what they feel about it, what they feel about the infrastructure, what they feel about the hotels and hospitality etc.

There is not enough maintenance of heritage sites like forts of Tunga, Raigad, Torna, Alibag heritage gates etc. Many of the forts are in a deteriorating state due to lack of repair and maintenance. Also, there is degraded water quality and degrading

air quality in the forts. The main opportunities for development are in the areas of economic growth, proposed research, state initiated reforms and heritage. This can attract many tourists because of the rich heritage and culture, picturesque and congenial natural setting. It has the capacity to attract many potential developers in economic and industrial sectors state urban reforms due to its location. One can see ancient to modern archeological structure in the forts of Maharashtra. Such study is very useful for the historical person, archeologist, tourist, planner, researcher, government. By refering geoinformatics, the model can be developed to give directions and recommendations for the cost – effective planning and management in the state.

Tourism is a promising industry. Tourism has a very bright future at local, national and international level. Various improvement measures have been started by the government, private sector units and individuals. Hence, Promotion of tourism can contribute largely to the growth of our economy. Geographic Information System (GIS) is a very powerful tool which can be used for collecting, storing, retrieving, transforming and displaying spatial data from the real world. GIS can assimilate divergent sources of data i.e. spatial as well as non spatial data. GIS helps the user to integrate database formed as a result of different sources on a signal platform. It also helps to analyze them in a spatiotemporal domain. GIS also provides support in the management of resources and decision making (Burrough, 1986). The modern technology of remote sensing that includes aerial and satellite based systems, helps to collect lot of physical data and combining with GIS helps to analyze the data spatially. This offers the possibilities of generating varied options (modeling). Therefore, this optimizes the whole planning process. These information systems offer interpretation of spatial data along with socio-economic data. Therefore, it provides an important linkage in total planning process making it very effective. The combination of Geographical Information System, Global Positioning and Remote Sensing system becomes a very powerful tool for planning and for the making of maps. Tourism industry will asist to change the future of Maharashtra district. The main motive behind selection of this study area is to improve the social, cultural, economic status

of the district. In today's world, where the pace of life has increased tremendously, GIS is the best tool to collect and analyze the information.

Tourism is very important to any country. There are opportunities for the tourists to understand a country better, its culture, and its people in a much better way. The Government of India has been promoting tourism since a long time. Many states have been focusing their themes around the campaign Incredible India. This study will help in understanding and estimating the current scenario of tourism in Maharashtra. It will also help to overcome the hurdles coming in the way of branding Maharashtra as a global brand. It would also create emplopment portunities like setting up the hotels, travel agents, travel guides, taxi owners etc. to organize their activities. The study will help to promote the Pune district as a tourism destination world wide.

1.8 DESIGN OF THE WORK

The thesis consists of the following five chapters.

Chapter 1: Under the title *'Introduction'* it deals with the significance of the study, objectives, data source and design of the work.

Chapter 2: Under the title *'Review of Literature'* it deals with contribution of the Indian and foreign authors for tourism development.

Chapter 3: Under the title *'Research Methodology'* it deals with the database, methodology and various statistical and GIS techniques use in analysis of data.

Chapter 4: Under the title *'Analysis and Interpretation'* it deals with the detail study of the region. First half of chapter discuss on physical determinants like location, physiography, geology, drainage system, climate, vegetations, soil and cropping pattern, demographic pattern, industry, trade and commerce in the study area. Second half of the chapter discuss on to identify and assess the various factors regarding tourism in major fort sites in Pune district. It deals mainly with historical importance as well as with geology, physiography, drainage, climate, natural vegetation, water supply, transport and communication, socio economic conditions of the fort. Last part of chapter deals with the assess the potential of tourism activity of the fort sites, which include assessment of forts on the basis of key indicators. The chapter includes

analysis and classification of fort site into high, moderate and low potential region on the basis of potentiality. Various maps are prepared to describe the environmental profile of the study area.

Chapter 5: Under the title *'Summary, Results, Conclusions and Recommendations'* a precise summary of this work and the important conclusions drawn at the end of the study are given in this chapter.

C H A P T E R – II

REVIEW OF LITERATURE

2.1 Introduction

2.2 Review of Literature

2.1 INTRODUCTION

Tourism at present is the rapidly growing industry of the world. The demand for all types of tourism is increasing day by day. However fort tourism is that particular branch of tourism which is finding favour with neo-educated class of tourists. It has been attracting the tourists from diverse backgrounds such as history, sociology, geography, economics, archelogy and others. It is also a field which has been attracting many researchers and planners. Particularly, the heritage of India, has always been fascinating the people around the world. Though the state of Maharashtra in India and Pune district especially boasts of a rich vibrant cultural heritage; however the Pune district still doesn‘t attract the number of tourists it deserves. This study examines the scope of tourism and heritage management i.e. forts in the Pune district. It tries to bring awareness about the heritage resources and their fast fading condition with its potential supporters and their important role is not only preserving but also developing forts tourism in Pune district. It also aims to form a strategy to develop forts tourism in the area by accommodating various strategies to be adopted at various levels. That is why it is imperative to review the literature on the heritage of Pune district. This is particularly significant in view of finding out the various aspects of forts tourism development in Pune distrct.

The present chapter discuss about review of literature by foregien and Indian authers and their contribution in the field tourism development.

2.2 REVIEW OF LITERATURE

Tourism and recreation as a field of geographic study were introduced in India quite late. Therefore, the literatures on the various aspects of tourism are quite meager. Many scholars have written books dealing with various issues on tourism.

Defert P. C. (1966) was one of the first French geographers to make substantial contribution to the geography of tourism.

Clawson M. and Knetsch J. (1966) on outdoor recreation is a model of outdoor recreation as source based, use based and intermediate use has been useful for the development of tourism and destination.

Michel, Peters (1969) entitled ‘International Tourism’ was considered as a landmark in the study of tourism.

Robinson H. (1976) focused on the importance of geographical components with scientific study on geographical aspects, in his book entitled, "Geography of Tourism."

Emanuel Kadt (1979) "Tourism – Passport to Development," which deals with the perspectives on the social and cultural effects of tourism in developing countries.

Burkart A. J. and Medlik S. (1981) deals with the past, present and future development of tourism.

Kaur Jagdish (1985) has presented his research work entitled 'Himalayan Pilgrimage and New Tourism,' this study has been beneficial to the researcher to fixing the criteria for identification of resource potential for tourism development in the context of Pune district.

Mclntosh G. (1986) and other scholars have introduced the literature on tourism information system.

Bhatia A.K. (1986) wrote on important book entitled "Tourism Development, Principles and Practices," book covers systematically various areas related to the subject, tourism development and promotion, from the earliest time to the modern day also, included on international tourism organization, accommodation, travel agencies and development of tourism in India.

Dube D. P. (1987) in his article entitled "Kumbha Mela origin and history of India's greatest pilgrimage fair," has highlighted the importance of religion fairs and festivals in the human life from the beginning of civilization.

Douglas Pearce's (1987) study was based on a systematic and comprehensive manner of the geographical perspective can contribute to its planning and development.

Stephen L. J. and Smith (1989) "Tourism Analysis," which deals with different method for selecting a site for tourism development.

Likewise Ashworth and Goodall (1990) argued that heritage tourism is an ultra compounded of many different emotions, including nostalgia, romanticism, aesthetic pleasure and a sense of belonging in time and space.

Chopra, Suhita, (1991) conducted study on potential of tourism in Khajuraho, the world famous temples and a remote tourist resort in Madhya Pradesh. This study has assessed various impacts on tourism viz. physical, economic, socio-cultural impact.

Zeppel H. and Hall M. (1992) also stated heritage tourism as a special form of tourism. In his views heritage tourism is a broad field of specialty travel, based on nostalgia for the past and desire to experience diverse cultural landscapes and forms.

Prentice K. (1993) defined the term heritage as not only landscapes, natural history, buildings, artifacts, cultural traditions and the like that are literally/metaphorically passed on from one generation to the other but those also which can be promoted as tourism products. He also suggested that heritage sites should be differentiated in terms of types of heritage: built, natural and cultural heritage.

Silberberg T. (1995) defines cultural tourism as visits by persons from outside the host community motivated wholly or in part by interest in the historical, scientific, and artistic or lifestyle/heritage offerings of a community, region, group or institution.

Hunter and Green (1995) 'Tourism & Environment' have divided the environment into three broad components as natural, built and socio-cultural environment; and then tried to analyze the effects of tourism development on all there components.

Mieczkowski (1995) discussed in his book, 'Environmental Issues of Tourism and recreation' the impacts of tourism on natural, built and socio-cultural environment in an international perspective with greater emphasize on developed countries. He pleads, ' to blame any economic activity, Such as tourism in general, for decreasing environmental quality is like blaming literacy for bad writing'.

Balcar M. and Pierce G. (1996) suggested that A wide range of concepts and definitions are being used to explain the term heritage. A number of theories and case studies are being explained by the authors. However, a little specific agreement exists on what is heritage tourism. Many scholars have given various definitions on what is cultural tourism and what is heritage tourism. However cultural tourism may be used to refer to the historical sites and buildings and handicrafts etc., also the surrounding environment at the destination and its facilities shall be a part of heritage tourism experience.

Anderson V, Prentice R. and Guerin S. (1997) during their research on cultural tourism in Denmark identified certain features of cultural heritage tourism. Cultural heritage tourism comprises visits to historical buildings, museums, galleries, theatres festivals and events, shopping, food palaces, famous people like writers, castles sports and old towns.

Rai S.C. (1998) wrote on important book entitled “Hill Tourism: Planning and Development” (study based on Kumanon Himalayan). The book provides a comprehensive study of tourism development and planning for the sustainable use of tourism recreational resources in the hilly region of Himalaya. An attempt has been made to understand process of tourism development by considering some case studies and to find out the potential and planning of different tourist centers.

Mohammed Zulfikar (1998) wrote a book entitled “Introduction to Tourism and Hotel Industry,” this book discusses in detail tourism, hoteliering and its main branch – Hotel Front Office Management – in its operative perspective and forms, hotel industry with its historical perspective, hotels in India- origin, growth and development find a prominent place in this book.

Hall and Brown (2000) Eco-tourism is an instrument for natural protection and assures sustainable economic benefits for the local people.

Delaney, (2000) In spatial decision-making and designing, in particular, these tools support different stages of the process which involve rapid and effective storage and retrieval of information, various kinds of visualization to inform survey and analysis, and different strategies for communicating information and plans to the affected community.

M.B. Potdar (2003), pointed out potentials of tourist points in south konkan region in Maharashtra state in her thesis entitled “Tourism development in south Konkan” She focused on undeveloped tourism centers, which have natural beauty and scenic tourist attractions. She also pointed out the impact of tourism on the south konkan region.

Romila Chawla (2003) “Tourism in the 21st Century.” She emphasized on important features of the tourism industry, its contribution to the national integration and creation of harmonious social and cultural environment and also suggests the promotion of arts, crafts and culture and brings about prosperity and sustainable development. Twenty first century is the age of information technology and tourism. She gives aspects and challenges of tourism in the Twenty first century.

Subhash N. Nikam (2003) has presented in his research work “Potential and Prospects for Tourism Development in Nashik District”. His attempt has been made to understand for the tourism development by considering four case studies and find out the potential and prospects for the planning at different destinations in the district.

Romila Chawla (2004) Economic of tourism and development, there has been rate race among the developed and developing countries to expand tourism indiscimenaintaily, which has resulted, in severe cultural and ecological damage to the host county.

Sasankan Silpa (2004) highlighted the importance of human resource development in tourism industry. Human resource plays much greater role in tourism industry by giving importance to the strength in communication, relationship building and conflict management.

Remanan. K (2004) pointed out the positive and negative impacts of tourism. It is also suggested that the citizens of a country should try to minimize the negative factors and maximise positive factors. Tourism provides employment to millions and act as a reservoir of foreign exchange reserve but causes resource drain, pollution of air and rivers, damage to bio-diversity etc.

Thomas Asha E.and Raju.G (2004) reviewed the literature on the origin, growth and development of and the demand for rural tourism as a specific sector of the overall tourism market. They have also analyzed the role and potential of tourism in socio-economic development and regeneration of rural areas to promote tourism industry of the developing countries by concentrating on rural heritage and culture.

Romila Chawala (2004), discussed various approaches and qualitative research methods for undertaking research in geography of tourism. **Garud M.K.** (2004), worked on Tourism and ecology of the Koyana Basin a thesis submitted to the Shivaji University, Kolhapur. In his research he discussed on eco-tourism and ecology of the koyana river basin. He gives details information about some potential tourist attractions in his study region.

K.K. Sharma (2004) wrote a book entitled “Tourism and Regional Development,” this study has been a guideline for urban and rural tourism development.

Rabindra Seth (2005) wrote a book “Tourism in India-An overview,” which provides information on tourism industry past development and present scenario in India and future steps and policies to improve tourism in India.

Aneja Puneet (2005) analysed the growth of tourism in India by evaluating the present status of the industry by stating the contributions of tourism , GDP and

employment. The barriers in development highlighted are private investment, absence of legislative support and unprofessional approach.

Asif Iqbal Fazili and S. Husain Ashraf (2006), 'Tourism in India Planning and Development' tourism as a subject of study is an emerging discipline and there still exists some confusion as regarding its concept and definition**.** In the Indian context, it is in its very juvenile phase and as such not much of the study material is available on the subject. The onset of the liberalization has made India a destination of many stakeholders worldwide. This has resulted in change of fortunes for the country and today India has emerged as one of the greatest market for global trade. This has opened opportunties for tourism as well. As a result tourism has become a subject for both planners and policy makers. While, recognizing the true potential of tourism in the economic development of the country, the government of India has every reason to adopt it as it is an important facet for nation building process. As such the govement has meticusioly used all its resources in the speedy development of tourism in the country.

James Murdy (2006) explored the exciting possibilities in tourist motivation research and practical usages of it in the field. Tourism and other crimes against tourists will be an ongoing challenge to both tourists and management of hotels, and other tourism resources. Before tourism and tourists can become agents of peace, a better understanding of the latter must be achieved. In order to achieve this task an integrated model of tourist motives, motivations, attitudes and behaviour, information search expectations and needs may be made. To study the motives of tourists a methodological innovation must be developed to study drives, urges, latent needs and motives.

Nikunj Tarun (2006) Tourism planning in 21st centuarty, the present work intends to bring together all relevant information on tourism planning and development.

Satish C. Nigam (2006) Ecotourim and suistainable development, this book preents an overview of he ecotourism ndustry and comprehensive account of its potential to enhance sustainable development. It will be an important guide for the students and researchers of tourism and sustainable developmet, as well as for anyone interested in becoming an eco tourist.

A. S. Badan and Harish Bhatt (2007), 'Regional Tourism' attempted history of tourism and its definitions with entire concept tourism planning and promotion planning for various countries.

Dattatraya Harpale, R.G. Patil and Virendra Nagarle (2007) in Shodh, Sameeksha aur Mulyankarn pointed the tourism information system and Site Suitability in Pune district. For this study author has used GIS as a tool for the sit suitability for known as well as unknown places.

P.C. Bhardwaj (2007) Glimses of Maharashtra is an attempt to bring before the readers a pictuerseque presentation of various aspect and activities of the states. The book also has elaborate description on welfare initiatives of the state, Marathi language, culture, festivals, arts along with places of the tourist attraction- beaches, sanctuaries, caves, forts, hill sations, shrines, arkes rivers, etc.

Cook, Peta S. (2008) highlighted how health and medical tourism is a subjective practice and embodied experience which, due to increasing options available to tourists, is difficult to classify. Furthermore, as health and medical tourism involves an active body that is not restricted by time and place, it challenges traditional sociological understandings of tourism, which classify tourism as a passive, escapist and leisurely activity that occurs over 'there' in contrast to 'here'.

March, Roger St George (2008) offered a method for investigating and conceptualising network relationships in a regional tourism district. The field work was undertaken in the Australian wine region of the Hunter Valley. The findings from are analysed using four different approaches to the conceptualisation and classification of inter-organisational relationships in a tourism region: (1) the application of a value net to the region's stakeholders, (2) the generation of a partnership-activities matrix, (3) an ecological approach using Budowski's (1976) typology and (4) identifying the competition for scarce resources among tourism stakeholders. Managerial implications for each approach are described.

Anand Prakash Tiwari (2008), 'Tourism Industry in Himachal Pradesh' studied impact of tourism on economic growth.

Pushpalata Arkshalini (2008), "Tourism Development In Mahabaleshwar, Pachgani Region." concerns with the study of tourism development and Socio – Economic Impact of Tourism in Pachgani and Mahabaleshwar.

Romila Chawla (2008) “Adveture Tourism” adventure tourism abroad range of motivational characteristics, risk, excitement, education and aesthetic appreciation. It is an emerging market, very popular and high yielding. It represents one of the fastest growing market segments of todays’s travel market.

A.Satish Babu (2008) Tourism Development in India, Travel and Torism occupies a pivotal postion internationally and is considered to be an important sector next to oil industry. Relasing important of tourism and its foeigen exchange earnings most of the countryie in the world have been endeavoring to promote this sector. Andhra Pradesh is considered as gateway for southeen tourism with an oasis of peace, calm and serenity.

D.V. Harpale (2009), Entitled thesis, New Tourist Centers And Their Site Suitable, A Case Study Of Pune District, Maharashtra State concern with the study of prepare tourist information system for entire Pune district tourist places.

J. P. Jagtap (2009), “A Geographical Study of Tourism Centers in Solapur District.” He considered and studied tourism development and potential tourist centers in Solapur District.

Prof. Parag Govardhan Narkhede and Ms. Imelda Morris (2011) in their research article titled Conservation of Forts in Maharashtra through Appropriate Tourism Development Policy have described major forts in Maharashtra and discussed about the appropriate tourism policy in journal ARCHITECTURE - Time Space and People in March 2011.

U.N. Patil (2011), conversed on tourism opportunities in Maharashtra in her paper published by Golden Research Thought Vol. 1 Issue VI. She discussed on different tour circuits such as pilgrimage circuits, fort circuits etc for the development of tourism in Maharashtra.

M. B. Potdar and P. R. Talekar (2011), discussed on the tourist satisfaction level about the destination, accommodation facility, behavior of the local people and other infrastructural facilities in Kolhapur district, in research paper entitled “Satisfaction Level of Tourists at Religious Tourists Places in Kolhapur District” published in Maharashtra Bhoogol shastra Sanshodhan Patrika. Vol. XXVIII.

Rakesh V. Patil (2011) ‘Ecotourism potential of Salher Fort Nashik District’ by Mr. in Researchers World Journal of Arts, Science and Commerce E-ISSN2229-4686

ISSN 2231-4172 Vol. II Issue 4 Oct. 2011(135) has studied the Salher Fort in Nashik as ecotourism potential. He has studied the physical and biological features of the study area and found the role of stake holder's sustainable tourism and environment friendly development. He tried to expose the ecotourism potentiality of Salher fort in the present paper.

R.C. Chakravarthy and P.R.S. Murthy (2012) Information Technology and Tourism, the world tourism industry has certainly been one of the first tomake lagge scale use of new information technology and communication technologies it appears that technological progress over the past thirty years has allowed the most innovative tourism enterprises to redefine not only their own organizational structure but their relationships with partner organization. This book describes the impact of information technology in tourism it will be a valuable reference tool for students and professional in this fields.

P. V. Joshi (2012), published paper in Golden Research Thought Vol. 1 Issue IX entitled "Planning Cultural-Heritage Tourism for Sustainable Development." Discussed on cultural-heritage tourism for sustainable development and pointed on tourism as a positive force for the preservation of nature and culture; its contributions should bring about benefits for the host community and provide its members with significant resources and incentives to look after and maintain their heritage.

V. Koundal (2012), **'**Impact of Pilgrim tourism in Jammu and Kashmir Economy: A Case Study of Mata Vaishno Devi Pilgrims' published in Golden Research thought Vol. 2. Issue II, studied on pilgrimage tourism in Vaishno Devi of Jammu and Kashmir for that he asses the expenditure of tourist on shopping, lodging and internal traveling

Anantdrao S. Patil (2012)'Potential for adventure tourism in Satara District A case study of Forts in Satara (Maharashtra)' published in International Referred Research Journal, Jan. 2012 ISSN 0975-3486 Vol III Issue 28 illustrated that tourism is an ever expanding service industry with latent vast growth potential. He stated that Satara is one of the important districts of Maharashtra with the high potential for adventure tourism. The study has made to attempt in identifying the tourist destination of adventure tourism their potential for adventure tourism in Satara district.

K. K. Kamra (2014) Tourism Planning, Marketing and Management, travel is a basic human instinct. Travel product is known, then the problem is of a appropriate product development and for the tourism planning, marketing and management become imperative. Technological revolutions in the last few decades and the consequent changes in the social systems accelerated its intensity in the current century.

Kunal Chattopadhyay (2014), Economic Impact of Tourism Development An Indian Experience, tourism today is one of the fastest growing industries throughout the world. The book provides a comprehensive overview of tourism development in the third world. This book is an attempt towards the evaluation of the economic impact of different types of tourism (including domestic tourism) in the third world countries in general and India in particular.

Sanjay Nibhoria (2014) Tourism Development principles policies and process, here the author keep a pace with the changing trends in tourism, its link with economic theory, and academic research as well as accessibility to travelers with across the broad economic background.

Prem Nath Dhar (2015), International Tourism emerging challenges and future prospects, provides readers with an introduction to international tourism with highlights on both context and content of tourism today. The dynamic of tourism is described and the cultural and sociological aspect of tourism in India and rest of the world is given. Focus lies on different forms of tourism. The elements of and dimension of contemporary infrastructure, insensitive and attractions required for tourism promotions are described.

Other type of information literature, journals on tourism, annals of tourism, journals of travel research and some research papers on geography of tourism published in National Geographical Journals of India (BHU), Government of India tourist statistics, Department of tourist annual reports, annual reports of ITDC and MTDC etc. All above mentioned researches in India have been made very useful work in the field of new tourist centers and their suitable site.

C H A P T E R – III

RESEARCH METHODOLOGY

3.1 Introduction

3.2 Data Base

3.3 Methodology

3.1 Introduction

Data analysis is a process of modeling, transforming and gathering data. It is done with the goal of highlighting useful suggesting conclusions, information and supporting decision making. Data analysis has multiple approaches and facets, encompassing diverse techniques under a variety of names, in different business, science, and social science domains. Combined methods approaches may mean a many things: i.e. a number of different types of methods in a study or at different points within a study, or, using a mixture of quantitative and qualitative methods.

Present chapter focused on various methods are used for doing research work. The primary and secondary data are used for the present study. Surveys are a very good way of gathering a large amount of data, providing a broad perspective. Surveys can be administered electronically, by telephone, by mail or face to face. Interviews can be conducted by telephone or face-to-face. Depending on the information being sought, they can range from in-depth, semi-structured to unstructured. The questionnaire was administered to different respondents; hence two questionnaires were prepared for data collection. The Questionnaire consisted of two way questions, questions with options and Likerts scale type questions. The questionnaire was prepared using the selected factors and focus areas for understanding forts tourism and its potential in Pune district.

3.2 Data base

Requisite data and information have been collected from various sources. Primary and secondary data have been used in the present study. The secondary data have been taken from Socio-economic Reviews and District Statistical Abstracts of Pune; Census Hand Book of Pune district; Gazetteer of Pune district, M.T.D.C. Office, and available published and unpublished material, journals, books, magazines and other periodicals, dissertations, different websites etc., SOI toposheets. Primary data was collected by visiting tourist centers in the study region. Questionnaire was prepared and filled up by the tourists, guide and local people, shopkeepers at the time of interview which is supplemented by the secondary sources. Various institutions and government offices have been visited for the collection of data. Grampanchayats,

Municipal councils of the respective tourist's centers were visited and information was collected.

3.3 Methodology

The importance of the study lies is the fact that due consideration may be given to the primary data. Data collection visiting tourist's attraction centers during field work. Primary data regarding public utilities and amenities have been collected through a questionnaire. For the authentic and reliable information proposed during the field work interviews of the local people have also been taken.

For the identification and inventory of the natural scenery and recreational spots personal camera has been used and certain photographs have been taken. All the collected data is finally classified, tabulated and by applying various cartographic and statistical techniques presented in the form of diagrams, tables, graphs and maps etc. For the preparation of tourist information system map following methodology is adopted which is shown in flow diagram.

Present study is designed to make an attempt to understand the importance of forts as a tourism potential for tourism development in Pune district. The study covers the physiography of the forts, infrastructural facilities, and tourist attractions in the study area. The study also assesses the present tourism and potential for tourism development. The importance of the study lies is the fact that due consideration may be given to the primary data. A data is collected by visiting tourist's attraction centers during field work. Primary data regarding public utilizes and amenities have been collected through a questionnaire. For the authentic and reliable information proposed during the field work interviews of the local people have also been taken.

Secondary data was collected through District Census Hand Book, District Gazetteer, published and unpublished materials, travel books, newspapers, periodicals, etc. Different statistical methods and cartographic techniques are used wherever necessary. The information related to geographical background, origin of tourists, economic status, mode of transport, infrastructural facilities etc used by tourists, was collected through the questionnaire. Weather data and impact analysis has been used to calculate with the help of Likert Scale. For the identification and inventory of the natural scenery and recreational spots personal camera has been used

and certain photographs have been taken. All the collected data is finally classified, tabulated and by applying various cartographic and statistical techniques presented in the form of diagrams, tables, graphs and maps etc. The preparation of tourist map following methodology is adopted.

Elevation Control Sampling: Forts are selected representatively for the Tahasil in Pune district. They are selected on the basis of elevation controlled sampling. All these forts are having natural beauty, religious importance too and the historical importance also (Table 3.1)

Table 3.1: Classification of forts using elevation controlled sampling

Sr. No.	Tahasil	Fort	Elevation (m)	Major forts selected for study
1	Maval	Induri Anghai Tung Tikona Lohgad Visapur Morgiri	595 612 964 988 1016 1045 1052	Tung, Tikona, Lohgad
2	Bhor	Kavlya Rohida Kenjalgad Raireshwar	597 1095 1267 1357	Raireshwar
3	Khed	Chakan Bhorgiri	618 735	Chakan, Bhorgiri
4	Mulshi	Rajmachi Korigad Kailasgad Ghangad	692 929 944 982	Rajmachi, Ghangad
5	Purandar	Daulatmangal Sonori Vajragad Purandar	815 953 1290 1320	Purandar
6	Junnar	Narayangad Jivdhan Nimgiri Junnar Shivneri Chavand Sindhola Hadsar	820 898 980 998 998 1010 1043 1431	Nimgiri, Shivneri
7	Velhe	Rajgad Torna	1307 1358	Rajgad, Torna

8	Haveli	Sinhagad	1308	Sinhagad
Total		**32**		**14**

Source: Gazetteer Pune District (2011).

Primary data: collected by relevant questionnaire from tourists, trekking agencies and NGO's the questionnaires include basic information of tourist and the factors for the visit to fort site. It also includes the questions regarding the facilities like transport, food and drinking water, parking, cleanliness, behavior of local people. Data regarding tourism is collected from the government offices like archeology, NGO and tourism department (MTDC).

Secondary data: regarding the physiography, drainage were collected from toposheets, map. Journals, reference books, tourist guides is used to collect the data regarding tourist activity.

Terrain map of Pune district: The location map of the fort is prepared by using toposheets, satellite image and data collected in the field. Digital Terrain model of these forts were prepared by using GIS softwares.

To assess the tourism potential of forts in Pune district following key indicators are used. It helps to delineate the study area into high, moderate and low potential regions. The key indicators are

1. Natural resources: Physiography, drainage, forest.
2. Historical importance.
3. Infrastructure – Accessibility, hotels, restaurants, lodging facilities.
4. Potential for adventure tourism.
5. Government facilities.
6. Support by local people and NGO.
7. Potential for income generation for local people

Following techniques are employed for the proposed study.

Survey Technique: By questionnaire method qualitative as well as quantitative data is collected.

Dialogue Process: The purpose of the study is to understand profile of the tourists visiting fort sites. Dialogue process is adopted to communicate with tourist, shopkeepers in the area.

Statistical Technique: simple statistical technique like mean, percentage, satisfaction index, network analysis is used to summarize the quantitative data.

Mapping Technique: Charts, 3D model, cross sectional analysis, visibility mapping and line of sight maps were prepared by using GIS softwares.

GIS Technique: The GIS technique is used for analysis and mapping for the preparation of tourist information system map following methodology is adopted.

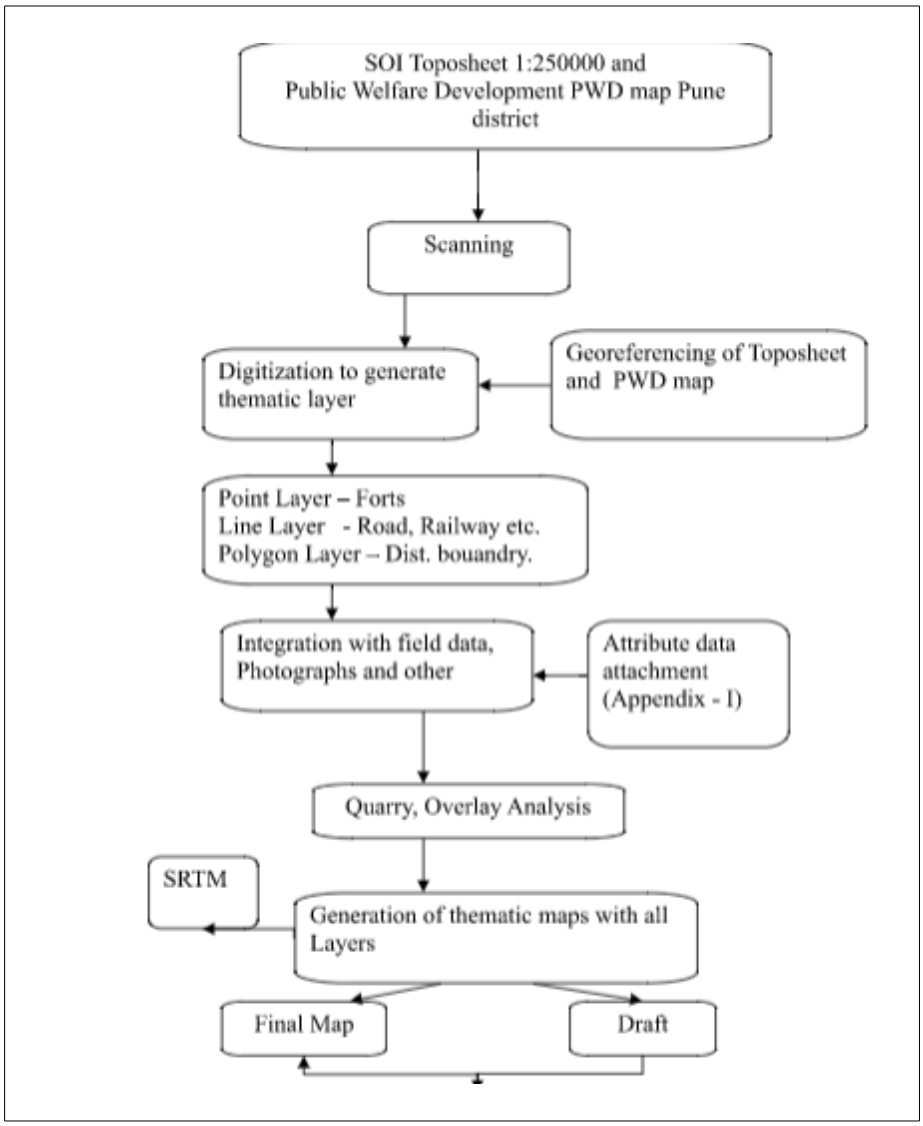


Fig 3.1: Methodology for tourist information system

In the present study satisfaction index method is used to assess the level of satisfaction of the tourists. It was necessary to know the views of tourists about the various facilities, which are provided to them at the tourist destinations. Such tourist satisfaction assessment of a certain tourist places was essential to modify the tourist programmes and the facilities available at these destinations.

The tourists who are coming from different places to the destination may have different behaviors, ideas, views and expectations, but if required facilities are provided them at reasonable rates, they will be satisfied and it will be helpful to increase the reputation of tourist destination.

Present research work is based on sample survey. The questionnaire was prepared to assess the level of satisfaction of the tourists by taking their views regarding to the various facilities i.e. lodging, boarding, food, transportation, darshan, traveling problems and the behavior of local people.

The indicator wise average values are calculated. These average values are used to compute the satisfaction index and then the ranks are given to these satisfaction indices. Satisfaction level of tourists is a very important universally accepted tool for measurement. By adopting certain satisfaction methods, an attempt has been made to assess the satisfaction level. The indicator wise level of satisfaction index is calculated by using the following formula.

$$\mathbf{Sli} = \frac{\mathbf{Mi\ Ni}}{\mathbf{N}}$$

Sli = Satisfaction index for i^{th} factor.

Mi = Numerical values for the particular level of satisfaction for the i^{th} factor.

Ni = Number of respondent deriving the particular level of Satisfaction for the i^{th} factor.

N = Total number of respondents for that factor for all Level of satisfaction, final Ranks are given to these satisfaction Indices.

(Ref. Avishkar – Solapur University Research Journal, Vol. 3, 86 – 96, 2014)

The impact of tourism was calculated using the Seven point “Likert Scale” technique. A Likert scale is the most widely used scale in survey research. This term is often used interchangeably with rating scale even though these two are not

synonymous impact of tourism. Respondents specify their level of agreement to a statement while responding to a Likert questionnaire item. The scale is named after its inventor, Psychologist Rensis Likert.

The study is based on primary and secondary data. With the help of questionnaire, a stratified random sample survey was undertaken, 450 tourists were interviewed. For this study the factor wise Likert scale is calculated. Tourism satisfaction is a psychological outcome and it is concerned with the attribute of behaviors itself. Likert scale is a technique for the measurement of attitude a scale giving values for an individual's reactive attitude. The test is required to choose from a possible answer per item and thus to show a degree of agreement or disagreement with the attitude represented. The response to each question was rated on seven points 'Likert Scale' ranging from 1 to 7.The attitudinal survey has been the common method of addressing a range of environmental and economic issues. In this approach, respondents are asked to indicate their attitude and feeling towards the impact of tourism, with a set of closed questions or statements. Such survey can yield useful information about the types of impacts but it must be remembered that what is being recorded is the respondent's perception of those impacts and these may and may not accord with reality (Perce D. 1989). The impact of the study is an attempt to examine empirically the impact of tourism on local population. The format of seven level Likert item is, 1=strongly disagree, 2=moderately disagree, 3=disagree, 4= undecided or neutral, 5=agree, 6=moderately agree and 7 strongly agree. (Likert, R. C.)

The tourism potential fort sites have been analyzed on the basis of matrix analysis so as to judge qualitative and quantitative aspects of tourist infrastructure at forts. These are natural attraction, vegetation, roads, public transport, accommodation, and medical facility. The matrix has been prepared based upon the weighted index method. The various parameters are given weightage on a 1 to 5 scale to find out overall tourist convenience at the tourism potential fort sites

Table 3.2: Major fort sites in Pune district

Sr. No.	Name of fort	Distance from Pune City in km	Other settlement	Education Facility available	Drainage/ Dam
1	Chakan	29	Chakan	Primary, Secondary, Higher education	Bhama river, Chass dam
2	Rajmachi	82	Udhewadi	Primary education	Ulhas river
3	Tung	85	Tungi	Primary, Secondary education	Pavana River, Pavana dam
4	Shivneri	93	Junnar, Somatwadi, Barav	Primary, Secondary, Higher education	Kukdi, Manikadoha
5	Rajgad	93	Bhutunde	Primary, Secondary education	Velwandi, Kanandi, Neera
6	Purandar	38	Narayanpur, Ghera Purandar	Primary, Secondary education	Karha, Nira

Source: (Census 2011 Pune District)

C H A P T E R – IV

ANALYSIS AND INTERPRETATION

4.1 General Introduction

4.2 Physiography of region

- 4.2.1 Physiography
- 4.2.2 Geology
- 4.2.3 Drainage System
- 4.2.4 Climate
- 4.2.5 Natural Vegetation

4.3 Cultural information of region

- 4.3.1 Population Growth
- 4.3.2 Water Supply
- 4.3.3 Transport and Communication
- 4.3.4 Socio-economic condition

4.4 Method for selecting Major Fort Sites

4.5 Importance of Major Fort Sites

4.6 Various Major Fort Sites and Data Collection

4.7 Profile of Major Fort Sites in Pune district

- 4.7.1 Chakan
- 4.7.2 Rajmachi
- 4.7.3 Tung

4.7.4 Shivneri
4.7.5 Rajgad
4.7.6 Purandar

4.8 Place wise Satisfaction Index of Tourists

4.8.1 Chakan
4.8.2 Rajmachi
4.8.3 Tung
4.8.4 Shivneri
4.8.5 Rajgad
4.8.6 Purandar

4.9 Determination of Potentaility of the Fort

4.10 Potential Major Fort Sites in Pune District

4.11 Criteria for selecting Tourism Potential Fort Sites

4.12 Role of Tourism Potential Fort Sites

4.13 Various Tourism Potential Fort Sites

4.13.1 Assessment of forts on the basis of Key indicators
4.13.2 Matrix Analysis for Tourism Potential fort sites
4.13.3 Classification of Tourism Potential fort sites

4.14 Likert scale analysis of Tourism Potential Fort Sites

4.1 GENERAL INTRODUCTION

The knowledge of physiography and related aspect of geography is essential not only for grasping geographical facts of the region but also for understanding its potentialities as tourist resources. Pune district has several resources. The district is famous for its scenic beauty. It has several tourist attraction centres. It has a lot of tourism potential. Its latent capacity of tourism can support the regional development.

