CHAPTER - 2

Research Methodology
This chapter presents the review of previous research work done on this topic. It also presents the main objectives of the study, hypothesis and research methodology has been presented in this chapter. The main characteristics of study area of this study has been presented in brief.

### 2.1 Review of Literature

Chaturvedi, Sachin and Halla, Thorsteindoltrí (2012) in their study analyzed that Though there is huge spectrum of South-South collaboration, led by the economies from the BRICS countries in the medical field there is a lack of studies examining the extent and characteristics of these collaborations and evaluating their benefits. The author's research on South-South research and entrepreneurial collaboration in health biotechnology shows relatively strong involvement of the emerging economies BRICS, apart from some of the other economies such as Cuba, also actively pursues South-South collaboration. This collaboration is generally mutually beneficial for both participating countries, and aimed at shared health needs. As a result of the study shows that collaboration does not necessarily consist of donor-recipient relationships but heavily reflect capacity-building efforts, where capacity in health biotechnology research and development was extended through South-South collaboration.
De Prabir (2011) in his study empirical analysis the linkages between India’s services trade flow and its probable barriers. The results of the analysis shows that the linkages between services export and services trade barriers are multiple and complex. Findings of the study suggests that that improved trade facilitation may help unlock the unrealized trade potential and therefore, more effective policy approaches towards improved services trade infrastructure would be needed to facilitate services export from India. The study finds that recruiting favourable domestic policies that are responsible for services trade facilitation and reforming domestic regulations in trade and infrastructure sectors need utmost attention.

Ganguly, Sumit (2011) in his study reveals comprehensive account of the evaluation of India’s foreign policy since 1947 to the present day. It is divided into three distinct historical sections. The author will also attempt to explain the underlying reasons for these the initial orientation and subsequent shifts that occurred over time. The first section deals with the period from 1947 to 1962, the second from 1962 to 1991 and the third from 1991 to the present. The choice of these three segments is so far from arbitrary. The first period constituted the most idealistic phase of India’s foreign policy under the tutelage of India’s first prime minister, Jawaharlal Nehru. The second began with India’s disastrous defeat in the 1962 Sino-Indian border war. This period saw a gradual shift away from the early idealism that had characterized the country’s foreign policy and the adoption of an increasingly “self-help” approach to foreign policy while retaining elements of the Nehruvian rhetoric. The third phase began with the end of the Cold War and the
adoption of a more pragmatic foreign policy hewing closely to the principles of Realism.

Dubey, Ajay (2010) in a study analyzes that Indo-African relations in twenty-first century acquired new rallying points and priorities. Advent of globalization and growing engagements of new Asian powers like China led to a new rush to Africa. Fast growing energy countries like India too found Africa energy resources and market unexplored and attractive. India moved on its historical goodwill and multi-dimensional relations to effect mutually agreed partnership with African countries. African countries also discovered that the new and competing global interests are beneficial in terms of high commodity prices, huge investment and increased bargaining power. Indo-African relations moved on these new priorities and complementarities. Moulding itself in the framework of a partnership as attempted in India-Africa Forum Summit of April 2008. The author covers different aspects of multi-dimensional Indo-African relations. The study examines their priorities and evolving trends in their cooperation. The study explores that background of the Indo-African Forum Summit and highlights the directions and challenges in current Indo-African relations.

Yadav, Surya Narain (2010) in a study examines the evolving relationship between the two democratic and emerging economies of Asia and Africa. By virtue of a democratic political system and sound economic foundation, South Africa is bound to play a decisive role at the regional and global levels because it is a member of all the important international commonwealth, non-aligned movement and the United Nations Organization. India has maintained close and cordial relations with
South Africa since ever the Indians migrated to that country, especially since 1652. Despite of economic and political discrimination, India has played a decisive role in dismantling of the South Africa’s system, of apartheid. The case study of Africa fund clearly establishes this fact. India and South Africa has played a significant role in formulation and implementation of the agenda of the non-aligned movement.

Kragelund, Peter (2010) in a study analyzes that the exceptionally fast growth of big economies like China and India has resulted in a new-found interest in the economic and political consequences of this growth for the development economies. Recently, traditional donors’ concern that ‘emerging’ donors were re-emerging on the development scene was addressed. This kicked off a quest among donor agencies, think tanks and researchers alike to identify and establish the doings of these ‘emerging’ donors. Time to time, however, China has received most attention while the doings of other donors like India, Brazil and South Africa have remained virtually invisible. This ARI describes India’s current engagement in Africa and analyzes the reasons why India once again puts Africa high on its political agenda. It argues that the development cooperation and in particular the 2008 India-Africa summit is a way to brand India anew.

Gupta, Rakhi; Chaudhary, Divya Gupta and Gupta, S.N.P. (2010) in their study analyzes that the stabilization and structural adjustment measures, initiated since July 1991 by now commonly referred to as “Economic Reforms” (Liberalization) mark a watershed in the country’s economic policies. For almost three decades since independence, India’s development strategy and economic policy were guided by the objectives of accelerating the growth of output and
employment with social justice and equity. The authors emphasis was on distributive justice, regional balance and alleviation of poverty. However, the study throws light on the impact of the reforms on the various sectors of the Indian economy though there is ambiguity in the reforms. The aim of the study is to argue that one cannot find a development country that practices complete free trade. It will be shows that all developing countries use some restrictions to protect their domestic firms and in doing so the study will focus positive and negative influence of the liberalization.

Kweka, Josaphat (2010) studies on trade policy for low-income countries have established that high transport costs associated with poor quality infrastructure in countries such as Tanzania represent a barrier to trade and an additional source of protection to domestic producers of import competing goods. Using the analytical framework applied by Milner et al. (2000) to Uganda, this study reports results for Tanzania on transport costs as a barrier to trade. The estimates are used to identify sectors most vulnerable to transport costs. The results shows that although substantive trade policy reforms have succeeded in lowering average tariff levels and associated protection, transport costs increase the level of protection for almost all sectors; notably Beverages and Tobacco, cash crops, manufactured foods and building materials. In addition, decomposition of disprotection (taxation) effects on exports shows that measures to reduce transport cost burdens on exporters are essential to improve export performance for Tanzania. Simulation of the protection effects under the new EAC Customs Union shows that overall the level of tariff protection may increase but any adverse impacts could be offset by greater efficiency
at Customs and ports and additional investment to reduce infrastructure-related transport costs.