As discussed in the previous chapter, that many scholars (Robinson H. 1976, Defert 1966, Bhatia 1986, Rai S. 1998 and Sharma K. 2004) consider the physiography, climate, soil, vegetation and other natural factors that directly or indirectly governs the spatio-temporal distribution in relation to tourism development. Pune district is a region of contrast. There is a variety in geographical and cultural characteristics. Topographically region has large diversity. Surface features of the region are varied in nature. Western part of the region is hilly part of the Sahydri. In contrast eastern part of the region is plain region. The region has good vegetative cover to the west. In comparison to the west, the eastern part of the region has less vegetative cover. The climate of the region is mild and temperate. The region has number of rivers which flow generally, west to east. The rivers in their upper course flow into forest area and gorges in Ghats region, but the lower course of the rivers are rather in the plain region. In the district different tourism centers located in the western part.

First half of chapter discuss on physical determinants like location, physiography, geology, drainage system, climate, vegetations, soil and cropping pattern, demographic pattern, industry, trade and commerce in the study area. Second half of the chapter discuss on to identify and assess the various factors regarding tourism in major fort sites in Pune district. It deals mainly with historical importance as well as with geology, physiography, drainage, climate, natural vegetation, water supply, transport, communication and socio economic conditions of the fort. Last part of chapter deals with the assess the potential of tourism activity of the fort sites, which include assessment of forts on the basis of key indicators. The chapter includes analysis and classification of fort site into high, moderate and low potential region on

the basis of potentiality. Various maps are prepared to describe the environmental profile of the study area.

4.2 PHYSIOGRAPHY OF THE REGION

The study area, Pune district has unique geographic location in Maharashtra. The Pune district lies between 17º 54' N to 19º 24' N latitude and 73º 33' E to 75º 10' E longitude. The total geographical area of the Pune district is 15642 km^2. The district headquarter or the district place is Pune. The district consists of 14 tahasils. The fourteen talukas in study region are, namely, Haveli, Purandar, Pune City, Indapur, Daund, Baramati Junnar, Ambegaon, Khed, Maval, Velhe, Bhor, Shirur and Mulshi. The area of the district is surrounded by Thane district in the north and northwest, Raigarh district in the west, Satara district in the south, Solapur district in the south and southeast and Ahamadnagar district to the east. It is situated at 559 m above ASL. The district ranks second in terms of area in the state. Pune district consists of 14 talukas and 1866 villages and having total 94.29 lakh population in 2011. The district has the shape of a triangle with its base in the Sahyadri mountain on the west and its apex in the extent extreme southeast corner near the point of confluence of the Bhima and Nira rivers (***Fig. 4.1***).

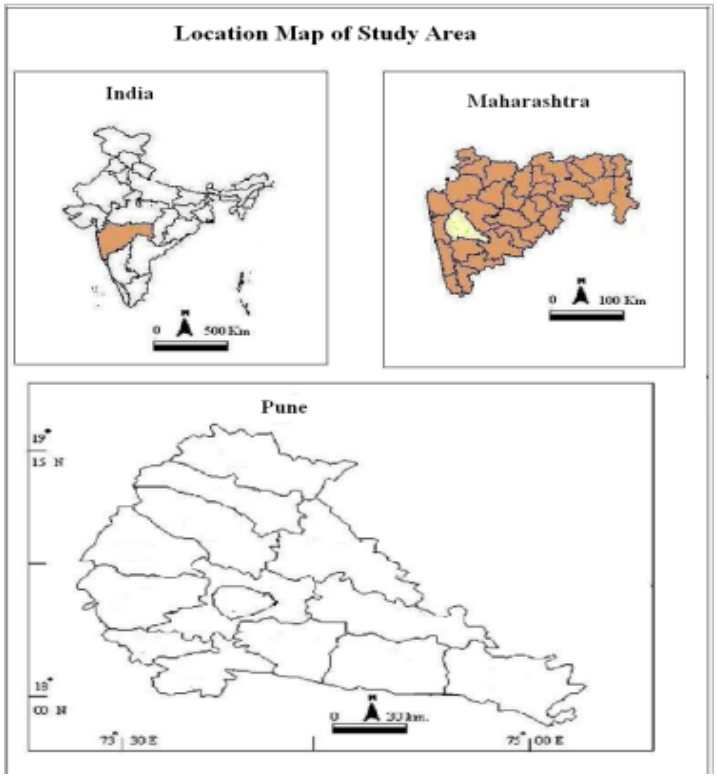


Fig. 4.1

4.2.1 PHYSIOGRAPHY

Pune district can be roughly divided into three main belts. The change from west to east is very gradual. It is most complete. Rugged wooded hills and deep valleys give place to a flat bare plain. The western belt consists of the main Sahyadri hills which run along the entire western border of the district. This is an extremely rugged terrain with lofty peaks, clear-cut ridges, steep slopes and deep ravines. These hills have height of between 700 m to 1300 m. Some peaks rise to even more than 1300 m (*Fig. 4.2*).

Physiography Map of Pune District

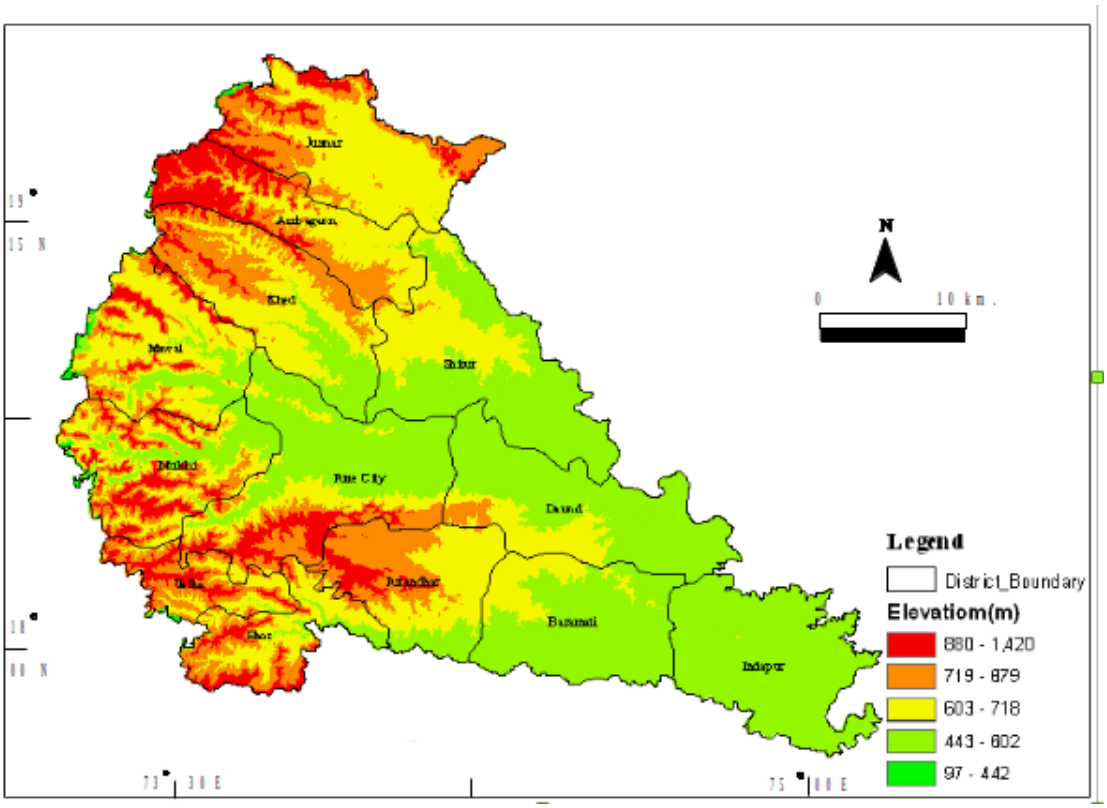


Fig. 4.2

Sahyadris

The hills of the district belong to two distinct systems. One running, on the whole, north and south, forms the main range of the Sahyadris, about 117 km in a straight line and includes the narrow broken crested ridges and the bluff flat-topped masses that stretch eastwards and gradually sink into the plain. The crest of the Sahyadris falls in places to about 606 m, the level of the western limit of the Deccan

plateau. In other places it rises in rounded bluffs and clear-cut ridges 909 m or 1212 m high. The leading peaks are, in the extreme north, Harishchandragad whose mighty scarps, nearly 1415 m high, support a plateau crowned by two low conical peaks. About 16 km to the southwest, at head of the Kukdi valley and commanding the Nane pass, the massive rock of Jivdhan, its fortifications surmounted by a rounded grass covered top, rises about 303 m above the Deccan plateau. About 4 km south of Jivdhan, the next very prominent hill is Dhak. From the east Dhak shows only as a square flat tableland, but from battlements of the Sahyadris. 16 km southwest of Dhak, where south, is the Sahyadris change from about the Deccan pleatue in gentle slopes, but falls west into the Konkan, a sheer cliff between 900 m and 1200 m high. From several spurs branch off forming valleys in which the rivers Pushpavati, Mina, Khukdi, Ghod and several of their minor tributaries have their source. 12 km south of Ahupe and like it, a gentle slope to the east and a precipice to the west, stands Bhimashankar, the sacred source of the river Bhima. About 22 km south comes a second Dhak, high, massive, and with clear-cut picturesque outline. Though its base is in Thana it forms a noticeable feature among the peaks of the Pune Sahyadris. 8 km further south, at the end of an outlying plateau, almost cut off from the Deccan, raises the famous double-peaked fort of Rajmachi. 16 km south, a steep slope ends westwards in a sheer cliff known to the local people as Nag-phani (Cobra's hood) and to Europeans as the Duke's Nose. About 9 km south of Nag-phani and 1 km inland from the line of the Sahyadris, raises the lofty picturesque range known as the Jambulni hills. Further south, the isolated rocks of Koiri and Majgaon command the Ambavni and Amboli passes. 9 km further is the prominent bluff of Salter (1070 m), and 24 km beyond is Tamhini (955 m), the southwest corner of Pune.

The Tamhini range goes to the east for about 40 km separating the Mula and the Mutha valleys. On this spur there are several peaks above 1030 m Koludat is 1087 m. About 6 km from the Koludat peak is the Mahadeo peak (1197 m). About 1km and half to the east of Mahadeo is Guruduhi peak (1079 m). The Tamhini spur slopes towards the northern edge of the Khadakvasala dam. About 6 km north of Tamhini is the Pondi peak (965 m). From Saltar 4 km to the southwest is the flat topped Sudhagad fort. 4 km to the south of Pondi is another peak Dipat (998 m).

Minor Ranges

From the main line of the Sahyadris four belts of hills run east wards of these, beginning from the north, the first and third consist of parallel ridges that fall eastwards till their line is marked only by isolated rocky hills. The second and fourth belts are full of deep narrow ravines and gorges cut through confused masses of hills with terraced sides and broad flat tops.

The north belt, which is about 25 km broad, corresponds closely with the Junnar taluka. It has three well-marked narrow ridges, the crests occasionally broken into fantastic peaks, and the side's sheer rock or steep slopes, bear of trees, partly under tillage and partly under grass. The north most ridges stretches from Harishchandragad along the Pune boundary and on to Ahmadnagar. South of this ridge two short ranges of about 32 km fall into the plain near Junnar. The major peaks in the northern spur are, Hatakeshvar, about 8 km north of Junnar and more than 606 m above the Junnar plain, a lofty flat-topped hill which east in a series of jagged pinnacles. It forms the eastern end of the spur that divides the Madhner and Kokadner valleys. About half-way between Hatakeshvar and the Sahyadris, on a half-detached ridge at right angles to the main spur, is Hadsar, a great fortified mass, which with rounded top raises about 364 m from the plain, and ends westwards in a rocky fortified point cut off by a chasm from the body of the hill. About 6 km to the southwest, guarding the right bank of the Kukdi, Chavand raises about 212 m from the plain. It is a steep slope crested with a scarp 18 m to 30 m high, whose fortifications enclose a rounded grassy head. 22 km further east, Shivneri, part of the broken ridge which separates the Kukdi and the Mina, rises from a three-cornered base about 242 m from the plain and commands the town of Junnar. Its long waving ridge is marked for km round by a flying arch, which stands out against the sky between the minarets of a mosque. 25 km southeast, isolated, but like Chavand and Shivneri marking the line of water parting between the Kukdi and the Mina, is the ruined hill-fort of Narayangad. It has a clear-cut double-peaked outline, the western and higher peak being crowned by a shrine. South of these, a spur, 56 km long, forms the south wall of the Mina valley.

On the south of the crest of this spur, for about 24 km, the second belt of eastern hills stretches a confused mass of uplands separated by abrupt gorges, their steep slopes covered in the west with evergreen woods, and in the east with valuable teak. The slopes are broken by terraces with good soil cover which are cultivated in places, and their tops stretch in broad tilled plateaus which often contain the lands of entire villages. In this belt of hilly land several peaks rise from the centre of a large plateau, such as Nayphad (1027 m), south of Dhumalwadi (1141 m) through, this upland region the Ghod nadi having its source near Ahupe, and the Bhima having its source near Bhimashankar flow through narrow valleys. At the southern limit of this hill region, on the north of the Bhama valley, are two conical hills Shinga (1286 m) and Kundeshwar (1238 m).

The third belt includes several spurs or ridges which are:

- The Tasubai ridge (1141 m) - Between the Bhama and the Andra ending a few km west of Chakan. This ridge ends with the hill of Bhamchander (660 m). The great saint Tukaram lived on this hill.
- Shridepathar - About 19 km long dividing the valleys of the Andra and the Kundali.
- The Vihirgaon spur - About 16 km long separates the Kundali and the Indrayani valleys.
- The Sakhupathar plateau - From which an offshoot with the four peaks of Lohgad (1034 m), Visapur (1081 m), Bhatrasi (1097 m) and Kudwa separates the valleys of the Indrayani and the Pavna.
- Further south within Bhor limits in the Pavna valley is the fifth spur from which rise the peaks of Tung (1067 m), Tikona (1054 m) and Mandvi (1249 m). This spur divides the Pavna and the Mula valley.

The fourth belt of east-stretching hills is further to the south, in the Mulshi taluka, where the Mula and its seven tributaries cut the country into a mass of hills and gorges. This is almost as confused as the second belt of hills, but has fewer trees and more tillage, the hill-sides being less terraced and the hill tops narrower. South of Mulshi, a belt of about 32 km broad cuts off Pune from the main line of the Sahyadris. Though separated from the main line of the Sahyadris the southwest of the district is not without hills. Starting 606 m from the plain in the scarped flat-topped fort of

Sinhagad, a range of hills stretches east for 11 km, and near the Katraj pass, divides in two, one branch, with well-marked waving outline stretches about 24 km to the fortified peak of Malhargad. From Malhargad it passes 14 km to Dhavleshvar and from Dhavleshvar about 9 km to the famous temple of Bhuleshvar. Beyond Bhuleshvar, for about 80 km to near Indapur, the line is still marked by low hills, rolling downs, and barren uplands. The second branch, after leaving the main range close to the Katraj pass, turns southeast for 19 km, and with several bold spurs, centers in the fortified mass of Purandar. Out of the same mountain mass raises, from the level of the lower Purandar fort, the fortified peak of Vajragad which commands the lower and main fort of Purandar. Beyond Purandar the range forms the water-parting between the Karha and the Nira rivers, and after stretching 16 km further east, is prolonged in low bare hills and stony ridges to near Baramati. About 22 km east of Purandar, above the village of Jejuri, at the end of the last ridges, of any noticeable height, is the small plateau of Kharepathar which is occupied by an ancient much venerated temple of Khandoba.

In the eastern belt, the hills sink slowly into the plain, the tablelands become lower and more broken, often little more than rolling uplands, and the broader and more level valleys are stripped of the most of their beauty by the dryness of the air.

4.2.2 GEOLOGY

The geology of the entire district consists of Deccan traps with inter-trappen beds (***Fig. 4.3)***. The Pune district consists of multiple layers of solidified fluid basalt and is more than 2,000 metres thick and formed between 60 to 68 millions years ago during the Cretaceous period. The basaltic lava flows is estimated to be around 512000 km^2.The volcanic lava flows are spread out in the form of horizontal sheets or beds. To the west they lie in flat – topped ranges, separated by valleys, tending from west to east. In some flows the basalt is columnar and then it weathers into the fantastic shapes. The rocks are dark grey in colour and are generally of two types. The non- vesicular types are hard though compact and medium to fine grained, with concordat fracture. The vesicular types are comparatively soft. Geological features offer aesthetic appeal for attracting to the tourists in the Pune district. The rocks exhibit a tendency to spheroid weathering by the exfoliation of roughly concentric

shells and hence rounded weathered boulders are commonly found scattered along the foot hills throughout the district. Trap rocks are generally barren of any economically useful and important minerals but being hard. Irregular nodes of kankar and gypsum occur in the eastern parts of the district. The region has basaltic base on which there are alluvial deposits in river valleys on the terraces and an old flood plain. Fault lines are scattered throughout the study region and these areas are minor earthquake prone.

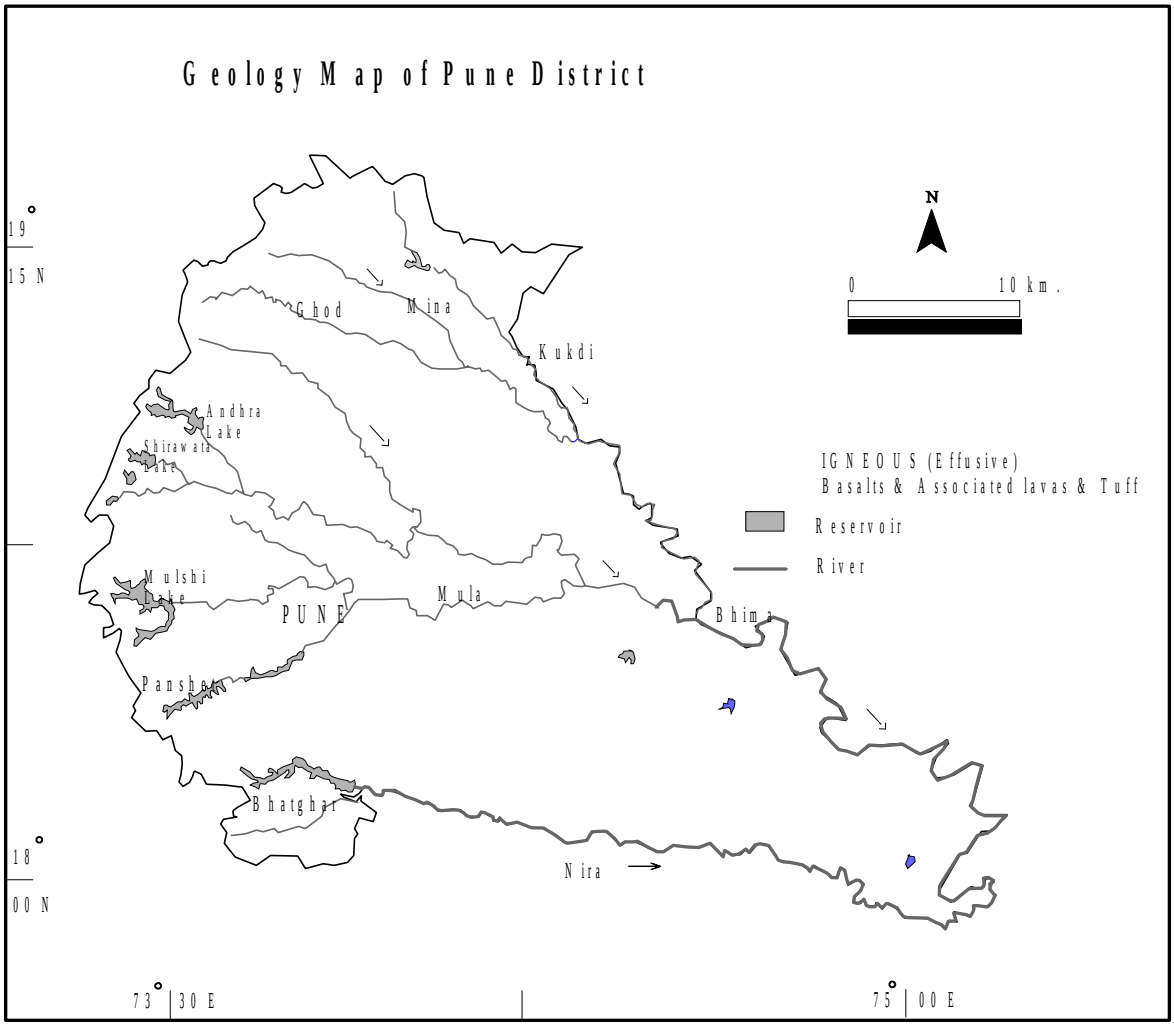


Fig. 4.3

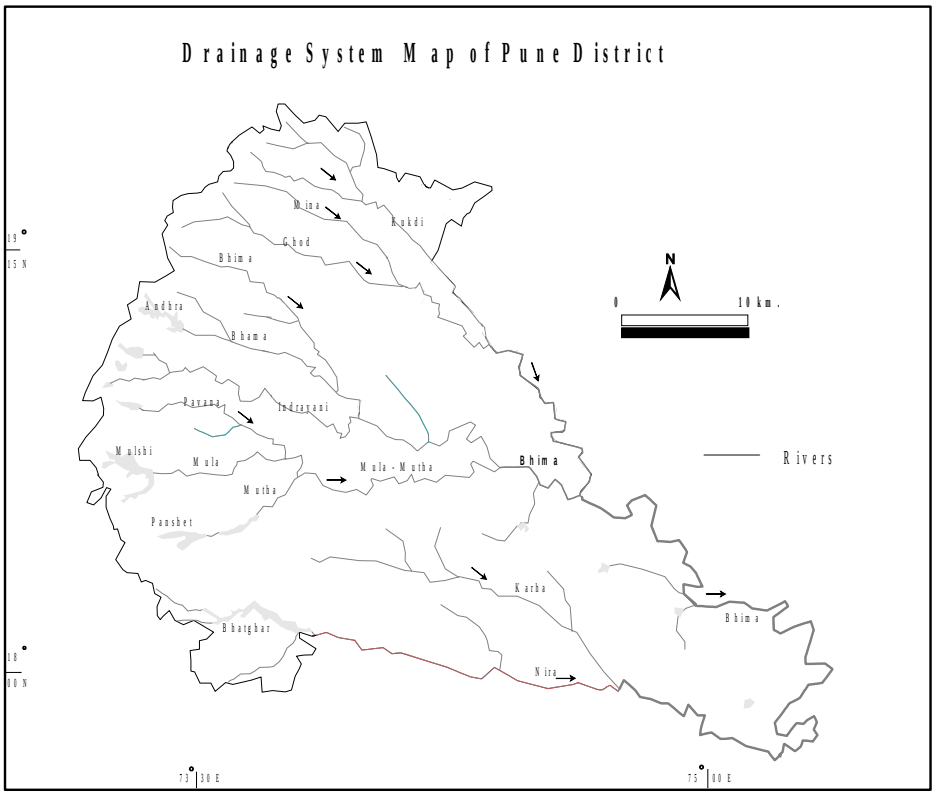
4.2.3 DRAINAGE SYSTEM

Pune is crossed by many rivers and streams, which take their rise in and near the Sahyadris, and bounded by the east-stretching spurs, flow east and south across the

district. The main river is Bhima, which crosses part of the district and for more than a hundred km forms its eastern boundary. The main tributaries of the Bhima are the Vel and the Ghod on the left, and the Bhama, the Indrayani, the Mula or Mula-Mutha and the Nira on the right. Besides the Bhima and its tributaries there are seven rivers the Kukdi and the Mina tributaries of the Ghod, the Andra tributary of Indrayani, the Shivganga and the Karha tributaries of the Nira. The Pushpavati with its feeder the Mandvi is a minor stream which flows into the Kukdi, and the Pavna is a tributary of the Mula (***Fig. 4.4***). During the rainy season all of these rivers flow with a magnificent volume of water and during the hot season shrink to a narrow thread in broad stretches of gravel.

The study region has Bhushi, Lonavla, Pavna, Valvan, Tungarli, Andhra and Shirawta lake. The dams constructed across the rivers are, namely, Temghar, Khadakwasla (Mutha), Varasgaon (Ambi), Panshet

Fig. 4.4 Drainage System Map of Pune District



(Mose), Chapet (Kanandi), Bhatgar (Velvandi), Devghar, Veer (Neera), Pimpalgaon (Pushpavati), Manikdoh, Yedgaon (Kukadi), Meena (Meena), Dimbe (Ghod), Chas-

Kaman and Ujani (Bhima), Andhra (Andhra), Valvhan (Indrayani), Pavna (Pavna), Mulshi (Mutha), There are long canal constructed along the river banks to its right and left such as Mula-Mutha canals, Nira canals etc. This facilitates farmers to change their traditional landuse pattern in study region.

Bhima -The famous temple of Bhimashankar on the crest of the Sahyadris, 40 km north of Khandala, marks the source of the Bhima. From a height of about 909 m above ASL, the river falls over terraces of rock some 182 m in the first 8 km. Further east, with a general course to the south-east, it flows 58 km through the very narrow and rugged valley of Bhimner. On its way it passes the large villages of Vada, Chass and Khed and near the village of Pimpalgaon from the right receives the water of the Bhama and at Tulapur the waters of the Indrayani. From Tulapur it bends to the south, skirting the Haveli taluka, and after receiving from the left the waters of the Vel about 8 km below Talegaon-Dhamdhers, it turns again north-east, to Mahalungi, a point 25 km east of Tulapur. Then running south for about 14 km, at the village of Ranjangaon it is joined from the right by the Mula-Mutha. This point is 591 m above ASL or 144 m below the village Vadhu. From Ranjangaon the Bhima runs southeast with a widening course of about 22 km till, on the eastern border of the district, it receives from the left the waters of the Ghod. After meeting the Ghod, the Bhima's course is very widening, the stream at Diksal flowing north-west for some km. Finally, at the extreme southeast corner of the district, after a deep southward bend round the east of Indapur, it is joined from the right by the Nira. The banks of the Bhima are generally low and after its meeting with the Indrayani are entirely alluvial. Here and there, where the winding stream has cut deep in to the soft mould, are steep banks of great height, but in such places the opposite bank is correspondingly low. In places, where a ridge of basalt throws a barrier across the stream, the banks are wild and rocky and the water, dammed into a long deep pool, forces its way over the rocks in sounding rapids. Except in such places the bed of the Bhima is gravelly and in the fair season has but a slender stream. Here and there muddy deposits yield crops of wheat or vegetables and even the sand is planted with melons.

4.2.4 CLIMATE

Climate plays important role in promotion of tourism. In a geographic sense, the varying trends and human adjustment are also governed by the changing weather condition. It is therefore, necessary to deal with the important attributes of climate particularly as they affect the pattern of tourist activity. In accordance with the environmental adjustment, the fluctuation in tourist frequency varies; it denotes that a particular season is more suitable for tourism. The climate of Pune district is generally dry and invigorating most of tourist attracted to the comfort climatic zones areas. The climate of the Pune district is quite favorable for the tourism point of view.

Generally, altitude affects the atmospheric pressure and temperature. Mountains by virtue of their elevation altitude arrangements of ranges, peaks, windward and leeward location, water bodies, natural vegetation reveal wide difference of climatic condition mainly in temperature and precipitation (Joshi- etd, 1983). The year can be divided into four principle season in the district.

1. The cold season from December to February.
2. The hot season from March to May.
3. The monsoon season from June to September.
4. The retreat of monsoon season from October to November.

The study region experiences tropical monsoon climate. Due to uneven topography, rainfall is unevenly distributed in study region. The average annual rainfall in the district is 722 mm. The rainfall generally decreases from west to east. On the basis of rainfall, it is possible to divide the district into three broad regions. The extreme western region where eastern limit passes through Junnar, Ghod, Khed, Talegaon-Dabhade and Sinhagad is one of the heavy and assured rainfalls. The central region whose eastern limit passes through Ale, Pabal, Loni, Saswad, Jejuri and Valha has a moderate but regular rainfall. The eastern belt has the lowest rainfall which is irregular and uncertain.

Table 4.1: Annual Rainfall in Pune District 2013-14

Sr. No	Tahasil	Rainfall mm	Sr. No	Tahasil	Rainfall mm
1	Junnar	1126.1	8	Pune city	478.7
2	Ambegaon	745.2	9	Daund	591.2
3	Shirur	661	10	Purandar	574.3
4	Khed	759.2	11	Velhe	1889.6
5	Maval	2465.1	12	Bhor	1726.5
6	Mulshi	2186.8	13	Baramati	469.5
7	Haveli	478.7	14	Indapur	477.7

(Socio-economic Abstract, Pune District, 2013-14)

About 85 % of the annual rainfall in the district is received during the southwest monsoon season from June to September. July is the rainiest month. Due to uneven topography, rainfall is unevenly distributed in study region. The rainfall amount of more than 2000 milimeters receives in Mulshi and Maval talukas whereas moderate rainfall of 1000 to 2000 milimeters is occur in Bhor, Velhe, Junnar, talukas. Maval taluka (2465.1) receives highest amount of rainfall during 2013-14 followed by Mulshi (2186.8) and Velhe (1889.6). Baramati taluka has found lowest rainfall (469.5 millimeters) followed by Indapur (477.7), Haveli (478.7) and Pune city (478.7). (***Fig.4.5 and 4.6***).

Temperature - From March onwards is a period continuous rise in temperature and May is generally the hottest month of the year. With the onset of the monsoon there is an appreciable drop in temperatures. With the retreat of monsoon day temperature again rise in October. Thereafter, both day and night temperature begins to fall. The mean temperature is lowest in December. The minimum diurnal variation in temperature is recorded in the months of July and August, whereas maximum daily variation in temperature is recorded during the months of January and February. The summer season is moderately hot and the temperature various from 35°C to 39°C the summer months i.e. April and May are very hot and unbearable. The winter is quite fair and slightly severe and the temperature varies from 10°C to 15°C during the months of December and January. The monsoon season is comparatively cooler with sporadic rains distributed overall the monsoon period. The extremes of heat and cold are greater towards the east.

Fig. 4.5 Climate Map of Pune District

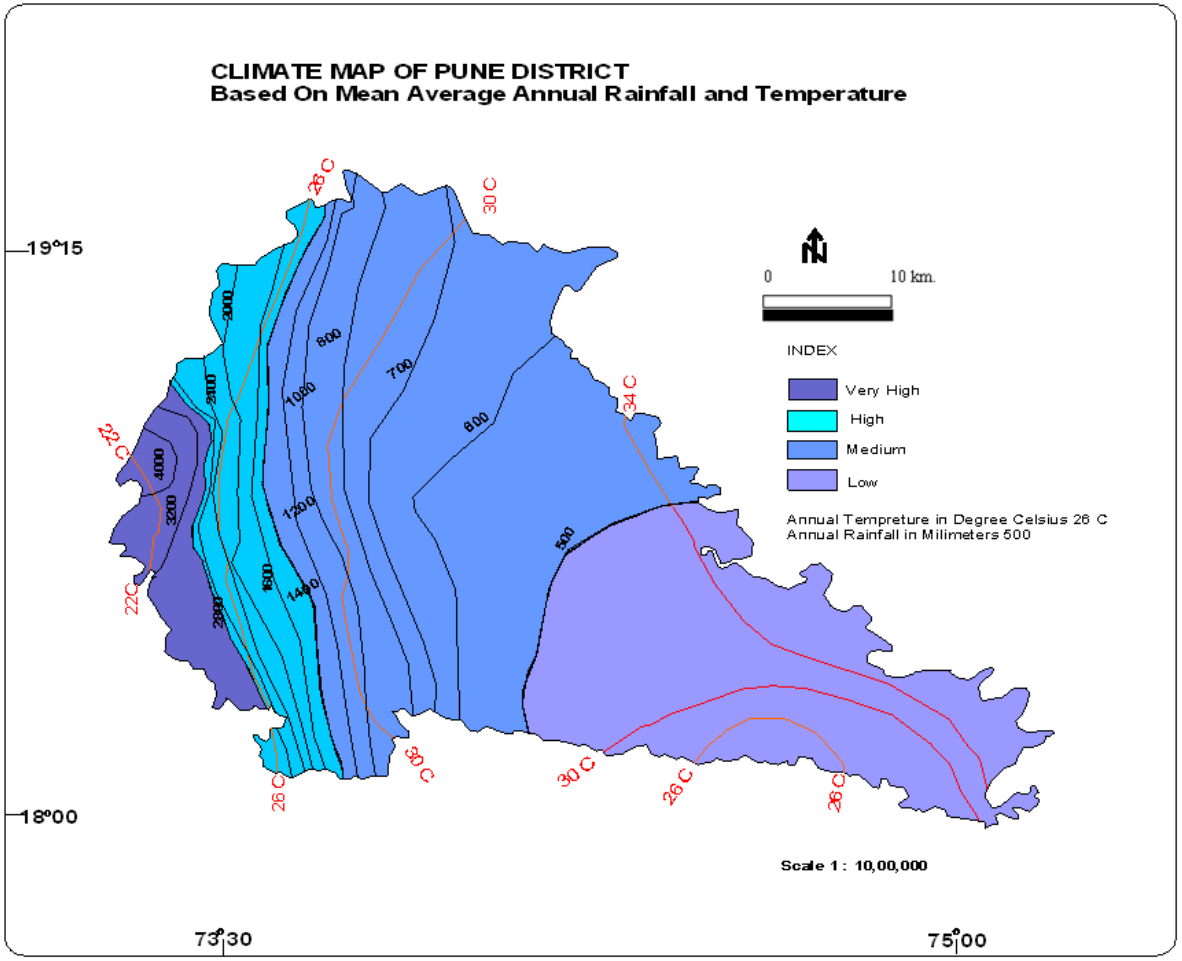


Fig. 4.5

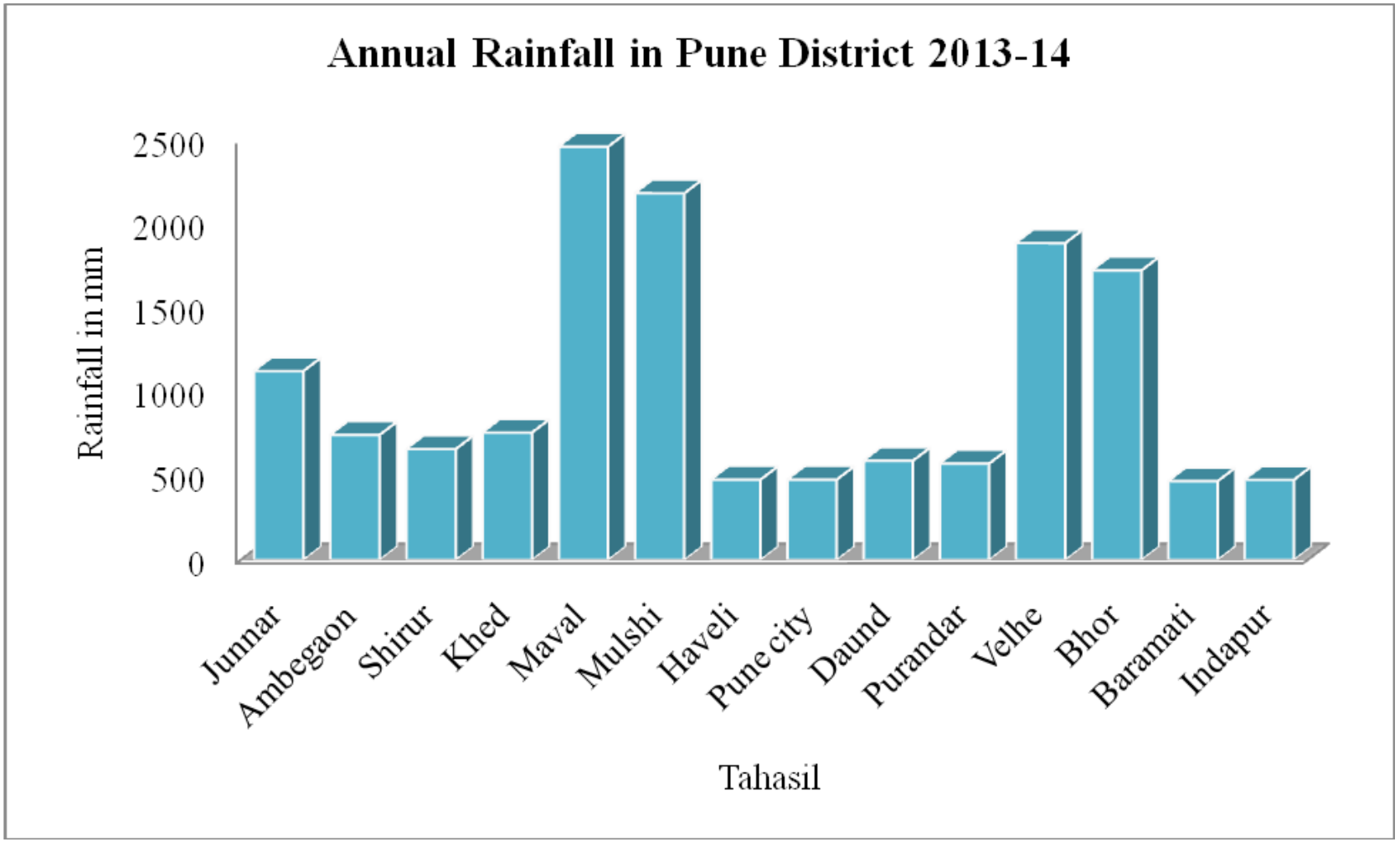

Annual Rainfall in Pune District 2013-14
Rainfall in mm
2500
2000
1500
1000
500
0
Junnar
Ambegaon
Shirur
Khed
Maval
Mulshi
Haveli
Pune city
Daund
Purandar
Velhe
Bhor
Baramati
Indapur
Tahasil

Fig.4.6

Forest Map of Pune District

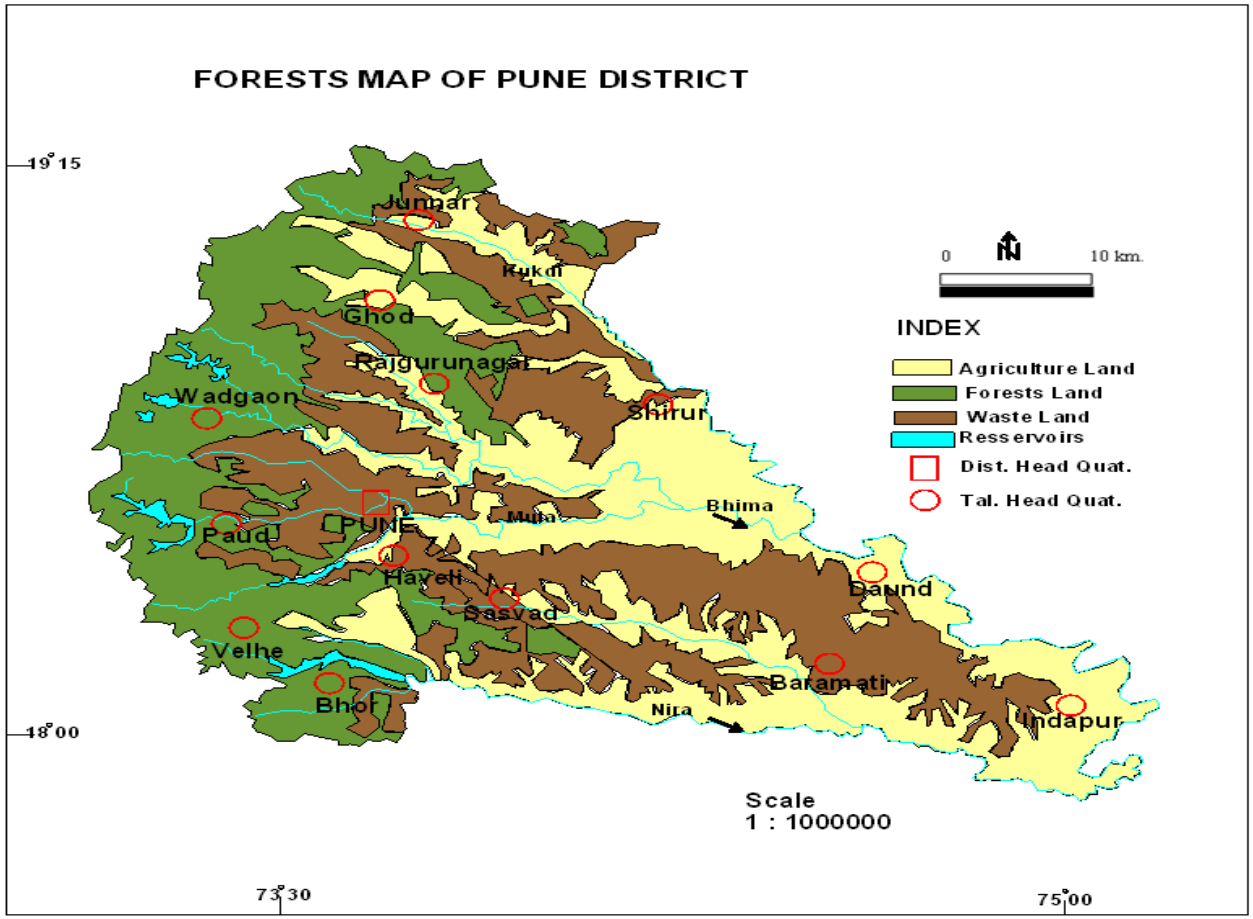


Fig. 4.7

4.2.5 NATURAL VEGETATION

In modern tourism the forest has played an important role for development of tourism in forest areas. The forest area in the district is distributed among 1866 villages in the district. This includes all land classified on forest under any legal enactment dealing with forests or administered as forest weather. State owned or private or weather wooded or simply maintained as forest land within the forest area itself these may be occasionally outrivaled patches or grazing lands. Pune district experiences dry climate, hence it shows sparse to scanty vegetation in its eastern part, where as relatively dense vegetation occurs in its western part (***Fig. 4.7***). It comprises of trees, herbs and shrubs, grasses occupying valley plain, colluvial slopes and hill tops where a significant soil cover is formed (Dikshit, 1986).