Sheela, S. Shantha and Angappapillai, A.B. (2010) in their paper analyze that during the pre-liberalization period, the growth in imports stood slightly higher than the growth in exports with a higher volatility experienced again in the case of imports. However, the average level of export stood again lower than the imports in the post-liberalization period the growth in exports and imports stood almost on par with a higher vitality experienced in the case of imports than exports and the average level of exports leading to an adverse balance of payments.

Sikri, Rajiv (2009) in a study examines India’s current and looming foreign policy challenges from a strategic and policy-oriented perspective. Author analyzes the long-term factors and trends that should determine the country’s foreign policy formulation. The author urges a reappraisal of India’s approach if it is to become a major player in the complex and rapidly evolving 21st century world. Challenge and Strategy: Rethinking India’s Foreign Policy focuses on India’s immediate strategic neighbourhood. Author also looks at important issues like energy security, economic diplomacy, the interaction between defense and diplomacy, and foreign policy institutions. A unique feature of the book is that it combines with the perspectives of a historian, a diplomat and a scholar. With many new out-of-the box ideas and policy suggestions, it makes a valuable contribution to the ongoing debate on foreign policy within India’s strategic community.

Joseph, K. Reji (2009) argued in the context economic reforms in pharmaceuticals sector, particularly in the context of changing patent regime, that
growth in exports would be restricted, imports would get a fillip and balance of trade would be adversely affected. The study looks into the recent experience in exports and imports of drugs and pharmaceutical products. Author found that there is a tremendous growth in the exports. The focus of exports has shifted from intermediates and bulk drugs to formulations. The expiry of patents on drugs worth billions of dollars in the near future, would provide a big opportunity for Indian generic producers. However, the expansion of formulation exports is increasingly facing challenges from various corners-increasing application of non-tariff barriers by importing countries, authorized Indian generics being targeted by global anti-counterfeit derive and competition from China. Import of formulations did not increase as has been anticipated. Paper also finds that there is a negative and growing trade balance, wing to the import of intermediates and bulk drugs. The industry is now increasingly adopting the strategy of importing intermediates and bulk drugs and processing them into formulations. The removal of ration parameter linking the production of intermediates and bulk drugs to the production of formulations has eliminated compulsions on the indigenous production of intermediates and bulk drugs.

**Pillania K. Rajesh** (2008) in his study explores Indian economy and foreign trade are on a growth trajectory. Indian exports have come a long way in value terms from the time of gaining independence in 1947. The total value of India’s merchandise exports increased from US$ 1.3 billion (7055.1 cr. rupees) in 1950-51 to US $ 63.8 billion (346242.6 cr. rupees) in 2003-04 – a compound rate of 7.6%, Trade growth has picked up post liberalization of 1991. The composition of trade is now
dominated by manufactured goods and services. India services exports share in
globe exports is more than double of that of Indian manufacturing exports. East-
Asian countries, particularly China have become a major trading block. There is
huge untapped potential for Indian foreign trade in years to come.

Daniel, Large (2008) in his study discusses the background in relations with
the main factors that have facilitated China’s expansion within Sudan. Second, it
surveys the nature of the ties between Sudan and Malaysia. India, Japan and China,
with particular emphasis on economic relations. Third, it outlines China’s changing
role in Sudan in connection to Darfur. The study traces the evolution of China’s
diplomatic role with the elements of continuity in its relations with Sudan and the
development of its relations with Chad. Finally, the author assumes a wider Sudan
perspective by considering the role of China in relation to the Comprehensive Peace
Agreement (CPA). With particular attention to the development of relations between
Beijing and Juba. Recently, China-Sudan relations referred predominantly to
relations between Beijing and Khartoum but the Chinese government has also
developed relations with the Government of Southern Sudan based in Juba.

Vines, Alex and Oruitemeka, Bereni (2008) in their study analyzes that in
recent years India has strengthened its involvement in the African India Ocean Rim
considerably. This shift in policy comes in part because of India’s desire to compete
with China’s growing influence in the region. The Indian Ocean has immense
significance for India’s development. India’s strategy is deepening not only
commercially but due to concerns over its security and hegemony in the region,
which are underpinned by India’s 2004 maritime doctrine. During the mid-1990s
Indian foreign policy was largely introspective and concerned with consolidating its position as the regional power. Despite of being a member of the Indian Ocean Rim Association for Regional Cooperation, there was little enthusiasm for the association and it produced few tangible results. The emergence of trilateral developmental initiative between India, Brazil and South Africa clearly reflected India’s priority of positioning itself as a major developmental power. The growing importance of the African Indian Ocean Rim to India is evidenced by increasing bilateral and trilateral efforts and improved relations, notably with Mauritius, the Seychelles, Madagascar and coastal states such as Mozambique, Kenya and Tanzania. India’s most formidable economic and commercial partnership in the African Indian Ocean is with Mauritius.

Collier, Paul and Venables, Tony (2008) in their study analyzes that the population of South Asia lives almost entirely in one mega-country or two large ones. In contrast, the rather smaller population of sub-Saharan Africa is spread across some fifty countries. Does this political fragmentation have economic consequences? Authors suggest that both private economic activity and the provision of public goods benefit from powerful scale economies that confer advantages on the South Asian model. Paradoxically, although as a result Africa has a greater need than other regions for supra-national power structures, it has far less made less progress towards regional unity.

Mohanty, S.K. and Chaturvedi, Sachin (2008) in their study observed that with the growing internationalization, the traditional old linkages between India and Africa are gradually emerging as a dynamic and vibrant trade and investment
partnership, benefitting all the participating economies. The rapid economic transformation of Indian economy and her emergence as major market has provided huge opportunities to the participating countries. The trade between India and Africa has almost doubled in last couple of years with rapid rise in Indian investments region. This may contribute substantively towards South-South cooperation model as was perceived at Bandung. It is in this context that India and Africa are also playing a vital role at various global fora such as WTO.