Hilly portion of west side is covered by forest in Junnar, Ambegaon, Khed, Maval, Mulshi, Bhor and Velhe talukas. Small patches of forest are found in Purandhar and Haveli talukas. The west part of talukas, namely, Mulshi, Velhe and Bhor is covered by forest. The talukawise percentage is shown in Table 4.2. Fifty percent forest is found in west part in Maval, Bhor, Mulshi, Ambegaon and Velhe talukas. The largest forest cover is identified in Maval (19.05%) followed by Ambegaon (14.14%), Junnar (12.15%), Khed (11.69%) and Mulshi (09.74%). Daund, Purandar and Haveli taluka shows decreased trend and Maval taluka shows increased in area under forest.

Table- 4.2 : Forest Area in Pune District

Sr. No	Tahasil	Forest Area in %	Sr. No	Tahasil	Forest Area in %
1	Junnar	12.15	8	Pune city	0.14
2	Ambegaon	14.14	9	Daund	2.85
3	Shirur	3.50	10	Purandar	1.29
4	Khed	11.69	11	Velhe	6.28
5	Maval	19.05	12	Bhor	7.14
6	Mulshi	9.74	13	Baramati	2.87
7	Haveli	4.58	14	Indapur	4.58

Source : Socio-economic Abstract, Pune District, 2013-14.

Vegetation consists of trees like mango, jambhul, bamboo, jackfruit, herbs, shrubs, weeds and grasses are mostly observed along the valley flats, gently sloping ground and on the flat ridges. Eastern parts of the district occupied by the sparse vegetation of xerophytes and dry deciduous type vegetation. The forest produce is divided into two main classes i.e. major and minor. The major forest produce is timber and firewood mostly found in Junnar, Maval, Mulshi and Velhe. The minor forest produce

like bamboo, gum, honey, apta and tembhurni leaves (useful in bidi manufacturing) in addition to babul, hirda and wax etc. are found in large quantity in almost all tahasils.

4.3 CULTURAL INFORMATION OF REGION

4.3.1 POPULATION GROWTH

According to Census 2001, there was 7,232,555 population in Pune district of which males are 3769128 and females are 3463427 and population has increased up to 9429408 in 2011. Demographic growth may basically influence the growth of tourism in two ways. First, given unequal per capita incomes, it will mean an overall increase in national and international demand. Second, in the industrially advanced countries where tourism has reached high proportion the growth of the population will lead to its further expansion (Tiwari, 1994).

Table 4.3: Tahasilwise Population of Pune District

Sr. No.	Name of Tahasil	Male	Female	Total Persons
1	Junnar	202360	196942	399302
2	Ambegaon	119226	116746	235972
3	Shirur	201152	184262	385414
4	Khed	237868	212248	450116
5	Maval	198487	179072	377559
6	Mulshi	90053	80953	171006
7	Haveli	1316346	1119235	2435581
8	Pune City	1700867	1604021	3304888
9	Daund	196283	184213	380496
10	Purandar	119906	115753	235659
11	Velhe	27504	27012	54516
12	Bhor	94158	91958	186116
13	Baramati	221094	208506	429600
14	Indapur	198801	184382	383183
Pune District		4924105	4505303	9429408

Socio-economic Abstract, Pune District, 2013-14.

According to 2011 census the total population of Pune district was 9429408. The details are given in the **table 4.3 and fig. 4.8**. During the decade 2001-2011 the growth rate of the district was 30.37. The high growth rate in the district may be partly attributed to the immigration of people for employment and other reason.

Within the district Pune city tahasil experienced the highest population of 3304888, while Velhe tahasil has shown the lowest population of 54516. The growth rates in Pune city is above the district average (30.37) and the remaining 13 tahasils have growth rates below the district average. Velhe have no urban areas. Among the 12 tahasils of the district, urban growth rate of Pune city tahasil of the district is the highest. Pune city tahasils recorded growth rates above the district urban average. The percentage of urban population to total population is indicator of the level of urbanization. It is noticed that Pune city is the most urbanized tahasil with 3274923 being urban, while Bhor, is the least urbanized with 18453 populations in urban areas. The density of population in Pune district is recorded 603 sq. km. The Pune city tahasil has recorded the highest density of the population (19728 sq. km.). The lowest population density is recorded in Velhe tahasil (110 sq. km.).

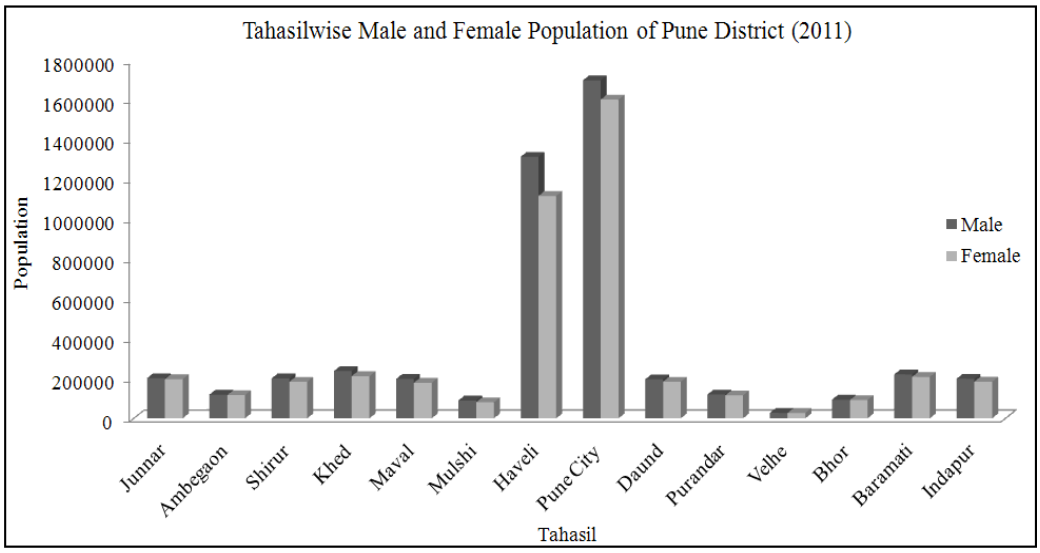


Fig 4.8

4.3.2 WATER SUPPLY

Water bodies constitute major resource potential for tourism development of any region. Rivers, lakes, dams, waterfalls, pot hole, river confluences etc. are the main resource for tourist activities i.e. swimming; skiing, boating, fishing, river rafting and mostly adventures activity related only the availability of water bodies. The Pune district has a numerous water reservoirs, which has been constructed for multi purpose uses. There are 19 major dams and numerous tanks, lakes and ponds in the district which, add beauty to the landscape. The details are given in table 4.4

Table 4.4: Water Reservoirs in Pune District (2013-14)

Sr. No.	Name of Dam	Location	Height (in Meter)	Capacity (in Tmc)
1	Vankoji Sagar Bhatghar (1928)	Bhatghar taluka - Bhor	56.39	672.67
2	Veer (1966)	Veer taluka - Purandar	35.80	266.40
3	Ghod (1958)	Chinchani Wadgaon taluka – Shirur	29.57	216.31
4	Khadakawasla (1880)	Khadakawasla taluka – Haveli	32.92	86.00
5	Panshet (1975)	Panshet taluka - Velhe	60.05	304.00
6	Varasgaon (1992) Veerbaji Pasalkar	Varasgaon taluka – Haveli	66.70	374.00
7	Pavana (1975)	Phagane taluka - Maval	42.37	305.00
8	Yedgaon (1977)	Yedgaon taluka – Junnar	23.6	93.43
9	Manikdoh (1982)	Manikdoh taluka – Junnar	50.38	307.91
10	Dimbhe (1999)	Dimbhe taluka - Ambegaon	67.65	382.06
11	Vadaj (1981)	Vadaj taluka – Junnar	26.42	35.94
12	Pimpalgaon Joga (2000)	Pimpalgaon Joga taluka – Junnar	27.57	217.91
13	Chas kaman (2005)	Chass kaman taluka – Khed	46.28	241.69
14	Pushpavati (1954)	Netwad taluka - Junnar	7.54	30.50
15	Nazare (1974)	Nazare taluka - Purandar	22.55	22.31
16	Vadivale (1999)	Ukasan taluka -Maval	27.20	40.87
17	Mulshi	Mulshi taluka -Mulshi	30.22	90.00
18	Temghar	Temghar taluka – Haveli	24.30	7.56
19	Andra (1997)	Andra taluka – Maval	34.00	2.93

Source: Irrigation Department Pune

Pune district experiences high rainfall in west part and less rainfall in east part. Rainfall decreases from west to east. There are 16 major, nine medium and 79 minor projects in Pune district and numerous tanks, lakes and ponds in the district which, add beauty to the landscape. There are 1778 wells, 534 KTP weir and 113 weir used for irrigation purpose in study region. The details are given in table 4.5

Table 4.5: Irrigation and Lift Irrigation facilties (2013-14)

Name of Tahasil	Major Project	Medium Project	Minor Project	Tank	KTP Weir	Weir	Lift Irrigation	Well Irrigation
Junnar	4	2	2	0	28	24	1	194
Ambegaon	1	0	1	1	49	5	1	158
Shirur	1	0	12	1	30	8	1	123
Khed	2	1	2	1	58	19	1	176
Maval	1	2	4	0	40	4	1	45
Mulshi	1	2	14	1	38	3	1	17
Haveli	1	0	1	0	31	12	0	61
Pune City	0	0	0	0	0	0	0	0
Daund	0	0	7	0	32	10	0	205
Purandar	0	1	9	0	32	9	1	116
Velhe	3	0	0	0	41	0	0	106
Bhor	2	0	4	1	42	5	0	136
Baramati	0	0	8	1	86	13	0	238
Indapur	0	1	15	1	17	1	0	203
Total	16	9	79	7	534	113	7	1778

Source: Irrigation Department Pune

4.3.3 TRANSPORT

Pune has excellent external road, rail and air connectivity to almost all important cities in India. Transport facility at any place would naturally pave way to speed tourism development. The quantity of transport network is the key factor determining the accessibility of tourist areas. Therefore, transport may be considered as a tool for development of tourism.

Pune is extremely well connected to most of the important cities in India. Maharashtra state transport buses are most commonly used by tourist to travel to rural parts of Pune. They are the cheapest means of transport. State owned and private air-conditioned bus services run daily buses to most important tourist center from Pune. The bus frequency is extremely good. The table 3.3 showed the total length of road network of Pune district. The road network of the Pune district may be divided broadly into four categories

There are three national highways measuring a total length of 415 km that pass through Pune district.

1) Pune Mumbai and Pune Bangalore National Highway (NH 4) – Khandala, Lonavala, Talegaon, Chinchwad, Pune and Khed-Shivapur etc. are important places in the district along this road.
2) Pune Solapur Hydrabad National Highway (NH 9) – The main places along this highway arePune, Loni-Kalbhor, Daund, Bhigawan and Indapur.
3) Pune Nashik National Highway (NH 50) – This highway passes through Pune, chakan, Rajgurunagar, Manchar, Narayangaon and Alephata.

State highways play important role for promoting tourism in the district along with the national highway.There are four state highways are covering a total length of 1991.96 km distance.Pune Ahmednagar Aurangabad State Highway, Pune Alandi State Highway Pune Saswad Phandarpur State Highway and Pune Paud Roha State Highway. The details are given in ***fig. 4.9.***

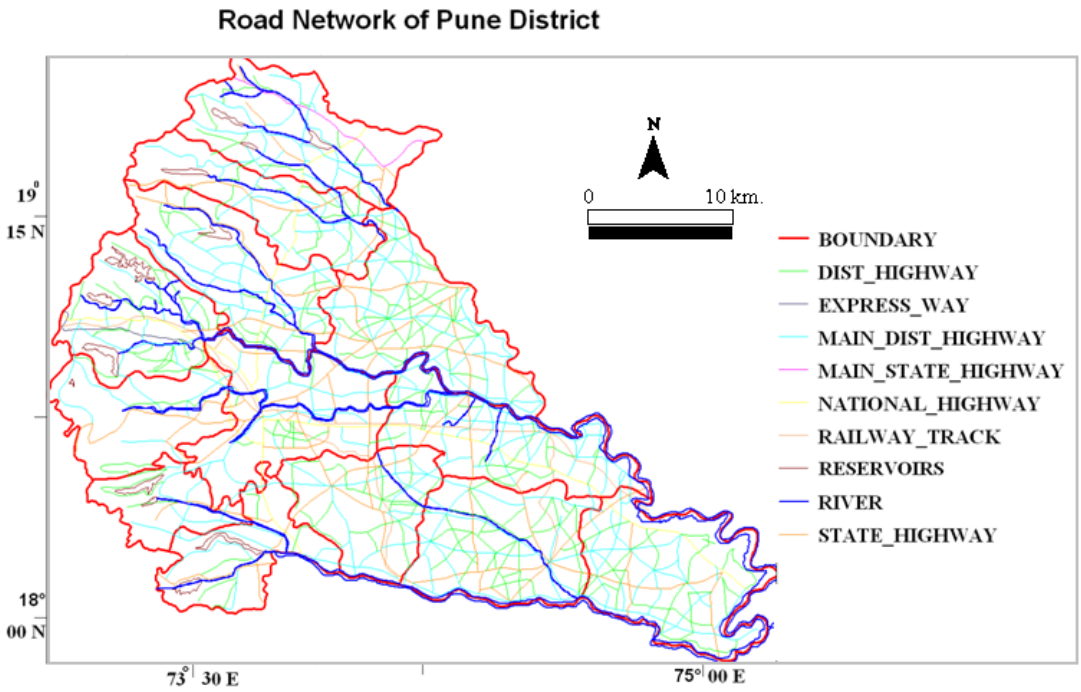


Fig. 4.9

Table 4.6: Types of roads by length in km. in Pune (2013-14)

Sr. No.	Types of Roads	Length in Km.
1	National Highways	415
2	State Highways	1991.96
3	Major District Roads	4078.96
4	Other District Roads	2367.04
5	Village Roads	10077.76
6	Pune Mumbai Express Highway	46
	Total	**18976.72**

Source: District Statistical Office, Pune 2013-14.

Pune is very well connected by rail to all the major cities in India. The Pune has two main railway stations, Pune junction and Shivajinagar station; most trains halt at Pune junction. Pune suburban trains also run from Pune junction to industrial towns of Khadki, Pimpari Chinchwad etc.The Railway lines include Pune Mumbai broad gauge double line (Central Railway), Pune Daund Solapur broad gauge double line (Central Railway), Daund Manmad broad gauge single line (Central Railway), Daund Baramati Lonand broad gauge single line (Central Railway) and Pune Miraj broad gauge single line (South Central Railway).

An airport is located at Lohgaon and 12 km away from Pune city. Pune now has an international-deemed airport, with flights to Singapore, Frankfrut and Dubai. Pune will see flights to New York, London and Shanghai (via Mumbai) in the next few years. Domestic flights are available to most metropolitan cities in India. One more airport is on the way Purandar which will help to attract the foreign tourist at Pune and its adjoining tourist centers.

Along with Bharat Sanchar Nigam Ltd. (BSNL) and Mahanagar Telelphone Nigam Ltd. (MTNL), eight private companies are providing telecommunication services in the district. The total number of landline connections at the end of 2014 in the State was 330411.

Table 4.7: Tahasilwise Post offices in Pune district 2013-14

Sr. No	Tahasil	No. of Post office	Sr. No	Tahasil	No. of Post office
1	Junnar	72	8	Pune city	15
2	Ambegaon	40	9	Daund	45
3	Shirur	51	10	Purandar	54
4	Khed	70	11	Velhe	5
5	Maval	40	12	Bhor	57
6	Mulshi	36	13	Baramati	55
7	Haveli	70	14	Indapur	50

Source: Post Office, Pune city 2013-14.

As per table 4.7 within the district Junnar tahasil having the highest number of post offices of 32, while Velhe tahasil has shown the lowest post offices of 5. During the year 2013-14, the number of Post Offices in the areas of the Pune district was 660.

4.3.4 SOCIO-ECONOMIC CONDITION

Socio-economic status (otherwise known as SES) refers to an individual's level of income, wealth, education, and occupation. In general, it analyzes how societies progress, stagnate, or regress because of their local or regional economy, or the global economy. Disparities in SES are a great cause for concern today as they are increasing throughout the world. Although socio-economic status has been clearly associated with the well-being of adults and young children, its impact on adolescents has been controversial. Some studies find that young people with higher SES have better health and other studies show no effect of SES on health in adolescence. These differing results could be due to studying different youth age groups or to difficulties in measuring SES accurately in the adolescent population.

Socioeconomic status is typically broken into three levels (high, middle, and low) to describe the three areas a family or an individual may fall into. When placing a family or individual into one of these categories, any or all of the three variables (income, education, and occupation) can be assessed. Education in higher socioeconomic families is typically stressed as much more important, both within the household as well as the local community. In poorer areas, where food and safety are priority, education can take a backseat.

Occupational structure of any region determines the level of economic development. This occupational structure shows the employment status of particular area. Working and non-working population determine the stage of economy. Agricultural laborurs are the main workforce in study region. Pune city is highly urbanised and found maximum workers working in secondary activities.

According to 2001 Census, there are 29.54 lakh population (40.85 percent) engaged as workers. It means 59.15 percent population, (42.78 lakh) is non-working population. Out of working group 7.93 lakhs are farmers and 3.74 lakhs are landless labours. The remaining (17.07 lakh) workers are being engaged in small scale industries, transportation, construction, trade and services.

Table 4.8: Occupational structure in Pune district1991 to 2001.

Sr. No	Year	Cultivators	Agricultural Labourers	Other Workers
1	1991	31.38	14.01	54.61
2	2001	26.90	12.70	60.40

Source: Socio-economic Sataistical Abstract 2013-14

It is observed from the table 4.8 that the percent of cultivators is decreased from 1991 to 2001. In 1991, percent of cultivators was 31.38 percent and it has decreased by 4.48 percent. The percent of agricultural labours are slightly decreased by 1.31 percent from 1991 to 2001. The percent of other workers have increased from 1991 to 2001 ie. 5.79 percentages.

Literacy and level of education are basic indicators of the level of development achieved by a society. Spread of literacy is generally associated with important traits of modern civilization such as modernization, urbanization, industrialization, communication and commerce. Higher levels of education and literacy lead to a greater awareness and also contributes in improvement of economic and social conditions. It acts as a catalyst for social upliftment enhancing the returns on investment made in almost every aspect of development effort, be it population control, health, hygiene, environmental degradation control, employment of weaker sections of the society. The study of occupational structure occupies an important position in the field of population geography. The social and economic development

of any region depends on the number of persons who are economically active and the quality and regularity of their work. The proportion of economically active population in various occupations indicates that economic profile of various groups of society.

Education in its general sense is a form of learning in which knowledge, skills, and habits of a group of people are transferred from one generation to the next through teaching, training, research, or simply through auto didacticism. Generally, it occurs through any experience that has a formative effect on the way one thinks, feels, or acts. As we believe that "World Change Starts with Educated Children", we are convinced in empowering community through education.

Literacy is essential for eradicating poverty and mental isolation, for cultivating peaceful and friendly international relations and for permitting the free play of demographic processes. Literacy refers to the ability to read for knowledge, write coherently, and think critically about the written word. Visual literacy includes in addition the ability to understand all forms of communication, be it body language, pictures, maps or video.

Table 4.9: Literacy of Pune district (1990-91 to 2013-14)

Year	Male	Female	Rural	Urban	Total
1990-91	81.56	59.77	60.75	80.78	71.05
2000-01	88.34	71.79	72.44	86.11	80.84
2008-09	88.34	71.79	72.44	86.11	80.84
2009-10	88.34	71.79	72.44	86.11	80.84
2010-11	88.34	71.79	72.44	86.11	80.84
2011-12	92.72	81.13	80.93	91.19	87.19
2012-13	80.02	71.73	71.29	79.11	76.06
2013-14	90.84	81.05	80.98	89.45	86.15

Source: Socio-economic abstract 2011

The table 4.9 showing the literacy of Pune district since from 1990-91 to 2013-14. The male literacy in 1990-91 was 81.56%. The male literacy in the 2000-01 and 2013-14 were 88.34% and 90.84% respectively. The female literacy in the 1990-91 was 59.77%. The female literacy in the 2000-01 and 2013-14 were 71.79% and 81.05% respectively. The female literacy is low because in the family more importance given to male.

The rural literacy in the 1990-91 was 60.75%. The rural literacy in the 2000-01 and 2013-14 were 72.44% and 80.98% respectively. The urban literacy in 1990-91 was 80.78%. The urban literacy in the 2000-01 and 2013-14 were 86.11% and 89.45%

respectively. The urban literacy is high because more education facilities available in the urban area, high standard of living, high income etc.

There are 833 hospitals, 96 public health centres and 541 public health subcentres in pune district as per the socio economic abstract 2013-14.

Resume

This chapter explains the general setup of Pune district which shows that the region is having good educational, economical and infrastructural position. The region is educational hub as well as industrial hub. The physical and social economic conditions of study region have discussed in this chapter. Pune district consists of 14 talukas and 1866 villages having 14,642 square kilometers area. Pune's average rainfall is 700 mm. According to Census 2001, there was 7,232,555 population in Pune district of which males are 3769128 and females are 3463427and population has increased upto 9429408 in 2011. Sub-tropical hill forest, Semi-evergreen forest, Moist mixed deciduous forests, Dry mixed deciduous forest and dry teak forest are found in study region. The district is well connected with state capital and surrounding region with district roads and rail routes. The total length of roads is 18976.72 kilometers, of which, 415 kilometers road length is covered by National highways, 1991.96 kilometers by state highways, 4078.96 kilometers by majore district roads and 2367.04 kilometers by other district roads. The broad gauge rail length is 311 kilometers. Pune is well connected by domestic and international airlines. During the year 2013-14, the number of Post Offices in the areas of the Pune district was 660.

4.4 METHOD FOR SELECTING MAJOR FORT SITES

A human being always tries to fulfill his requirements or desires with activities for specific purpose; which reflect in the functional characteristics. According to Eichenbaum J. and Gale S. (1971) the functional analysis represents, "The description of temporal cross sectional properties of phenomena". Tourism is new but fastly growing industry. It has very bright future. Because with increase in population, complex day to day life; increase in standard of living relief from tense etc. large number of people were attracting towards this industry. Hence by day it is getting very complex in nature; as it embraces many economic activities, services, human relations etc. Tourism development in an area or region primarily depends on the sties

of attraction on one side and facilities and services provided to tourist at destination on the other side i.e. it is the place or sites of attractions both natural and manmade. It generates demand in the tourist industry. Hence the tourist potential of an area or site and its importance from the view of tourism development is determined by various factors. They include natural conditions, amenities, accessibilities, incentives besides other factors like political support, capital and availability of labour etc.

In this research an attempt has been made to study the potential major fort sites for tourism development in respect of existing and newly identified major fort sites. Also an attempt has been made to analyse views of tourist on the basis of basic indicators of tourism. The satisfaction index is calculated to evaluate their views statistically. However, the study of function and behavioural aspects of the tourist has seen important for the tourism development and planning.

There are number of method for selecting sample major fort sites i.e. purpose of visit, on the basis of physiography, (mountain, plateau and plain region), on the basis of natural and cultural resources. It has been very difficult to survey entire Pune district as tourist resource potential, as many places having relief barrier. The district has vast and rich tourism resource potential of different cultural background in all its 14 tahsils. Tourism potential fort sites are classified on the basis of elevation. The forts from 400m to 1600 m MSL were selected and classified according to elevation with interval of 400 m. The minimum elevation of the fort Chakan is 618 m and maximum elevation of the fort Purandar is 1320 m (Table 4.10). Pune city region is not selected for any fort sites because in this region all type of infrastructural facilities are available to tourist, forts are well known, easy accessible, the information of these fort is easily available from MTDC, travel agents, media, internet and secondary data. The detailed information of forts in Pune district are mentioned in ***appendix - I***. The study shows that the forts known to outsider tourists are limited to Shivneri, Sinhagad, Shaniwarwada and Pune city only. This prevents full exploitation of the tourism potential of the other fort sites. This is due to the lack of information about these forts at various terminals and information centers.

It is not easy to analyze the attitude of the tourists. Functional properties are changing according to the varying attitude and changing context of the human being. Therefore, to assess the functional characteristics of tourists in the study region survey was conducted during the year 2015 and 2016 respectively. The Questionnaire and personal interview method have used as an alternative for the survey.

The questionnaire was given to the tourists to know their responses and reactions in respect to above mentioned various issues as well as lodging-boarding facilities, transport, drinking water medical facilities etc. problems which they have faced at major fort sites and also their suggestions about the major fort sites. The major object was to study the tourism potentiality of Pune district. The Random sampling method has been used for the selection of the respondents i.e. tourists at different locations.

4.5 IMPORTANCE OF MAJOR FORT SITES

Tourism development can play an important role in the economic development of the major fort sites. This requires the role of planning, promotion and publicity which can create a favorable environment for tourism. Major fort sites give detail idea about present status, infrastructure development of particular centers. Major fort sites are very rich in natural and cultural resources, these tourism resources are not fully utilized because of inadequate tourist facility, lack of information regarding this centers. Hence, proper development of tourism while treating tourism as a 'industry' along with industrial and agricultural development needs attention of the researcher of number of discipline to find out solution on problem on development of tourism which in turn will help to increase the tourist arrivals in the Pune district. Tourism can provide more scope for a generation of employment opportunities due to the increase in tourist facilities in terms of different socio-economic and marketing indicators; tourism can reach the vast majority of the population.

4.6 VARIOUS MAJOR FORT SITES AND DATA COLLECTION

On the basis of the above mentioned criteria different major fort sites have been selected from different terrain and environment. Chakan, Rajmachi, Tung, Shivneri, Rajgad, Purandar etc. forts were selected to assess the tourism potential of these fort sites

(***Fig. 4.10*** and Table 4.10.)

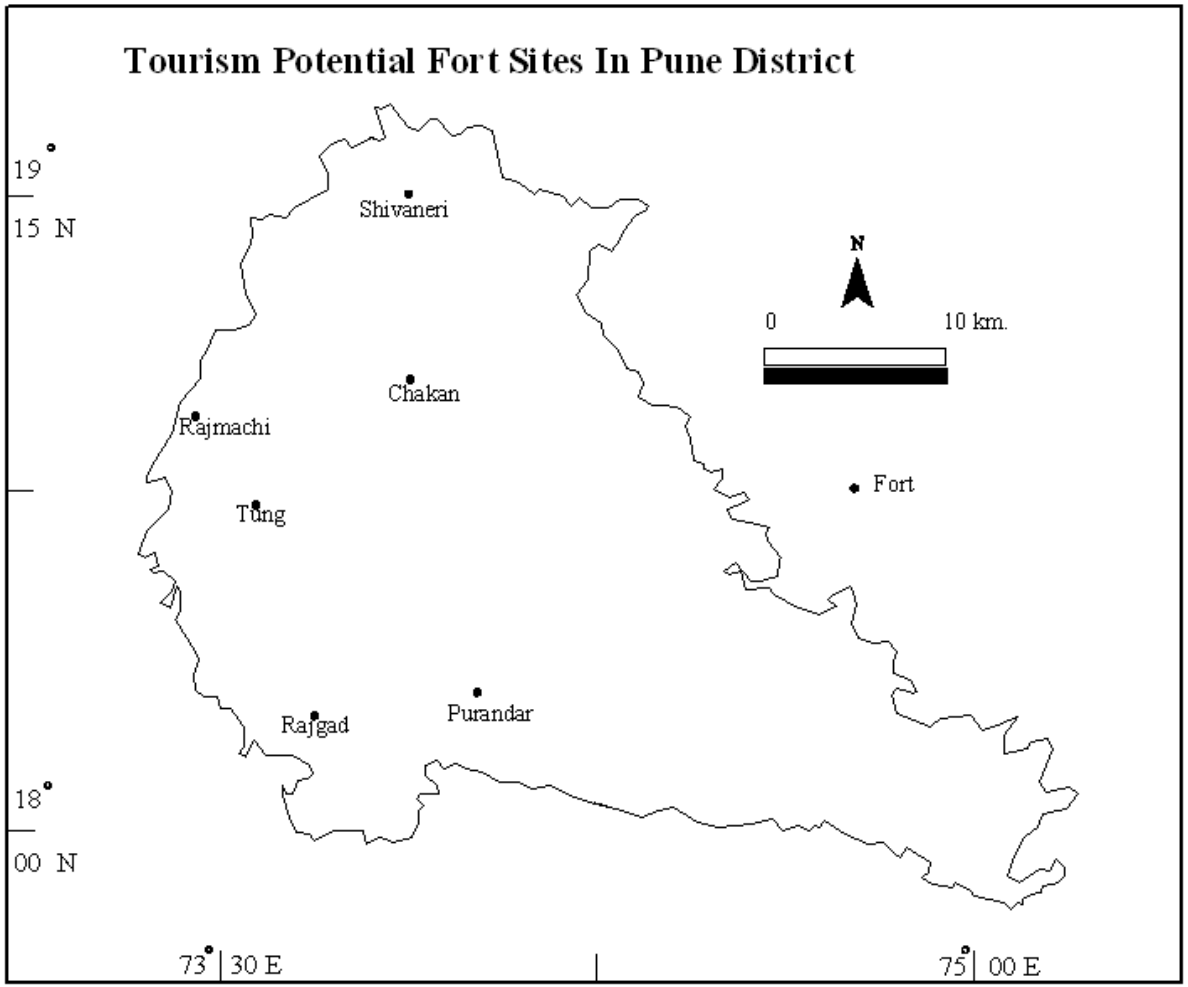

Tourism Potential Fort Sites In Pune District
19°
15 N
18°
00 N
73° 30 E
75° 00 E
N
0
10 km.
Shivaneri
Chakan
Rajmachi
Fort
Tung
Rajgad
Purandar

Fig. 4.10

Table 4.10: Major fort sites in Pune district

Sr. No	Name of fort	Name of tahasil	Elevation Class (m)	Elevation (m)
1	Chakan	Khed	400-800	618
2	Rajmachi	Mulshi	400-800	692
3	Tung	Maval	800-1200	964
4	Shivneri	Junnar	800-1200	998
5	Rajgad	Velhe	1200-1600	1307
6	Purandar	Purandar	1200-1600	1320

The data collected from the field survey and contacted total number of tourists is shown in Table 4.11.

Table 4.11: Tourists contacted at various Fort in Pune District.

Sr. No.	Name of the Fort	No. of Tourist
1	Chakan	125
2	Rajmachi	125
3	Tung	125
4	Shivneri	125
5	Rajgad	125
6	Purandar	125
Total		750

4.7 PROFILE OF MAJOR FORT SITES IN PUNE DISTRICT

The selected six major fort sites have studied and brief information of these places is discussed:

4.7.1 CHAKAN

Location: Chakan is located in Khed tahasil and it is recognized as land fort, located at 29kms north of Pune. Chakan is located on 18^0 45' north latitude and 73^0 52' east longitudes. The altitude of Chakan is 618 m. The area of the Chank is 17.12 km^2 (***Fig.4.11, 4.12, 4.13, 4.14, 4.15***).

Physiography: Physiographically, Khed Tahsil represents heterogeneous characters. Chakan is situated in the southern part of the Khed Tahsil. It is located at the

confluence of Bhama and Bhima River where the height is 560 m above the mean sea level. These flood plains are formed in the eastern part of the Khed Tahsil mainly in Chakan. In these villages the black deep and fertile soil is observed which is suitable for the agricultural activity.

Geology: The basaltic lava flows belonging to the Deccan traps of Eocene to upper cretaceous is the only major geological formation occurring in Chakan. Geologically the entire Chakan is underlined by basalt rock and horizontally bedded lava flows commonly referred as “Deccan Trap”. Most part of the Chakan is covered by the Indrayani formation which comprises a thick succession of five “aa” basaltic lava with 50 to 80 m thickness.

Historical Background: This fort is also called Sangram Durg, after the ferocious battle between the Mughal Army led by Shayeste Khan and Firangoji Narsala, a notable commander in Shivaji’s army. The fort is home to the famous temple of Shri Chakreswar, which pays a tribute to Lord Vishnu through the carvings that glorify its walls.

Nearly square, the chakan fort was protected by a strong wall with bastions and corner towers surrounded by a moat. There was also an inner wall. The chakan fort is now in ruins. The Chakan fort is quite old and was occupied by several ruling powers. An Abyssinian chief is said to have made the first fortification in 1295 AD. In 1595 AD it was given in jagir to Shivaji’s grandfather, Maloji Bhosale. An important event occurred here when the fort was captured by Shaista Khan in 1660 AD. Being on the shortest route from Ahmadnagar to Konkan, Chakan was a place of great strategic importance. The fort was captured from the Marathas by the British in 1818 AD.