Ray, Nivedita (2007) in her study find that the India’s interest in Sudan has grown significantly in recent years. This is reflected in India’s increased trade and investments in Sudan. Two factors that have generated such interest and encouraged Indian engagement are the signing of the Comprehensive Peace Agreement in January 2005 and the soaring economy. However, delay in the implementation of the peace deal and conflict in western and eastern Sudan pose serious challenges to the huge Indian interest. The author examines India’s role and interest in the context of the ongoing crisis in Sudan. Author argues that lack of democracy and good governance has perpetuated the conflict and made peace unsustainable. Prolongation of such a situation is not in India’s interest given its economic and energy stakes in Sudan. A prudent and proactive role of India is necessary in order to address Sudan’s concerns and challenges and thereby advance its growing interests in Sudan and Africa.

Broadman, G. Harry et al. (2007) in their study find that the dramatic new trend in South-South economic relations is transforming traditional patterns of economic development, and this is nowhere more evident than in African-Asian
trade and investment flows. Indeed, while China and India emerge as economic giants in Asia, Africa is coming into its own, finding a vital role in this transformation. As illustrated in Africa’s Silk Road: China and India’s New Economic Frontier, these new South-South economic relations present real opportunities – as well as challenges – to African countries. They also highlight the need for complementary reforms by China and India to support more vigorous African development.

In analyzing Africa’s intensifying relationships with China and India, authors examines the trends to date and considers the implications of these developments for the economic future of the African continent. The diagnosis cautions that the opportunities engendered by China and India’s trade and investment with Africa will not necessarily be converted into growth and poverty reduction in the region. A critical finding of the study is that it is not just the quantity of these trade and investment flows that matters – it is also the quality of the overall commercial relationships underlying as well as shaping these flows. Both African and Asian policy makers need to devise appropriate policy responses to make the quality of these relationships even better. For China and India, the study points to the need for reform of policies that inhibit the potential export of Africa’s products. This includes, among other things, elimination of the escalating tariffs that make high valued-added exports from Africa commercially unviable in Chinese and Indian markets. On the African side, the main challenge is how to make best use of the positive spillover effects that Asian investments are having on the continent. Clearly, improving the competitiveness of African domestic markets is a priority.
Bhanushali, Kishor (2007) in a study analyze that whole world has recognized India as super power of 21st century. India is the youngest country in the world growing a rate of more than 8%. Large population of India provides market to the countries of the world. At the same time it provides opportunities to India in terms of extracting the potentials of its manpower and other resources to emerge as real super power. India’s foreign trade should also reflect her potentials to emerge as a super power. Present study aims at analyzing the recent changes in the pattern of foreign trade. Information on various dimensions on India’s foreign trades like imports, exports, balance of payment, composition of trade by commodities and countries, etc. are collected and analyzed to find out trend and pattern and its impact on future. India’s trading relations with Canada are also analyzed. These types of analysis assist in the formulation of international policies.

Pham, J. Peter (2007) in his study concludes that as the United States builds its own framework for broad, long-term engagement with an African continent that is increasingly recognized as strategically, diplomatically, and economically vital to U.S. national interests, India’s burgeoning public and private investments in the region as well as its diplomatic strategy vis-à-vis African national organizations and individual states will not affect U.S. - African relationships but U.S. - Indian relationships as well.

Sharma, Prafula and Chaturvedi, U. (2007) in their paper analyze that process of economic development of a country has an important impact on the size, composition and the direction of its foreign trade. The author’s study is limited to the examines how exports are helpful in improving the economic condition of our
country. The first part of the paper deals with the data where as the second part shows the causes behind the slow increase in exports and the suggested remedies.

Mathur, Vibha (2006) in her study observed that over the last 60 years, India’s foreign trade has undergone a complete change in terms of composition and direction. The exports cover a wide range of traditional and non-traditional items while imports consist mainly of capital goods, petroleum products, raw materials, and chemicals to meet the ever-increasing needs of a developing and diversifying economy. In recognition of the growing importance of the foreign trade in driving the economy, the author describes and examines changes in the pattern of India’s foreign trade since Independence in 1947, with focus on post-1991 developments. The author addresses issues related to trade policy, export strategy, tariff policy, current account dynamics, exchange rate management, foreign exchange reserves, capital account liberalization, external debt and aid, foreign investments (both direct and portfolio), and the WTO.

Jenkins, Rhys and Edwards, Chris (2005) in their study examines the impact of the emergence of China and India as important players in the global economy on 21 sub-Saharan African countries. Trade between the “Asian Drivers” and Africa has grown significantly since 1990 and in the last few years they have also become sources of foreign direct investment (FDI) in the region. Four types of impacts are considered – exports from Africa to the Asian Drivers, African imports from China and India, competition in third markets, and impacts on FDI. It is shown that for some African countries these impacts are by no means negligible and are likely to become more important in the foreseeable future. The ways in which Africa has been
affected differs from country to country, with some such as Angola, Nigeria and Sudan being important exporters, others such as Ghana, Ethiopia, Kenya, Tanzania and Uganda mainly importers from Asia, and Lesotho facing competition from China in export markets.

Farah, Arbab (2005) in his study examines the historical relation between India and Africa. The Author attempts to analyze India-Africa ties from a historical perspective while taking into account the importance of the growing level of interaction between the two sides. The study seeks to explore the genesis of India-Africa ties, traces the roots of how an initial interest in the continent was developed and how the nature of ties shifted to political and economic cooperation. The study will also discuss India’s major areas of cooperation with Africa and how the developments in these areas provide the context in which India is developing its relations. Finally, the study examine India-Africa ties in the light of the concerns they raise for Pakistan.

Asher, Mukul G. and Sen, Rahul (2005) in their study argues that India’s unilateral liberalization policies since the early 1990s, and purposeful and strategic perusal of its Look East Policy has resulted in considerably greater integration with the rest of Asia than is commonly realized or acknowledged. Moreover, the enabling conditions for greater economic integration among major Asian economies have been laid. If Asia is to increase its economic and political weight in the world affairs, India’s involvement would have to be an integral part of the Asia-wide cooperation. It is in this context that closer cooperation among Japan, Asian, South Korea, India
and China would provide considerable win-win opportunities and will have far ranging implications for the world.

2.2 Objectives of the Study

The main objectives of the present study are as follows:

- To study main characteristics of India and Africa in terms of trade and economic relation.
- To examine the terms of trade like foreign exchange, tariff, quote, balance of payment etc. related to these countries.
- To analyze factors responsible for expansion of trade and economic relation and also hurdles during trade and economic relation of these countries.
- To analyze the role of government for trade and economic relation between India and African countries.
- To suggest measures for further strengthening trade and economic relation.

2.3 Hypothesis

In the present study, following hypothesis has been tested:

- There will be no positive relationship between India and African countries in terms of trade and economic relation.
- Both governments of these countries will not play an immense role for strengthening trade and economic relation between India and Africa.

2.4 Research Methodology
The following methodology has been adopted during the research work:

**Sample Size**: Because of Africa is a vast Era continent. Thus we have selected a sample of six countries out of fifty three countries of which 10% is 5.3 of continent.

**Data Collection**: The study based on secondary data. The data collected with the help of Embassy of African countries, New Delhi and Office of D.G.C.L.&S., Calcutta etc. also be consulted for collecting data and relevant information needed for analyzing the facts. Graphs, Charts, Photographs etc. will be given to interpret the data.

**Personal Interviews**: For this study, researcher has undertaken the interviews of the authorities of trade and industry such as I.I.F.T., I.C.S.S.R., I.T.P.O., Afro-Study centre, JNU New Delhi etc.

**Government Publications**: For this study researcher used various government reports, journals such as D.G.C.I.&S. Calcutta, I.I.F.T. Publication, R.B.I. Reports and Bulletin, International Trade Statistics etc.

**Statistical Analysis**: The collected data were coded, tabulated and analyzed using various statistical techniques. The statistical tests were used to know the relationship between dependent and independent variables among the various group of study. The significance level was used as 5% and 1% for rejecting the hypothesis. Specific purposes for which tests were used have been given in Table 2.1

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Statistical Tests</th>
<th>Purpose</th>
</tr>
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<tbody>
<tr>
<td>1.</td>
<td>Percentage</td>
<td>To study the distribution of both</td>
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<tr>
<td>S.No.</td>
<td>Statistical Tests</td>
<td>Purpose</td>
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<td>2.</td>
<td>Arithmetic Mean</td>
<td>To study the central value.</td>
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<td>3.</td>
<td>Standard Deviation</td>
<td>To know the variability among the observations.</td>
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<td>4.</td>
<td>t-test</td>
<td>To test the mean difference between two means.</td>
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<tr>
<td>5.</td>
<td>Correlation coefficient</td>
<td>To determine the relationship between dependent and independent variables.</td>
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<tr>
<td>6.</td>
<td>t-test for correlation coefficient</td>
<td>To test the level of significance of correlation coefficient.</td>
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<tr>
<td>7.</td>
<td>t-test for paired data</td>
<td>To know the difference on the paired observation</td>
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<tr>
<td>8.</td>
<td>Regression Line</td>
<td>To estimate the value of dependent variable.</td>
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The test used are described below:

(1) Percentage

Single comparisons were made on the basis of the percentage. For drawing percentages the frequency of a particular cell was multiplied by 100 and divide by total number of respondents in that particular category to which they belonged.

(2) Arithmetic Mean
Arithmetic mean is the average used in the present study. “Arithmetic mean of a series if the figure obtained by dividing the total values of various items by their number.” (Elhance, 2000).

\[ \bar{x} = A + \frac{\sum fu}{\sum f} \times i \]

where, \( \bar{x} \) = Arithmetic mean
\( A \) = Assumed mean
\( \sum fu \) = Product of frequency and deviation from the assumed mean
\( i \) = Class interval
\( \sum f \) = Total frequency

(3) Standard Deviation

It is usually denoted by letter \( \sigma \) (small sigma) of the Greek alphabet and is a measure of dispersion. Standard deviation is the square root of the arithmetic mean (average) of the squares of the deviation measured from the mean or assumed mean. (Elhance, 2000)

\[ \sigma = i \sqrt{\frac{\sum fu^2 - (\sum fu)^2/n}{n-1}} \]

where, \( \sigma \) = Standard deviation
\( \sum fu^2 \) = Sum of the product of frequency and square of deviation from assumed mean
\( \sum fu \) = Sum of the product of frequency & deviation from assumed mean
(4) Test of Significance

The t-test can be expressed as:

\[
t = \frac{|\bar{X}_1 - \bar{X}_2|}{C.S.E.}
\]

where, \(\bar{X}_1\) and \(\bar{X}_2\) are the means of the first and second group.

C.S.E. means combined standard error. It is calculated by the following formula:

\[
C.S.E. = C.S.D. \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}
\]

where \(n_1\) and \(n_2\) are the number of observations in the first and second group respectively. C.S.D. is the combined standard deviation. It is calculated by the following formula:

\[
C.S.D. = \sqrt{\frac{(n_1 - 1) \sigma_1^2 + (n_2 - 1) \sigma_2^2}{n_1 + n_2 - 2}} \quad \text{if} \quad n_1 \leq 30, \quad n_2 \leq 30
\]

\(\sigma_1\) and \(\sigma_2\) are standard deviations of the first and second group respectively.

(5) Correlation Coefficient (r):

A mathematical method of measuring the intensity and magnitude of linear relationship between two variables of the series, was suggested by Karl Pearson, 1936.
The coefficient of correlation or the product moment correlation is calculated by the following formula:

\[ r = \frac{n \sum fuv - \Sigma fu \Sigma fv}{\sqrt{[n \Sigma fu^2 - (\Sigma fu)^2][n \Sigma fv^2 - (\Sigma fv)^2]}} \]

where,
\[ r \] stands for correlation coefficient,
\[ n \] number of observations
\[ \Sigma fuv \] Sum of the product of deviation of x and y variables with their frequencies
\[ \Sigma fu \] Sum of the product of deviation of x variable with the frequency
\[ \Sigma fv \] Sum of the product of deviation of y variable with the frequency
\[ \Sigma fu^2 \] Sum of the product of squares of deviation of x variable with the frequency
\[ \Sigma fv^2 \] Sum of the product of squares of deviation of y variable with the frequency

(6) Formula for testing correlation coefficient by t-test

\[ t = r \sqrt{\frac{n-2}{1-r^2}} \]

n is the number of observations
r is the correlation coefficient.