Location Map: Chakan

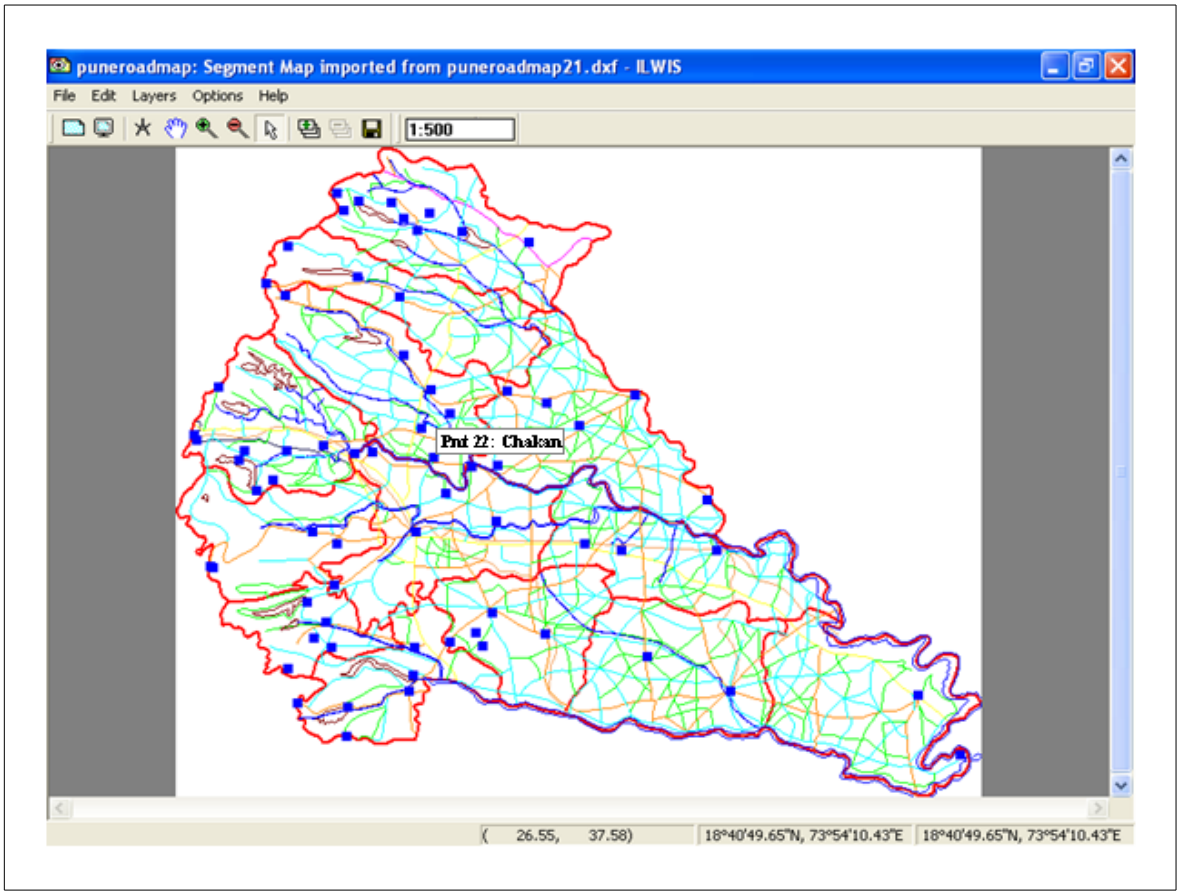


Fig. 4.11

Tourist Information System (TIS): Chakan

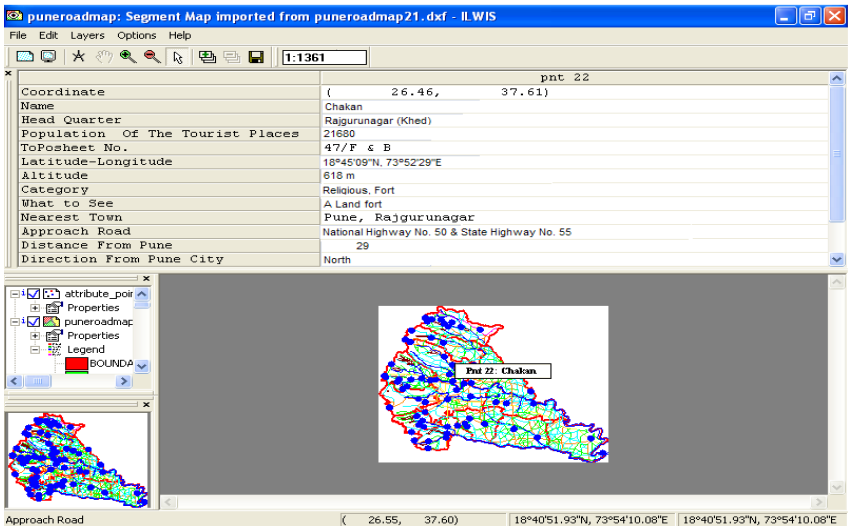


Fig. 4.12

Google Image: Chakan Fort



Source: (Google earth May 2017)

Fig. 4.13

Chakan Fort: Google map



Source: (Google earth May 2017)

Fig. 4.14

Toposheet: Chakan Fort

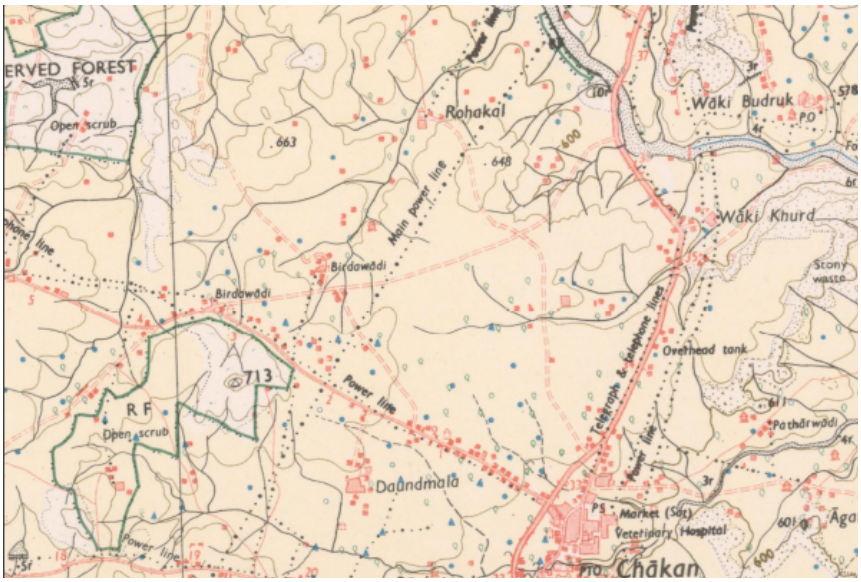


Fig. 4.15

Drainage: Chakan is irrigated through Bhama River which is flows from June-November i.e. only in rainy season. This source produce water for drinking purpose the people as well as for industrial purpose also.

Climate: The various parameters of climate become the resource of tourist activity. The area can be characterized by rainy, winter and summer season. The Chakan experience warm and dry climate throughout the year. The mean annual temperature of Chakan is 32°C. Month of May is generally hottest month of the year. The average rainfall received by the land fort is 664mm.

Natural Vegetation: As the Chankan is covered with agricultural land, the area under vegetation cover is less. Dry forests occur in the area having rainfall 50 cm to 100 cm. These are distributed in the eastern part of the Chakan and contain thorny bushes and cactus. The vegetation becomes sparse and consists of Acacia, Ber, Pipal and other scrubs and bushes. Dense cactus is distributed in Chakan. The cover of natural vegetation acts as rain holder and rain banker. Some scattered trees are also found that includes species like Neem, Babul, Sag, Mangoes and Guava etc.

Accommodation: The two vital requirements for tourism are accommodation and transport facilities. Accommodation in sufficient quantity in conformity with the requirements of the tourists is a major consideration for successful tourism. The accommodation available at Chakan is represented in the Table 3.3.

Table 4.12: Accommodation facilities in Chakan

Sr.no	Type of Accommodation facilities	Total
1	Lodges	8
2	Lodging and Boarding	3
3	Hotel Resorts	13
4	Motel	1

Source: Field survey 2014-16

In Chakan there are accommodation options that suit various budgets of tourists. There are economical tourist dormitories, resorts, lodging and boarding, lodges, Motel etc. in Chakan. In Chakan there are 13 hotel resorts, 8 lodges and 3 lodging and boarding, and one Motel. The Neelam Executive, Monika, OYO Apartments 129, OYO Premium 014, courtyard by Marriott Pune, Indrayani, Shivkrupa are the main

resorts in Chakan. Chakan is famous for the restaurants which serve authentic village food, ice creams, vegetarian and non- vegetarian meals etc.

Transportation and Communication: The excellent road network links Chakan with the other important place in Maharashtra and India. The Maharashtra State Road Transport Corporation (MSRTC) plies regular ordinary, Asiad, semi deluxe and deluxe buses for local sight seeing and to major destinations in Maharashtra. Private Coaches are also available to Pune, Mumbai and Nashik through a large number of private travel centers. Chakan is well connected by NH-50, SH-55 and MDR-20. Chakan is 180 km from Mumbai and just 29km from Pune and is well connected by road, rail and airways.

PMPML buses connect Chakan to Pune and Pimpri Chichwad . PMPML, Pune Station to Rajgurunagar, Pune PMC bus stand to Chakan-Mahalunge run through Chakan connecting important areas of surrounding areas to Pune City. Highways connecting to Pune and Pimpri-Chinchwad have heavy traffic due to extensive industrial growth in the area. Chakan is also on the proposed Pune Junction – Nashik Road railway line. Phase III of the Pune Metro will connect Chakan to Moshi which hosts an International convention and exhibition centre.

Mobile companies are providing services to the Chakan and surrounding region. Well developed communication facilities are available.

Water supply: Bhama River provides drinking water faciltity for the Chakan. Apart from this other sources are 23 tubewells, 29 wells and one tank for water supply in Chakan.

Population: In the year 2001 the total population was 21680. The Chakan town has population of 41113 of which 22194 are males while 18919 are females as per report released by Census 2011. As per the Census 2011, the total population of Chakan was continuously increased from 2001 to 2011, because of increasing literacy, medical facilities and awareness of peoples. The decadal growth rate of population is 89.64%. As per census 2011, Chakan had an average literacy rate of 72%, higher than the national average of 59.5%; with male literacy of 78% and female literacy of 65%.

Chakan has been a wholesale agricultural produce marketing hub. Chakan has big onion market to sell their agro-commodities and also for the industrial products. The Maharashtra Industrial Development Corporation (MIDC) introduced Chakan as a Special Economic Zone (SEZ). It has since evolved into a major automobile

hub. More than 750 industries, including a number of automobile manufacturers, are based in the area. Alandi, Chakan, Rajgurunagar and Shelpimplegaon are daily markets. Due to the easy accessible daily and weekly markets, even small size holders are also interested in cultivation of cash crops. It leads to increase the area under cash crops. The people of village are engaged in the occupation like agriculture, labors, service sectors, the driver, industrial worker and some people are government employees.

4.7.2 RAJMACHI

Location: The Rajamachi (Udhewadi) is located in Maval tahsils of Pune district. Rajamachi is located on $18^0$83' north latitude and $73^0$40' east longitudes. Lonavala is nearest town to Udhewadi which is approximately 17km away. The altitude of Rajamachi is 692m. The area of the Rajamachi is 2316 hect. (***Fig .4.16, 4.17, 4.18, 4.19 & 4.20***).

Physiography: Rajmachi is a charming fort. Rajmachi is an important fort in the Pune district. It is popularly known as the Jewel of the Sahyadri mountains. Rajmachi is set amongst the important hill fort of the Western Ghats at an altitude 692m above sea level. From this point we can see the Rajamachi fort's top two peaks are close to each other. The taller peak to the right is the Shrivardhan fort and smaller is Manrajan. There is a pass between the two peaks. A Bhairoba temple nearby is the spot from where one can climb to the top. Before entering Rajamachi plateau a small canal has to be crossed then you reach the foot of Shrivardhan. Shrivardhan, which is the taller of two peaks, is 910m. high. There are some water tanks here, one of which has an iron pillar lying in it. The fort was probably used only as a look out to control the ghat region. Manrajan is about 818m and has a massive rampart and three gates. From Manrajan we can see the river Ulhas, and its valley side, Duke's Nose, Karnala, Matheran, Mahuli, and Bhimashanker etc. At the bottom of the Rajamachi are the ancient Hindu and Buddhist Kondhane caves. Because they are directly below the mountain, the rain water falling from the top has eroded the caves.

Location Map: Rajmachi

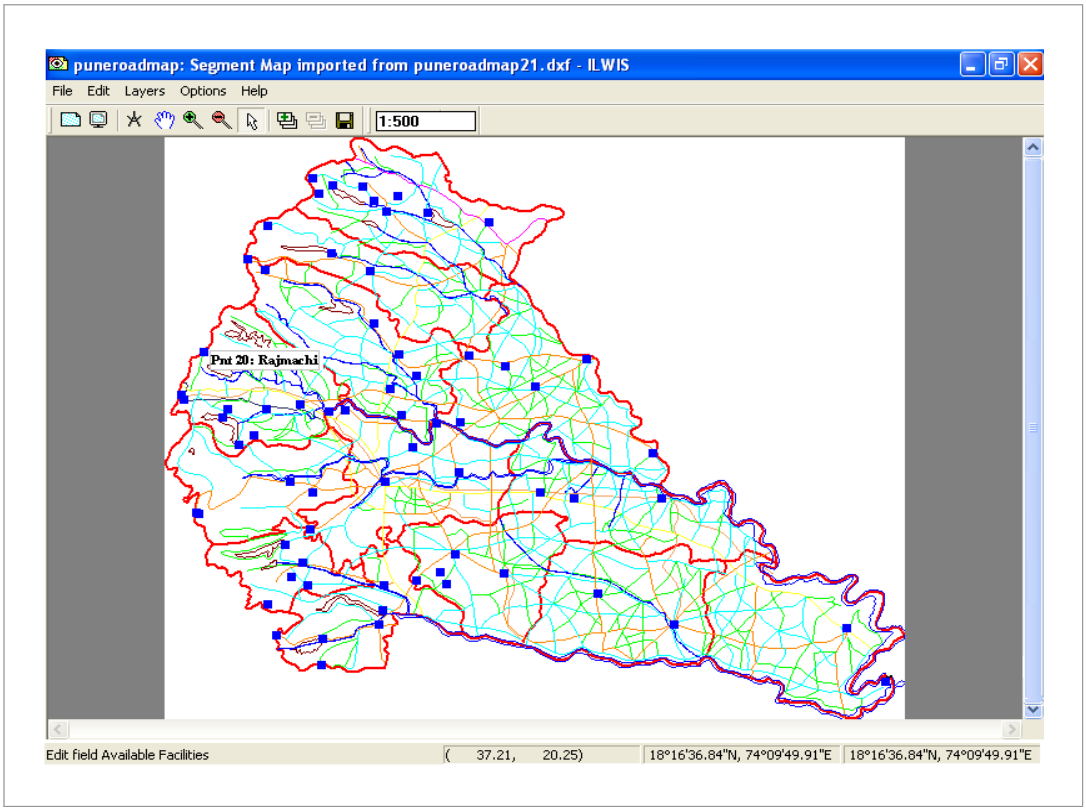


Fig.4.16

Tourist Information System (TIS): Rajmachi

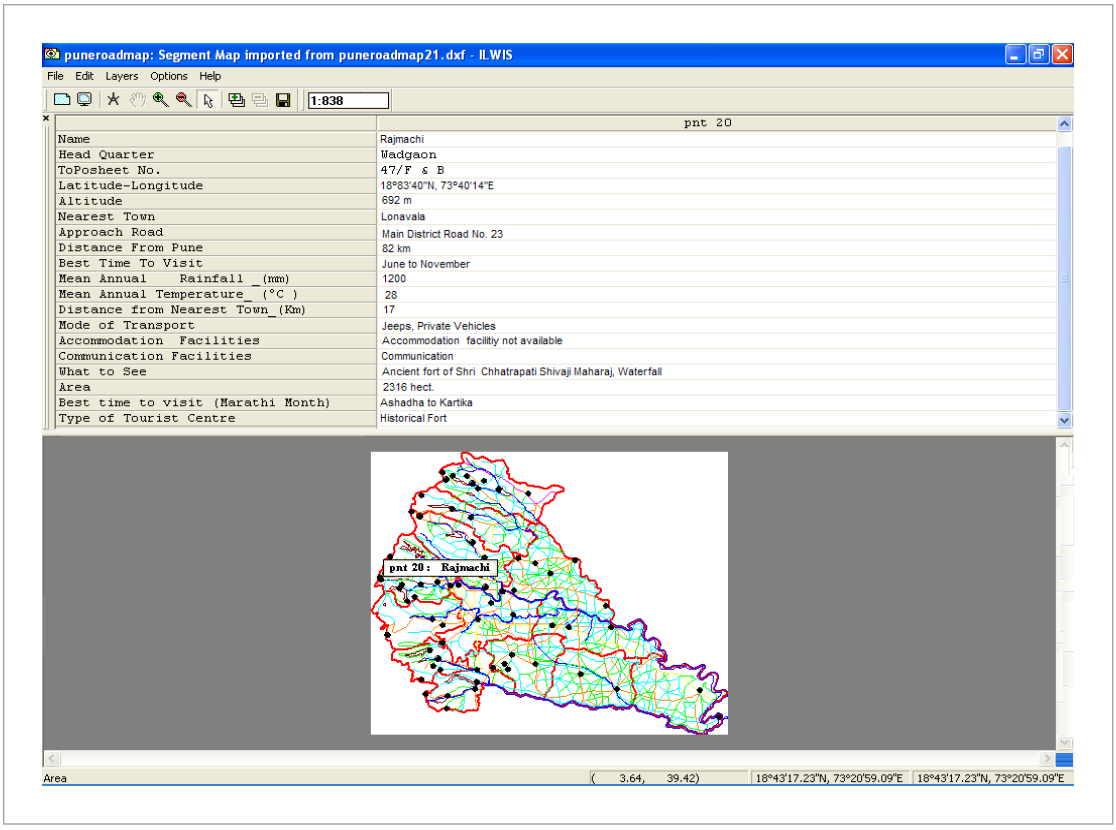


Fig. 4.17

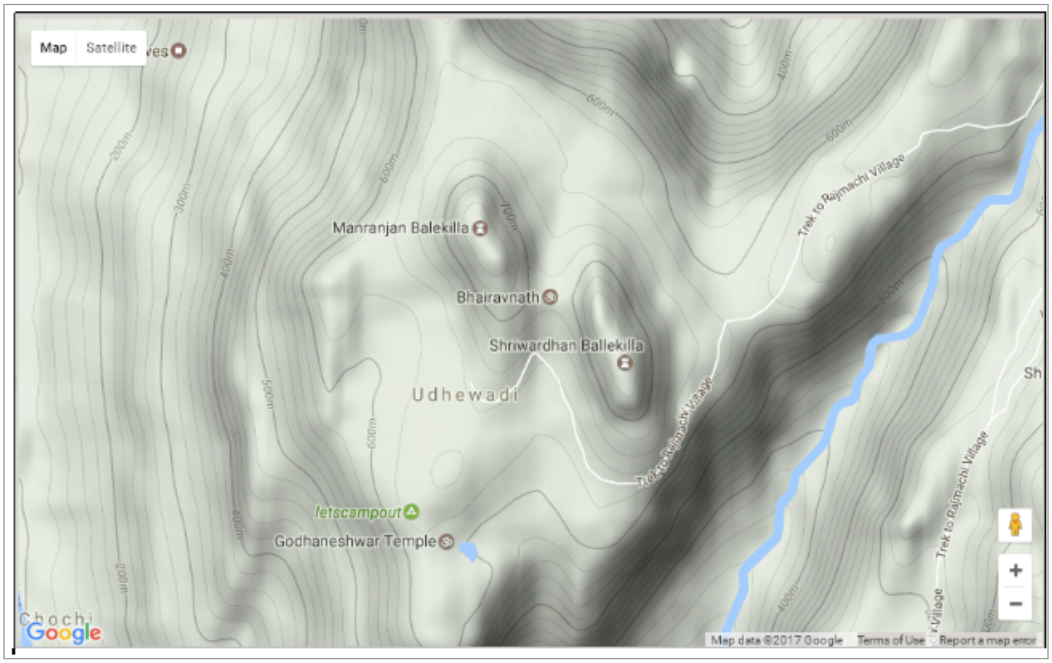
Google Image: Rajmachi Fort



Source: (Google earth May 2017)

Fig. 4.18

Google Contour Map: Rajmachi Fort



Source: (Goog00000le earth May 2017)Fig.4.19

Toposheet: Rajmachi Fort

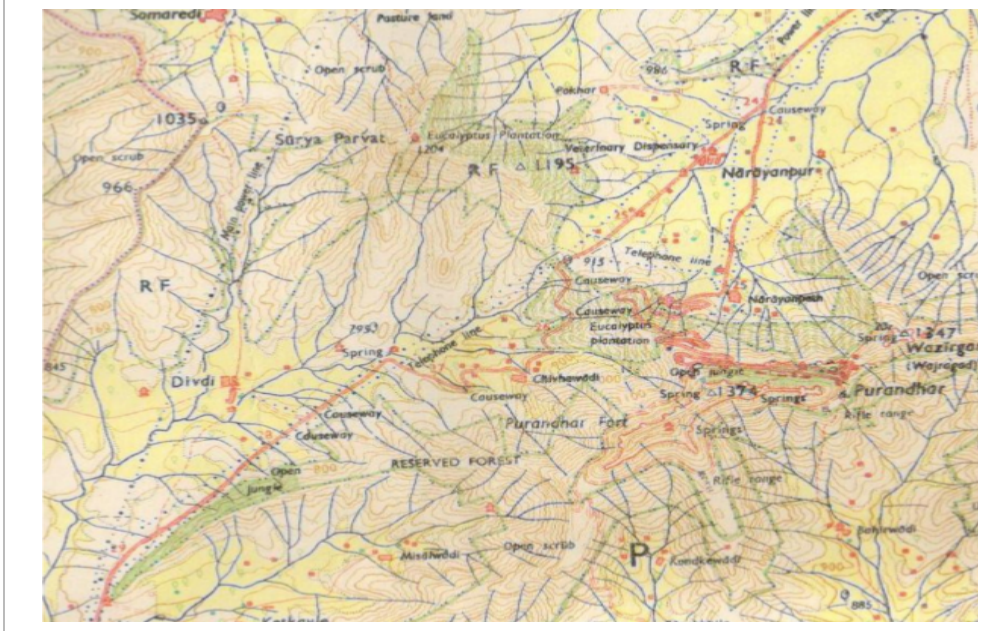


Fig.4.20

Geology: The geology of the entire district consists of Deccan traps with inter-trappen beds. The volcanic lava flows are spread out in the form of horizontal sheets or beds. To the west they lie in flat – topped ranges, separated by valleys, tending from west to east. In some flows the basalt is columnar and then it weathers into the different shapes. The rocks are dark grey in colour and are generally of two types. The non-vesicular types are hard though compact and medium to fine grained, with concordat fracture. The vesicular types are comparatively soft. Laterite caps the summit of some of the hills of high altitudes in the Rajmachi. Laterite rocks is ferruginous hard and massive and generally varies one colour from dark red to yellowish and dark brown. A fresh cut surface of the laterite bed is usually soft but becomes very hard.

Historical Background: Historically, Rajmachi fort was a strategic fort to control Bor Ghat (between Khopoli and Khandala on Mumbai-Pune route) which was a historical trade route. The fort complex was originally constructed by the Satavahanas. In 1657 CE, Shivaji Maharaj captured this fort along with other neighbouring forts from the Adilshahi ruler of Bijapur. In 1704 CE, the Mughal Emperor Aurangzeb captured the fort from the Marathas. However, the Marathas regained its control in 1705 CE. In 1713 CE, Shahu Maharaj handed over Rajmachi fort to Kanhoji Angre. Eventually in 1818 CE with the downfall of the Marathas, the British took over the Rajmachi Fort.

Drainage: The tributary of the Ulhas River are originated at Rajmachi fort. These tributary are seasonal during rainy season they ave enough water in their path otherwise through the year they are dry. Tourists get attracted towards a walk along waterfalls, the grassy abimdance and hills in and around Rajmachi. The mountainous terrain of Rajmachi is ideal for trekking and hiking.

Climate: Rajmachi falls in Western Ghats of Sahayadri. Rajmachi gets rain from SW monsoon. The average rainfall received by the fort is 1200mm. the cloud contiuley move slowly from the mountain. The mist covering the whole place makes the view hazy, beautiful, natural and memorable. The winter is very cold its period is from November to February. The tourists during this season are health conscious people, who want to make the best out of this healthy, hygienic- pollution free atmosphere. The summer season is from March to May. During this season the mornings and the nights are pleasant. The mean annual temperature of Rajmachi is 28°C. Month of May is generally hottest month of the year. The afternoons are quite humid. But

compared to the two closes by cities i.e. Pune and Mumbai, Rajmachi even in summer is much cooler and therefore people come to Rajmachi even in the summer months. Good climate helps to cure the patient faster, the recovery of the person is seen to –be much better than what it was when he just comes to the town'. The salubrious climate is like an invigorating tonic to the senses.

Natural Vegetation: In modern tourism; forests are playing important role in development of tourism because greenery of forests attracts people from crowded town and cities. The colorful birds and wildlife in forests are also attracts children, men and women, young and olds from surrounding and distant urban areas. So forests are helping to develop new tourist centers like bird sanctuaries or wildlife sanctuaries. The area under forest in Udhewadi is 1567 hectores. Dense vegetation occurs at Rajmachi. It comprises of trees, herbs and shrubs, grasses occupying valley plain, colluvial slopes and hill tops where a significant soil cover is formed. Vegetation consist of trees like mango, jambhul, bamboo, jackfruit, herbs, shrubs, weeds and grasses are mostly observed along the valley flats, gently sloping ground and on the flat ridges. The principal forest produce comprises timber, fire-wood and char coal. The minor forest produce includes mainly grass fodder grass and other minor forest produce.

Accommodation: Tourism infrastructure facilities include accommodation, transportation, touristic sports, travel agencies, tour operator, entertainment industry, arts and crafts and so on. Though, the key to successful tourism is the quality, location and perception of the natural resources the support services can enhance or detract its appeal. The two vital requirements for tourism are accommodation and transport facilities. Camping in Rajmachi is a perfect idea especially because of the long trek. Rajmachi Rural Aid and Development Programme (NGO) have two dormitories to provide accommodation facilities for trekkers to Rajmachi in Udhewadi village at nominalcharge.

Transportation and Communication: At a distance of 15 km from Lonavala, 15 km from Khandala, 82 km from Mumbai and 82 km from Pune, Rajmachi Fort is an ancient fort situated in Pune district of Maharashtra. Lonavla, Talegaon Dabhade, Dehu Road are the nearby by towns to Udhewadi having road connectivity to Udhewadi. Kamshet railway station, Malavli railway station are the very nearby railway stations to Udhewadi. Begdewadi railway station (near to Dehu road), Ghorawadi railway station (near to Talegaon Dabhade), Khandala railway station

(near to Lonavla), Talegaon railway station (near to Talegaon Dabhade), Lonavala railway station (near to Lonavla), Dehu road railway station (near to Dehu Road) are the railway station reachable from near by towns. However, Pune railway station is major railway station 47 Km near to Udhewadi. The Lohagaon airport is 49km from the Udhewadi.

Mobile companies are providing services to the Rajmachi and surrounding region. Due to this communication facilities tourist feels that they are in their home.

Water supply: Ulhas River tributory provide drinking water faciltity for the Rajmachi. Apart from this other sources are one tubewell, one well and one spring for water supply.

Population: In the year 2001 the total population was 230 of which 112 are males while 118 are female. The Rajmachi village has population of 287 of which 158 are males while 129 are females as per report released by Census 2011. There are about 60 houses in Udhewadi village. Udhewadi village has lower literacy rate compared to Maharashtra. In 2011, literacy rate of Udhewadi village was 53.01 % compared to 82.34 % of Maharashtra. In Udhewadi Male literacy stands at 62.50 % while female literacy rate was 41.59 %. The 36% tribal people in Undhewadi village are engaged in collection of forest product like honey, gum, flowers, plants etc, 40% peoples are engaged in agriculture sectors because in the land is favorable for agriculture. The other people are engaged in Labour, there is lack of education as well as the people are backward class. **4.7.3 TUNG**

Location: The Tung fort is located in Maval tahsils of Pune district. Tung is located on $18^0$39' north latitude and $73^0$35' east longitudes. Lonavala is nearest town to Tungi which is approximately 35km away. The altitude of Tung is 964 m. The area of the Tung is 7.81 km^2 (***Fig. 4.21, 4.22, 4.23, 4.24 & 4.25***).

Physiography: Tung fort is popularly known as Kathingad. Kathin in Marathi means difficult, the vertical slopes to the fort itself predicates difficulty level of the fort. The fort is conical in shape and consists of strongly fortified walls, ramparts and also has several bastions. It has steep climbs with a very narrow route on the edge of the mountain throughout. The fort premise also has a rocky staircase that opens to a water cistern. A steep climb on grassy slopes leads to the ruins of a temple at the summit. The forts of Korigad, Tikona, Visapur and Lohagad can be clearly viewed from the top of Tung fort.

Geology: The Deccan plateau is made up of basalt rock. This is an extrusive type of igneous rock. The certain sections of the Tung mountain ridges, one can find granite, which is an intrusive igneous rock. The basalt rock forms on eruption of lava, that is, on the surface the basalt, rock, is mafic in composition—meaning it is rich in pyroxene and in some cases, olivine, both of which are Mg-Fe rich minerals. Basalt is similar in composition to mantle rocks, indicating that it came from the mantle and did not mix with continental rocks.

Location Map: Tung Fort

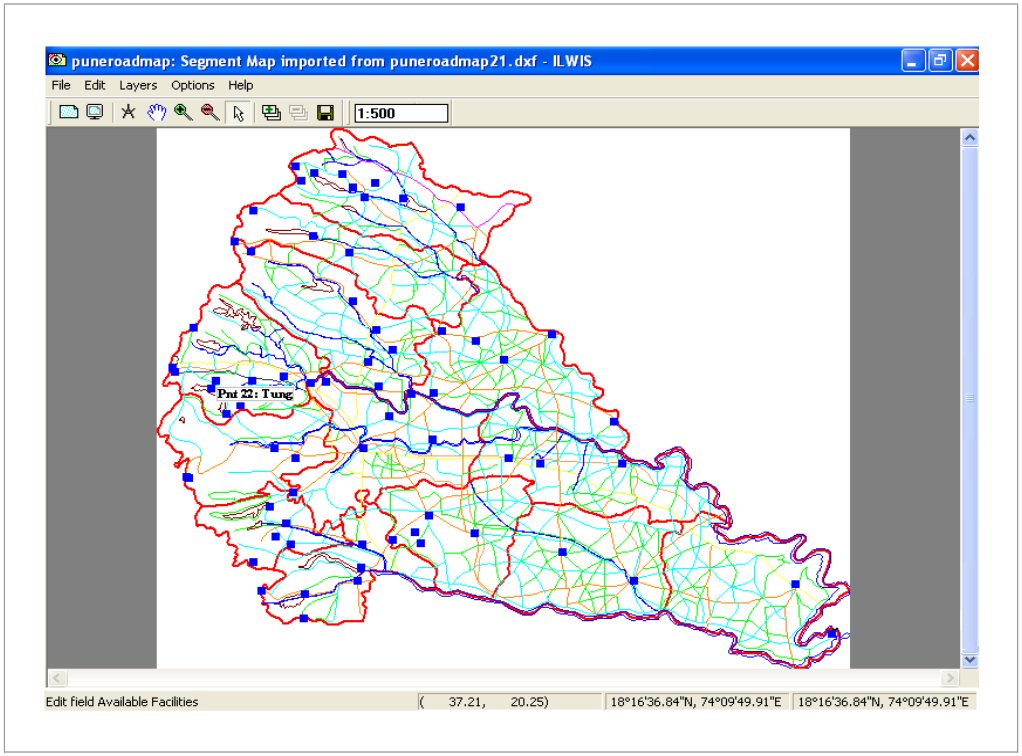


Fig. 4.21

Tourist Information System (TIS): Tung Fort

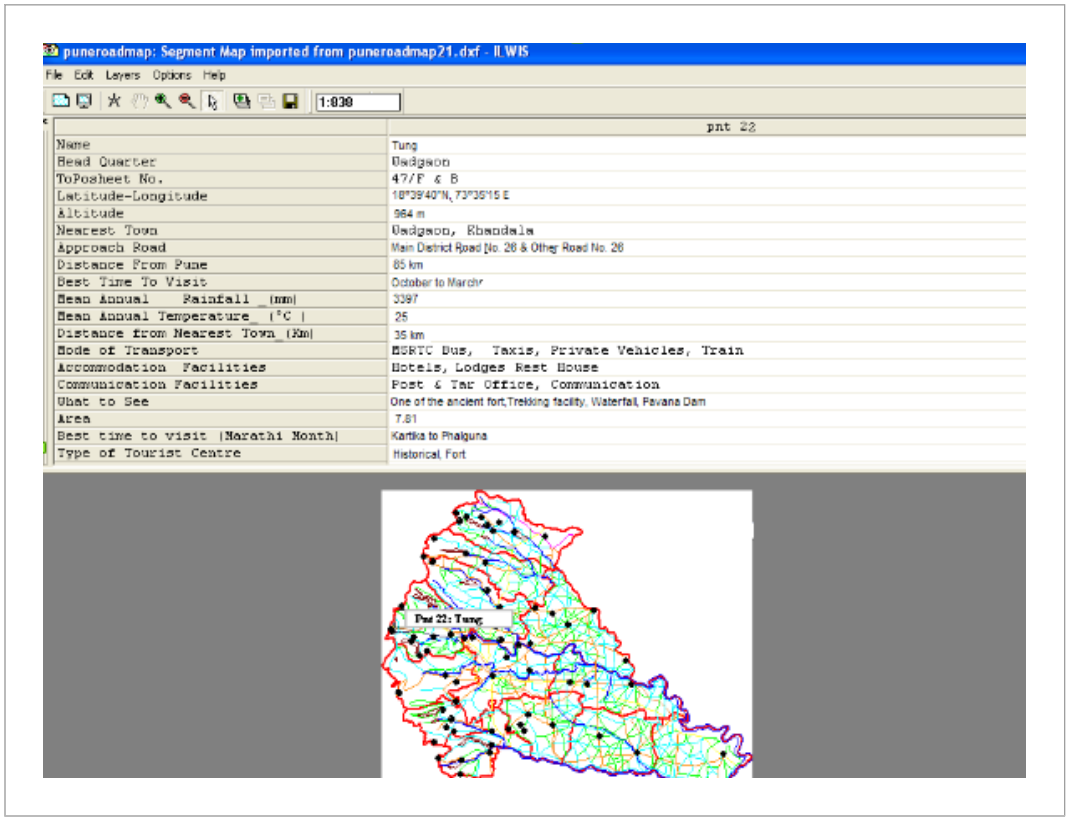


Fig. 4.22

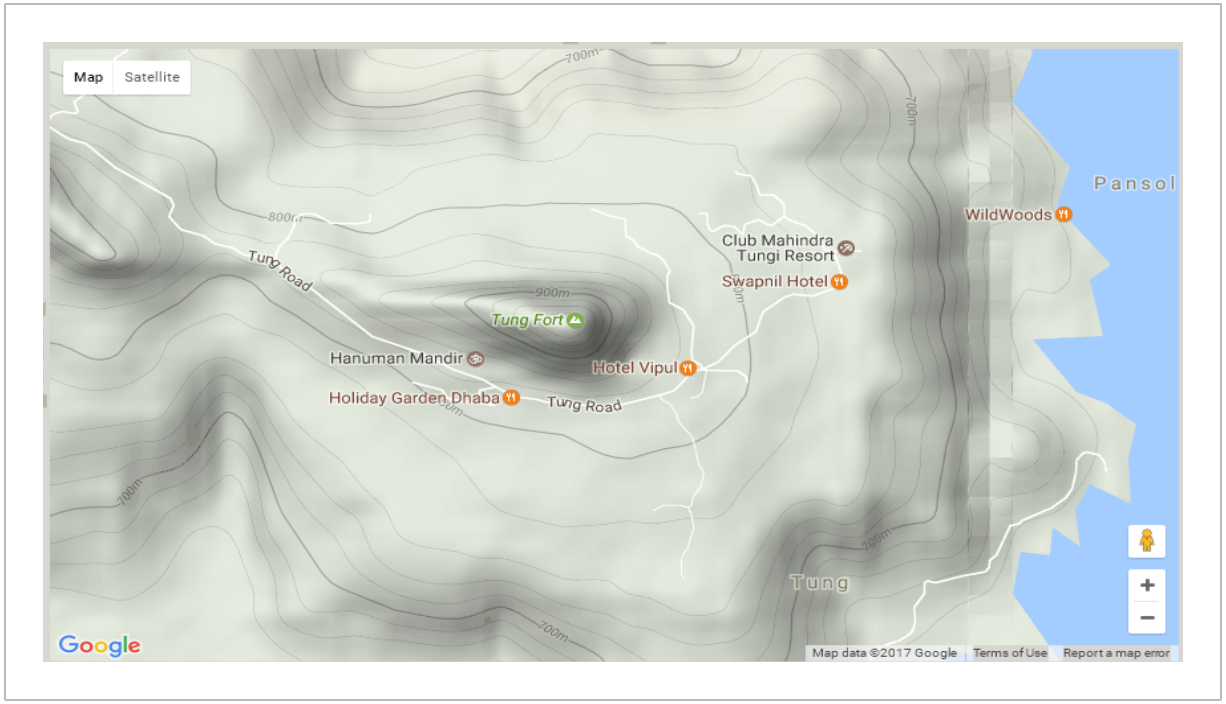
Google Image: Tung Fort



Source: (Google earth May 2017)

Fig. 4.23

Google Contour Map: Tung Fort



Source: (Google earth May 2017)

Fig. 24

Toposheet: Tung Fort



Fig. 4.25

Historical Background: Tung fort was built by the rulers of the Adilshahi dynasty before 1600 CE. However, it was later occupied by Chatrapati Shivaji Maharaj of the Maratha Empire. It is a small fortification and supported around 200 soldiers only. This fort served as a watchtower in the past because the site offers a panoramic view of the Maval region of Pavana and Mulshi valley. The Dhamale family, one of the Deshmukhs from the Maval region, was charged with ensuring the security of Tung fort. During invasion, it served to provide a temporary distraction for invaders. Thus, the major forts of Visapur and Lohagad would have time to prepare themselves to meet invading army. As you climb first come across a Hanuman temple, further ahead is a Tulzai Devi temple and water tanks at the top Tungi Devi temple from where we get a view of the Pavana dams which encircles three sides of the hill, Lohagad and Visapur to the north, and Tikona to the east. To the southwest, we can spot the fort of Koraigad on the Jambhul mountain range. You can spend a day at Kathingad and return to Pune or Lonavala in the evening.

Drainage: The tributaries of the Pavana River are originated at Tung. These tributaries are seasonal during, rainy season rain water flow through these tributaries but rest of the year they are dry. Tourists get attracted towards a walk along Pavana dam, waterfalls, the grassy ambience and hills in and around Tung. The mountainous terrain of Tung is ideal for trekking and hiking.

Climate: The climate in Tung is warm and cold, it receives heavy rainfall during the monsoons. The various parameters of climate become the resource of tourist activity. The area can be characterized by rainy, winter and summer season. The mean annual temperature of Tung is 25°C. The average rainfall received at Tung is 3397mm.

Natural Vegetation: The Tung fort have semi-evergreen, ever to mixed moist deciduous and dry deciduous forest in a narrow belt along the steep slope of the area. Very steep sided slopes of Tung fort area are covered with grass. These slopes have thin soils and do not support vegetation. The valley side area of the Tung fort is characterized by existence of different plant species Acacia being the dominant one. Vegetation consist of trees like mango, jambhul, bamboo, jackfruit, herbs, shrubs, weeds and grasses are mostly observed along the valley flats, gently sloping ground and on the flat ridges. The hill slopes are almost bare in nature which are susceptible to gully erosion have thin soil cover which have ultimately reflected on vegetation cover foothill zones however shows distinct change in vegetation and covered mainly by moist deciduous forest.

Accommodation: There are 2 hotels and 1 lodge and four private accommodations are available for tourist Other than private hotels, lodges the ZP and Irrigation rest houses are also available for accommodation near Tung.

Transportation and Communication: Tung has good road network so that tourist can reach easily to the Tung by metaled road from Mumbai, Pune, Satara and Kolhapur etc. MSRTC buses that operate on above mention route will take Tung. The Table 4.13 shows the total vehicles in the year 2015 in Tung.

Table 4.13: Vehicles in Tung 2015

Sr.No.	Type of Vehicle	No. of Vehicles
1	Jeeps	21
2	ST Buses	13
3	Auto Rikshaws	16
4	Other	23

Source: Field work, 2015.

S.T. bus to Ghusalkhamb village via INS Shivaji Road is available at Ghus village. This road is well connected with village Tungi, the scenic beauty along the road at Morvi and Tungi hills attract as one side of the road is covered with thick forest and at other side back water of Pavana dam enhance the landscape with beautiful view.

Tungi is the base village for the Tung Fort trek. The village of Tungi is located around 300 m distance from the entrance of the fort. Presently the fort is bounded by water on three sides as a result of the construction of the Pavana dam. One can also reach the base village Tungi from Pawna dam by boat. From Pawna dam, reaching this fort entrance requires a 400m climb. It takes 1 hour to reach the top of the fort from the base. Various mobile companies are providing mobile services to the Tung and surrounding region.

Water supply: Pavana River and Pavana dam provide drinking water faciltity for the Tungi village. Apart from this, other sources are one well and one tank for water supply at Tung village.

Population: In the year 2001 the total population was 917 of which 498 are males while 419 are females. The Tung village has population of 958 of which 487 are males while 471 are females as per report released by Census 2011. There are about

151 houses in Tung village.Tung village has lower literacy rate compared to Maharashtra. In 2011, literacy rate of Tung village was 73.50 % compared to 82.34 % of Maharashtra. In Tung Male literacy stands at 86.43 % while female literacy rate was 60.39 %.

The 65% peoples of the tungi village are work in agriculture sectors others 16% are agriculture labors, some in transport sectors, doing private job etc.

4.7.4 SHIVNERI

Location: Shivneri is situated in Junnar tahasil and 93 km away from Pune.Shivneri is located at $19^0$13' north latitude and $73^0$49' east longitudes. Junnar is nearest town to Shivneri which is approximately 1km away. The altitude of Shivneri is 998 m. The area of the Junnaris 2.65km^2 (***Fig. 4.26, 4.27, 4.28, 4.29 & 4.30***).

Physiography: Shivneri is a triangular shape hill fort and has its entrance from the SW side of the hill. Apart from the main gate there is an entrance to the fort from Eastern side called locally as the chain gate, where in one has to hold chains to climb up to the fort gate. The fort extends up to 1 mile with seven spiral well-defended gates. There are mud walls all around the fort. The fort also exhibits a small water pond named Badami Talav, located at the center of the fort.

Geology: The Shivneri fort is the part of Deccan Plateau and hence rock formation is associated with the flows of basic lava. There are two types of traps, viz. Massive and Zeolitic. Massive trap is found on the large scale as compared to Zeolitic trap in the Shivneri according to the Geological Survey Department.

Historical Background: The Shivneri Fort was built during the time of Satavahanas. After the Satavahanas, the Shivneri Fort was occupied by the Shilaharas, the Yadavas, and the Bahamanis. In 1599 AD the hill fort was granted to Shivaji's grandfather, Maloji Bhosale and passed down to Shahaji. Jijabai (Shivaji's mother) spent the days of her pregnancy at this fort and this is the birth place of Shivaji, the famous Maratha warrior who was born in 1630 AD. Shivaji spent his childhood in Shivneri Fort and also undertook his military training

Location Map: Shivneri Fort

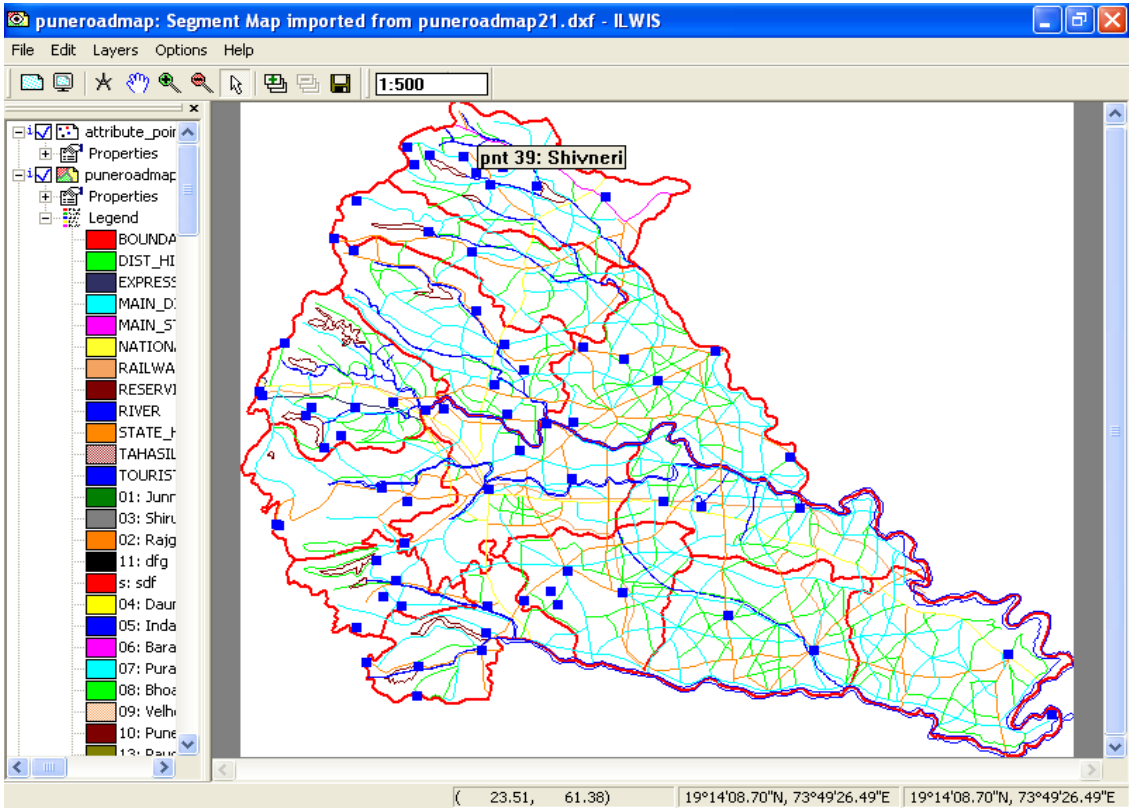


Fig 4.26

Tourist Information System (TIS): Shivneri Fort

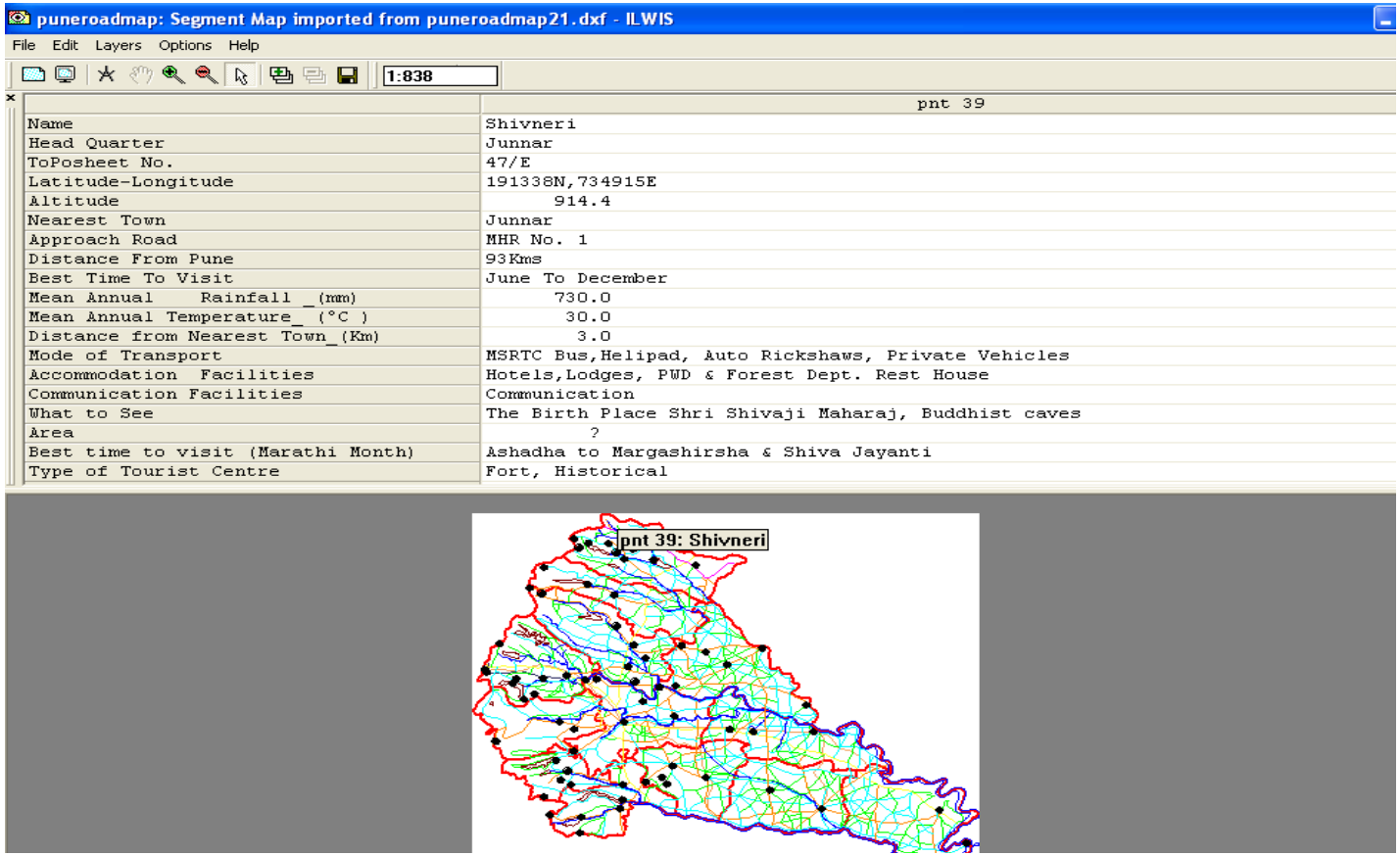


Fig. 4.27

Google Image: Shivneri Fort



Source: (Google earth May 2017)

Fig. 4.28

Toposheet Map: Shivneri Fort



Fig. 4.29

Google Contour Map: Shivneri Fort

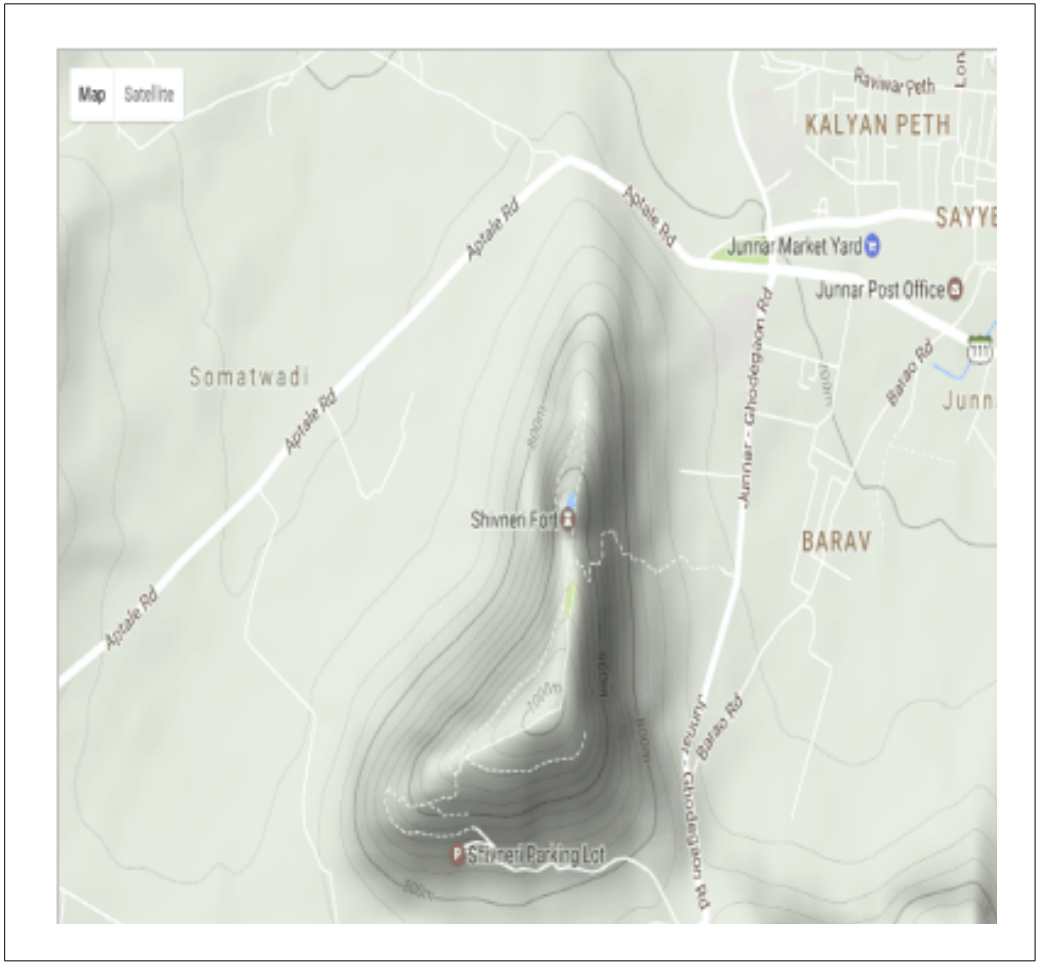


Fig. 4.30

There are two routes to top of the fort. One path takes you via stone steps dug out from the natural strata. The second is a rough pathway that was extremely hazardous with the help of a parapet and chain barricades. The fort has a total of seven doors Maha Darwaja, Parvangicha Darwaja, Hatt Darwaja, Peer Darwaja, Shipai Darwaja, Patak Darwaja, and Kulambkat Darwaja, The fort tapers to one side. Its northern face is called Kadeloat. To reach the fort, climb 300 m steep slope where to the northern face a huge lake is constructed named Badami Talav. Around the lake are remnants of quarters and bungalows. There is much for the tourist to see. An arch shows the Mughal influence, towering over a water tank that is heavily reminiscent. In the Shivneri fort most importance tourist places are the Ganga – jamuna reservoir and the Idgah at the central square of the fort and Shri Shivai Mandir. Shivneri has number of under ground caves. The fort is unique as it has 50 caves at the middle and also covered by three hills ranges having 150 caves. Shivneri is surrounded on all sides by fort and dams. Until 1925, this fort too, was left to the vagaries of nature and was in a state of utter decline. After the formation of the state of Maharashtra, a good motorable road was made that reached right up to the main door of the fort. Every year, the birth celebrations of Chhatrapati Shivaji Maharaj take on colorful hue here; this is an excellent occasion to visit.

Drainage: The tributary of the Kukadi River are originated at Shivneri fort. These tributary are seasonal during, rainy season they ave enough water in their path otherwise through the year they are dry. Shivneri is surrounded on all sides by dams. The Ganga – jamuna reservoir and Badami Talav is another water tank provides water facilties on the fort.

Climate: The Shivneri fort is situated on hillock and hence the various parameters of climate become the resource of tourist activity. Shivneri offer more prospects with its combination of cool pleasant summer climate along with its enchanting natural settings. The area can be characterized by rainy, winter and summer season. The mean annual temperatur of Shivneri is 32°C. Month of May is generally hottest month of the year. The average rainfall received by the fort is 721.70mm.

Natural Vegetation: The factors like relief, soil and precipitation affect upon the natural vegetation. Mainly the distribution of the rainfall controls the typeof natural vegetation. The natures of soil and climatic condition have a direct impact on the growth of vegetation. This Shivneri fort is owned by the Forest Department therefore, trees and forest have been preserved. The natural vegetation is mainly of low scattered

trees occurring along the border of the study area. The hot and dry climate has resulted mixed thorny trees, stunted grass and scanty vegetation.

Accommodation: There are a quite number of hotels, restaurants and lodges available for accommodation in Junnar. Other than several private hotels there is a PWD and Forest Dept. rest house available for accommodation in Junnar.

Transportation: State highway No. 52 and Main District Highway No. 3 and 1 connect the Junnar which provides excellent road network so that tourist can reach easily to the Junnar by metal road. MSRTC buses that operate on the Pune – Junnar routes, will take Shivneri. There is no state transport for the last 3 km, but local transport will reach to the foot hill of the Shivneri also, helipad facility available on Shivneri.

Mobile network services are available at the regions of Shivneri and Junnar.

Water supply: Shivneri is surrounded on all sides by fort and dams. To scale the fort, you will have to negotiate a climb of 300m to the northern face a huge lake is constructed- Badami Talav. Around the lake are remnants of ancient monuments. There is much for the tourist to see. An arch shows the Mughal influence, towering over a water tank that is heavily reminiscent. The Ganga – jamuna reservoir is another water tank provides water facilties on the fort.

Population: In the year 2001 the total population of Junnar town was 21416. The Junnar town has population of 25315 of which 13066 are males while 12249 are females as per report released by Census 2011. There are about 5637 houses in Junnar town. The density of the population in 2011 was 4119km^2. The decadal growth rate of population is 2.32%. Nature of occupation and economic development are associated with each other. Primary, secondary and tertiary are the three types of occupations. The population of the Junnar has been working mainly in the agricultural sector and hence there is dominance of proportion of workers in the primary sector. The proportion of workers in agriculture is 75% while the persons engaged in the secondary occupation in the tahsil 16%. The percentage of workers engaged in the tertiary occupation in the tahsil 9% is also less than that in the district (14.96%). The data has also shown graphically (Fig. 2.8). All these account shows that the Junnar tahsil is economically backward than the district.

4.7.5 RAJGAD

Location: The Rajgad fort is located in Velhe tahasil of Pune district and 93 km away from Pune. Rajgad is located on $18^0$14’ north latitude and $73^0$39' east longitudes. Velha is nearest town to Rajgad which is approximately 7km away.The altitude of Rajgad is 1307 m. The area of the Rajgad is 5.39km^2 (***Fig.4.31, 4.32, 4.33, 4.34 & 4.35***).

Physiography: The fort is situated at the end of a spur, surrounded on three sides by fortified plains (machees)-the Padmavati machees, the Sanjivani machees, and Suvela machees. The main summit is about 152m high. The Padmavati machees is the largest of three plains.

Location Map: Rajgad Fort

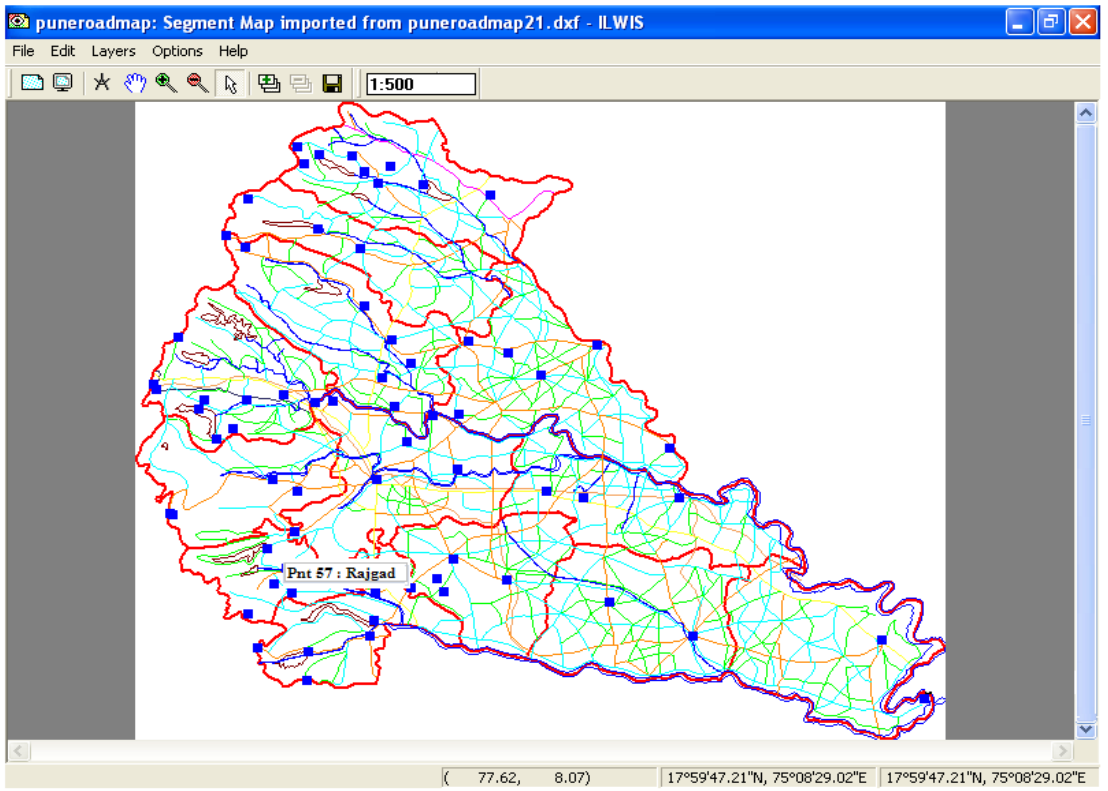


Fig. 4.31

Tourist Information System (TIS): Rajgad Fort

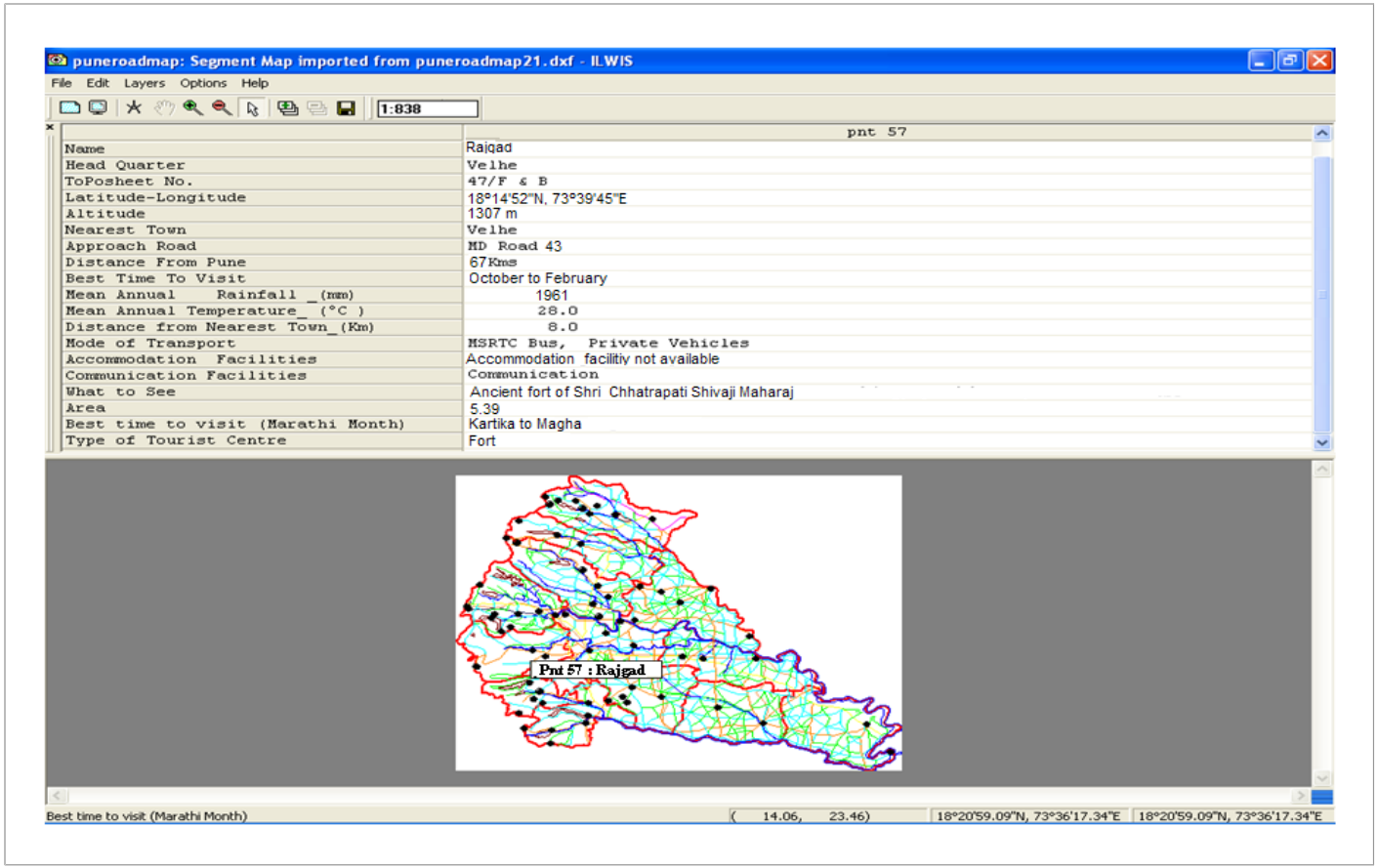


Fig. 4.32

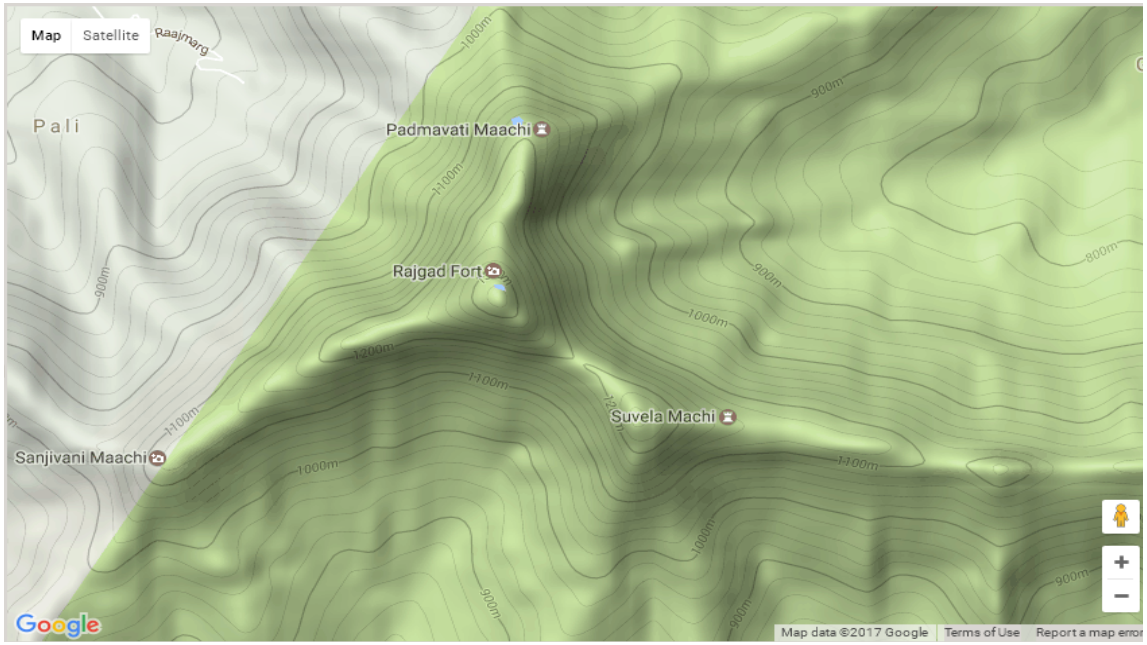
Satellite Image: Rajgad Fort



Source: (Google earth May 2017)

Fig. 4.33

Google Contour Map: Rajgad Fort



Source: (Google earth May 2017)

Fig. 4.34

Toposheet: Rajgad Fort



Fig. 4.35

Geology: The volcanic lava flows are spread out in the form of horizontal sheets or beds. To the west they lie in flat – topped ranges, separated by valleys, tending from west to east.

Historical Background: The name of this fort is itself an indication of why it is known as the king of all forts. The main reason probably lies in the fact that this fort was Shivaji's home for the major part of his life. Before he becomes Chhatrapati, he used Rajgad as his base and is said to have spent nearly 25 years here a lot of administrative work was control from Rajgad. Rajgad Fort was a witness to many adventurous incidences in the life of Shivaji, including the birth of Shivaji's son Rajaram; Shivaji's successful return from the captivity of Aurangzeb; the sad demise of his queen Saibai, and so on. It also showcased the ideal governance system of the Maratha king. The fort is situated at the end of a spur, surrounded on three sides by fortified plains (machees)-the Padmavati machees, the Sanjivani machees, and Suvela machees. The main summit is about 152 m high.

The Padmavati machees is the largest of three plains. Three main doorways of the fort open into this plain; the Chor darwaja, the Pali darwaja, and the Gunjawani darwaja. The ruins of Padmavati temple, the Padmavati Lake, the Maharaja's residential palace, the havaldar's wada can all be seen here. The only place which can be used by trekkers for an overnight stay here is the Padmavati temple.

The narrowest plain is the Suvela plain stone steps ramparts and a bastion can be seen here. On this plain is a 5m diameter opening called Waghacha Dola (tiger's eye). The view of the sunrise from this point is really beautiful.

The 3rd plain, Sanjivani plain is an about 2km in length. Double fortification and a bastion can be seen here. There is a direct route from this point, through the Alu Darwaja, to the Budhala plain on Torna.

Once you enter the main gate see the palace ruins, the Janani Mandir and the Bramhrishi temple and a water tank. Rajgad is built on a hill named Murambdev which was not captured for a long time. The main gates to the fort are Alu darwaja, Gunjawani darwaja, Pali darwaja and Chor darwaja.

Drainage: Around the Rajgad are the four rivers Velwandi, Kanandi, Neera and Gunjawane, so that all routes to the fort are across rivers.

Climate: The Rajgad fort is situated on hillock and hence the various parameters of climate become the resource of tourist activity. Rajgad offer more prospects with its combination of cool pleasant summer climate along with its enchanting natural settings. The area can be characterized by rainy, winter and summer season. The mean annual temperatur of Rajgad is 28°C. Month of May is generally hottest month of the year. The average rainfall received by the fort is 1961mm.

Natural Vegetation: The low lying foothill areas along the banks of Neera, Gunjvani and Shivganga rivers are capped by thin immature soil cover. However, at places in the valley fills of Rajgad fort rich black cotton soil is found. The thin, immature soil cover is found on the banks of Mutha River. The hill tops are almost without any soil cover. The area is almost barren, devoid of a true forest cover. Though at places, eucalyptus and teak plantation has been taken up as a reforestation programme. The common crops cultivated in the area are bajra, jowar, sugar cane and paddy.

Accommodation: For overnight stay at the fort, there are options like the premises of Padmavati Temple or a big hall constructed for this purpose. There is sufficient water and meals can be arranged for from the locals with prior intimation.

Transportation: By road, distance from Pune is 56 kms. The fort is quite accessible and state transport buses ply from the Swargate bus station in Pune. Rajgad is well-connected by roads and local transport is easily available from Nasarapur, Velha and Bhor. Rajgad is also well conneted from Mumbai to Pune by Express way and then by NH4 to Pune - (Pune - Bangalore Highway) - Nasrapur to Rajgad fort. It takes around 1hr 30 mins to reach by road. By air, nearest airport is Pune.

Mobile companies are providing services to the Rajgad and surrounding region. Due to the communication facilities, this fort can be promoted as major tourist destination of Velha tahsil.

Water supply: Velwandi, Kanandi, Neera and Gunjawane river tributories provide drinking water faciltity for the Rajgad. Apart from this other sources are two tubewells, three wells and one dam for water supply in Rajgad fort.Since Rajgad Fort served as Shivaji's second capital, it had a provision for ample supply of water throughout the year. In fact, the two big tanks of potable water are in use even today.

Population: In the year 2001 the total population of Bhutonde village was 141 of which 65 are males while 76 are females. The Bhutonde has population of 272 of which 145 are males while 127 are females as per report released by Census 2011. There are about 59 houses in Bhutonde. Bhutonde village has lower literacy rate compared to Maharashtra. In 2011, literacy rate of Bhutonde village was 71.37 % compared to 82.34 % of Maharashtra. In Bhutonde Male literacy stands at 81.90 % while female literacy rate was 60.36 %. The people of village are engaged in the occupation like 67% agriculture, 23% labors, 4%service sectors, 3% driver, 2%industrial worker and 1% people are government employees.

4.7.6 PURANDAR

Location: The Purandar fort is located in Purandar tahsils of Pune district. Purandar is close to Saswad and 38 km away from Pune.Purandar is located on $18^0$16' north latitude and $74^0$00' east longitudes. The altitude of Purandar is 1320 m. The area of the Purandar fort is 4.5km^2(***Fig.4.36, 4.37, 4.38, 4.39 & 4.40***).

Physiography: The Sahyadri, which stretch along the north-south direction, also have ranges that branch off eastward. The fort lies in the same mountain range as the Sinhagad fort. This ridge continued for around 15 - 20km and terminates at Bhuleshwar. This is the mighty Purandar pride of Maharashtra and the theatre of one of the most landscape victories for the Marathas Empire. The western side of the fort is a mountainous and towards east is largely a plateau region. Kandakada hill here stretches a 100m. Long but is just 3-4 feet wide. Apart from the Kandakada hill, the top of the fort also has two hillocks – the Rajgadi and the Kedar Tekdi. They stand at an altitude of 1500m.

The fort has two distinct levels. The lower part of purandar is called the machi. North of the machi is a flat area. The northern part of the machi has a low fall with several bastions and an imposing gate with two towers. From the lower level called machi a staircase leads to the upper level called Ballekilla. The first structure of the Ballekilla that comes into view is the Dilli Darwaza (Delhi Gate). The higher level called Ballekilla is surrounded by steep drop on three sides.