(7) t-test (For Paired data)

\[ t = \frac{|d| \sqrt{n}}{Sd \text{ diff}} \]

where \( d \) is the mean of difference
Sd is the standard deviation of difference

n is number of observation

(8) Regression Line

Y on X where Y is dependent variable and X is independent variable.

\[ Y - \bar{Y} = r \frac{6X}{6Y} (X - \bar{X}) \]

Where \( \bar{X} \) & \( \bar{Y} \) are the means of X and Y variable

6X and 6Y are the S.D’s of X and Y variable

r is the correlation coefficient between Y and X variables

Map of India
2.5 Introduction of Study Area

India's defining geological processes commenced seventy-five million years ago. When the Indian subcontinent, then part of the Southern Supercontinent
Gondwana, began a northeastwards drift-lasting fifty million years across the unformed Indian ocean. The subcontinents subsequent collision with the Eurasian Plate and subduction under it gave rise to the Himalayas, the Planet’s highest mountains, which now about India in the north and the north-east. In the former seabed immediately south of the emerging Himalayas plate movement created a vast trough, which having gradually been filled with river borne sediment, now forms the Indo-Gangetic plain. To the west of this plain, and cut off from it by the Aravalli Range, lies the Thar Desert. The original Indian plate now survives as peninsular India, the oldest any geologically most stable part of India, and extending as far north as the Satpura and Vindhya ranges in Central India. These parallel ranges run from the Arabian Sea cost in Gujarat in the west to the coal rich Chota Nagpur Plateau in Jharkhand in the east. To their the remaining peninsular landmass, the Deccan Plateau, is flanked on the left and right by the Coastal ranges, Western ghats and Eastern ghats respectively, the Plateau contains the oldest rock formations in India. Some over one billion years old, constituted in such fashion India lies to the north of the equator between 6°44’ and 35°30’ north latitude and 68°7’ and 97°25’ east longitude.

India’s coast 7,517 kilometers long of this distance, 5,423 kilometers belong to peninsular India and 2,094 kilometers to the Andaman, Nicobar and Lakshadweep islands. According to the Indian naval hydrographic charts, the mainland coast
consists of the following 43% beaches, 11% rocky coast including cliffs, and 46% mudflats or marshy coast.

Major Himalayan-origin rivers that substantially flow through India include the Ganges and the Brahmaputra, both of which drain into the Bay of Bengal. Important tributaries of the Ganges include the Yamuna and the Kosi, whose extremely low gradient causes disastrous floods every year. Major peninsular rivers whose steeper gradients prevent their waters from flooding include the Godavari, the Mahanadi, the Kaveri and the Krishna, which also drain into the Bay of Bengal, and the Narmada and the Trapti, which drain into the Arabian Sea. Among notable coastal features of India are the marshy Ran of Kutch in western India, and the alluvial Sundarbans delta, which India shares with Bangladesh. India’s climate is strongly influenced by the Himalayas and the Thar Desert, both of which drive the monsoons. The Himalayas prevent cold Central Asian Katabatic winds from blowing in, keeping the bulk of the Indian subcontinent warmer than most locations at similar latitudes. The Thar Desert plays a crucial role in attracting the moisture laden south west summer monsoon winds that, between June and October, provide the majority of India’s rainfall. Four major climatic groupings predominate in India: Tropical Wet, Tropical Dry, Subtropical humid and mantane.

With an estimated population of 1.17 billion representing 17% of the world population, India’s is the world’s second most populous country. The last 50 years have seen a rapid increase in population due to medical advances and massive
increase in agricultural productivity made by the green revolution. Almost 70% of Indians reside in rural areas, although in recent decades migration to larger cities has led to a dramatic increase in the country’s urban population. India’s largest cities are Mumbai, Delhi, Kolkata, Chennai, Bangalore, Hyderabad and Ahmedabad.

India is the world’s most culturally, linguistically and genetically diverse geographical entity after the African continent. India is home to two major linguistic families Indo-Aryan (74% spoken) and Dravidian (24% spoken). Other languages spoken in India come from the Austro-Asiatic and Tibeto-Burman linguistic families. Hindi, with the largest number of speakers, and official language is English. Every state has its own language.

India’s literacy rate is 64.8% (53.7% for females and 75.3% for males). The state of Kerala has the highest literacy rate at 91% while Bihar has the lowest at 47%. The national human sex ratio is 933 females per 1,000 males. India’s population growth rate of 1.38% per annum. There are 22.01 births per 100 people per year.

With an average annual GDP growth rate of 5.8% for the past two decades, the economy is among the fastest growing in the world. It has the world’s second largest labour force, with 516.3 million people. In terms of output, the agriculture sector accounts for 28% of GDP, the service and industrial sectors make up 54% and 18% respectively. Major agricultural products include rice, wheat, oilseed, cotton, jute, tea etc. Major industries include textiles, chemicals, food processing, steel, transport equipments, software.
India’s GDP is US $ 1.089 trillion (5910003 cr. rupees), which makes it the twelfth-largest economy in the world or fourth largest by purchasing power adjusted exchange rates. India’s economic growth has averaged 7.5% a year, which will double the averaged income in a decade.

Map of Africa
**Africa** is the largest of the three great southward projections from the largest landmass of the Earth separated from Europe by the Mediterranean Sea. It is joined to Asia at its northeast extremity by the Isthmus of Suez, 163 km. wide from the most
northerly point, Ras ben Sakka in Tunisia (37°21'N) the most southerly point, Cape Agulhas in South Africa (34°51'15"S), is a distance of approximately 8,000 km, from Cape Verde, 17°33'22" W, the Westernmost point, to Ras Hafun in Somalia, 51°27'52" E, the most easterly projection, is a distance of approximately 7,400 km. The coastline is 26,000 km long, and the absence of deep indentations of the shore is illustrated by the fact that Europe, which covers only 10,400,000 kilometers about a third of the surface of Africa – has a coastline of 32,000 kilometers.

Africa's largest country is Sudan, and its smallest country is the Seychelles, an archipelago off the east coast. The smallest nation on the continental mainland is the Gambia.

Africa's population has rapidly increased over the last 40 years, and consequently it is relatively young. In some African states, half or more of the population is under 25 years of age. African population grew from 221 million in 1950 to 1 billion (estimated) in 2012-13. Speakers of Bantu language are the majority in Southern, Central and East Africa proper but there are also several Nilotic groups in East Africa, and a few remaining indigenous Khoisan and Pygmy people in Southern and Central Africa, respectively. Bantu speaking Africans also predominate in Gabon and Equatorial Guinea, and are found in parts of Southern Cameroon. In the Kalahari Desert of Southern Africa, the distinct people known as the Bushmen have long been present. The San are physically distinct from other
Africans and are the indigenous people of Southern Africa. Pygmies are the pre-Bantu indigenous people of Central Africa.

The peoples of North Africa comprise two main groups, Berber and Arabic-speaking peoples in the west, and Egyptians in the east. The Arabs who arrived in the seventh century introduced the Arabic language and Islam to North Africa. The Semitic Phoenicians, the Iranian clans, the European Greeks, Roman and vandals settled in North Africa as well. Berbers still make up the majority in Morocco, while they are a significant minority within Algeria. They are also present in Tunisia and Libya.

Although it has abundant natural resources, Africa remains the world’s poorest and most underdeveloped continent, due to a variety of causes that may include the spread of deadly diseases and viruses, corrupt governments that have often committed serious human right violations, failed central planning, high levels of illiteracy, lack of access to foreign capital, and frequent tribal and military conflict.

Poverty, illiteracy, malnutrition and inadequate water supply and sanitation, as well as poor health, affect a large proportion of the people who reside in the African continent. In 2012, the World Bank announced revised global poverty estimates based on a new international poverty line of $1.25 per day. The new figures confirm that Sub-Saharan Africa has been the least successful region of the world in reducing poverty ($1.25 per day), 50% of the population living in poverty
in 1981, a figure that rose to 58% in 1996 before dropping to 50% in 2005 and 47.5% in 2008.

From 1999 to 2012, Africa’s real G.D.P. growth increased by 4.5% in 2012 and 4.8% (P) in 2013. Some countries experienced still higher growth rates, notably Angola, Suda and Equatorial Guinea, all three of which had recently begun extracting their petroleum reserves or had expanded their oil extraction capacity.

The continent has 90% of the world’s cobalt, 90% of its platinum, 50% of its gold, 98% of its Chromium, 70% of its tantalite, 64% of its manganese and one third of its Uranium, the Democratic Republic of the Congo (DRC) has 70% of the World’s Colton and most mobile phones in the world have Colton in them. The DRC also has more than 30% of the world’s diamond reserves.

Map of Benin
Benin, a narrow, north-south strip of land in West Africa, lies between the Equator and the tropic of Cancer. Benin’s latitude ranges from 6°30’N to 12°30’N and its longitude from 1°E to 3°40’E. Benin is bounded by Togo to the West, Burkina
Benin is located between Nigeria to the North, Niger to the North, Nigeria to the east, and the Bight of Benin to the South. With an area of 112,622 square kilometers, roughly the size of Pennsylvania, Benin extends from the Niger River in the North to the Atlantic Ocean in the South, a distance of 700 kilometers. Although the country measures 121 kilometers, it measures about 325 kilometers at its widest point. It is one of the smaller countries in West Africa. Eight times smaller than Nigeria, its neighbour to the east.

The majority of Benin’s population lives in the South. The population is young, with a life expectancy of 53 years. About 42 African ethnic groups live in this country, these various groups settled in Benin at different times and also migrated within the country. Ethnic groups include the Yoruba in the south-east, the Dendi in the north-central area, the Bariba and the Fulbe (Peul) in the northeast, the Betammaribe and the Somba in the Atacora Range, the Fon in the area around Abomey in the South-central and the Mina, Xueda and Aja on the coast. Recent migrations have brought other African nationals to Benin that include Nigerians, Togalese and Malians. The foreign community also include many Lebanese and Indians involved in trade and commerce.

The economy of Benin remains under-developed and dependent on subsistence agriculture, cotton production and regional trade. Cotton accounts for 40% of GDP and roughly 80% of official export receipts. Growth has offset much of
this increase. Inflation has subsided over the past several years, Benin uses CFA frame, which is pegged to euro.

In order to raise growth still further, Benin plans to attract more foreign investment, place more emphasis on tourism, facilitate the development of new food processing systems and agriculture products, and encourage new information and communication technology.
Egypt is the world’s 38th largest country, the Arab Republic of Egypt is a country mainly in north Africa, with the Sinai Peninsula forming a land bridge in Western Asia covering an area of about 1,001,450 square kilometers, Egypt is
bordered by the Mediterranean Sea to the north, the Gaza Strip and Israel to the northeast, the Red Sea to the east, Sudan to the south and Libya to the west. Egypt's latitude ranges from 30°2'N to 31°13'E and its longitude from 30.033°N and 31.217°E.

The great majority of its estimated 76 million live near the banks of the Nile River, in an area of about 40,000 square kilometers, where the only arable agricultural land is found. The large areas of the Sahara Desert are sparsely inhabited. About half of Egypt's residents live in urban areas, with the majority spread across the densely populated centers of greater Cairo, Alexandria and other major cities in the Nile Delta.

Egypt is the most populated country in the Middle East and the third most populous on the African continent, with an estimated 83 million people. Almost all the population is concentrated along the banks of the Nile in the Delta and near the Suez Canal. Approximately 90% of the population adheres to Islam and most of the remainder to Christianity, primarily the Coptic orthodox denomination. Apart from religious affiliation, Egyptians can be divided demographically into those who live in the major urban centers and the fellahin or farmers of rural villages. Egyptians are by far the largest ethnic group in Egypt at 98% of the total population. Ethnic minorities include the Bedouin Arab tribes living in the eastern deserts and the Sinai Peninsula, there are also tribal communities of Beja concentrated in the South-eastern-most corner of the country, and a number of Dom class mostly in the Nile
Delta and Faiyum who are progressively becoming assimilated as urbanization increases.