Location Map: Purandar Fort

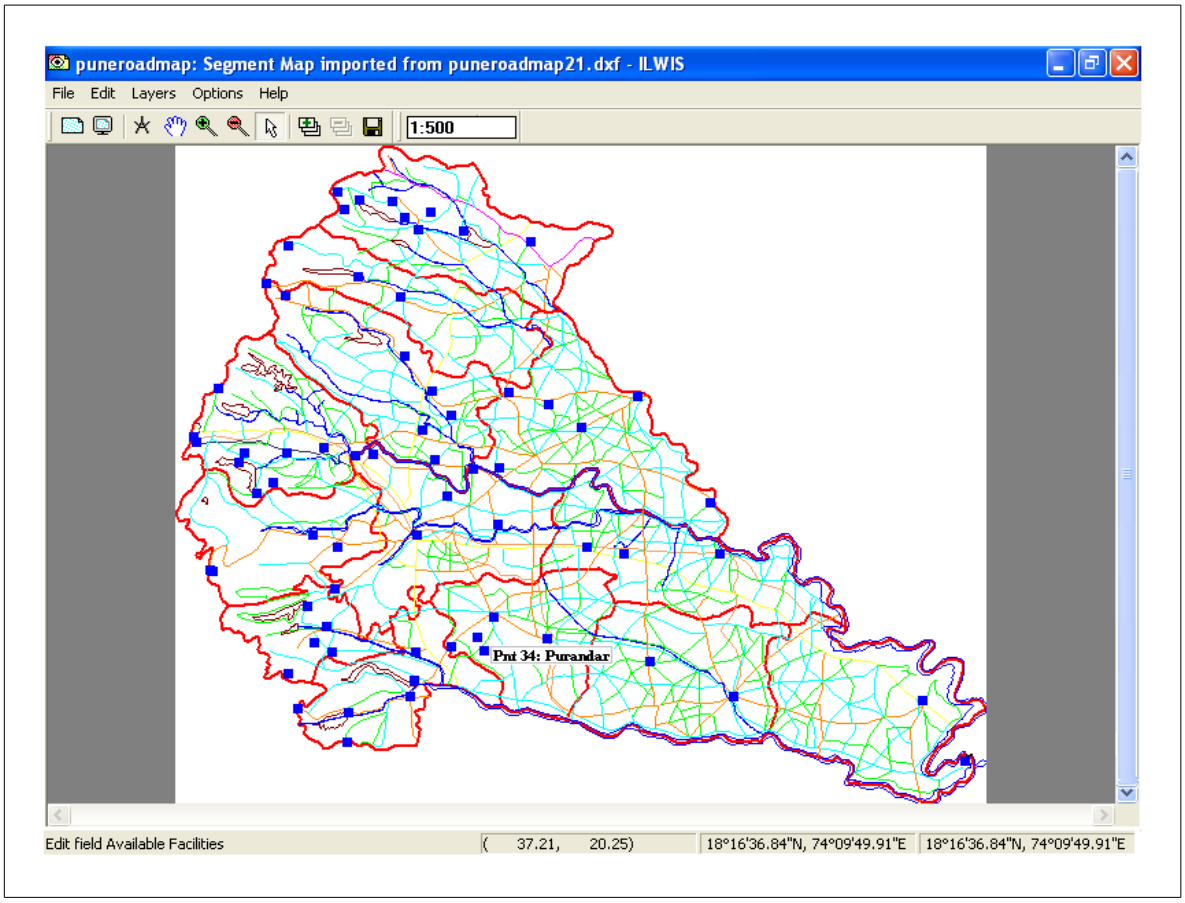


Fig. 4.36

Tourist Information System (TIS): Purandar Fort

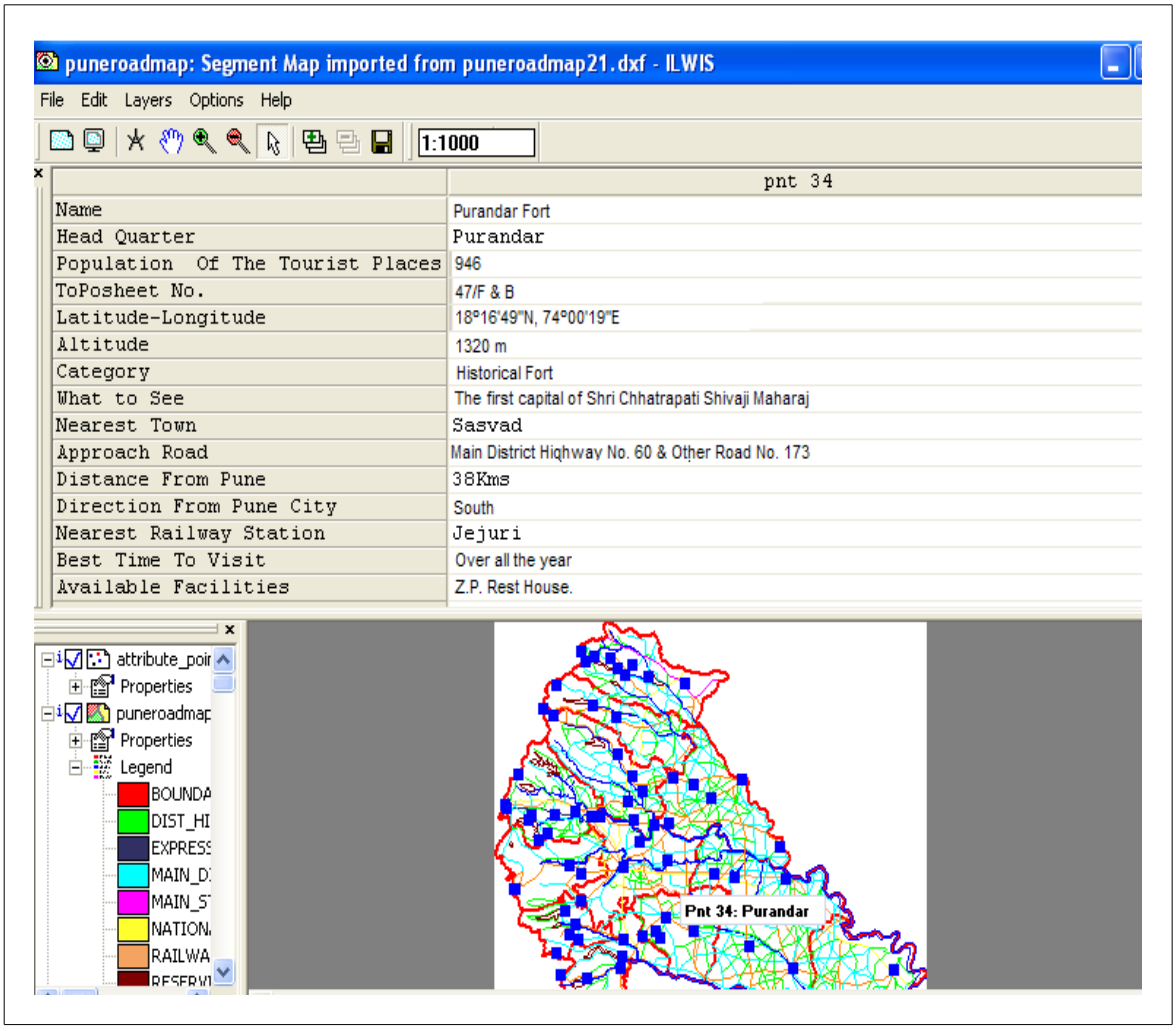


Fig. 4.37

Satellite Image: Purandar Fort



Fig. 4.38 Source: (Google earth May 2017)

Google Contour Map: Purandar Fort



Source: (Google earth May 2017)

Fig. 4.39

Toposheet: Purandar Fort

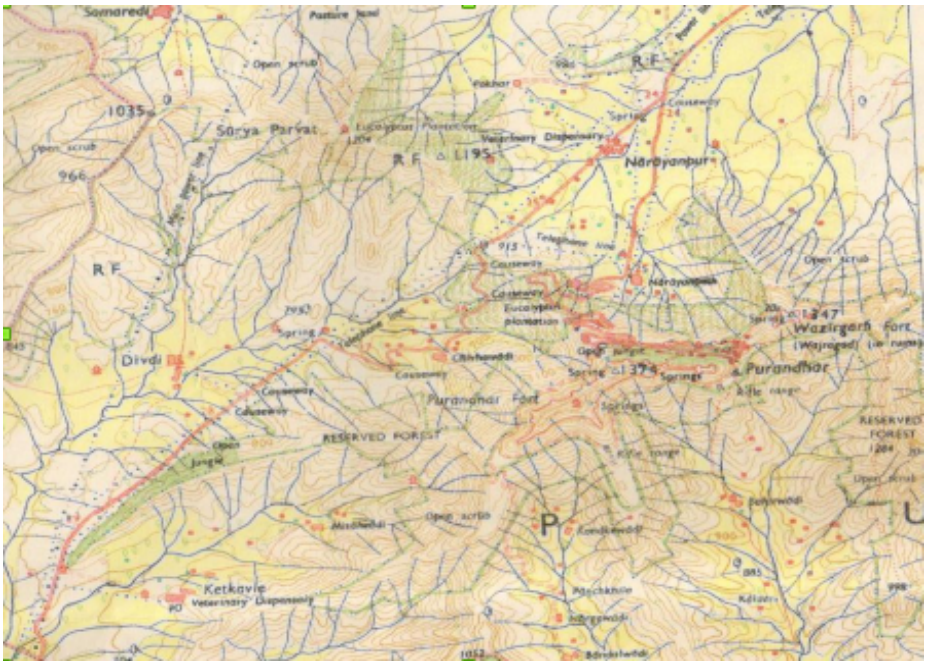


Fig. 4.40

Geology: In some flows the basalt is columnar and then it weathers into the different shapes. The rocks are dark grey in colour and are generally of two types. The non-vesicular types are hard though compact and medium to fine grained, with concordat fracture. The vesicular types are comparatively soft. Laterite caps the summit of some of the hills of high altitudes in the Purandhar.

Historical Background: The great Marathas Empire Sri Shivaji's 1st capital is Purandar fort. The fort preserves immortal memory of Murar-Baji Deshpande who laid down his life fighting against the mighty forces of mughals in 1665 A.D. Peshwa's capital at the beginning. Till as recently as 1976, there was an army post on the fort. Its strategic importance and the presence of soldiers on the top made it out of bounds for commoners and tourists. Today there is still a strong military presence on the top, but the fort is open for trekkers, groups of tourists and the local people. There are two routes to the top of Purandar, the one on foot will take you to the doorway. The Sar Darwaza will let you in. The Kandakada hill here stretches a 100m. Long but is just 3-4 feet wide. There is a water tank here and the informal, secret doorway to the north. The Sar Darwaza is followed by the Bini Darwaza. Going west, we can go around the entire fort and see the Nishana Buruz, Shendri Buruz, Hatti Buruz, Fattch Buruz, and Konknya Buruz. The last of them, the Konknya Buruz, has a strong room constructed in stone and was probably used to detain prisoners. The water tank too is near by. Apart from the Kandakada hill, the top of the fort also has two hillocks – the Rajgadi and the Kedar Tekdi. They stand at an altitude of 1500m.

However, today the areas outside the military jurisdiction, like the water reservoirs, the temples, and the buildings which will stand, are sadly derelict. The Purandar fort, though massive and dominating the entire landscape, is surprisingly easy to climb and the free from any dangerous curves or barriers.

Drainage: The tributary of the Karha and Neera River are originating in this region. They are seasonal.

Climate: The Purandar fort is situated on hillock and hence the various parameters of climate become the resource of tourist activity. Purandar offer more prospects with its combination of cool pleasant summer climate along with its enchanting natural settings. The area can be characterized by rainy, winter and summer season. The mean

annual temperatur of Purandar is 32°C. Month of May is generally hottest month of the year. The average rainfall received by the fort is 790mm.

Natural Vegetation: The area under forest in Purandar is 727.12 hectores.Purandar fort comprises of trees, herbs and shrubs, grasses occupying valley plain, colluvial slopes and hill tops where a significant soil cover is formed. Vegetation consist of trees like mango, jambhul, bamboo, herbs, shrubs, weeds and grasses are mostly observed along the valley flats, gently sloping ground and on the flat ridges.

Accommodation: Accommodation facility at Purandar is not available. For Accommodations purpose the hotels, restaurants, lodges, etc. are available at Narayanpur village. There are two hotels, one lodge and one Narayanpur village Dharamshala trust rest house available for accommodation in Narayanpur. But at the time of annual fair and yatra period it is difficult to get accommodation because more than thousand tourists visit Narayanpur. It creates pressure on available accommodation facilities.

Transportation: Via Pune S.T. bus from Saswad will drop you at the bus-stop of 'Purandar Ghat matha' in Narayanpur village. A road on the left side along the two houses situated on mountain ahead leads to Bini Darwaja which can be reached approximately in 45 minutes.

Private and hired autos and jeeps can also be used to reach Purandar. The road from Saswad and Purandar is metalled. Nearest railway station is at Jejuri. The Table 4.14 shows the total vehicles in the year 2015 in Purandar.

Table 4.14: Vehicles in Purandar 2015-16

Sr.No.	Type of Vehicle	No. of Vehicles
1	Jeeps	17
2	Auto Rikshaws	23
3	ST Buses	15
3	Other	07

Source: field work (2015)

Mobile companies are providing services to the Purandarand surrounding region.

Water supply: Karha river tributories provide drinking water faciltity for the Purandar. Apart from this other sources are two handpumps, one well and one tank for water supply in Purandar fort.

Population: In the year 2001 the total population of Gerapurandar was 946 of which 488 are males while 458 are females. The Gerapurandar has population of 706 of which 356 are males while 350 are females as per report released by Census 2011. There are about 136 houses in Gerapurandar. Gherapurandhar village has lower literacy rate compared to Maharashtra. In 2011, literacy rate of Gherapurandhar village was 73.47 % compared to 82.34 % of Maharashtra. In Gherapurandhar Male literacy stands at 83.65 % while female literacy rate was 63.23 %.

The people of village are engaged in the occupation like 74% agriculture, 19% labors, 2% service sectors, 1% driver, 2%industrial worker and 2% people are government employees.

4.8 PLACE WISE SATISFATION INDEX OF TOURISTS

In the present study satisfaction index method is used to assess the level of satisfaction of the tourists. It was necessary to know the views of tourists about the various facilities, which are provided to them at the tourist destinations. Such tourist satisfaction assessment of a certain tourist places was essential to modify the tourist programmes and the facilities available at these destinations.

The tourists coming from different places to the destination may have different behaviors, ideas, views and expectations, but if required facilities are provided them at reasonable rates, they will be satisfied and it will be helpful to increase the popularity of tourist destination.

Present research work is based on sample survey. The questionnaire was prepared to assess the level of satisfaction of the tourists by taking their views regarding various facilities i.e. lodging, boarding, food, transportation, darshan, traveling problems and the behavior of local people. *(Ref.* Avishkar – Solapur University Research Journal, Vol. 3, 86 – 96, 2014)

The indicator wise average values are calculated and these are used to compute the satisfaction index. Then the ranks are given to these satisfaction indices. Satisfaction level of tourists is an important and universally accepted tool for

measurement. Here an attempt has been made to assess the level of satisfaction by adopting certain satisfaction methods. This indicator wise distribution of each tourist place is shown in the following Tables. The indicator wise level of satisfaction is calculated and tabulated with the help of following formula.

$$\mathbf{Sli} = \frac{\mathbf{Mi\ Ni}}{\mathbf{N}}$$

Sli = Satisfaction index for i^{th} factor.

Mi = Numerical values for the particular

level of satisfaction for the i^{th} factor.

Ni = Number of respondent deriving the particular level of

Satisfaction for the i^{th} factor.

N = Total number of respondents for that factor for all Level

of satisfaction, final Ranks are given to these satisfaction Indices.

4.8.1 CHAKAN

The factor wise level of satisfaction is calculated and presented in given tables, which is based upon tourist's survey at Chakan fort.

Table 4.15: Factor wise Level of Satisfaction [Mi] (Chakan)

Sr. No	Management factor	Excellent		Good		Satisfactory		Unsatisfactory		Total
		No	%	No	%	No	%	No	%	
1	Natural scenery	39	31.2	42	33.6	24	19.2	20	16	125
2	Transport	49	39.2	40	32	22	17.6	14	11.2	125
3	Food & Drinking Water	47	37.6	31	24.8	26	20.8	21	16.8	125
4	Accomodation	37	29.6	47	37.6	18	14.4	23	18.4	125
5	Tourist Guide	22	17.6	31	24.8	35	28	37	29.6	125
6	Entertainment	41	32.8	28	22.4	37	29.6	19	15.2	125

(Source: Data compiled by researcher)

The destination Chakan is located in Khed tehsil. The analysis given in the table 4.1 is concerned to the views of 125 tourists who were interviewed at Chakan fort on

different occasions. As per the opinion of the tourists it is observed that transport facility at Chakan is satisfactory; few tourists are not happy with this management. Chakan fort is a land fort; therefore special intention should be given towards the tourist's expectations. Food and drinking water factor is also satisfactory at Chakan. But as per data accommodation and tourist guide factor and overall approach of the local people should be improved for the promotion of the tourism.

Table 4.16: Factor wise average of Satisfaction (Ni) (Chakan)

Sr.No.	Management factor	Average Satisfaction (%)			
		Excellent	Good	Satisfactory	Unsatisfactory
1	Natural scenery	8.33	6.55	4.44	2.55
2	Transport	8.59	7.05	5.51	2.09
3	Food & Drinking Water	9.03	7.43	5.58	3.55
4	Accomodation	8.31	6.46	4.51	3.06
5	Tourist Guide	8.41	6.11	4.45	2.64
6	Entertainment	8.47	6.46	4.67	2.63

(Source: Data compiled by researcher)

Table 4.16 reveals the average values of satisfaction in respect to tourist factors.

Table 4.17: Factor wise Satisfaction Index with Rank (Sli)

Sr.No.	Management Factor	Satisfaction Index	Rank
1	Natural scenery	6.06	4
2	Transport	6.83	2
3	Food & Drinking Water	6.99	1
4	Accomodation	6.10	3
5	Tourist Guide	5.02	6
6	Entertainment	6.01	5

(Source: Data compiled by researcher)

From the satisfaction index table 4.17, it is clearly seen that tourists have ranked food and drinking water at first position. It means there is scope to improve service ability and status of the remaining factors as equal to entertainment. The trust or the local authority should construct bhakta-niwas or dharmashala which will have more capacity for haulting of tourists. The authority has to arrange three to four days training programmes to create tourism awareness and hospitality for the local people

with the approach of Atithi Devo Bhavo. Solar light system and garden facility should be made available at fort for the development of tourism.

4.8.2 RAJMACHI

The factor wise level of satisfaction is calculated and given in the Table 4.18, which is based upon tourist survey at Rajmachi fort.

Table 4.18: Factor wise Level of Satisfaction Mi (Rajmachi)

Sr. No	Management Factor	Excellent		Good		Satisfactory		Unsatisfactory		Total
		No	%	No	%	No	%	No	%	
1	Natural scenery	44	35.2	36	28.8	29	23.2	16	12.8	125
2	Transport	19	15.2	33	26.4	41	32.8	32	25.6	125
3	Food & Drinking Water	29	23.2	25	20	42	33.6	29	23.2	125
4	Accomodation	30	24	23	18.4	33	26.4	14	11.2	125
5	Tourist Guide	21	16.8	27	21.6	16	12.8	36	28.8	125
6	Entertainment	42	33.6	38	30.4	23	18.4	22	17.6	125

(Source: Data compiled by researcher)

It is observed (Table 4.18) that near about 50 % tourists have expressed their views in between good and satisfactory about the various available management factors at Rajmachi fort. Most of the tourists are happy towards the natural scenery factor at Rajmachi fort. Local hotels are providing quality food and tourists have appreciated their services. The table reveals that the few tourists are unsatisfactory about the accommodation, tourist guide and status of various management factors. The data indicates that Rajmachi fort has more potentiality to satisfy the tourists. A systematic planning and necessary measures need to be followed to improve status of transport and other management factor.

Table 4.19: Factor wise Average of satisfaction Ni (Rajmachi)

Sr.No.	Management factor	Average Satisfaction (%)			
		Excellent	Good	Satisfactory	Unsatisfactory
1	Natural scenery	9.1	6.55	4.44	2.55
2	Transport	8.01	6.01	5.51	3.58
3	Food & Drinking Water	8.02	6.11	4.22	3.55
4	Accomodation	8.31	6.46	4.51	3.06
5	Tourist Guide	8.41	6.11	4.45	2.64
6	Entertainment	8.47	6.46	4.67	2.63

(Source: Data compiled by researcher)

Table 4.19 reveals the average values of satisfaction in respect to tourist factors.

Table 4.20: Factor wise satisfaction index with rank Sli (Rajmachi)

Sr.No.	Management Factor	Satisfaction Index	Rank
1	Natural scenery	6.45	1
2	Transport	5.53	3
3	Food & Drinking Water	5.32	4
4	Accomodation	4.72	5
5	Tourist Guide	4.06	6
6	Entertainment	6.13	2

(Source: Data compiled by researcher)

The Table 4.20 is concerned to the ranking of various management factors, which are calculated as per values assigned by the tourists to that factor. The data reveals that the tourists need not to worry about natural scenary factor at Rajmachi fort because the tourists who have visited the place they are quite satisfied and they have ranked natural scenary factor at first position. But, Accomodation should be preferably improved as well as other factors also have scope to improve their position at the tourist place. Rajmachi fort is mainly historical, therefore, visit to the historical places on the fort should be properly arranged with proper guidance and information.

4.3.3 TUNG

The factor wise level of satisfaction is calculated and presented in given Tables, which is based upon tourist survey at Tung.

Table 4.21: Factor wise Level of Satisfaction Mi (Tung)

Sr. No	Management Factor	Excellent		Good		Satisfactory		Unsatisfactory		Total
		No	%	No	%	No	%	No	%	
1	Natural scenery	57	45.6	43	34.4	16	12.8	9	10.24	125
2	Transport	44	35.2	37	29.6	25	20	19	16	125
3	Food & Drinking Water	45	36	42	33.6	23	18.4	15	14.72	125
4	Accomodation	49	39.2	37	29.6	22	17.6	17	14.08	125
5	Tourist Guide	32	25.6	35	28	32	25.6	26	20.48	125
6	Entertainment	37	29.6	33	26.4	29	23.2	26	20.8	125

(Source: Data compiled by researcher)

According to tourist survey, transport factor is excellent for 35.2% tourists. 29.6% tourists ranked it as good, while 20% tourists replied as satisfactory and only 16% tourist mentioned it as unsatisfactory for them. As per analysis it can observed that most of tourists are unsatisfied with the present status of entertainment at Tung, but it should be developed according to future demand of the potential tourists.

The other management factors like electricity, petrol pumps, sanitation, medical help etc. are not standard and satisfactory according to tourist requirements.

Table 4.22: Factor wise Average Of satisfaction Ni (Tung)

Sr. No.	Management factor	Average Satisfaction (%)			
		Excellent	Good	Satisfactory	Unsatisfactory
1	Natural scenery	8.55	6.07	4	3
2	Transport	8.44	6.53	4.62	2.71
3	Food & Drinking Water	8.34	6.62	4.4	2.67
4	Accomodation	8.5	6.53	4.62	2.71
5	Tourist Guide	8.43	6.56	4.57	2.63
6	Entertainment	8.78	6.93	4.36	2.64

Table 4.22, reveals the average values of satisfaction in respect to tourist factors.

Table 4.23: Factor wise Satisfaction Index with Rank Sli (Tung)

Sr.No.	Management Factor	Satisfaction Index	Rank
1	Natural scenery	6.71	1
2	Transport	6.24	4
3	Food & Drinking Water	6.36	3
4	Accomodation	6.45	2
5	Tourist Guide	5.71	6
6	Entertainment	5.99	5

The Table 4.23 reveals that the natural scenery is most favorable factor for the tourists at Tung. Accommodation factor is 2nd in the rank. There is scope to improve food standards. Transport facilities ranked by tourist at forth position. Tourist Guide are less in Tung as well as parking and petrol pump is the major problem at Tung; therefore local authority need to provide open ground for parking as well as petrol pump should be made available by the government at Tung. Other management is least favored factor for the tourists. Public amusement park, health centers and sanitations should be in more numbers and should be public oriented. In this regard there is enough scope to improve standard of other management factors.

4.8.4 SHIVNERI

The factor wise level of satisfaction is calculated and given in the table 4.24, which is based upon tourist survey at Shivneri.

Table 4.24: Factor wise Level of Satisfaction (Mi) Shivneri

Sr. No	**Management Factor**	**Excellent**		**Good**		**Satisfactory**		**Unsatisfactory**		**Total**
		No	%	No	%	No	%	No	%	
1	Natural scenery	42	33.6	47	37.6	22	17.6	14	11.2	125
2	Transport	36	28.8	39	31.2	31	24.8	19	15.2	125
3	Food & Drinking Water	46	36.8	37	29.6	22	17.6	20	16	125
4	Accomodation	39	31.2	42	33.6	25	20	19	15.2	125
5	Tourist Guide	43	34.4	33	26.4	27	21.6	24	19.2	125
6	Entertainment	24	19.2	37	29.6	41	32.8	23	18.4	125

(Source: Data compiled by researcher)

It is observed from table 4.24 that, near about 37.6% and 17.6% tourists have expressed their views in between good and satisfactory about the Natural scenary factors respectively at Shivneri. Most of the tourists are happy towards the food and drinking water factor at Shivneri. Hotels are providing food at Shivneri while local hotels are also providing quality food and tourists have appreciated their services. The Table reveals that the few tourists are unsatisfactory about the service and status of entertainment factors. The data indicates that Shivneri has more potentiality to satisfy the tourists. A systematic planning and necessary measures need to be followed to improve status of accomodation and tourist guide factor.

Table 4.25: Factor wise Average of satisfaction (Ni) Shivneri

Sr.No.	**Management factor**	**Average Satisfaction (%)**			
		Excellent	Good	Satisfactory	Unsatisfactory
1	Natural scenery	8.45	7.23	4.37	3.32
2	Transport	8.1	6.32	4.69	3.68
3	Food & Drinking Water	8.99	7.88	5.04	2.16
4	Accomodation	8.37	7.01	5.02	3.42
5	Tourist Guide	8.32	6.98	4.44	2.83
6	Entertainment	8.04	6.39	4.37	2.61

(Source: Data compiled by researcher)

Table 4.25 reveals the average values of satisfaction in respect to tourist factors.

Table 4.26: Factor wise Satisfaction Index with Rank (Sli) Shivneri

Sr.No.	Management Factor	Satisfaction Index	Rank
1	Natural scenery	6.7	2
2	Transport	6.03	5
3	Food & Drinking Water	6.87	1
4	Accomodation	6.49	3
5	Tourist Guide	6.21	4
6	Entertainment	5.35	6

(**Source:** Data compiled by researcher)

Table 4.26, is concerned to the ranking of various management factors, which are calculated as per values assigned by the tourists to that factor. The data reveals that the tourists need not to worry about food and drinking water at Shivneri because the tourists who have visited the place they are quite satisfied and they have ranked food and drinking water at first position. But, transportation, accomodation, tourist guide,

and entertainment should be preferably improved as well as other factors also have scope to improve their position at the tourist place. Hotels and lodges are less in Shivneri as well as parking is the major problem at Shivneri; therefore local authority need to provide open ground for parking.

4.8.5 RAJGAD

The factor wise level of satisfaction is calculated and presented in given tables, which is based upon tourist survey at Rajgad.

Table 4.27: Factor wise Level of Satisfaction Mi (Rajgad)

Sr. No	Management Factor	Excellent		Good		Satisfactory		Unsatisfactory		Total
		No	%	No	%	No	%	No	%	
1	Natural scenery	51	40.8	44	35.2	16	12.8	14	11.2	125
2	Transport	49	39.2	38	30.4	23	18.4	15	12	125
3	Food & Drinking Water	41	32.8	32	25.6	29	23.2	23	18.4	125
4	Accomodation	38	30.4	37	29.6	31	24.8	19	15.2	125
5	Tourist Guide	22	17.6	31	24.8	38	30.4	34	27.2	125
6	Entertainment	27	21.6	33	26.4	35	28	30	24	125

(Source: Data compiled by researcher)

According to tourist survey, natural scenery factor is excellent for 40.8% tourists. 35.2% tourists ranked it as good, while 12.8% tourists replied as satisfactory and only 11.2% tourist mentioned it as unsatisfactory for them. As per analysis it can observed that most of tourists are unsatisfied with the present status of food at Rajgad, but it should be developed according to future demand of the potential tourists. The other management factors like electricity, petrol pumps, sanitation, entertainment, medical help etc. are not standard and satisfactory according to tourist requirements.

Table 4.28: Factor wise Average of satisfaction Ni (Rajgad)

Sr. No.	**Management factor**	**Average Satisfaction (%)**			
		Excellent	Good	Satisfactory	Unsatisfactory
1	Natural scenery	8.63	6.32	5.32	3.86
2	Transport	8.21	7.11	4.36	3.22
3	Food & Drinking Water	8.02	7.62	5.21	2.31
4	Accomodation	8.73	6.35	4.32	2.15
5	Tourist Guide	9.01	7.1	5.36	2.35
6	Entertainment	8.07	6.3	5.68	3.1

(Source: Data compiled by researcher)

Table 4.28, reveals the average values of satisfaction in respect to tourist factors.

Table 4.29: Factor wise Satisfaction Index with Rank Sli (Rajgad)

Sr.No.	Management Factor	Satisfaction Index	Rank
1	Natural scenery	6.86	1
2	Transport	6.57	2
3	Food & Drinking Water	6.22	3
4	Accomodation	5.93	4
5	Tourist Guide	5.62	6
6	Entertainment	5.74	5

(Source: Data compiled by researcher)

The table 4.29 reveals that the natural scenery is most favorable factor for the tourists at Rajgad. Transport factor is 2nd in the rank. There is scope to improve food standards. Hault facilities ranked by tourist at forth position. Hotels are less in Rajgad as well as parking and petrol pump is the major problem at Rajgad; therefore, local authority need to provide open ground for parking as well as petrol pump should be made available by the government near Rajgad. Other management is least favored factor for the tourists. Public amusement park, health centers and sanitations should be in more numbers and should be public oriented.

4.8.6 PURANDAR

The factor wise level of satisfaction is calculated and presented in given tables, which is based upon tourist survey at Purandar.

Table 4.30: Factor wise Level of Satisfaction Mi (Purandar)

Sr. No	Management Factor	Excellent		Good		Satisfactory		Unsatisfactory		Total
		No	%	No	%	No	%	No	%	
1	Natural scenery	52	41.6	39	31.2	19	15.2	15	12	125
2	Transport	57	45.6	45	36	14	11.2	10	8	125
3	Food & Drinking Water	39	31.2	35	28	29	23.2	22	17.6	125
4	Accomodation	50	40	32	25.6	31	24.8	12	9.6	125
5	Tourist Guide	12	9.6	19	15.2	43	34.4	51	40.8	125
6	Entertainment	25	20	26	20.8	40	32	34	27.2	125

(Source: Data compiled by researcher)

According to tourist survey, accomodation factor is excellent for 40% tourists. 25.6% tourists ranked it as good, while 24.8% tourists replied as satisfactory and only 9.6% tourist mentioned it as unsatisfactory for them. As per analysis it can observed that most of tourists are unsatisfied with the present status of food and drinking water at Purandar, but it should be developed according to future demand of the potential tourists. The other management factors like electricity, petrol pumps, sanitation, etc. are not standard and satisfactory according to tourist requirements.

Table 4.31: Factor wise Average Of satisfaction Ni (Purandar)

Sr.No.	Management factor	Average Satisfaction (%)			
		Excellent	Good	Satisfactory	Unsatisfactory
1	Natural scenery	8.2	6.9	4.32	3.37
2	Transport	8.01	6.98	4.39	3.34
3	Food & Drinking Water	8.36	6.35	5.23	2.82
4	Accomodation	8.02	6.87	5.22	2.39
5	Tourist Guide	8.31	6.47	4.21	2.03
6	Entertainment	8.23	6.4	4.03	2.09

(Source: Data compiled by researcher)

Table 4.31, reveals the average values of satisfaction in respect to tourist factors.

Table 4.32: Factor wise Satisfaction Index with Rank Sli (Purandar)

Sr.No.	Management Factor	Satisfaction Index	Rank
1	Natural scenery	6.63	2
2	Transport	6.92	1
3	Food & Drinking Water	6.1	4
4	Accomodation	6.49	3
5	Tourist Guide	4.06	6
6	Entertainment	4.84	5

(Source: Data compiled by researcher)

The table 4.32 reveals that the transport is most favorable factor for the tourists at Purandar. Natural scenery factor is 2nd in the rank. There is scope to improve food and drinking water standards. Accomodation facilities ranked by tourist at third position. Hotels are less in Purandar and parking is the major problem at Purandar; therefore local authority need to provide open ground for parking as well as petrol pump should be made available by the government near Purandar.

Table 4.33:Factor wise Satisfaction Index of Sample forts with Ranks

Sr. No.	Management Factors	Chakan	Rajmachi	Tung	Shivneri	Rajgad	Purandar
1	Natural scenery	4	1	1	2	2	2
2	Transport	2	3	4	5	5	5
3	Food & Drinking Water	1	4	3	1	1	1
4	Accomodation	3	5	2	3	3	3
5	Tourist Guide	6	6	6	4	4	4
6	Entertainment	5	2	5	6	6	6

(Source: Data compiled by researcher)

As per the table 4.33, it clear that most of places except Tung have not good facilities for accommodation. Therefore, accommodation facilities like hotels and lodges with good provisions in the rooms should be provided.

Transport factor for Rajgad, Purandar, Shivneri and Tung have satisfactory index 5 and 4 which shows that tourists are not satisfied with traveling facilities.

Therefore, these places must have metalled road with increased in no. of vehicles by Govt. and by private agencies this will provide the employment for the district people.

The food and drinking water facilities available at Chakan, Shivneri, Rajad and Purandar are good because these places have index 1. There are some regions which have satisfied the travelers, for e.g. special food like Junnar non-veg and for the veg. there are some special items like masswadi, shengoli etc.

All other places have satisfied to the travelers for natural scenary except Chankan. At Rajmachi no. of houses as less compared other places is less, accomodation and food facilities are also not available which creates problems to the local people.

Tourist guide factor for Chakan, Rajmachi and Tung have satisfactory index 6 which shows that tourist guide facilities are also not available which creates problems to the tourist.

As far as other management factor like electricity, water supply, safety of tourists is concerned are not satisfied except Shivneri. Most of the places have no electricity supply, problem of water supply and protection. Therefore, it is advisable to the local Govt. or State Govt. to provide these basic facilities which will improve the no. of tourists.

4.9 DETERMINATION OF POTENTIALITY OF THE FORT

Pune district has lot of tourism potentiality. But all the places of Pune district cannot be developed as tourist places. For the development of any place as tourist destination several factors should be available according to the requirements of tourists. In the present study various forts of the district are studied as potential tourist places on the basis of following criteria.

- Accessibility of the place.
- Availability of basic amenities.
- Historical Importance/value of the place.
- Richness of the natural resources of the place.
- Religious importance of the place.
- Tourists favored places.
- Availability of various tourist resources.

Accessibility of the place means the suitability of the location to visit. Tourists always prefer such places where they can reach easily with their families; such places develop as tourist destinations. According to this criterion most of the selected forts of Pune districts are easily accessible by road transport.

Tourism development at that place where food, drinking water, shelter and hygienic environment is available or can be available. Some places become popular even though above factors are not available in those places; especially the place has historical value. For example, most of the forts in Maharashtra are situated in remote areas, accessibility of the forts is not easy and no basic amenities are available in majority places; still the trekkers, researchers and followers of the royal family visit such places. Richness of the natural resources also encourages development of tourism. Waterfall, scenery, lakes, beaches, wild animals or even desert etc. are the places where tourists want to spend their spare time or wish to visit such places for mental refreshness. Pune district is rich in natural resources but the richness of these places is yet not properly explored. Such places need basic infrastructure with proper marketing and planning.

The religious tourist centers of India have more importance in the life of Indians. Each and every temple or other religious places of India have tourism prosperity. Some places remain overcrowded throughout the year; where as some places become popular after their renovation or due to some incidents. According to this criterion some places of Pune district have tourism prosperity; such places have discussed under the religious category.

Sometimes tourists visit places, which are on the way of their journey. People also give the frequent visit to specific places of the nearby areas; that places are called as tourists favored places. For example, sun set point, street bazaars, lake point or like as ‘Gate Way of India’, bangles or Chudi bazaar of Hyderabad; these places became tourist destinations because tourists like to give visit such places. Therefore this criterion is also considered while classifying potential tourist forts of Pune district.

4.10 POTENTIAL FORTS IN PUNE DISTRICT

1) Dhakoba

The Dhakoba fort is located in Junnar tahsil of Pune district. The area around Junnar is particularly steeped in fascinating history. Forts like Harishchandragad and Shivneri

have already captured people's imagination. Little are aware of the other, lesser known places of interest, like Hadsardurg and Dhakoba. To the west of Amboli village, stands a Ganesh temple, a narrow road from one side of the temple right up to the Darya ghat. Continue along the left and you come upon Dhakoba. A beautiful scene awaits you here. Flanked by a vast plateau on its left and jagged cliffs on the western side, Dhakoba is pristine nature. The foothills of these ranges mark the beginning of the lovely konkan coast. Throughout this walk, one is keenly aware of the glories view of the Amboli ghat. To the south, a path leads to the Durg fort and the temple of Dakeshwar. (Milind Gunaji).

It is a good two hours walk from the temple up to the fort, which is surrounded by thick forest. It is a thrilling, difficult trudge through the dense undergrowth to reach the top of Durg hill. From a distance, the crown of Dhakoba resembles Nandi Lord Shiva's bull. It is actually easier to scale Dhakoba peak from the north. This is the highest point in that ridge of the Sahyadries that act as a barrier between the coast and mainland Maharashtra.

2) Hadsar

The Hadsar fort is located in Junnar tahsils of Pune district. Few people are familiar with this fort, the famous Lenyadri caves are on the road that connects Junnar to Hadsar. Hadsar fort on a steep hill near the Nane pass valley. The fort lies within the limits of Hadsar village at the foot of the village. From Junnar the road to the hill lies along the valley of the Kukadi between two ranges of the hills. The road is easy passable even for carts, but 2km. From the Junnar it is crosses by the Kukadi, which during the rains is difficult to fort. Hadsar was one of the five Poona forts, which Shahaji gave to the Moghalsin 1637. There is an unbroken flight of stone steps to the fort. The original fort occupies on entire hill by itself. On the east, it is only in the gorge that it comes into contact with other hills. On all other sides, it is surrounded by rock faces. To the west, there is another mountain as high as Hadsar. The pass between these two peaks is interspersed with steps carved out from the rock at regular intervals. (Milind Gunaji)

A walk around the periphery of the fort revolts rough, torn rock edges and jagged shards of rock all around the fort. Probably for this reason, there are no signs of any major fortification, since the fort is naturally well protected. The top fort is in the centre of the fort. At the foot of this hillock, there is a temple of Lord Mahdev in

surprisingly good condition. The vast expanse of the Kukdi Lake is clearly seen. There is a large dry water tank behind the temple. On the west a rock cut passage leads to three underground chambers, which are used as storerooms, one of them being filled with water. The water supplied is from several cisterns inside the fort. Just opposite, a huge dark dungeon has been similarly carved out. No light enters these rooms and they seem to have been constructed specially to serve as either secret cellars, or torture chambers for criminals and prisoners.