Egypt also hosts an unknown number of refugees and asylum seekers, but they are estimated to be between 500,000 and 3 million there are some 9,000 Palestinian refugees and about 18,245 registered refugees in urban areas, but the number of the largest group, the Sudanese is contested. The once vibrant Greek and Jewish communities in Egypt have virtually disappeared, with only a small number remaining in the country, but many Egyptian Jews visit on religious occasions and for tourism. Several important Jewish archaeological and historical sites are found in Cairo, Alexandria and other cities.

Egypt’s economy depends mainly on agriculture, media, petroleum exports and tourism, there are also more than three million Egyptians working abroad, mainly in Saudi Arabia, the Persian Gulf and Europe, the completion of the Aswan High Dam in 1970 and the resultant Lake Nasser have altered the time-honoured place of the Nile River in the agriculture and ecology of Egypt. A rapidly growing population, limited arable land and dependence on the Nile all continue to overtax resources and stress the economy.

The government has struggled to prepare the economy for the new millennium through economic reform and massive investments in communications and physical infrastructure. Egypt has been receiving U.S. foreign aid an average of $ 2.2 billion (11939.4 cr. rupees) per year, and is the third-largest recipient of such
funds from the U.S. following the Iraq war. Its main revenues however come from tourism as well as traffic that goes through the Suez Canal.

Egypt has a developed energy market based on coal, oil, natural gas and hydro power. Substantial coal deposits are in the north-east Sinai, and are mined at the rate of about 600,000 tonnes per years. Oil and gas are produced in the western desert regions, the Gulf of Suez and the Nile Delta. Egypt has huge reserves of gas estimated at 1,940 cubic kilometers and LNG is exported to many countries.

Map of Republic of Kenya
The Republic of Kenya is a country in East Africa. Lying along the Indian ocean, at the equator, Kenya is bordered by Ethiopia (north), Somalia (northeast), Tanzania (South), Uganda plus Lake Victoria (West) and Sudan (Northwest).
latitude from 1°16’S to 36°48’E and its longitude from 1.267°S to 36.8°E. The capital city is Nairobi. Kenya spans on area about the country is named after Mount Kenya a significant landmark and the second among the highest mountain peaks of Africa. Before 1920, the area now known as Kenya was known as the British East Africa Protectorate and so there was no need to mention mount when referring to the mountain.

Kenya is a country of great ethnic diversity. Most of Kenyans are bilingual in English and a large percentage of Swahili speak the mother tongue of their ethnic tribe.

The vast majority of Kenyans are Christian with 45% regarding themselves as Protestant and 33% as Roman Catholic. Sizeable minorities of other faiths do exist. There is a fairly large Hindu population in Kenya (around 500,000) who have integrated well with the community and play a key role in Kenya’s Economy but estimates for the percentage of the population that adheres to Islam or indigenous beliefs vary widely. 6% of the Muslim population lives in coast Province, comprising 50% of the total population there. Western areas of coast province are mostly Christian. The upper part of Eastern province is home to 10% of the country’s Muslims, where they are the majority religious group and apart from a small ethnic Somali population in Nairobi, the rest of the country is largely Christian.

After independence, Kenya promoted rapid economic growth through public investment, encouragement of agriculture production, and incentives for private and
foreign industrial investment. Kenyan GDP was 4.3% in 2004 and 5.8% in 2005 and 7.2% in (East) 2007 and 5% in 2013. In 2007, the Kenyan government unveiled vision 2030, which is a very ambitious economic blueprint and which, if implemented in its entirety, has the potential of putting the country in the same league as the Asian Economic Tigers.

Nairobi continues to be the primary communications and financial hub of East Africa. It enjoys the region best transportation linkages, communications, infrastructure and trained personnel. A wide range of foreign firms maintain regional branch or representative offices in the city. In March 1996, the Presidents of Kenya, Tanzania and Uganda re-established the East African Community. The EAC’s objectives include harmonizing tariffs and customs regimes, free movement of people, and improving regional infrastructures.

Map of Sudan
Sudan is a country in northeastern Africa. It is the largest country in Africa and in the Arab world and tenth largest in the world by area. It is bordered by Egypt to the north, the Red Sea to the northeast, Eritrea and Ethiopia to the east, Kenya and
Uganda to the Southeast, the Democratic Republic of the Congo and the Central African Republic to the southwest, Chad to the west and Libya to the northwest. The world’s longest river, the Nile, bisects the Sudan latitude from 15°31'N to 32°35'E and longitude from 15.517° N to 32.583°E. The blue and white Niles meet in Khartoum to form the River Nile, which flows northwards through Egypt to the Mediterranean Sea. Blue Niles course through Sudan is nearly 800 km. long and is joined by the rivers Dinder and Rahad between Sennar and Khartoum. The White Nile within Sudan has no significant tributaries.

United Nations estimated 37 million population in Sudan. The population of metropolitan Khartoum is growing rapidly and is estimated at about 5 to 7 million, including around 2 million displaced persons from the southern war zone as well as western and eastern drought-affected areas.

Despite of being a refugee-generating country, Sudan also host a refugee population. According to the World Refugee Survey 2008, 310,500 refugee and asylum seekers lived in Sudan in 2007. The majority of this population came from Eritrea (240,400 persons), Chad (45,000), Ethiopia (19,300) and the Central African Republic (2,500). The Sudanese government was reportedly uncooperative with the UN High Commissioner for Refugees in 2007, and the government forcibly deported at least 1,800 refugees and asylum seekers during the year. Sudan is a party to the 1951 convention relating to the status of Refugees.