3) Jeevdhan

The Jeevdhan fort is located in Junnar tahsils of Pune district. Jeevdhan has the unique distinction of being one of the foursome that seems to guard the Naneghat terrain. Shivneri, Hadsar, Chavand and Jeevdhan, form a set of 'Watch towers' that stand many hundreds of meters above the landscape and offer their stolid protection. This area is about 27km to the north of Junnar. Today, however, the natural beauty of this belt is its most important asset. Jeevdhan stands at the very beginning of the Naneghat, and act as a bodyguard to the stretch ahead. There are two routes that take us to Jeevdhan. There is a regular bus service from Junnar that reaches Ghatghar, at the foot hill of the fort. The other road comes from Kalyan-Marbad and skirts the village of Vaishakhare, before stopping at Naneghat. A road then climbs 21m, from the jungles at the bottom, to sheer rock face. This road ends at the eastern doorway of the fort. There is a water tank right next to this doorway. Much of this fort has collapsed, including the arch at the main entrance. Adjacent to the doorway Goddess Gajalaxmi. The only other structure is the good won.

The summit of the fort is long and extensive, at height of 600m. The south again shows ruins of masonry and structures. The Tulsi Vrindavan that Jijabai worshipped everyday, still stands, sad witness to the ravages of time. The fort also has a huge fresh water reservoir to its north. (Milind Gunaji)

4)Koraigad

The Koraigad fort is located in Maval tahsils of Pune district, which offers a panoramic view of the Deccan plateau as well as the kokan region. Its height is 909m from ASL. The distance between Lonavala and Koraigad is just 20km. From the village of Pethshahpur we can see the Koraigad hill rising like a steep wall. The road to the fort goes along a flat plain for quite a while before entering the forest just below

the fort. Form here to the main doorway is a steep climb, through dense vegetation among the various trees, birds, animals live here. Half way along the path to the left we can see a carved Ganpati idol in a rock. Further ahead, just short of the main doorway is a water tank, contain cool and fresh water and on entering the main door, we find a canon lying to one side, to the left the main gateway, the Ganesh gate. The southern side of the fort has a temple dedicated to Koraidevi. Outside the temple are two stone lamps. Inside is a 1.21m tall idol of the goddess. Behind the temple, adjacent to the ramparts of the fort, is a large canon. The western part of the fort contains some caves and idol of Vishnu. From the northern bastion of the fort, there is a panoramic view of the kokan area. (Milind Gunaji)

5)Lohagad

The Lohagad fort is located in Maval tahsils of Pune district. The height of Lohagad from mean sea level is 1034m. Just after Lonavala on the road from Mumbai to Pune we can see two forts Lohagad and Visapur. To get here by rail you have to alight at Malavali station. There is a path through the Gaimukh Khind (pass) between Lohagad and Visapur. At the base of Lohagad is the village of Lohgadwadi, from here we can enter the fort through four well built gates is the Ganesh Darwaja, followed by Narayan Darwaja, Hanuman Darwaja, Maha Darwaja. There are inscriptions on this gate. Once inside, we can see the remains of a building and a blacksmith's forge. In the centre of Lohagad fort near the building which looks like a mosque, is a slightly raised area with two store rooms, the Khajindar kothi and Laxmi kothi (treasuries). There is also a lake here which does not have much water; to the west is what is called Vinchukata (Vinchu means scorpion)

6) Sinhagad / Kondana

The Sinhagad fort is located in Haveli tahsils of Pune district. Almost every child in Maharashtra knows the story of how Tanaji Malusare captured Sinhagad for Shivaji. One of the most heroic and existing stories in Maratha history, the tale of how he used an iguana to climb this mountain has been told again and again. Shivaji was said to have remarked that, "We won the fort but lost the lion", and thus the name of the fort was changed from Kondana to Sinhagad. (Milind Gunaji)

While traveling from Pune to Sinhagad we pass the Khadakvasla dam, drive towards the Donje village and then striate up to the Sinhagad. There are several

things of interest in Sinhagad, if we enter through the Kalyan Darwaja; we reach the Dav tank, which has clean, refreshing water. To the west is the Donagiri cliff, now popularly known as Tanaji Kada, the side from when Tanaji kada, the side from when Tanaji is said to have climbed the hill. The Zanjar bastion, the Kalvanti bastion, the Tanaji memorial are all places worth seeing. To the east is the Ganesh tank while a memorial to Rajaram maharaj has been erected to the north. At the center of the fort the Amriteshwar temple and the ruins of the places. The Z. P. maintains a Rest House here. Sinhagad can be easily distinguished from among the hilltops which surrounded the city of Pune because of the television tower on top of it.

7) Tikona

The Tikona fort is located in Maval tahsils of Pune district. While traveling from Mumbai to Pune by rail, we pass through the stations of Lonavala, Khandala, Malavali and Kamshet. From Kamshet there is a bus service to Paud via Kale Colony near the Phagane dam. Disembark at the Tikona Peth village. There are four forts in this area- Lohagad, Visapur, Tung and Tikona- the latter is most easily recognizable because of its distinct shape. With its triangular peak, this hill resembles a pyramid from a distance. Tikona is the nearly same height as Tung around 1061m.

Inside fort is an ancient temple and a water tank. To reach this, however, is a steep climb and really leaves you perspiring! On top are some caves and a large water tank. One of the best views of Passoli or Kevre, which can be reached by launch from Kale Colony. From here, the reflection of Tikona in the blue waters of the Pauna dam is a magnificent sight.

8) Torna

The Torna fort is located in Velhe tahasil of Pune district. The height of Torna is 1395m. Take Pune Keland bus; alight at Bhatti village from here, we can climb the Budhala Machee on Torna or the catch the bus to Velhe from here it is 2-3 hours climb to the top. This is the first fort that Shivaji captured; he said to have quietly occupied the fort without any bloodshed in the monsoon of 1646. Legend says that when he began reconstructing the fort, which had fallen into disrepair, he came across a hidden treasure, with which he built the fort of Rajgad on the hill opposite to Murumbdev. (Milind Gunaji)

The expensive plain at one end of the fort, the Budhala Machee, has given the fort its name of Prachandagad (huge fort). Torna has two main gates- the Bini Darwaja and the Kothi Darwaja. Just inside the Kothi Darwaja is a small temple dedicated to Tornajai while another temple, the Torneshwar the Torna tank and the Khokad tank are nearby. The main temple in the fort is the Mengai temple. To the east of this strong hold is the Zauzar Machee. We can see a few water tanks and ruined buildings while walking towards this plain. The Brahmapishaccha (Ghost) stone is also here. On the way from the Kothi Darwaja to the Zunzar Machee lie the Hanuman bastion and the Bhel bastion. At the other is the big stretch of plain known as the Budhala Machee. While walking towards it, the Takmak bastion, the Thibthiba and the Konkan Darwaja are plainly visible.

9) Visapur

The Visapur fort is located in Maval tahsils of Pune district at an altitude of 1081m. The Visapur hill lies in between the Lohagad and Bedse hills, to get to Visapur we have to go through the Gaimukh Khind from Lohagad. These forts were built in the Satavahana region. After being under the control of Nizamshah and Adilshah, the forts were conquered by Shivaji. Later in a treaty singed by Shivaji with Mirza Raje Jaysingh, he handed over 23 forts to Aurangzeb, one of which was Visapur. The lakes on the fort were built by Nana Phadnavis.

4.11 CRITERIA FOR SELECTING TOURISM POTENTIAL FORT SITES

Identification of tourism potential fort sites and its evaluation is essential for development of tourism and long term future planning. So, identification of tourism potential fort sites is undoubtedly the first step of the planning and development of tourism in any geographical unit. The potential for tourism development mostly depends on the variety and richness of tourist attractions and resources and more unique and varied resources are better prospects for tourism development than other. Several factors which need to be assessed in the location of tourist destinations influences the potential of geographical unit as a tourist destination or its importance for development, attraction, physical conditions, climate accessibility, amenities, constraints and incentives.

In the present chapter, an attempt has been made to study, criteria for selecting tourism potential fort sites for tourism development, role of tourism potential fort site

for tourism development, various tourism potential fort sites, various parameters of tourism potential fort sites for tourism development, matrix analysis for tourism potential fort sites and classification of tourism potential fort sites have been described in detail in this chapter.

The term ‘potential’ means something existing but not yet fully exploited. There are various criteria for selecting tourism potential fort sites i.e. on the basis of phsiography, climate, purpose of visit, on the basis of natural and cultural resources. Tourism potential fort sites should be equally distributed i.e. sampling should be systematic stratified. It has been very difficult to survey entire Pune district as tourist resources potential, it’s entirely for reasons of relief barrier. The district has vast and rich tourism resource potential of different cultural background in all its 14 tahsils are classified according to tourism potential on the basis of elevation. Tourism potential fort sites are selected, they represent entire Pune and same problem is found in similar type of tourist centers in throughout the district. Pune city region we have not selected any fort sites because in this region all type of infrastructural facilities are available to tourist, forts are well known, easy accessible, every one can get the information of these forts from MTDC, travel agents, media, internet and secondary data. The detailed information of forts in Pune ditrict are mentioned in ***appendix - I***. The study shows that the forts known to outsider’s tourists are limited to Shivneri, Sinhagad, Shaniwarwada and Pune city only. This prevents full exploitation of the tourism potential of the other fort sites. This is due to the lack of information about these forts at various terminals and information centers.

Tourist is the backbone of tourism industry. However, the study of functional and behavioral aspects of the tourist has been important for the tourism development and planning of tourist region. Therefore, for the assessment of the functional characteristics of tourists in the study region, a survey was conducted during the year 2015 and 2016. For primary data collection purpose interview was considered to be best alternative. These respondents have been selected through random sampling survey but the reactions of the tourist were obtained from every tahsil of the district and are covered for study. These findings are useful for suggesting the strategy for development of tourism in the study region.

4.12 ROLE OF TOURISM POTENTIAL FORT SITES

Tourism potential fort sites give detail idea about present status, infrastructure development of particular centers. Tourism potential fort sites are very rich in natural and cultural resources, these tourism resources are not fully utilized because inadequate tourist facility, lack of information regarding this forts. Hence, proper development of tourism while treating tourism as a 'industry' along with industrial and agricultural development needs attention of the researcher of number of discipline to find out solution on problem on development of tourism which in turn will help to increase the tourist arrivals in the Pune district. Tourism can provide more scope for a generation of employment opportunities due to the increase in tourist facilities in terms of different socio-economic and marketing indicators; tourism can reach the vast majority of the population and also the common man. This requires the role of planning, promotion and publicity which can create a favorable environment for tourism. Tourism development can play an important role in the economic development of the potential centers. The study has a special significance for government, its agencies and other organization concerned with policy making and planning, assessing the impact of development and management and control system of these potential centers.

4.13 VARIOUS TOURISM POTENTIAL FORT SITES

On the basis of above mention criteria different tourism potential fort sites have been selected from different geographical terrains and environment. The location of this tourism potential fort sites and their details information are already given in ***table 1.1***, from that following tourism potential fort sites selected on the basis of elevation (***fig 4.41***).

Table 4.34: Tourism potential fort sites in Pune district

Sr. No	Name of fort	Name of tahasil	Elevation Class (m)	Elevation (m)
1	Chakan	Khed	400-800	618
2	Rajmachi	Mulshi	400-800	692
3	Tung	Maval	800-1200	964
4	Shivneri	Junnar	800-1200	998
5	Rajgad	Velhe	1200-1600	1307
6	Purandar	Purandar	1200-1600	1320

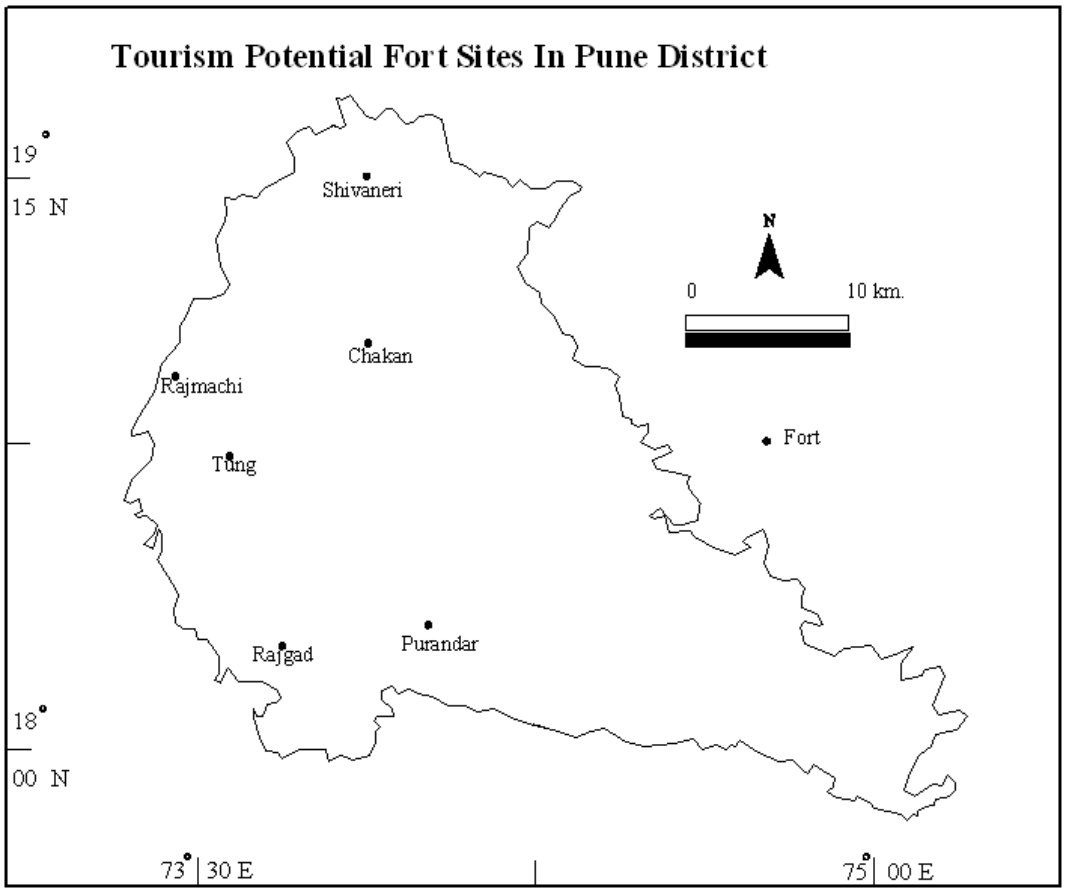


Fig:41

4.13.1 ASSESSMENT OF FORTS ON THE BASIS OF KEY INDICATOR

The development of tourism of any region may be defined as the creation, provision or addition of facilities, amenities and services to meet the needs of the tourist. The facilities such as accommodation, transportation, roads, communication, entertainment and recreation, natural attraction, vegetation, natural attraction and other infrastructural facilities etc. constitute the basic parameters of suitable sites. In the context of infrastructure, it is not enough to just ensure that the journey of the tourists are comfortable, quick and has suitable hospitability, but the facility extended are within there reach, according to tourist expectation and liking. An attempt has been made to analyze 11 micro aspects for potential suitable sites in Pune district.

1) Natural attraction – Scenic attraction and pleasant weather are the most important factors in tourism. Beautiful mountains, lakes, ponds, dykes, waterfalls, cliffs, gorges, valleys and forest etc. always attract tourists. Purandar, Shivneri Rajgad, Tung and Rajmachi etc. sites have good scenic attraction. Pleasant weather plays vital role in

tourism. In countries with tropical climate many of land cool areas have been developed as hill stations. Purandar, Rajmachi have pleasant weather throughout the year.

2) Vegetation – Natural vegetation play an important role for recreational activities of tourists. The forest of the district is broadly divided into three types on the basis of variation in physiography and rainfall. Purandar and Rajmachi are situated in the western part of the district the forest in this track is classified as evergreen forest. Rajgad, Tung and Shivneri are come under central and eastern part of the district the forest in this track is classified as dry deciduous to scrub forest.

3) Roads – Roads are one of the important parameters of the potential suitable site for tourism development. Roads transportation network development is considered to be one of the keys to rapid modernization and development especially better traffic efficiency. It is important for both long and short distance as only means of transport within the destination area for tourist road transport provide opportunity to enjoy the countryside with close quarters. Purandar, Chakan and Shivneri etc. centers have good network of road while, Rajgad, Tung etc. centers have not metalled road facility but they have highest potential for tourism development.

4) Public transport - Public transport network is a vital component of infrastructural development. Public transport is the primary service needed by the tourist in order to reach the destination and further to move around at the destination. Public transport is a pre requisite for mass tourism. Tourism can not succeed without developed transport facilities. Transport facilities at any place would naturally pave way to speedy tourism development. The quantity of transport network is the key factor determining the accessibility of tourist areas, Rajgad, Rajmachi, Chakan, etc. centers have good public transport facility while, Purandar, Shivneri, Tung have not MSTRC public transport facilities.

5) Accommodation - Accommodation is one of the important parameter of potential suitable site for tourism development. Accommodation is an important aspect of tourist industry which is necessary at the destination. There are various types of accommodation facilities, which are used by the tourist. Accommodation may itself

be an important tourist attraction. In fact, a large number of tourist visit a particular tourist region simply because first class luxurious hotel or resort which provide excellent food services and other facilities. Accommodation is only available to the centers like Rajgad and Shivneri but, Purandar, Tung and Rajmachi lack in accommodation facilities.

6) Parking facility – This is another important parameter of potential suitable site for tourism development. With change in the character of tourist travel mode, the requirement of parking increase day by day (Bhatia 1989). The formal parking facility is available only at the centre Shivneri, Chakanand Rajgad. But even this is inadequate for these sites. Purandar, Tung and Rajmachi are short of parking facility. Most of the vehicles are parked along the roads there by reducing the effective roads width. This causes traffic congestion, time loss and inconvenience to tourist. The major issue here is that the tourists coming in their own vehicle discover this problem only after reaching the site, which increases the problem.

7) Adventure tourism and recreation facility – Inadventure tourism, it includes to participate in various adventures activities like trekking, mountain climbing etc. facility available to the sites like Purandar, Tung, Kavani. In case of recreational facility, one of the best mean of enjoyment for tourist when tourist has leisure time. It is the best method of preventing boredom and providing relaxation. Tourism itself is the part of recreation and both of them are very much interrelated with one another. The recreation facility is available in the site like Tung, Chakan, Rajgad and Shivneri while, remaining sites have lack in recreation facility.

8) Drinking water, communication and medical facility – Drinking water, communication and medical facility are also important parameters of potential suitable site for tourism development. The drinking water, communication and medical facilitiesare available in the sites like Chakan, Rajmachi, Rajgad and Shivneri while, remaining sites lack in these facilities.

4.13.2 MATRIX ANALYSIS FOR TOURISM POTENTIAL FORT SITES

The tourism potential fort sites have been analyzed on the basis of above mention parameters so as to judge qualitative and quantitative aspects of tourist infrastructure

at these forts. These are natural attraction, vegetation, roads, public transport, accommodation, and medical facility. The matrix has been prepared based upon the weighted index method.

The various parameters are given weightage on a 1 to 5 scale to find out overall tourist convenience at the tourism potential fort sites (Singh, Kuldip 2007) ***Table 4.35***.

Table 4.35: Matrix analysis for tourism potential fort sites in Pune district

Suitable Site Parameter	Purandar	Chakan	Rajgad	Rajmachi	Tung	Shivneri
Natural attraction						
Scenic attraction	5	1	5	5	5	4
pleasant weather	5	1	5	5	5	4
Vegetation						
Evergreen	-	-	-	5	-	-
Dry deciduous	4	-	4	-	4	
Shrub/bushes	-	1	-	-	-	3
Roads						
Metalled	-	5	-	-	-	5
Unmetalled	3	-	2	1	1	-
Public Transport	3	5	1	1	2	5
Accommodation	4	4	2	1	2	4
Adventure tourism	5	1	5	5	4	4
Recreation	3	3	3	2	1	3
Parking facility	4	3	3	3	2	5
Drinking water	1	3	4	1	1	5
Medical facility	1	4	1	1	2	3
Communication	4	4	3	1	1	3
Total weight	**42**	**35**	**38**	**31**	**30**	**48**

Source: Field survey 2014-16 **Scale:** 1(Low poor condition), 5(High condition)

As per the table 4.35 the matrix has been prepared based upon the weighted index method. The various parameters are given weight age on a 1 to 5 scale to find out overall tourist convenience at the tourism potential fort sites.

Purandar, Shivneri Rajgad, Rajmachi etc. have good scenic attraction for these forts allotted highest value 5. The Chakan fort has less scenic attraction for that 1 value given. Regarding natural vegetation Purandar, Rajmachi Rajgad and Tung etc forts allotted 4 as highest value. The Shivneri and Chakan forts respectively allotted 3 and 1 values. Purandar, Chakan Shivneri and Rajgad etc forts haave good communication facilities so 4, 4, 3 and 3 values respectively allotted. Purandar, Rajgad, Rajmachi, Tung, Shivneri etc forts have adventure tourism facilities so 5, 5, 5, 4, 4 values respectively allotted and Chakan fort allotted lowest value 1.

4.13.3 CLASSIFICATION OF TOURISM POTENTIAL FORT SITES ON THE BASIS OF POSTIVE AND NEGATIVE ASSESSMENT FACTORS

The tourism potential fort sites have been analyzed on the basis of their total weight. They are classified such as highly suitable, moderately suitable, suitable, and least suitable. So, from the table 4.3 it is clear that only Purandar and Shivneri scores high i.e. 42 and 48 respectively are highly suitable sites to be good tourism potential fort sites. Chakan and Rajgad score 35 and 38 respectively are moderately suitable sites. Rajmachi score is 31 as suitable site. On the other hand certain site like Tung score 30 is least suitable site on most counts. Most of the parameters can be improved immediately, without disturbing the environments of these forts to increase the tourism potential of these fort sites.

Table 4.36: Classification of Tourism Potential fort Sites on the basis of Positive and Negative assessment factors

Sr. no.	Name of fort	Weight	Assessment factors	Potential of fort	Remark
1	Purandar	42	Positive	Highly Potential	Highly suitable
2	Chakan	35	Positive	Highly Potential	Moderately suitable
3	Rajgad	38	Positive	Highly Potential	Moderately suitable
4	Rajmachi	31	Negative	Low Potential	Suitable
5	Tung	30	Negative	Low Potential	Least suitable
6	Shivneri	48	Positive	Highly Potential	Highly suitable

(Source: Data compiled by researcher)

4.14 LIKERT SCALE ANALYSIS OF TOURISM POTENTIAL FORT SITES

A Likert scale is a psychometric scale commonly used in questionnaires, and is the most widely used scale in survey research, such that the term is often used interchangeably with rating scale even though the two are not synonymous. When responding to a Likert questionnaire item, respondents specify their level of agreement to a statement. The scale is named after its inventor, psychologist Rensis Likert.

Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri forts selected for Likert scale analysis. The study is based on primary and secondary data. With the help of questionnaire, a stratified random sample survey was undertaken, 450 tourists were interviewed. For this study the factor wise Likert scale is calculated. Tourism satisfaction is a psychological outcome and it is concerned with the attribute of behaviors itself. Likert scale is a technique for the measurement of attitude a scale giving values for an individual's reactive attitude. The test is required to choose from a possible answer per item and thus to show a degree of agreement or disagreement with the attitude represented. The response to each question was rated on seven points 'Likert Scale' ranging from 1 to 7. The attitudinal survey has a common method of addressing a range of environmental and economic issues. In this approach, respondents are asked to indicate their attitude and feeling towards the impact of tourism, with a set of closed questions or statements. Such survey can yield useful information about the types of impacts, what is being recorded is the respondent's perception of those impacts and these may and may not accord with reality (Perce D. 1989). The impact of the study is an attempt to examine empirically the impact of tourism on local population. The format of seven level Likert item is, 1=strongly disagree, 2=moderately disagree, 3=disagree, 4= undecided or neutral, 5=agree, 6=moderately agree and 7 strongly agree (Likert, R. C.) table 4.37.

Table 4.37: Seven Level Likert Scale

Value	Remark
1	strongly disagree
2	moderately disagree
3	disagree
4	undecided or neutral
5	agree
6	moderately agree
7	strongly agree.

Environmental Impact:

Tourism has a major impact on environmental conditions of the region. Assessment of the environmental impact of tourism is particularly important, for the various facts of the environment constitute the basis of much tourist development. The questionnaire for assessment of environmental impact consists of 15 questions. These questions will help to understand the environmental impact of the tourist on the region. The mean and standard deviation of residents of the Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri forts responses to environmental impact on tourists are calculated *(*Virendra Nagarale and Dattatraya Harpale) T***able 4.38.**

Table 4.38: Resident's response to environmental impact of tourists Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri forts

No	Environmental impact	1	2	3	4	5	6	7	∑	Mean	S.D.
1	Overcrowding and congestion	-	12	33	15	70	148	172	450	75	63.37
2	Noise and air pollution	-	-	28	23	67	132	200	450	90	67.42
3	Water pollution	-	-	-	18	105	129	198	450	112.5	64.36
4	Sewage disposal	-	45	39	17	92	178	79	450	75	52.40
5	Drinking water	-	23	17	33	111	145	121	450	75	51.87
6	Strain on public utility services and recreational facilities	-	-	61	33	145	112	99	450	90	39.19
7	Strain on entertainment facility	-	67	123	80	46	89	45	450	75	26.86
8	Road condition	-	-	53	10	103	145	139	450	90	51.70
9	Development of slums	-	145	101	14	34	67	89	450	75	43.28
10	Freely moving cattle	-	47	27	11	115	147	103	450	75	49.58
11	Acute problem of dirtiness	-	-	-	28	145	123	154	450	112.5	50.07
12	Modernization of infrastructure	-	45	25	19	89	189	83	450	75	57.43
13	Increasing number of religious institution	-	-	45	23	60	145	177	450	90	60.01
14	Increasing number of hotels	-	13	17	33	156	108	123	450	75	56.16
15	Need of separate parking facility	-	-	-	22	115	154	159	450	112.5	54.96
Total		0	397	569	379	1453	2011	1941	6750		

(Source: Field work 2014-2016)

The mean and standard deviation of overcrowding and congestion is respectively 75 and 63.37, noise and air pollution 90 and 67.42, road condition 90 and 51.70 etc.

The higher the number of respondent tourists larger the effect on host population of tourist centers fort. The frequency distribution of environmental impact mean is 14.29 and standard devation is 11.25. So, it can be said that in Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri forts there is an overall positive effect of tourism ***(table 4.39 and fig 4.42).***

Table 4.39: Frequency distribution of environmental impact

Sr. No	**Average Score**	% of Respondent
1	1	0
2	2	5.88
3	3	8.43
4	4	5.61
5	5	21.53
6	6	29.79
7	7	28.76
Total		100%
Mean		14.29
Standard deviation		11.25

(Source: Field work 2014-2016)

Frequency distribution of Purandar, Chakan, Rajgad, Rajmachi, Tung, Shivneri Forts

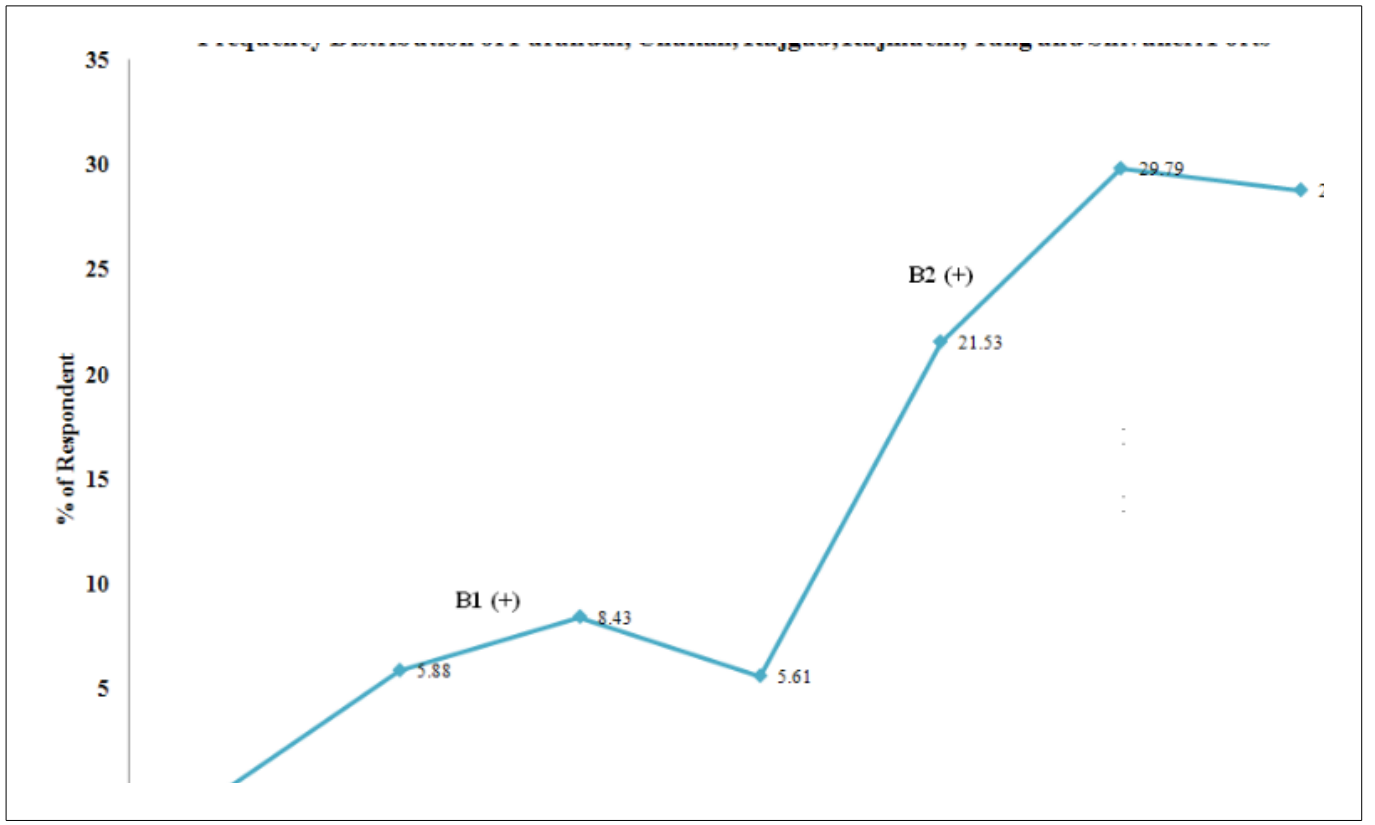


Fig. 4.42

Now, is there any relation between tourist response and average score of Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri fort. This can be checked with second degree bivariate regression equation $\mathbf{Y} = a + b1x^1 + b2x^2$ (**table 4.40**).

Table 4.40: Result Table

$\mathbf{Y} = a + b1\,x^1 + b2\,x^2$ $\mathbf{Y} = -2.39 + 2.37\,x^1 + 0.36\,x^2$		
R^2	0.88	
R	0.94	
EV	88%	
UEV	12%	
t	5.43	
Level of significant	Calculated t	Table t
95%	5.43	2.78
99%	5.43	4.60
99.99%	5.43	8.61

(Source: Field work 2014-2016)

There is a correlation between tourist response and average score of Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri forts. The explained variance is 88% and unexplained variance is 12%. It indicated that tourist response is depending on score. The equation derived is significant at 99% level. The calculated **t** value is 5.43 i.e. more than table t value on 99% level. Hence it is clearly indicating that tourist response depends on the score. So, it can be said that in Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri forts there is an environmental impact of tourism.

It can be summarized that environmental impact depends upon the factors like, overcrowding,noise and air pollution, water pollution, sewage disposal, supply and quality of fresh water, strain on public utility services and recreational facilities, strain on entertainment facility, road condition, development of slums, freely moving cattle and problems of congestion, hotels, parking facility etc.

Mostly in the rainy season many tourists go to enjoy the picturesque of Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri. The higher the number of tourists larger the effect on host population of tourist centers. The attitude index means for environmental impact Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri is 14.29

and standard deviation 11.25. The second degree bivariate regression equation gives idea about tourist response and average score of Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri forts. There is a correlation between tourist response and average score. So, it can be said that in Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri forts there is a positive effect of tourism. Besides this, such study is useful to planners, administrators, layman and those who are interested in research in the field of economic and social planning, strategic study and social and economic development may get the benefit.

C H A P T E R - V

SUMMARY, RESULTS, CONCLUSIONS AND RECOMMENDATIONS

SUMMARY AND RESULTS

Tourism is considered as foreign exchange earning.Today, it is among the world's largest economic activities. Due to growth in tourism, there is an exchange of ideas, thoughts and services as well as money among the people.

In the present study, GIS is used as a tool for the Tourist Information System (T.I.S.). It can be used for the developed as well as undeveloped sites of Pune district. The Governments of underdeveloped as well as developing nations invest in the development of tourism to grow their economic status. Likewise, the government also encourages and facilitates the young and emerging geographers for travel. By this research, man power development and training can be facilitated. Moreover, the government can focus on the domestic needs of the Pune district by spreading information like cheap accommodation, easy way to transportation etc. Hence, it results into the socio-cultural benefits for the local community by creating the employment opportunities, advancing income generators and spreading environmental awareness among the people.

Potential fort sites are extremely rich not only in natural resources but also in terms of cultural resources. However, these tourism resources are not utilized upto the best of their availability due to the inadequate tourist facility and lack of information regarding these centers. Greater scope for the generation of employment opportunities can be provided to the potential by increasing tourist facilities. Various socio economic and marketing indicators bring money. It also helps in the reduction of regional disparities in the Pune district. As a result of the development of new potential fort sites,it will lead in the reduction of the pressure on existed tourist sites. However, new potential fort sites for tourism purpose are not fully developed in Pune district. This is because of the lack in planning which is in terms of accommodation, transportation, parking facilities, road site amenities, drinking water, poor road condition, electricity, medical facility etc. Hence, systematic development of potential fort sites along with industrial and agricultural development needs to be taken. This development needs the attention of researchers belonging to different disciplines inorder to find out solution on the development of tourism. This in turn

will help to increase the tourist arrivals in the Pune district. Also, this requires the role of planning, promotion and publicity which can create a favourable environment for tourism. The site attraction is increased by promoting the local art, local agriculture food ,handicrafts, culture initiatives and boating facility.

Because of the better infrastructure facility, easy accessibility and closeness to the Pune city the tourism development in Pune district is concentrated only in the west. There is a need to find out solution for the problem of development of tourism which in turn will help to increase the tourist arrivals in the Pune district. This shows the need to create a favourable environment for tourism. The site attraction is increased by promoting the local art, handicrafts, culture initiatives, local agriculture food, boating and trekking facility. It will attract more tourists and hence is expected to contribute to the local economy. For assessing the impact of development and management and control system of these potential centres, the study has an important significance for government, its agencies and other organization concerned with policy making and planning.

The major aim to the proposed study was to find out assessment of tourism potential of major forts in Pune district, Maharashtra. In the three phases of methodology, the first phase i.e. pre-field work phase, literature review, second phase i.e. field work phase extensive field surveys were carried out tourist facilities regarding destination, photographs, GPS reading and personal interview of tourists. In the third phase i.e. laboratory work, PWD map of Pune district scanning and then digitizing to generate thematic layers, these layers are analyzed to demarcate tourism potential zones and suitable sites. Entire work is presented into five integrated chapters.

Pune district, lies between 17º 54' to 19º 24' N latitude and 73º 33' to 75º 10' E longitude. The total geographical area of the district is 15,643 sq. km. The district headquarter is located at Pune. The district consists of 14 tahsils. The topography of the study areas varies between 500 m to 1400 m ASL. It is situated at 559 m above ASL. The Pune district is bounded by high hill ranges comprising of Deccan Trap basaltic lava flows. All the rivers such as the Bhima, Vel, Ghod, Mutha, Nira, Kukdi, Mina, Andra, Shivganga, Karha, Indrayani, Mula, are the rivers drain the Pune district. All rivers are originating in the Western Ghat.The Pune district receives rains from southwest monsoon during the period from June to September. The Pune district receives average annual rainfall of 722 mm. The landuse pattern in the Pune

district roughly coincides with the physiography of the area. Study area experiences dry climate, hence it shows sparse to scanty vegetation in its eastern part, where as relatively dense vegetation occurs in its western part of heavy rainfall. Ridges and hill tops are covered with reserved forest consisting of tiny shrubs, bushes and trees as well as open scrub, stony waste, pasture land and barren land at some places. Sub-tropical hill forest, semi-evergreen forest, moist mixed deciduous forests, dry mixed deciduous forest and dry teak forest are found in study region. The Pune district shows four types of soil formation such as black, red, brown and paddy. The central and eastern region of the district is almost occupied by agricultural crops. Western region partly occupied by scanty agricultural as well as natural vegetation. According to Census 2001, there was 7232555 population in Pune district of which males are 3769128 and females are 3463427and population has increased up to 9429408 in 2011. The population density of the Pune district was 603/sq. km which is quiet high density of population. The geographical features like mountains, rivers, waterfalls, forests, wildlife etc. act as centers of tourist attraction and historical monuments, forts, palaces and ancient temples provide great scope for tourism development. The potential for tourism development in any area largely depends on the availability of recreational resources such as mountain peak, river, lake, waterfall, reservoir, forest, wildlife and historical monument, an object of art, fair or festival.