Despite of being the 17th fastest growing economy in the world with new economic policies and infrastructure investments. Sudan still faces formidable economic problems, as it must rise from a very low level of per capita output. Since
1997, Sudan has been implementing the macroeconomic reforms recommended by the IMF. In 1997, Sudan began exporting crude oil and in the last quarter of 1999, recorded its first trade surplus. Increased oil production revived light industry, and expanded export processing zones helped sustain GDP growth at 6.1% in 2003. These gains along with improvements to monetary policy, have stabilized the exchange rate. Currently oil, is Sudan’s main export, and the production is increasing dramatically. With rising oil revenues the Sudanese economy is booming, with a real GDP growth rate of about 10.2% in 2007 which is 2.0 (estimated) in 2012. Rich mineral resources are available in Sudan including Petroleum, natural gas, gold, silver, chrome, asbestos, manganese, gypsum, mica, zinc, iron, lead, uranium, copper, kaolin, cobalt, granite, nickel and tin.

Agriculture production remains Sudan’s most important sector, employing 80% of the workforce and contributing 39% of GDP but most farms remain rain-fed and susceptible of drought.

Map of United Republic of Tanzania
The United Republic of Tanzania is mountainous in the northeast, where Mount Kilimanjaro, Africa’s highest peak, is situated to the north and west are the Great Lakes of Lake Victoria and Lake Tanganyika with Total surface of 945,087 Km. Tanzania is the world’s 31st largest country, it is comparable in size to Nigeria.
Central Tanzania comprises of a large plateau, with plains and arable land. The eastern shore is hot and humid, with the island of Zanzibar lying just offshore.

In Tanzania the Kagera region, one of the newly created districts is Misenyi, which is used to be the Misenyi Chiefdom. It extends from the Kyaka to the Mutukula border with Uganda that Chiefdom was inhabited by Baganda. However, they do not appear on the list of Tanzanian tribes. It is important to make such a correction because the Babumbilo people of former Misenyi Chiefdom are not Bahaya, they are Bagand.

The economy is mostly based on agriculture, which accounts for more than half of the GDP, provides 85% of exports, and employees approximately 80% of the workforce. Topography and climatic conditions, however, limited crops cultivation up to only 4% of the land area.

The United Republic of Tanzania has many resources including gold and natural gas. Extraction of natural gas began the decade, Gas is drawn into the commercial capital, Dar Es Salaam and exported to various markets overseas. Lack of overall development however has hampered the extraction of these various resources and even up to the present there has been effort to develop the natural resource sector but no major quantifiable results.

Industry is mainly limited to processing agricultural products and light consumer goods. Tanzania has vast amounts of natural resources including gold, diamonds, coal, iron ore, uranium, nickel, chrome, tin, platinum, Colton, niobium and other minerals. It is the third largest producer of gold in Africa after South-Africa and Ghana. Tanzania is also known for the Tanzania gemstones. Tanzania has
dozens of beautiful national parks like the world famous Serengeti and the Ngorongoro conservation area, that generate income with a large tourism sector that play a vital role in the economy growth. Recent public sector and banking reforms and revamped and new legislative frameworks have all helped in increasing the growth of private sector and investment. Short-term economic progress also depend on curbing corruption and cutting back on unnecessary public spending.

Prolonged drought during the early years of the 21st Century has severely reduced electricity generating capacity during 2006, Tanzania suffered a crippling series of “load shedding” or power rationing events caused by a shortfall of generating power, largely because of insufficient hydro-electric generation. Plans to increase gas and coal fuelled generation capacity are likely to take some years to implement and growth is forecast to be increased to 7% per year, and perhaps 8% or more.

Map of Zambia
Zambia is a landlocked country in Southern Africa, with a tropical climate and consists mostly of high plateau, with some hills and mountains, dissected by river valleys. At 752,614 km. it is the 39th - largest country in the world and slightly larger than the US state of Texas. Zambia is drained by two major river basins, the Zambezi basin in the south covering about three quarters of the country, and the
Congo basin in the north covering about one quarter of the country. A very small area in the north-east forms part of the internal drainage basin of Lake Rukwa in Tanzania.

In the Zambezi basin, there are a number of major rivers flowing wholly or partially through Zambia: the Kabompo, Lungwebungu, Kafue, Luangwa and the Zambezi itself, which flows through the country in the west then forms its southern border with Namibia, Botswana and Zimbabwe. Two of the Zambezi’s longest and largest tributaries, the Kafue and the Luangwa, flow mainly in Zambia.

Zambia is one of the most highly urbanized countries in sub-Saharan Africa with 44% of the population concentrated in a few urban areas along the major transport corridors, while rural areas are sparsely populated. Unemployment and underemployment in Urban areas are serious problems, while most rural Zambians are subsistence farmers. The population comprises of approximately 72 ethnic groups, most of which are Bantu-speaking. Almost 90% of Zambians belong to the nine main ethnolinguistic groups. The Nyanja-Chewa, Bemba, Tonga, Tumbuka, Lunda, Luvale, Kaonde, Nkoya and Lozi. In the rural areas, each ethnic group is concentrated in a particular geographic region of the country and many groups are very small and not well known. However, all the ethnic groups can be found in significant numbers in Lusaka and the copper belt.

About 68% of Zambians live under the recognized national poverty line, with rural poverty rates standing at about 78% and urban rates of 53%. Zambia ranked
117th out of 128 countries on the 2007 global competitiveness index, which looks at factors that affect economic growth per capita annual incomes are currently at about one-half of their levels at independence and at US $ 395, place the country among the world’s poorest nations. Social indicators continue to decline, particularly in measurements of life expectancy at birth about 40.9 years. The economy is projected to grow 6.9% in 2012, picking up to 7.3% in 2013 while inflation should remain in single digits, at 8.0% and 8.5% respectively. Zambian real GDP growth rate in 2013 is 7.3 and real GDP per capita growth is 4.2 in 2013.

The Zambian economy has historically been based on the copper mining industry. Output of copper has fallen, however to a low of 228,000 metric tons in 1998, after a 30 year decline in output due to lack of investment, low copper prices and uncertainty over privatization.

Recently, firms like Vedanta Resources, a London based miner acquired Kon Kola copper mines. Vedanta transformed the company and continues investing in the Zambian economy. Zambia rich resource based on promoting agriculture, tourism, gemstone mining, and hydro-power. The Zambian government has recently been granting licenses to international resource companies to prospect for minerals such as nickel, tin, copper and uranium.

References