In the context of available tourist facility, it is not enough to just ensure that the journey of the tourist are comfortable and quick and has suitable hospitability, but the facilities extended are within their reach, according to tourist expectation and liking. Keeping in mind this fact, available tourist facility a variety of infrastructure, goods and services which can be further diversified on the basis of different considerations and perspective. An attempt has been made to analyze the five micro aspects of the available tourist facility of Pune district such as accommodation, transportation, medical facilities, entertainment and recreation. Pune has also some other facilities for the tourist i.e. tourist office of MTDC which is located at Pune city. In accommodation facilities Pune city provides quiet good facility in its content worthy hotels, motels, lodges and dharmashalas. Transports facilities are provided by Central Railway, MSRTC, PMPL etc. are satisfactory. Shopping facilities are inadequate the distance except Pune city. The other centers have limited facilities in regards to the tourist. The district is well connected with state capital and surrounding region with

district roads and rail routes. The total length of roads is 18976.72 kilometres, of which, 415 kilometres road length is covered by national highways, 1991.96 kilometres by state highways, 4078.96 kilometres by major district roads and 2367.04 kilometres by other district roads. The broad gauge rail length is 311 kilometres. Pune is well connected by domestic and international airlines. During the year 2013-14, the number of Post Offices in the areas of the Pune district was 660. Hence there is an urgent need to develop, maintain the quality and increase the standards of various available tourist facilities that can satisfy the need of the tourist.

Assessment of tourism potential of major forts is essential for the development of tourism and long term future planning. So, identification of new potential forts sites is the first step of the planning and development of tourism in any geographical units. There are several approaches to identify the new potential suitable sites for tourism. The term potential means something existing but not yet fully exploited. New tourism potential forts sites should be equally distributed i.e. sampling should be systematic stratified.

Tourist is the backbone of tourism industry. However, the study of functional and behavioural aspects of the tourist has been important for the tourism development and planning of tourist region. Therefore, for the assessment of the functional characteristics of tourists in the study region, a survey was conducted during the year 2015 and 2016. For primary data collection purpose interview was considered to be best alternative. These respondents have been selected through random sampling survey but the reactions of the tourist were obtained from every tahsil of the district and are covered for study. These findings are useful for suggesting the strategy for development of tourism in the study region. Potential forts sites give detailed idea about present status, infrastructure development of particular centers. Those are Khandoba fair Jejuri, Bhimashankar fair - Bhorgiri, Firangai Devi fair- Kurkumbh, Ekvira Aai fair- Vehergaon; Kamar Ali Shah Darvesh Ra. Baba Dargah Urus-Khedshivapur.

Maharashtra is the third largest state of India, both in area and population. Maharashtra is a land of forts with its 350 odd forts. The Archaeological Survey of India (ASI), an agency controlled by the union government, controls 29 of the important forts. The state archaeological department controls 39 other forts and 99 forts are unprotected forts .The remaining 183 forts are either controlled by the revenue department, which knows little about archaeology or are privately owned

(*Maharashtra Tourism Policy 2016*). There are 32 forts in Pune district. Every fort has its own importance and uniqueness. There are 14 thasils in Pune district. The forts are lying in eight thasil of Pune district which includes Maval, Bhor, Khed, Mulshi, Purandar, Junnar, Velhe and Haveli. Tourism potential fort sites are classified on the basis of elevation. The forts from 400m to 1600 m MSL were selected and classified according to elevation with interval of 400 m. The minimum elevation of the fort Chakan is 618 m and maximum elevation of the fort Purandar is 1320 m (Table 4.10). Pune city region is not selected for any fort sites because in this region all type of infrastructural facilities are available to tourist, forts are well known, easy accessible, the information of these fort is easily available from MTDC, travel agents, media, internet and secondary data. On the basis of the above mentioned criteria different major fort sites have been selected from different terrain and environment. Chakan, Rajmachi, Tung, Shivneri, Rajgad, Purandar etc. forts were selected to assess the tourism potential of these fort sites.

Chakan is situated in the southern part of the Khed Tahsil. It is located at the confluence of Bhama and Bhima River where the height is 560 m above the mean sea level. Chakan fort is located on 18^0 45' north latitude and 73^0 52' east longitudes. The altitude of Chakan is 618 m. This fort is also called Sangram Durg, after the ferocious battle between the Mughal Army led by Shayeste Khan and Firangoji Narsala, a notable commander in Shivaji's army. The mean annual temperature of Chakan is 32°C. Month of May is generally hottest month of the year. The average rainfall received by the land fort is 664mm.

In Chakan there are 13 hotel resorts, 8 lodges and 3 lodging and boarding, and one Motel. Chakan is well connected by NH-50, SH-55 and MDR-20. Chakan is 180 km from Mumbai and just 29km from Pune and is well connected by road, rail and air. Bhama River provides drinking water faciltity for the Chakan. The Chakan town has population of 41113 of which 22194 are males while 18919 are females as per report released by Census 2011. Chakan has been a wholesale agricultural produce marketing hub. Chakan has big onion market to sell their agro-commodities and also for the industrial products. The Maharashtra Industrial Development Corporation (MIDC) introduced Chakan as a Special Economic Zone (SEZ).

Rajmachi is a charming fort. The Rajamachi (Udhewadi) is located in Maval tahsils of Pune district. Rajamachi is located on $18^0$83' north latitude and $73^0$40' east longitudes. The altitude of Rajamachi fort is 692m. Historically, Rajmachi fort was a

strategic fort to control Bor Ghat (between Khopoli and Khandala on Mumbai-Pune route) which was a historical trade route. The fort complex was originally constructed by the Satavahanas. The average rainfall received by the fort is 1200mm. The mean annual temperature of Rajmachi is 28°C. Dense vegetation occurs at Rajmachi. It comprises of trees, herbs and shrubs, grasses occupying valley plain, colluvial slopes and hill tops where a significant soil cover is formed.

In order to provide accommodation facilities for trekkers at Rajmachi in Udhewadi village for a nominal charge, Rajmachi Rural Aid and Development Programme (NGO) has two dormitories. Lonavla, Dehu Road, Talegaon Dabhade are the nearby by towns to Udhewadi which has road connectivity to Udhewadi. The Rajmachi village has population of 287 of which 158 are males and 129 are females as per report released by Census 2011. The 36% tribal people in Undhewadi village are involved in collection of forest product like gum, flowers, plants, honey etc, whereas 40% of the peoples are engaged in agriculture sectors because in the land is favorable for agriculture.

The Tung fort is located in Maval tahsils of Pune district. Tung is located on $18^{0}39'$ north latitude and $73^{0}35'$ east longitudes. The altitude of Tung is 964 m. Tung fort is popularly known as Kathingad. Tung fort was built by the rulers of the Adilshahi dynasty before 1600 CE. However it was later occupied by Chatrapati Shivaji Maharaj of the Maratha Empire. The tributaries of the Pavana river are originated at Tung. These tributaries are seasonal during, rainy season rain water flow through these tributaries but rest of the year they are dry. The mean annual temperature of Tung is 25°C. The average rainfall received at Tung is 3397mm. The Tung fort have semi-evergreen, ever to mixed moist deciduous and dry deciduous forest in a narrow belt along the steep slope of the area.

There are 2 hotels and 1 lodge and four private accommodations are available for tourist Other than private hotels, lodges the ZP and Irrigation rest houses are also available for accommodation near Tung. Presently the fort is bounded by water on three sides as a result of the construction of the Pavana dam. One can also reach the base village Tungi from Pavana dam by boat. From Pavana dam, reaching this fort entrance requires a 400m climb. Pavana river and Pavana dam provide drinking water faciltity for the Tungi village. The Tung village has population of 958 of which 487 are males while 471 are females as per report released by Census 2011. The 65%

peoples of the tungi village are work in agriculture sectors others 16% are agriculture labors, some in transport sectors, doing private job etc.

Shivneri is situated in Junnar tahasil and 93 km away from Pune. Shivneri is located at $19^0$13' north latitude and $73^0$49' east longitudes. The altitude of Shivneri is 998 m. Shivneri is a triangular shape hill fort and has its entrance from the SW side of the hill. The tributary of the Kukadi river are originated at Shivneri fort. In 1599 AD the Shivneri fort was granted to Shivaji's grandfather, Maloji Bhosale and passed down to Shahaji. Shivaji's mother spent the days of her pregnancy at this fort and this is the birth place of Shivaji, the famous Maratha warrior who was born in 1630 AD. Shivaji spent his childhood in Shivneri Fort. He also undertook his military training here. The mean annual temperature of Shivneri is 32°C. The average rainfall received by the fort is 721.70mm.

There are a quite number of hotels, restaurants and lodges available for accommodation in Junnar. Other than several private hotels there is a PWD and Forest Dept. rest house available for accommodation in Junnar. State highway No. 52 and Main District highway No. 3 and 1 connect the Junnar which provides excellent road network so that tourist can reach easily to the Junnar by metal road. The Junnar town has population of 25315 of which 13066 are males while 12249 are females as per report released by Census 2011.

Rajgad fort is located in Velhe tahasil of Pune district and 93 km away from Pune. Rajgad is located on $18^0$14' north latitude and $73^0$39' east longitudes. The altitude of Rajgad is 1307 m. The fort is situated at the end of a spur, surrounded on three sides by fortified plains (machees)-the Padmavati machees, the Sanjivani machees, and Suvela machees. Around the Rajgad are the four rivers Velwandi, Kanandi, Neera and Gunjawane, so that all routes to the fort are across rivers. Rajgad Fort was a witness to many adventurous incidences in the life of Shivaji, including the birth of Shivaji's son Rajaram; Shivaji's successful return from the captivity of Aurangzeb; the sad demise of his queen Saibai, and so on. The mean annual temperature of Rajgad is 28°C. The average rainfall received by the fort is 1961mm.

For overnight stay at the fort, there are options like the premises of Padmavati Temple or a big hall constructed for this purpose. Rajgad is well-connected by roads and local transport is easily available from Nasarapur, Velha and Bhor. The Bhutonde has population of 272 of which 145 are males while 127 are females as per report

released by Census 2011. The people of village are engaged in the occupation like 67% agriculture, 23% labors, 4%service sectors, 3% driver, 2% industrial worker and 1% people are government employees.

The Purandar fort is located in Purandar tahsil of Pune district. Purandar is located on $18^0$16' north latitude and $74^0$00' east longitudes. The altitude of Purandar is 1320 m. The western side of the fort is a mountainous and towards east is largely a plateau region. The great Marathas Empire Sri Shivaji's 1st capital is Purandar fort. The fort preserves immortal memory of Murar-Baji Deshpande who laid down his life fighting against the mighty forces of mughals in 1665 A.D. The tributary of the Karha and Neera River are originate in this region. The mean annual temperatur of Purandar is 32°C. The average rainfall received by the fort is 790mm.

There are two hotels, one lodge and one Narayanpur village Dharamshala trust rest house available for accommodation in Narayanpur. Via Pune S.T. bus from Saswad will drop you at the bus-stop of 'Purandar Ghat matha' in Narayanpur village. The Gerapurandar has population of 706 of which 356 are males while 350 are females as per report released by Census 2011. The people of village are engaged in the occupation like 74% agriculture, 19% labors, 2%service sectors, 1% driver, 2%industrial worker and 2% people are government employees.

Assessment of level of satisfaction is necessary to find out the degree of development therefore here attempt has been made to assess satisfaction of the visitors regarding lodging, boarding, food, transportation, darshan, travelling problems and the behaviour of local people.

The destination Chakan is located in Khed tehsil. As per the opinion of the tourists it is observed that transport facility at Chakan is satisfactory; few tourists are not happy with this management. Food and drinking water factor is also satisfactory at Chakan. But as per data accommodation and tourist guide factor and overall approach of the local people should be improved for the promotion of the tourism. Tourists have ranked food and drinking water at first position in Chakan fort. It means there is scope to improve service ability and status of the remaining factors as equal to entertainment.

Most of the tourists are happy towards the natural scenery factor at Rajmachi fort. Local hotels are providing quality food and tourists have appreciated their services. The table reveals that the few tourists are unsatisfactory about the accommodation, tourist guide and status of various management factors. The data indicates that

Rajmachi fort has more potentiality to satisfy the tourists. The data reveals that the tourists need not to worry about natural scenary factor at Rajmachi fort because the tourists who have visited the place they are quite satisfied and they have ranked natural scenary factor at first position.

As per analysis it can observed that most of tourists are unsatisfied with the present status of entertainment at Tung, but it should be developed according to future demand of the potential tourists. According to tourist survey, transport factor is excellent for 35.2% tourists. 29.6% tourists ranked it as good, while 20% tourists replied as satisfactory and only 16% tourist mentioned it as unsatisfactory for them. the natural scenery is most favorable factor for the tourists at Tung. Accommodation factor is 2nd in the rank. There is scope to improve food standards. Transport facilities ranked by tourist at forth position. Tourist Guide are less in Tung as well as parking and petrol pump is the major problem at Tung.

About 37.6% and 17.6% tourists have expressed their views in between good and satisfactory about the natural scenery factors respectively at Shivneri. 83% of the tourists are happy towards the food and drinking water factor at Shivneri. Hotels are providing food at Shivneri while local hotels are also providing quality food and tourists have appreciated their services. The data reveals that the tourists need not to worry about food and drinking water at Shivneri because the tourists who have visited the place they are quite satisfied and they have ranked food and drinking water at first position. But, transportation, accomodation, tourist guide, and entertainment should be preferably improved as well as other factors also have scope to improve their position at the tourist place.

Natural scenery factor is excellent for 40.8% tourists. 35.2% tourists ranked it as good, while 12.8% tourists replied as satisfactory and only 11.2% tourist mentioned it as unsatisfactory for them at Rajgad. As per analysis it can observed that most of tourists are unsatisfied with the present status of food at Rajgad, but it should be developed according to future demand of the potential tourists. Natural scenery is most favourable factor for the tourists at Rajgad. Transport factor is 2nd in the rank. There is scope to improve food standards. Hault facilities ranked by tourist at fourth position. Hotels are less in Rajgad as well as parking and petrol pump is the major problem at Rajgad.

Accommodation factor is excellent for 40% tourists. 25.6% tourists ranked it as good, while 24.8% tourists replied as satisfactory and only 9.6% tourist mentioned it as

unsatisfactory at Purandar. As per analysis it can observed that 22% of tourists are unsatisfied with the present status of food and drinking water at Purandar, but it should be developed according to future demand of the potential tourists. Transport is most favourable factor for the tourists at Purandar. Natural scenery factor is 2nd in the rank. There is scope to improve food and drinking water standards.

The development of tourism of any region may be defined as the creation, provision or addition of facilities, amenities and services to meet the needs of the tourist. The facilities such as accommodation, transportation, roads, communication, entertainment and recreation, natural attraction, vegetation, and other infrastructural facilities etc. constitute the basic parameters of fort sites. An attempt has been made to analyze 11 micro aspects for potential fort sites in Pune district. The matrix has been prepared based upon the weighted index method. The various parameters are given weightage on a 1 to 5 scale to find out overall tourist convenience at the tourism potential fort sites.

Purandar, Shivneri Rajgad, Rajmachi etc. have good scenic attraction for these forts allotted highest value 5. The Chakan fort has less scenic attraction for that 1 value given. Regarding natural vegetation Purandar, Rajmachi Rajgad and Tung etc forts allotted 4 as highest value. The Shivneri and Chakan forts respectively allotted 3 and 1 values. Purandar, Chakan Shivneri and Rajgad etc forts haave good communication facilities so 4, 4, 3 and 3 values respectively allotted. Purandar, Rajgad, Rajmachi, Tung,Shivneri etc forts have adventure tourism facilities so 5, 5, 5, 4, 4 values respectively allotted and Chakan fort allotted lowest value 1. The tourism potential fort sites have been analyzed on the basis of their total weight. They are classified such as highly suitable, moderately suitable, suitable, and least suitable. it is clear that only Purandar and Shivneri scores high i.e. 42 and 48 respectively are highly suitable sites to be good tourism potential fort sites. Chakan and Rajgad score 35 and 38 respectively are moderately suitable sites. Rajmachi score is 31 as suitable site. On the other hand, certain site like Tung score 30 is least suitable site on most counts.

The impacts of forts on the region are not widely understood because people think that this has only economic impacts. However, the range of impacts from forts are broad and residents of the places are realize with only positive impacts but this is also associated with negative impacts. The examining of these impacts is become easier to understand the development of region and maximizing positive impacts

while minimizing negative impacts with keeping it under control. Therefore, here attempt has been made to find out impact of forts by using seven point Likert Scale method. Tourism has a major impact on environmental conditions of the region. Assessment of the environmental impact of tourism is particularly important, for the various facts of the environment constitute the basis of much tourist development. The questionnaire for assessment of environmental impact consists of 15 questions. These questions will help to understand the environmental impact of the tourist on the region. The mean and standard deviation of residents of the Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri forts responses to environmental impact on tourists are calculated. The mean and standard deviation of overcrowding and congestion is respectively 75 and 63.37, noise and air pollution 90 and 67.42, road condition 90 and 51.70 etc. The higher the number of respondent tourists larger the effect on host population of tourist centers fort. The frequency distribution of environmental impact mean is 14.29 and standard deviation is 11.25. So, it can be said that in Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri forts there is an overall positive effect of tourism.

There is a correlation between tourist response and average score of Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri forts. The explained variance is 88% and unexplained variance is 12%. It indicated that tourist response is depending on score. The equation derived is significant at 99% level. The calculated **t** value is 5.43 i.e. more than table t value on 99% level. Hence it is clearly indicating that tourist response depends on the score. So, it can be said that in Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri forts there is an environmental impact of tourism.

CONCLUSIONS

Based on GIS analysis, field survey calculation of satisfaction index, matrix analysis, application of Likert scale, bivariate analysis of the data. Following conclusions are made.

1) It is seen that socio- economic resources act as a positive element for the growth of tourism in the study area.
2) It is found that the numbers of forts concentrate in the western part of the Pune district e.g. Sinhagad, Tung, Tikona, Shivneri, Rajgad, Torna

and Dhakoba. Therefore, there is a wide scope to develop forts in the eastern parts of the district.

3) Case studies (Details regarding case studies is given in chapter IV) which will be useful for development tourism in the district case studies of Purandar, Chakan, Rajgad, Rajmachi, Tung and Shivneri forts shows strong positive response of tourists as potential tourist size, which will be useful for development of tourism on these fort sites.
4) The tourism potential forts have been analyzed on the basis of satisfaction index analysis. The indicatorwise weight values are calculated for the identification of levels of satisfaction for forts (Details of satisfaction index analysis is discussed in chapter IV) scores high on most of the indicators is classified as highly potential forts.
5) The tourism potential forts have also been analyzed on the basis of site suitability parameters. The matrix has been prepared based upon the weighted index method. Purandar and Shivneri (Details regarding matrix analysis is discussed in chapter IV) scores high on most of the parameters are classified as highly suitable forts. On the other hand Tung fort is low on most counts and classified as the least suitable. But Tung is highly tourism potential fort as compared to other forts.
6) Most of the parameters can be improved immediately without disturbing the eco-system to increase the tourist potential of these forts.
7) With the help of GIS and TIS (Tourist Information System) of the needs and potentials of rural areas and economically disadvantage are studied. The tourist zones according to tourist category are demarcated e.g. forts places along the Bangalore-Pune express way can be display with the help of GIS.
8) The western part of Pune city having maximum number of forts with tourism facilities. Many forts of these parts are Shivneri, Sinhagad, Rajgad, Torna are well known tourist centers but few of them like Tung, Tikona, Bhorgiri sites are having strong tourism potential but there are not well developed tourist activies due to lack of facilities.
9) The Eastern part of Pune city having less number of fort sites and are not well developed due to lack of facilities as well as promotional activity by local government eg. Chakan and Purandar for.

RECOMMENDATIONS:

- To promote and develop tourism in the district there is an urgent need for improvement of transport facilities and equipments. The way side amenities should be create by tourism authorities such as petrol pumps, water facility, medical facilities at Rajmachi, Korigad, Sonori, Purandar, Rajgad, Tung etc. Roads condition should be improved and unmetalled roads (Kachha) should be converted into metalled roads at Kenjalgad, Raireshwar, Rajmachi, Tung, Purandar and Rajgad. The forts of rural areas should be provided the regular bus services i.e. Dhakoba, Tikona, Lohgad, Visapur, Jivadhan etc. comfortable buses and adequate number of auto rikshaw, jeeps and cars should be arranged in tourist season at Kenjalgad, Raireshwar, Hadsar Rajgad, Torna, Shivneri, Tung, etc. for tourist and pilgrims.
- Now a day's medical tourism, agro-tourism, eco-tourism, health tourism are growing rapidly. Some medical patienent required dry climate for that purpose at Narayangad, Sinhagad, Shivneri, Rajmachi, Tung, Tikona and Bhorgiri should be developed as medical and health tourism centers. The eco-tourism forts sites should be developed at most of the rural places in the Pune district i.e. Maval, Junnar, Ambegaon, Velha, Purandar, Bhor etc. which are ideal for susitanabale development of the region and will create employment opportunities in this area and improved their standard of living. There are some places like Shivneri, Rajmachi, Korigad, Sonori, Lohagad, Tikona and Bhorgiri etc. at the time of full moon (except rainy season) tourist can enjoy and observe the animals in dry region like rabbits, taras, deer and spotted deer etc.
- Most of the new potential suitable forts sites face the problem related to the accommodation e.g. Chakan, Rajgad, Rajmachi, Tung and Shivneri etc. in the Pune district. So, the problem regarding accommodation must be solved by construction of hotels, motels, youth hostels, lodges, dharmshalas, dormitories and MTDC rest house. The cheap and comfortable accommodation should be provided to the tourist.
- Every tourist center has it own tourist carrying capacity. If it is over utilized the infrastructural facilities are over strained and environment will be

disturbed. So extra flux of tourist should be diverted to the other near by tourist centers e.g. Chakan, Rajgad, Rajmachi, Tung and Shivneri etc.

- Present study is carried out with the help of GIS. Safety measures should be undertaken by the Government. Rescue operation teams need to be set up with proper training. This has to be implemented on the urgent basis for most of the forts especially at Sinhagad, Tung, Rajmachi, Lohagad, Shivneri and Rajgad where number of death incidents are on a higher side.
- Tourist guides for other state and foreigner tourists must be available at each place.
- Government of Maharashtra set up websites that focuses on tourist sites with appropriate information for the local and overseas tourist. These sites should be updated on the daily basis.
- Recreational activities should be set up such as trekking and rock climbing.

Inorder to strengthen the existing and new potential forts, a connectivity must be established between them by connecting through one travel network. Hence, the following tourism circuit can be made in practice for Pune district (Table 5.1)

Tabale 5.1: Recommended Tourism Circuit in Pune district

Tourism ciruit name	**centres**	**Total days**	**Place for Hault**	**Means of Transport**	**Total Distance (Km)**
North side of Pune	Pune – Bhimashankar - Bhorgiri-Shivneri - Narayangad – Hadsar – Chavand - Sindhola- Nimgiri- Pune	3	Bhimashankar, Shivneri	State Transport Bus, Luxury Buses, Public Jeeps, Private Vehicles.	300 km
	Pune-Hadshi- Tikona-		Mulshi,	State	

West side of Pune	Tung – Lohgad – Visapur-Morgiri – Kailasgad – Induri – Rajmachi - Pune	3	Lonavala	Transport Bus, Luxury Buses, Public Jeeps, Private Vehicles.	330 km
South side of Pune	Pune – Khadakwasla-Sinhagad – Torna – Rajgad – Kenjalgad – Raireshwar – Daulatmangal – Vajragad – Purandar – Jejurigad - Pune	4	Baneshwar, Narayanpur, Jejuri	State Transport Bus, Luxury Buses, Public Jeeps, Private Vehicles.	250 km

Table 5.2: Recommended One Day Tourism Circuit in Pune district

Travelling Schedule	Total distance of travel (in km)	Places for visit
Pune-Sinhgad-Pune		
Starting point – Pune city (7.00 a.m. to 09.30 a.m.)	76 Kms	Khadakvasala dam Breakfast at Donje village.
Journey to Sinhgad fort (09.30 a.m. to 12.30 a.m.) 01.30 a.m. to 2.30 p.m.		Sinhgad Hill fort, Bhuikot fort Lunch at Sinhgad fort
Journey to Pune city 3.00 p.m to 4.00 p.m.		Journey and tea break at Gore Buk. village
4.30 p.m to 5.30 p.m		Journey to Pune city
Pune–Shivneri-Chakan-Pune		
Starting point – Pune city (7.00 a.m. to 08.30 a.m.)	180 km	Shivneri fort Breakfast at Khed.
Journey to Shivneri fort (08.30 a.m. to 01.0 p.m.) 01.30 a.m. to 02.30 p.m.		Shivneri fort Lunch at Junnar
Journey to Chakan Land fort 3.00 p.m to 4.30 p.m. 4.45 p.m to 5.00 p.m.		Chakan Land fort Journey and tea break at Chakan
5.15 p.m to 6.30 p.m		Journey to Pune city
Pune–Purandar-Pune		
Starting point – Pune city (7.00 a.m. to 09.00 a.m.)	78 km	Purandar fort Breakfast at Saswad.
Journey to Purandar fort (09.15 a.m. to 12.30 p.m.) 01.00 a.m. to 02.30 p.m.		Purandar fort Lunch at Purandar

Journey to Ketkavale village 3.15 p.m to 4.15 p.m. 4.30 p.m to 5.00 p.m.		Tirupati Balaji Temple Journey and tea break at Ketkavale
5.15 p.m to 7.00 p.m		Journey to Pune city

Pune-Rajmachi-Pune		
Starting point – Pune city (6.00 a.m. to 09.00 a.m.)	164 km	Rajmachi fort Breakfast at Lonavala.
Journey to Rajmachi fort (09.15 a.m. to 12.00 a.m.) 01.00 a.m. to 2.00 p.m.		Rajmachi fort Lunch at Rajmachi fort
Journey to Pune city 2.30 p.m to 3.00 p.m.		Journey and tea break at Udhewadi village
3.30 p.m to 7.00 p.m		Journey to Pune city
Pune–Tung-Pune		
Starting point – Pune city (6.30 a.m. to 09.00 a.m.)	170 km	Tung fort Breakfast at Paud.
Journey to Tung fort (09.30 a.m. to 01.0 p.m.) 01.30 a.m. to 02.30 p.m.		Shivneri fort Lunch at Tung
Journey to Pavana Dam 3.00 p.m to 4.00 p.m. 4.15 p.m to 4.30 p.m.		Pavana dam Journey and tea break at Pavana
4.45 p.m to 8.00 p.m		Journey to Pune city
Pune–Rajgad-Pune		
Starting point – Pune city (6.00 a.m. to 09.00 a.m.)		Rajgad fort Breakfast at Nasarapur.
Journey to Rajgad fort		

(09.15 a.m. to 12.30 p.m.) 01.15 a.m. to 02.15 p.m.	186 km	Rajgad fort Lunch at Rajgad
Journey to Chaped dam 3.00 p.m to 3.45 p.m. 4.30 p.m to 5.00 p.m.		Chaped dam Journey and tea break at Velha
5.15 p.m to 8.30 p.m		Journey to Pune city

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P H O T O G R A P H S



Photo No. 1. Sinhagad Fort (View from Donje Village)



Photo No. 2. Sinhagad Fort and Streams



Photo No. 3. Lohagad



Photo No. 4. Tikona fort



Photo No. 5. Rajgad fort



Photo No. 6. Korigad Fort, Amby Valley (Planned City)



Photo No. 7. Shivneri Fort and Helipad



Photo No. 8. Shivneri Fort (Kadelot point and Birth place of Chhatrapati Shivaji Maharaj)



Photo No. 9. Fort Rajgad (Padmavati Machee on Right Side and Balekilla in Central Part) from Gunjawane Village



Photo No. 10. Tung Fort, Pavana Reservoir



Photo No. 11. Chakan Fort with entrance Gate



Photo No. 12. Chakan – Recent photo



Photo No. 13. Rajmachi Fort and Waterfall

Appendix-I

Geographical tudy and assessment of site and situation of major forts in Pune district, Maharashtra

Questionnaire- A

(Tourist's Opinion)

Name of Tourist Center -

Name and Address of the Tourist ----------

Sr.No	Criterion	Sub- criterion	Tick mark
1	Age		
2	Sex		
3	Religion and Caste		
4	Marital Status		
5	Other Relatives		
6	Edu. Qualification		
7	Occupation	Agriculture Business Service Other	
8	Monthly Income (In Rs.)	Less than Rs. 50,000/- Rs. 50,000/- To 1,00,000/- Rs. 1,00,0001 To 1,50,000/- More than Rs. 1,50,000/-	
9	Purpose of Visit	Piligrimage Entertainment Business Government work Service Friends and Relatives	

10	How many time visited	Once in a year Frequently First Time	
11	Mode of Travel	Railway MSRTC Hired Vehicle Owned Vehicle Other	
12	4) Stay at Tourist center	One Day Two Day Three Day Four Day More than four days	
13	Type of Accommodation preferred	Lodge Govt. Rest House Dharmashala Hotel Friend's/ Relative's	
14	Travel Accompany	Family Friends Tourist Group School/ College Tour	
15	Most favorable/ preferred Tourist season	Diwali Ekadashi New Year Week End	

	10 11 12	Summer Vacation Fairs	
16	Expenditure	Up to Rs. 250/- Up to Rs. 500/- Up to Rs. 1000/- Up to Rs. 1500/- More than Rs. 1500/-	

Date :-

Place :- **Signature**

Geographical study and assessment of site and situation of major forts in Pune district, Maharashtra

Questionnaire- B

1] Views of the Tourists about the Infrastructure Facilities

A) Accommodation

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

B) Transportation

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

C) Food_

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

D) Darshan Facility

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

E] Views of the Tourists about the behavior of local people

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

F] Views of the Tourists about the Tourist Center

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

G] Views of the Tourists about Safety

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

2] Views of the Tourists about the Environmental Impact

A] Overcrowding and congestion

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

B] Noise and air pollution

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

C] Water pollution

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

D] Sewage disposal

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

E] Drinking water

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

F] Strain on public utility services

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

G] **Strain on entertainment facility**

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

H] Road condition

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

I] Development of slums

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

J] Freely moving cattle

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

K] Acute problem of dirtiness

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

L] Modernization of infrastructure

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

M] Increasing number of religious institution

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

N] Increasing number of hotels

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

O] Need of separate parking facility

Index	Excellent	Good	Satisfactory	Unsatisfactory
1				
2				

3] Suggestions

Date -

Place - Signature

APPENDIX - II

Tourist Centers in Pune District

Sr. No.	Tourist Centers	Topo sheet No.	GPS Location Lat. / Lon.	Altitude from ASL (mtr)	Area (Sq. Km.)	Type of Tourist Centre	Head Quarter	Mean Annual Rainfall (mm)	Mean Annual Temperatur e(°C)	Best time to Visit According to English Month	Best time to Visit According to Marathi Month	Nearst Town	Distance from Nearest Town (Km)	Distance From Pune City (Km)	Approach Road	Mode of Transport	Accommoda tion Facilities	Communica tion Facilities	What to See
1	Dhakoaba (Amboli)	47/E	19°16'11"N, 73°44'35"E	1264.31	7.07	Fort, Historical	Junnar	1000	28	October to February	Kartika to Magha	Junnar	14	100	Other Roads No. 3	MSRTC Bus, Private Vehicles	Accommodation facilitiy not available	Communication	Historical fort, Trekking facility
2	Hadsar	47/E	19°16'19"N, 73°47'49"E	862.88	10.17	Fort, Historical	Junnar	1000	28	October to February	Kartika to Magha	Junnar	13	105	Main District Highway No. 1	MSRTC Bus, Private Vehicles	Accommodation facilitiy not available	Communication	Historical fort, Trekking facility
3	Jivdhan (Ghatghar)	47/E	19°15' 00"N, 73°47'5"E	858.92	10.97	Fort, Historical	Junnar	1400	28	October to February	Kartika to Magha	Junnar	27	135	Main District Highway No. 3	Private Vehicles	Accommodation facilitiy not available	Communication	Historical fort, Trekking facility
4	Shivneri	47/E	19°13'38"N, 73°49'15"E	914.4	3	Fort, Historical	Junnar	730	30	June to December	Ashadha to Margashirsha & Shiva Jayanti	Junnar	3	93	Main District Highway No.1	MSRTC Bus, Helipad, Auto Rickshaws, Private Vehicles	Hotels,Lodges, PWD & Forest Dept. Rest House	Communication	The Birth Place of Shri Chhatrapati Shivaji Maharaj, Buddhist caves
5	Bhima-Shankar	47/E	19°03'56"N, 73°30'48"E	1004.62	4	Fort	Ambegaon	2000	22	June to December	Ashadha to Margashirsha & Mahashivratra	Ambegaon	33	128	State Highway No. 53	MSRTC Bus, Private Vehicles, Package Tour	MTDC & Forest Dept. Rest House, Dharmshalas	P & T Office, Communication	One of the twelve Jyotirlings in India, Hill Station, Sanctuaries
6	Bhor Giri	47/F & B	19°03'44"N, 73°33'38"E	907	1.5	Historical	Rajgurunagar (Khed)	2000	25	June to October	Ashadha to Ashvina	Rajgurunagar	41	100	State Highway No. 53 & 54	MSRTC Bus, Private Vehicles	Accommodation facilitiy not available	Communication	Natural beauty along river Bhima
7	Chakan	47/F & B	18°45'09"N, 73°52'29"E	649	17.12	Fort, Historical	Rajgurunagar (Khed)	664	32	Over all the year	Over all the year	Rajgurunagar	10	45	National Highway No. 50 & State Highway No. 55	MSRTC Bus, Jeeps, Auto Rickshaws, Private Vehicles	Hotels, Lodges	P & T Office, Communication	A Land fort
8	Lohagad	47/F & B	18°41'49"N, 73°28'48"E	750	4.84	Fort	Maval (Wadgaon)	3259	25	October to March	Kartika to Phalguna	Lonavala	17	70	Main District Road No. 26	Private Vehicles	Accommodation facilitiy not available	facility not available	One of the Ancient fort, Waterfall
9	Tikona Fort	47/F & B	18°37'40"N, 73°31'00"E	1036	6.77	Historical, Fort	Maval (Wadgaon)	2851	27	October to March	Kartika to Phalguna	Lonavala	45	89	Main District Road No. 26	MSRTC Bus, Jeeps, Private Vehicles	Hotels	Communication	One of the ancient fort, Pavana Dam
10	Tung	47/F & B	18°39'40"N, 73°35'15 E	1060.6	7.81	Historical, Fort	Maval (Wadgaon)	3397	25	October to March	Kartika to Phalguna	Lonavala	35	85	Main District Road No. 26 & Other Road No. 26	MSRTC Bus, Jeeps, Private Vehicles	Accommodation facilitiy not available	Communication	One of the ancient fort, Trekking facility, Waterfall, Pavana Dam
11	Rajmachi	47/F & B	18°83'40"N, 73°40'14"E	692 m	2316 hect.	Historical Fort	Maval (Wadgaon)	1200	28	June to November	Ashadha to Kartika	Lonavala	17	82 km	Main District Road No. 23	Jeeps, Private Vehicles	Accommodation facilitiy not available	Communication	Ancient fort of Shri Chhatrapati Shivaji Maharaj, Waterfall
12	Sinhgad	47/F & B	18°20'21"N, 73°48'31"E	1371	26.11	Historical Fort	Pune (Haveli)	1200	30	June to December	Ashadha to Margashirsha	Pune	24	24	Main District Highway No. 35	MSRTC Bus, PMT Bus, Auto Rickshaws, Private Vehicles	Hotel, Lodges, Forest Dept. Rest House	facility not available	Ancient fort, Trekking facility
13	Sonavari	47/J	18°21'10"N, 74°03'34"E	915	13.49	Religious	Purandar (Saswad)	585	33	Over all the year	Over all the year	Saswad	9	35	Other Road No. 170	MSRTC Bus, Jeeps, Private Vehicles	Dharmashala, Mathas	P & T Office, Communication	Temple of Navanaths situated on hillock
14	Narayanpur	47/F & B	18°15'04"N, 74°00'17"E	600	4.5	Religious	Purandar (Saswad)	720	32	Over all the year	Datta Jayanti	Saswad	10	40	State Highway No. 62	MSRTC Bus, Jeeps, Auto Rickshaws, Private Vehicles	Dharmashala, Mathas	P & T Office, Communication	Shri Datta Mandir
15	Purandar Fort	47/F & B	18°16'49"N, 74°00'19"E	1390	4.5	Historical Fort	Purandar (Saswad)	790	32	Over all the year	Over all the year	Saswad	12	38	Main District Highway No. 60 & Other Road No. 173	Private Vehicles	Z.P. Rest House.	facility not available	The first capital of Shri Chhatrapati Shivaji Maharaj
16	Jejuri	47/J	18°20'08"N, 74°02'31"E	1017	6.68	Religious	Purandar (Saswad)	564	32	Over all the year	Somvati Amavasya	Saswad	14	38	State Highway No. 64 & Main District Road No. 66 & 65	MSRTC Bus, Jeeps, Private Vehicles, Train	Hotels, Lodges, Dharmashala, PWD Rest House	P & T Office, Communication	Temple of Shri Khandoba situated on hillock
17	Rayreshwar	47/F & B	18°03'21"N, 73°43'28"E	1100	16.71	Fort	Bhor	2000	28	June to December	Ashadha to Margashirsha	Bhor	18	69	Other Road No. 176	MSRTC Bus, Private Vehicles	Accommodation facilitiy not available	facility not available	Ancient fort of Shri Chhatrapati Shivaji Maharaj
18	Rajgad (Bhutonde)	47/F & B	18°14'52"N, 73°39'45"E	1377	5.39	Fort	Velhe	1961	28	October to February	Kartika to Magha	Velhe	7	67	Main District Road No. 43	Jeeps, Private Vehicles	Accommodation facilitiy not available	Communication	Ancient fort of Shri Chhatrapati Shivaji Maharaj
19	Torna	47/F & B	18°16'15"N, 73°37'38"E	1403	1.22	Fort	Velhe	2141	28	October to February	Kartika to Magha	Velhe	5	65	State Highway No. 43 & 33	MSRTC Bus, Jeeps, Private Vehicles	Accommodation facilitiy not available	Communication	Ancient fort of Shri Chhatrapati Shivaji Maharaj